SCOTTISH HOSPITALS INQUIRY

Bundle of documents for Oral hearings commencing from 13 May 2025 in relation to the Queen Elizabeth University Hospital and the Royal Hospital for Children, Glasgow

Bundle 43 – Volume 3
Procurement, Contract, Design and Construction, Miscellaneous Documents

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SCOTTISH HOSPITALS INQUIRY

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Acute Services Strategy Implementation and Planning Directorate Structure – 2007

Director of Acute Services Strategy Implementation & Planning
Helen Byrne
[redacted] (Dalian) & [redacted] (SGH)

- West of Scotland Cancer Network Co-ordinator – Evelyn Thomson [redacted]
- Head of Capital Planning & Procurement – Tony Curran [redacted]
- Health Improvement & Inequalities Manager – Anna Baxendale [redacted]
- Head of Acute Services Planning & Redesign – Sharon Adamson [redacted]
- Planning Manager: Managed Clinical Networks & Chronic Disease Mgt – Karen Ross [redacted]
- Head of Community Engagement & Transport – Niall McGrogan [redacted]
- Project Director – New Hospitals Project – Alan Seabourne [redacted]
- Head of Finance - Capital & Planning – Fiona Wade [redacted]
- PA/ Administration Manager – Linda Surgenor [redacted]
- Director of Finance – Peter Gallagher, [redacted]
- Director of Public Health – Dr Linda de Caestecker, [redacted]
  - Secretariat Administrator – Andrea LaRoche, [redacted]
  - PA/Administration Teams
- Public Health Consultant/ Lead Clinician, CHD, MCN – Dr Caroline Morrison, 64722
- Public Health Consultant – Dr Helene Irvine, 64952
- Lead Clinician for Diabetes Managed Clinical Network – Dr Andrew Gallagher

Service Planning & Redesign

Head of Acute Services Planning & Redesign – Sharon Adamson [redacted]

- Planning Manager Service Redesign – Janis Hughes [redacted]
- Planning Manager Diagnostics – Winnie Miller [redacted]
- Planning Manager Regional Services – Marjorie Johns [redacted]
- Planning Manager Women & Children's Services – Dorothy Cafferty [redacted]
- Planning Manager Emergency & Medical Services – Vacancy
- Planning Manager Clyde Acute Services – Stuart Reid [redacted]
- Planning Manager Surgery & Anaesthetics – Kirsty Murray [redacted]
- Health Economist – Ann Lees [redacted]
- Planning Analyst – Vacancy
- Redesign Coordinator Cancer Services – Vacant

Capital Planning & Procurement

Head of Capital Planning & Procurement – Tony Curran [redacted]

- Property Manager – Moira Anderson [redacted]
  - Property Administrator – Morag Scott [redacted]
  - Property Administrator – Kenny Millen [redacted]
- Partnership Project Manager – Stephen Baker [redacted]
  - Senior Project Manager – John Donnelly [redacted]
    - Partnerships Liaison Manager – Vacancy
    - Project Manager
    - Project Manager
    - Project Manager
    - CHP Premises Team – Carole Gillan, [redacted] Derek Rae, [redacted] Lorna Cranmer, [redacted]
- Acute Capital Planning Manager – John Hughan [redacted]
  - Senior Estates Manager – Arthur Hughes [redacted]
    - Project Manager / Project Support
    - Project Manager / Project Support
  - Senior Project Manager – Steve Russell [redacted]
    - Project Manager / Project Support
    - Project Manager / Project Support
  - Senior Project Manager – John Scott [redacted]
    - Project Manager / Project Support
    - Project Manager / Project Support
- Large Projects/PPP Proj Manager – Peter Moir [redacted]
  - Senior Project Manager – Vacancy; Hugh McDermott (Acting)
    - Project Manager / Project Support

New South Glasgow & New Children's Hospitals Project Team

Project Director – New South Glasgow & New Children's Hospital Project – Alan Seabourne [redacted]

Head of Capital Planning & Procurement – Tony Curran [redacted]

- Medical Director – Morgan Jamieson [redacted]
- Project Manager: New Children's Hospital – Mairi Macleod [redacted]
- Project Manager: New Adult Hospital – Heather Griffin [redacted]
- Project Administrator New Children's Hospital – Andy Bell [redacted]
- Head of Major Capital Plans/PFI – New South Glasgow Hospitals' Project – Peter Moir [redacted]

Finance

Head of Finance - Capital & Planning – Fiona Wade [redacted]

- ASR Capital Accountant – Tony Cocozza [redacted]
- ASR Capital Accountant – Iain Adams [redacted]
- Capital Accountant – Marie McClafferty [redacted]
- Capital Accountant – Paul Gemmell [redacted]
- Financial Analyst – John Fawcett [redacted]

Community Engagement & Transport

Head of Community Engagement & Transport – Niall McGrogan [redacted]

- Community Engagement Manager – Dan Harley [redacted]
- Community Engagement Manager – Mark McAllister [redacted]
- Community Engagement Manager – Kate Munro [redacted]
- Community Engagement Manager – Daniel Connolly [redacted]
- Transport Manager – Chris Drapper [redacted]
- Regional Transport to Health Project Manager – Carsten Mandt [redacted]
- PFPI Worker Women & Children's Division – Pauline Cameron [redacted]

Health Improvement & Inequalities

Health Improvement & Inequalities Manager – Anna Baxendale [redacted]

Topics Teams

Accident & Injury Prevention
SHPO, David Radford, [redacted]

Physical Activity
SHPO, Elaine Wong, [redacted]
HPO , Exercise Referral Officer, Fiona Hamilton, [redacted]

Nutrition
SHPO, Vacancy
HPO, Anne Gebbie-Diben, [redacted]
HPO, Joanne McNish, [redacted]

Tobacco
PHPO, Agnes McGowan, [redacted]
PHPO, Fiona Dunlop, [redacted]
SHPO, Acute & Maternity, Shirley Hamilton, [redacted]
HPO, Training, Rebecca Campbell, [redacted]
HPO Young People, Vacancy

Arts Co-ordinator
Jackie Sands, [redacted]

Older People Lead
SHPO, Claire Shields, [redacted]

NHS Team

PHPO, NHS/CDM, Heather Jarvie, [redacted]
SHPO, CDM, Vacancy
HPO, CDM, Suzanne Whiteford, [redacted]
SHPO, Keepwell Lead, Vacancy
HPO, Keepwell Lead, Chris Kelly, [redacted]
SHPO, MCN PFPI Lead, Pauline Fletcher, [redacted]
SHPO, HP HS Lead, Claire Goodheir, [redacted]

Big Lottery Team

BLF Manager, Louise Rennick, [redacted]
Project Manager – Clyde, Jan Irving, [redacted]
Project Manager – Glasgow, Chris Glendinning, [redacted]

West of Scotland Cancer Network

Regional Co-ordinator – West of Scotland Cancer Network – Evelyn Thomson, [redacted]

Personal Assistant – Susan Paton [redacted]

National MCNs

Neuro-oncology
Sarcoma
Hepatobiliary

Regional MCNs

Gynae-oncology
Colorectal
Lung
Upper GI
Skin
Breast
Head & Neck
Haemato-oncology
Palliative Care
Urology

Managed Clinical Networks & Chronic Disease Management

Planning Manager: Managed Clinical Networks & Chronic Disease Management – Karen Ross [redacted]

- MCN Coordinator: Diabetes – Marianne Hayward [redacted]
- MCN Coordinator: Heart Disease – Alan Foster [redacted]
- Clinical Network Manager: Diabetes – Vacancy
- MCN Facilitator: Cardiac/Stroke – Kevin McGoogan [redacted]
- Diabetes Register Facilitator – Inga Tulloch [redacted]

Request For Information - Section 21 Notice – dated March 2025 (No. 46)

1(b) Under the 2007 HAI-SCRIBE process the development stages of a healthcare facility to which question sets applied were:

a. Development Stage 1 - proposed site for development;

b. Development Stage 2 - design and planning;

c. Development Stage 3 - construction and refurbishment;

d. Development Stage 4 - ongoing maintenance.

Can NHS GGC please provide written response to confirm that these were carried out for each of the 4 stages mentioned above? Please note that if no further documentation, save for the above, is held by NHSGGC in respect of Part (1) of this s21 Notice, then please confirm this to be the case in written response to the Inquiry.

Response:

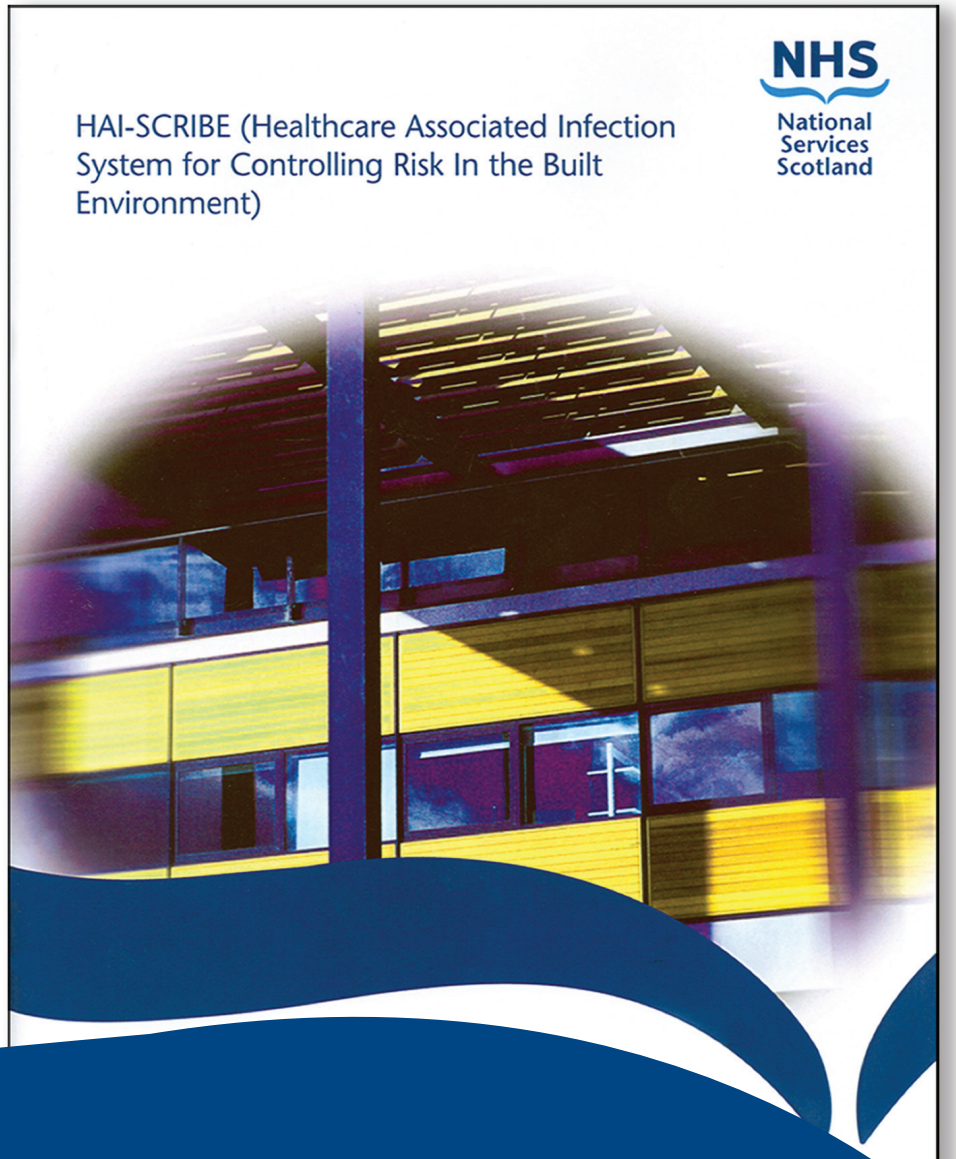
NHSGGC have not located any record of the HAI-SCRIBE process followed by the Project Team.

NHSGGC have located 2 documents titled “HAI-SCRIBE REVIEW Stages 1 2 – Adult.pdf” and “HAI-SCRIBE REVIEW Stages 1 2 – Children.pdf” both dated 07 July 2010 which are provided. Within both of these documents there is text that notes “Stage 1 – completed for Outline Business Case by Annette Rankin”. NHSGGC have been unable to locate any record of the Stage 1 HAI SCRIBE.

NHSGGC have been unable to locate any HAI-SCRIBE documents for Development Stage 3 - the Construction phase. A Development Stage 3 – Refurbishment/ Rectification HAI-SCRIBE for work to Ward 4B in July 2015 has been provided titled “QEUH L4B HAI SCRIBE 2015 V 1 0.doc”.

HAI-SCRIBE (Healthcare Associated Infection System for Controlling Risk In the Built Environment)

NHS National Services Scotland



Implementation Strategy

Health Facilities Scotland

A52725667

NHS National Services Scotland

HAI-SCRIBE

(Healthcare Associated Infection – System for Controlling Risk In the Built Environment)

Implementation Strategy

Health Facilities Scotland

September 2007

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1. Executive summary

Healthcare Associated Infection - System for Controlling Risk In The Built Environment

This document describes the main components of the HAI-SCRIBE system and identifies the steps required to ensure that the use of HAI-SCRIBE has been successfully implemented.

HAI-SCRIBE consists of four Development Stages, which are supported by a comprehensive range of questions designed to determine the actual and potential risk of patients developing an infection whilst using a healthcare facility.

The risk assessment method is effective in identifying actual and potential infection control hazards in the four development stages:

- proposed site for development;
- design and planning of the healthcare facility;
- refurbishment and building extensions to existing healthcare facilities;
- ongoing maintenance and repair of healthcare facilities.

It is recommended that this guidance be used as a working document when carrying out the different development stages of the risk assessment.

Contained within each of the development stage sections of this document, there is a risk assessment sheet and notes page. These are designed to give a historical, accountable record of the risk assessment process and the assessors involved for each of the development stages.

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2. Background

What is HAI?

Healthcare Associated Infection (HAI) is an infection that a patient has acquired during a visit, or stay, in a healthcare establishment.

The incidence and prevalence of HAI necessitates high standards of hygiene in existing hospitals and primary care settings and also in the design, planning, construction and ongoing maintenance of new and refurbished healthcare facilities.

What is HAI-SCRIBE?

HAI-SCRIBE is the acronym for 'Healthcare Associated Infection System for Controlling Risk in the Built Environment' and is aimed at all personnel who may be involved in providing newly built, refurbished or extended healthcare establishments.

It is intended for use in conjunction with Scottish Health Facilities Note (SHFN) 30: Infection Control in the Built Environment: Design and Planning.

Rationale

The rationale for using HAI-SCRIBE is to maintain a safe healthcare environment and to minimise the risk of HAI through assessment and planning, prior to and during, new build and renovation projects. It is also applicable when considering the ongoing maintenance of the healthcare facility.

Purpose

The purpose of using HAI-SCRIBE is to engage the collaboration and expertise from a wide range of healthcare experts, ensuring that key personnel are involved in reducing risk.

Principle

Demolition, construction or maintenance activities, in or near healthcare establishments, can pose significantly increased HAI risks to vulnerable individuals. In the main these risks can result in serious life-threatening airborne or water-borne infections such as Legionellosis, Cryptosporidiosis or Aspergillosis.

Patients using healthcare facilities are more likely to be immunocompromised and also more likely to receive intensive medical interventions, which in turn increases their vulnerability to opportunistic infections. Therefore every effort must be taken to acknowledge and ultimately reduce these risks.

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3. HAI-SCRIBE - What does it mean?

HAI-SCRIBE aims to provide information on the prevention and control of infection, and on the prevention of cross-infection and cross contamination in healthcare facilities, to those responsible for the planning, design construction, refurbishment and maintenance of such facilities.

There are three (3) stages to HAI-SCRIBE:

1. Identify the hazard (this may be an actual or potential hazard).
2. Assess the risk.
3. Manage the risk (either eliminate the risk or reduce the risk to minimise its impact).

The three (3) stages are supported by a specific range of questions, which are applicable during four (4) Development Stages, which cover:

Development Stage 1 - The proposed site and location of the new facility.

Development Stage 2 - The design and planning of the building.

Development Stage 3 - The construction or refurbishment of the facility.

Development Stage 4 - The ongoing maintenance of the operational facility.

Who should implement HAI-SCRIBE?

Implementation of HAI-SCRIBE should be the responsibility of a specialist multi-disciplinary professional team who have the necessary skills in relation to the healthcare facility being planned, designed, constructed, refurbished or maintained. The use of a multi-disciplinary team is necessary for the success of a new build or refurbishment healthcare project. Therefore the planning and implementation process should include an array of both healthcare professionals and contractor personnel. However, it is essential that all members of the project team have a background understanding of the principles of prevention and control of infection in the built healthcare environment.

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4. Project Team - Membership

Membership of this team would be expected to include the following:

- Project Owner - this will be a senior officer from the local NHS Board who has policy responsibility for the project;
- Project Sponsor - who will represent and have the authority of the client;
- Project Manager - may be the representative of the healthcare organisation which is undertaking redevelopment who requires to ensure that the objectives of the group are achieved;
- Infection Control Manager - designated as having overall responsibility for the management of infection control within the health board area and reporting directly to the local NHS Board.
- Infection Control Specialists - this may be an experienced Microbiologist and/or an Infection Control Nurse advisor;
- Healthcare Planner/Clinical Advisor - with a clear understanding of health facility operations and the principles of health facility design;
- Architect/Design Team - with knowledge and experience in designing healthcare facilities from project inception to completion;
- Building Services Engineer - with experience in healthcare facility services installation;
- Estates/Facilities Manager - with experience in healthcare facility management;
- Departmental Representatives - from a Ward or Department to represent users and healthcare staff;
- Other relevant specialists - who have appropriate experience and skills to contribute in the management of infection control in the provision of healthcare services, e.g. Risk Manager;
- Administrator/secretarial - the services of a member of administration staff will be helpful in providing administration support to members of the team throughout the project.

It is essential that a member of the Project Team is identified as the Project Manager to facilitate and co-ordinate the activities of team members.

It is also important to confirm the full commitment and availability of all members of the project team. A directory of telephone and e-mail contact details should be maintained.

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Project Team – Individual roles and responsibilities

The Project Team should comply with HAI SCRIBE and agree preventative strategies to negate HAI risks as a result of the project. Infection control advice should be implemented with specific reference to 'SHFN 30: Infection Control in the Built Environment'.

Team members should meet regularly as a working group until completion of the project, to ensure that infection control risks have been negated.

Project Owner

Each project must have a Project Owner. A senior officer within the local NHS board who has policy responsibility for the project, should normally fulfil this role. The Project Owner should have the status and authority to provide the necessary leadership and be clearly accountable for delivering the project requirements in accordance with the approvals given from individual funders at particular stages.

Main responsibilities of the Project Owner:

- Business Case and Budget - overseeing the preparation of the business case and budget;
- Structure and Communication - establishing an appropriate structure and the necessary communication process;
- Terms of Reference - agreeing all aspects of the scope and limits of the project;
- Reporting - overseeing the progress and reporting procedures.

Project Sponsor

It is mandatory that the NHSScotland body nominate a Project Sponsor. This is normally an appropriate employee, who will represent and have the authority of the client in respect of the project. All instructions given by the Project Sponsor are deemed to have been given by the client. NHSScotland bodies should ensure that adequate support is provided for Project Sponsors, so that they can carry out their duties effectively.

Main responsibilities of the Project Sponsor:

- Commissioning - professional services required for all aspects of the project work;
- Compliance - with the relevant EU Directives;
- Health and Safety - ensuring Health and Safety legislation is met and adhered to;
- Guidance - ensuring compliance with all relevant guidance and procedures.

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Project Manager

The Project Manager may be the representative of the healthcare organisation, which is undertaking redevelopment. The person should be of appropriate seniority to ensure that the objectives of the group are achieved e.g. the Infection Control Manager, and is either a NHS Board member or is directly accountable to a NHS Board member, i.e. having direct access to the Project Sponsor. (HDL(2001)10 and HDL(2005)8 describes the Infection Control Manager as the person who is designated as having overall responsibility for management processes and risk assessment relating to infection control.)

Main responsibilities of the Project Manager:

- Partnership working and communication - with all members of the project team;
- Managing Information - between all members of the Project Team;
- Co-ordination - of the activities of all personnel involved in the project;
- Authority to stop the work - if there is a breach of any infection control preventive measures during construction or refurbishment;
- Record Keeping - to ensure that all minutes of meetings held, decisions taken, actions agreed and planned, amendments made etc. are recorded and kept for future reference throughout the project;
- Risk - identifying, managing and mitigating project risk;
- Planning - preparing any follow-on action recommendations as required and identifying, tracking, managing and resolving all project issues;
- Strategies - adopting technical and quality strategies.

Infection Control Specialists

Microbiologist and/or Infection Control Nurse

Infection control specialists should be involved at the beginning of each project stage being assessed, when key decisions are being made, to ensure that robust infection control practices are built into the project design. They should advise on whether there are increased HAI risks associated with each of the four development stages of the project.

If such key specialists are not involved from the outset, then potential changes to building design or equipment may arise at later stages resulting in costly adjustments, additions, replacements and work delays.

Main responsibilities of the Infection Control specialists are:

- Partnership working and communication - with all members of the project team, especially non-clinicians, in the understanding of prevention and infection control principles;

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- Education, advice and guidance - on infection control issues such as operational and workflow arrangements, cleaning, storage, decontamination and preventive measures;
- Risk Assessment - where vulnerable patients may be at risk during a refurbishment, it is important that an appropriate risk assessment is carried out in advance of any demolition works or alterations to a building;
- Inspection of the construction site - regular visits will be required to ensure that contractors are following the building design and recommendations;
- Stopping the work - advising the Project Manager to ensure adequate information is available on which to make a decision to stop the construction work, if a breach of preventive measures has occurred.

Healthcare Planner/Clinical Advisor

The Healthcare Planner or Clinical Advisor should have a full understanding of the proposed healthcare building project, and will advise, develop, review and monitor the clinical specification for the new or refurbished facility in conjunction with all clinical groups.

Main responsibilities of Healthcare Planner/Clinical advisor are:

- Partnership Working - with the infection control specialists and other members of the project team;
- Advice and guidance - on planning issues such as design development, accommodation schedules and equipment requirements;
- Clinical specification - developing and agreeing requirements with relevant clinical personnel;
- Liaison - with all relevant personnel to ensure compliance with operational requirements and current Scottish Health Planning Notes (SHPNs), Scottish Health Facilities Notes (SHFNs), Scottish Health Technical Notes (SHTNs) and Scottish Health Technical Memoranda (SHTMs);
- Fit for Purpose - to advise on the new facility being functionally suitable for healthcare delivery and patient use.

Architect/Design Team

The Architect and Design Team should include the views of all relevant healthcare personnel into the final design of the new healthcare facility. In addition, the timescale involved to plan a new healthcare build or refurbish an existing establishment, can vary from a short period of a few months in the case of a small refurbishment, to as long as three or four years for a major capital project. Therefore it is important that infection control teams are notified of current capital bids, or contracts awarded, at the earliest possible opportunity.

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Main responsibilities of Architects are:

- Partnership Working - with the infection control specialists and other members of the project team;
- Obtaining advice - from all key healthcare professionals to incorporate views into the final project design;
- Meeting building objectives - ensuring that the construction or refurbishment meets the healthcare facility's exact requirements;
- Compliance - with professional standards and regulations in development and design;
- Understanding Infection Control - an up-to-date knowledge of prevention and control principles.

Building Services Engineer

The Building Services Engineer should review the proposed programme of work and advise on equipment and materials in the design, installation and maintenance of energy-using elements within the facility.

Main responsibilities of the Building Services Engineer are:

- Partnership Working - with the infection control specialists and other members of the project team;
- Compliance - with design legislation, standards and health and safety regulations;
- Liaison with contractors - in the organisation and assessment of work;
- Awareness of risks - from the ongoing construction project, site environment and installation of building services;
- Safe methods of working - ensuring that all contractors work safely whilst in the healthcare environment;
- Construction site - requires to be kept organised, safe, clean, functional and clear of debris.

Estates / Facilities Manager

The Estates/Facilities Manager must keep the HAI-SCRIBE Project Team up-to-date on new projects where the project work itself potentially increases the risk of HAI as determined by the Infection Control Risk Assessment specified in HAI-SCRIBE.

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Main responsibilities of the Estates / Facilities Manager:

- Partnership Working - with the infection control specialists and other members of the project team;
- Communication - with the infection control specialists to keep everyone up to date on all new projects where the work potentially increases the risk of HAI;
- Safe methods of working - ensuring that all visiting contractors work safely in the existing healthcare environment.

Departmental Representatives

Key healthcare staff, currently working in relevant wards and/or departments, should be involved in the project from the earliest opportunity to ensure that the needs of patients and staff are taken into consideration when planning the new or refurbished facility.

Main responsibilities of the Ward/Departmental representatives:

- Partnership Working - with the infection control specialists and other members of the project team;
- Patient safety - awareness of the patient population and the potential health risks that may occur during a project;
- Special precautions - require to be identified to mitigate risks for specific patient groups e.g. patients who are immunocompromised or who have underlying medical conditions;
- Fit for Purpose - to advise on the new facility being functionally suitable for healthcare delivery and patient use.

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5. Getting Started - preparation

All questions in each of the four Development Stages of HAI-SCRIBE should be answered. It is expected that many of the questions will have a YES response.

However, please do not enter into a 'box ticking' exercise when answering the questions at each stage. Each Yes or No answer should be backed up with additional written information relevant to the particular question, as some questions may require further consideration. Such information will be useful for reference at different stages of a new build project.

For example, if answering 'YES' to the following question at Development Stage 1:

"Are there industries or other sources in the neighbourhood which may present a risk of noise, smell, other pollution or infection e.g. animal by-products processing plant?"

Please describe fully what these 'industries' or 'other sources' are.

Similarly, if answering 'YES' to:

"Will lack of space limit the proposed development and future expansion of the facility?"

Please describe fully what the 'limitations' are and what actions need to be taken to eliminate or minimise the risk posed by these limitations.

Getting Started - Some points for consideration

Have you:

1. Identified all members of the multi-disciplinary project team?
2. Confirmed that all members of the project team have background knowledge in prevention and infection control?
3. Identified a Project Manager?
4. Obtained full telephone and e-mail contact details to confirm full commitment and availability to participate in the project?

DO NOT proceed to Step 1 until you can answer YES to the above four questions.

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6. Step 1: Development Stage 1 - Proposed site for development

The initial application of HAI-SCRIBE examines the intended site for the new build healthcare facility.

If any actual or potential hazards are identified during this initial stage, it is important that a full risk assessment is carried out to identify the nature of the risk. If risks are highlighted, remedial measures need to be identified in order that systems and processes can be designed into the project plans, so that the impact of the risk can either be eliminated, or its impact reduced.

The risks and the remedial actions should be clearly documented.

Development Stage 1 – Some points for consideration. Have you:

- Identified the proposed site for development?
- Confirmed the suitability of existing utility services?
- Carried out research on the existing local area?
- Identified potential pollution issues?
- Identified the prevailing wind direction?
- Highlighted any relevant site issues that need to be referred to specialists for an expert opinion?

Please ensure that you can provide robust documentary evidence when considering the above issues. This will ensure that you have facts and data to refer to at future stages of the project.

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Notes relating to Development Stage 1

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Please now complete the HAI-SCRIBE risk assessment on the next page to confirm the risk/s identified at Development Stage 1.

Development Stage 1 completed by .....

Signature ..... Date .....

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HAI-SCRIBE Risk Assessment

Name of establishment: .....

HAI-SCRIBE Development Stage: .....

Person carrying out risk assessment: .....

Description of planned construction or refurbishment: .....

.....

Construction activity type: .....

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What are the hazards?	Who might be harmed?	Risk to patients?	What action is necessary?	Action by whom?	Action by when?	Date completed

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7. Step 2: Development Stage 2 - Design and Planning

The second stage in applying HAI-SCRIBE to the new build project or refurbishment involves the project team members carefully considering the proposed plans to construct the facility.

Legislation and Regulations

Before any work commences, there is a need to be aware of all legislative issues, which apply to the project. Examples of relevant legislation may include:

- The Health and Safety at Work Act 1974;
- The Construction (Design and Management) Regulations 1994 (CDM);
- The Provision and Use of Work Equipment Regulations (PUWER) 1998;
- The Control of Substances Hazardous to Health (COSHH) Regulations 1999.

Development Stage 2 – Some points for consideration. Have you:

- Reviewed the proposed construction or refurbishment plans?
- Reviewed the proposed ventilation system requirements?
- Identified the patient population groups that will use the new facility?
- Checked that proposed single room occupancy is between 50% and 100% of the total planned bed numbers?
- Checked that bedspace is not less than 3.6m x 3.7m in each shared room?
- Identified the range of healthcare services to be provided?
- Carried out an infection control risk assessment of the proposed design and layout of the new facility?
- Designed in preventive measures, which will ensure that processes and procedures are in place to manage identified infection risks?
- Confirmed that no carpeted surfaces are planned for clinical areas such as patient bedrooms or treatment areas?
- Checked the locations of toilet, bath and shower accommodation in relation to convenience and accessibility for patients?
- Checked the accessibility of staff changing facilities?
- Reviewed the arrangements to dispose of clinical waste?
- Confirmed that clinical hand washing facilities comply with current regulations and guidance?

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Note: All handwash sinks used for clinical purposes must include the following:

- a mixer tap with elbow/wrist action lever, or automatic sensor, to avoid contamination;
- single horizontal tap spout with open nozzle and flow straightener (swan neck taps should be avoided;
- concealed ducted services.
- no plug, chain or overflow hole;
- washing under running water. The tap outlet should not point directly into the sink outlet;
- liquid soap, paper towel and alcohol gel dispensers at each sink.

Please ensure that you can provide robust documentary evidence when considering the above issues. This will ensure that you have facts and data to refer to at future stages of the project.

On completion of Step 2, you may find that changes and amendments are required to be made to the plans. However, it is better to identify any potential risk issues early on, rather than encounter costly project delays during the ongoing work.

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Notes relating to Development Stage 2

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Please now complete the HAI-SCRIBE risk assessment on the next page to confirm the risk/s identified at Development Stage 2.

Development Stage 2 completed by .....

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Signature ..... Date .....

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HAI-SCRIBE Risk Assessment

Name of establishment: .....

HAI-SCRIBE Development Stage: .....

Person carrying out risk assessment: .....

Description of planned construction or refurbishment: .....

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Construction activity type: .....

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What are the hazards?	Who might be harmed?	Risk to patients?	What action is necessary?	Action by whom?	Action by when?	Date completed

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8. Step 3: Development Stage 3 - Construction and refurbishment

Refurbishment of existing healthcare facilities

The third stage in applying HAI-SCRIBE is when a refurbishment or building extension is planned for an existing healthcare facility.

The major difference in applying HAI-SCRIBE at Step 3 compared to Steps 1 and 2, is due to healthcare services continuing to be provided during the construction work period to a population which consists of patients, healthcare staff and visitors.

Risk assessment

It cannot be over emphasised at this stage that a full risk assessment requires to be carried out to identify the nature of any risks from the refurbishment, which may affect existing patients already in the premises, many of whom will be immunocompromised due to ongoing complex medical treatments.

Development Stage 3 – Some points for consideration. Have you:

- Identified the specific area of the healthcare premises intended for refurbishment?
- Confirmed the exact nature of the refurbishment work to be carried out?
- Identified the patient population remaining in the premises?
- Identified the degree of risk to all groups of patients?
- Discussed the possibility of patients being moved to another healthcare location for the duration of the work period?
- Identified dedicated entry and exit points for use by healthcare staff and visitors during the construction/refurbishment?

If any actual or potential hazards are identified during the refurbishment work, it is important that full risk assessments are carried out and documented to identify the nature of the risk.

If risks are highlighted, remedial measures need to be identified in order that systems and processes can be designed into the refurbishment plans, so that the impact of the risk can either be eliminated, or its impact reduced.

Please ensure that you can provide robust documentary evidence when considering the above issues. This will ensure that you have facts and data to refer to at future stages of the project.

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Notes relating to Development Stage 3

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Please now complete the HAI-SCRIBE risk assessment on the next page to confirm the risk/s identified at Development Stage 3.

Development Stage 3 completed by .....

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HAI-SCRIBE Risk Assessment

Name of establishment: .....

HAI-SCRIBE Development Stage: .....

Person carrying out risk assessment: .....

Description of planned construction or refurbishment: .....

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Construction activity type: .....

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What are the hazards?	Who might be harmed?	Risk to patients?	What action is necessary?	Action by whom?	Action by when?	Date completed

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9. Step 4: Development Stage 4 - Ongoing maintenance

Ongoing use of HAI-SCRIBE in an existing healthcare facility

The final stage in applying HAI-SCRIBE is when an existing healthcare facility is fully operational.

The three (3) stages to HAI-SCRIBE are by their nature ongoing and involve:

1. Identifying hazards (this may be an actual or potential hazard)
2. Assessing the risks
3. Managing the risk (either elimination of risk or reducing risks to minimise their impact)

The use of HAI-SCRIBE on an ongoing basis is recommended. The exact frequency of use should be determined by those staff responsible for risk management in the establishment.

Development Stage 4 – Some points for consideration. Have you:

- Identified any proposed developments within the local environment, which may affect the healthcare establishment?
- Considered the infection risk from the finished surfaces of all fixtures and fittings?
- Confirmed that physical space around patient beds complies with current guidance?
- Confirmed that clinical hand washing facilities comply with current regulations and guidance?
- Confirmed that decontamination facilities and arrangements meet current regulations and guidance?
- Confirmed that engineering services, such as water, heating and ventilation systems, provided to the establishment meet current regulations and guidance?
- Considered the storage arrangements in terms of suitability for day-to-day use and also for episodes of contamination?
- Confirmed that the laundry facilities have sufficient capacity to cope with the healthcare service being provided?

Please ensure that you can provide robust documentary evidence when considering the above issues.

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All applications of HAI-SCRIBE should be recorded for future reference, especially where objectives and targets may have been set to address HAI concerns.

Notes relating to Development Stage 4

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Please now complete the HAI-SCRIBE risk assessment on the next page to confirm the risk/s identified at Development Stage 4.

Development Stage 4 completed by .....

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HAI-SCRIBE Risk Assessment

Name of establishment: .....

HAI-SCRIBE Development Stage: .....

Person carrying out risk assessment: .....

Description of planned construction or refurbishment: .....

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Construction activity type: .....

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What are the hazards?	Who might be harmed?	Risk to patients?	What action is necessary?	Action by whom?	Action by when?	Date completed

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Further information

Further information on **HAI-SCRIBE** can be found at http://www.hfs.scot.nhs.uk/guest/SHFN30/HAIScribe.pdf

Information on **SHFN 30 Version 3: 'Infection control in the built environment: Design and planning'** can be found at: http://www.hfs.scot.nhs.uk/guest/SHFN30/SHFN30V3.pdf

NHS Scotland e-library: http://www.elib.scot.nhs.uk/portal/elib/pages/index.aspx

Further advice on **HAI-SCRIBE Version 2** and **SHFN 30 Version 3** can be obtained from Health Facilities Scotland.

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BRE Environmental & Sustainability Standard

BES 5053: ISSUE 2.0

BREEAM Healthcare 2008 Assessor Manual

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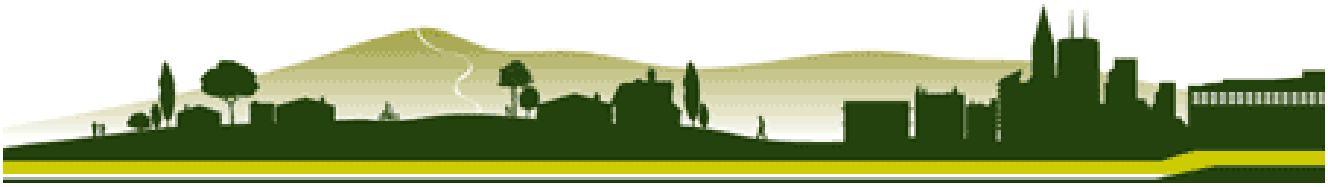

BREEAM HEALTHCARE 2008 ASSESSOR MANUAL

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BREEAM HEALTHCARE MANUAL

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Section 2: Scoring & Weighing
Section 3: Management
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Section 5: Energy
Section 6: Transport
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Section 11: Pollution
Section 12: Technical checklists

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breglobal	Schedule of Changes	Doc No: 5053
		Issue No: 2.0
BREEAM Healthcare 2008		Date: 11 August 2008

The following table details the changes that have been made to Issue 1.0 of this BREEAM scheme. Issue 1.0 of this standard was valid from 6 June 2008 to the date at which Issue 2.0 was first published (above date).

Key (Type of Change):
A = Administrative change e.g. typo.
C = an addition/insertion, deletion or alteration to the credit criteria, compliance requirements, compliance notes, evidence required or relevant definitions.
AG = an addition/insertion, alteration or deletion to the additional guidance and supporting information/references.

Issue ID	Type	Change
Man11	A	Reference 1: '*Guide to Ownership, Operation and Maintenance, CIBSE 2000*' **deleted**. Reference 1: *'Guide M: Maintenance Engineering and Management, CIBSE, 2008.'* **inserted**.
Man12	C	The wording of requirement 1 of the first credit has been changed from '*A Life Cycle Cost (LCC) analysis has been carried out based on the feasibility study proposals during RIBA Work Stages B (feasibility) and C (outline proposals), or equivalent*' **to** '*A Life Cycle Cost (LCC) analysis has been carried out based on the proposals developed during RIBA Work Stages B/C (feasibility study/outline proposals), or equivalent*'.
Man12	C	The wording for requirement 6 of the first credit has been **changed from** '*The model was updated during Stages D (detailed proposals) and E (final proposals), or equivalent.*' **to** '*The model was updated during RIBA Work Stages D/E (detailed/final proposals) or equivalent*.'
Hea1	C	The following 'Relevant definitions' have been **added** to this BREEAM issue: **Public areas:** Areas of the building designed for public use where no medical functions are carried out (e.g. reception, retail unit, waiting areas). **Staff areas:** Areas of the building used mainly by staff (e.g. offices, meeting rooms, staff rooms) and medical areas where patients are admitted but that do not require restricted environmental conditions (e.g. consulting rooms, physiotherapy, etc). **Clinical areas:** Areas of the building in which medical functions are carried out that require specific restricted environmental conditions such as humidity, daylighting, temperature, etc. (e.g. X-ray, operating department, delivery room, etc). **Patient areas:** Areas of the building used mainly by inpatients (e.g. wards, dayrooms, etc). The above definitions have also been **referenced** in BREEAM issues Hea2, Hea8, Hea10, Wat1, Wat2, Wat4, Wat5 and Mat7.
Hea8	C	The following text in the compliance note 'areas with a large and unpredictable occupancy' has been **changed from** '*Where the assessed building does not have any areas deemed to be large with an unpredictable pattern of occupancy, the third BREEAM requirement does not comply*' **to** '*Where the assessed building does not have any areas deemed to be large with an unpredictable pattern of occupancy, the fourth BREEAM requirement does not apply*'
Ene5	A	The word '*production*' **deleted** and the word '*reduction*' **inserted** in requirement 3 of the second and third credit and exemplary level requirements.

Issue ID	Type	Change
Ene5	C	Air Source Heat Pumps have been **added** to the list of heat pumps that can be considered as low or zero carbon technologies.
Ene5	C	In the compliance note 'List of recognised LZC technologies' the following text has been **deleted** '*The following technologies are recognised by the Department for Business, Enterprise and Regulatory Reform (BERR) as low or zero carbon (LZC) technologies under the Low Carbon Buildings Programme and would be deemed acceptable for BREEAM provided that the relevant percentage outputs are achieved:'* The following text has been **inserted** in its place*:* '*Technologies recognised by the Department for Business Enterprise and Regulatory Reform (BERR) Low Carbon Buildings Programme (LCBP) may be considered as part of a low or zero carbon emissions solution. The following list details the technologies recognised by the BERR, LCBP at the time of going to print'.*
Ene5	C	The following text has been **inserted** to the compliance note 'List of recognised LZC technologies': '*The list above is not a definitive list of technologies compliant with BREEAM, but a list of those technologies that may be considered to comply. If the assessor has a justified reason to doubt the low or zero carbon credentials/feasibility of the above technologies, when applied/installed on the development they are assessing, they can justifiably withhold the available BREEAM credits.'*
Ene5	C	The following text has been **deleted** from the 'Biomass community heating schemes' listing in the compliance note 'List of recognised LZC technologies': *'where the majority of the heat comes from biomass'.*
Tra1	C	The title of the following definition has been changed **from** '*Public Transport Accessibility Calculator*' **to** '*Tra1 Provision of Public Transport calculator'.*
Tra3	C	The compliant locker size has been **changed from** '*400mm x 200mm x 400mm*' **to** '*900mm X 300mm X 450mm or a locker with dimensions that provide an equivalent volume of storage space*'. The previous defined locker size is deemed to small to adequately store a cyclists equipment e.g. clothes, helmet, towel, bag etc.
Tra3	C	Two tier cycle stands **deleted** from the list of 'Non compliant cycle racks' in the compliance notes. This type of stand can comply with BREEAM's definition of 'Compliant cycle storage space'.
Tra7	C	The following has been **added** to the list of relevant definitions: *'Real time passenger information system: An electronic system that provides up-to-date, i.e. real time, information on local public transport service(s). Primarily how close the service is running to time and when it is due at a node/interchange, but also incidents that affect service operations, platform changes etc.*'
Wat4	A	The word '*teach*' has been **deleted** from requirement 1, second bullet point. The word '*each*' has been **inserted** in its place.
Mat1	AG	Guidance has been **inserted** in to the additional guidance section describing how the Mat 1 calculator determines the number of credits achieved using the Green Guide ratings achieved for each of the specifications/elements assessed.
Mat 1	AG	The following 'relevant definition' has been **inserted**: *'Ecopoint: The Ecopoint used in the Green Guide online is single score that measures the total environmental impact of a product or process as a proportion of overall impact occurring in Europe - 100 Ecopoints is equivalent to the impact of a European Citizen. Green Guide ratings are derived by sub-dividing the range*

Issue ID	Type	Change
		of Ecopoints/m^2 achieved by all specifications considered within a building element.'
Mat5	C	The instructions, in the additional guidance section, on using the responsible sourcing calculator have been **updated**.
Mat 1, 2 & 6	C	The requirement to provide a Green Guide element reference number, in addition to the Green Guide rating, for each elemental specification **inserted** in to the 'Schedule of Evidence Required'. The element reference number is provided along with each Green Guide rating on the online version of the Green Guide to Specification.
Wst1	AG	The table of Construction Waste Groups has been **updated**.
Wst2	C	The following has been **added** to the list of secondary aggregate types: "*Municipal Solid Waste Treatment Residues*".
Wst4	C	Compliance note **inserted** defining the building types/sizes that this BREEAM issue applies to.
Pol4	C	The word *'maximum'* has been **deleted** from the criteria and requirements of this BREEAM issue. This change has been made to avoid doubt over the validity of a manufacturer's statement on the tested NO_x emissions of their products, which are often stated in 'average' dry NO_x emission levels.
Pol5	C	The following compliance note has been **inserted**: '*Functional flood plain: The BREEAM credit for locating in a flood zone of 'medium or high annual probability' cannot be awarded where the building is located in the functional flood plain. PPS25[9] defines the functional flood plain as a 'zone [that] comprises land where water has to flow or be stored in times of flood'. If the building assessed is or has been defined as 'water-compatible development', please refer to the BREEAM office for guidance on assessing this BREEAM issue*.'
Pol5	AG	Updated Reference: BS EN 752:1998 '*Drain and sewer systems outside buildings'* has been superseded by BS EN 752:2008.

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WHAT IS BREEAM?

BREEAM (Building Research Establishment's Environmental Assessment Method) is the world's leading and most widely used environmental assessment method for buildings, with over 115,000 buildings certified and nearly 700,000 registered. It sets the standard for best practice in sustainable design and has become the de facto measure used to describe a building's environmental performance. Credits are awarded in nine categories according to performance. These credits are then added together to produce a single overall score on a scale of Pass, Good, Very Good, Excellent and Outstanding. The operation of BREEAM is overseen by an independent Sustainability Board, representing a wide cross-section of construction industry stakeholders.

AIMS OF BREEAM:

- To mitigate the impacts of buildings on the environment
- To enable buildings to be recognised according to their environmental benefits
- To provide a credible, environmental label for buildings
- To stimulate demand for sustainable buildings

OBJECTIVES OF BREEAM:

- To provide market recognition to low environmental impact buildings
- To ensure best environmental practice is incorporated in buildings
- To set criteria and standards surpassing those required by regulations and challenge the market to provide innovative solutions that minimise the environmental impact of buildings
- To raise the awareness of owners, occupants, designers and operators of the benefits of buildings with a reduced impact on the environment
- To allow organisations to demonstrate progress towards corporate environmental objectives

BREEAM GOVERNANCE AND QUALITY STANDARDS

The BRE Global "Sustainability Board" oversees BRE's guides, publications, standards and certification schemes in the area of "green buildings", energy, waste, sustainability and the environment.

Current standards and schemes include BREEAM, EcoHomes, Environmental Profiles and ISO 14001. One of the main responsibilities of this Board is to ensure that standards, guides and the way BRE Global operates meet the needs of stakeholders. The Board meets three times a year to review these issues.

The Sustainability Board reports to the BRE Global Governing Body, which has an independent overview of all BRE Global's schemes and activities. Specific responsibilities of the Sustainability Board and other Boards include:

- advising on the need for new certification schemes, standards and publications, including updates to existing ones
- advising BRE Global on relevant legislation and technical matters
- promoting certification
- advising on issues that may affect the reputation and integrity of BRE Global
- approving certification schemes, standards, publications or approvals and reviewing outputs from Expert Groups and Working Groups
- ensuring a balanced participation with no single interest predominating
- providing comments and guidance, where appropriate, on methods of assessment and testing, to review the progress of assessments and advise on content of certificates, prior to publication; and
- reviewing and advising on complaints and appeals as requested.

The Board represents a wide cross section of stakeholders from the construction industry including designers, developers, end users, financiers, insurers and regulators. The first independent chairman elected by the members is Bill Gething. Bill is one of the most respected figures in sustainable architecture and is the RIBA President's Sustainability Advisor, Chair of the Institute's Sustainable Futures Committee and a partner of Feilden Clegg Bradley Architects LLP.

ISO 9001

BRE Global has ISO 9001 certification for its BREEAM Buildings schemes and also for the assessment and certification of construction materials under the BREEAM LCA (Life Cycle Analysis) environmental profiles. The certification for the BREEAM schemes covers the operations relating to assessor training, licensing, quality management, and record keeping.

UKAS Accreditation

Assessors qualified to deliver the BREEAM buildings schemes are also covered under a UKAS accredited competent persons scheme. In addition, the operations relating to the certification of the BREEAM buildings versions and the environmental profiles are also covered under UKAS accredited product certification schemes.

TECHNICAL CREDIBILITY

BREEAM is tried and tested, both in terms of its robust technical standards, and its commercial delivery and expert advice (based on scientific evidence) continues to inform almost every issue in BREEAM.

In the UK there are over 115,000 buildings certified and over 700,000 homes and buildings currently registered for assessment. BREEAM can be used to assess any building type anywhere in the world.

BREEAM has always used objective criteria to recognise good environmental performance:

- Issues for assessment are agreed to be significant, and offer worthwhile reductions in environmental impact
- Issues must be assessable at the relevant stage in the building's life
- Performance levels are based on scientific evidence wherever possible
- Performance levels must exceed demands of law and regulations and encourage innovation
- Improvements encouraged by BREEAM are achievable and cost effective

Where specific targets cannot be set using hard science or research, sensible practical measures are recommended to minimise environmental impact or enhance the environment of the building and its users.

COMMERCIAL CREDIBILITY

Assessments are undertaken by organisations and individuals trained and licensed by BRE Global (Assessors). This ensures:

- Competition in the market for assessment services
- Engagement with the whole of the industry
- Assessors work to the same quality standards (monitored by BRE)

BRE Global has gained UKAS (United Kingdom Accreditation Service) accreditation for all its BREEAM versions. This means that its management of BREEAM is monitored and overseen by UKAS.

THE BREEAM ASSESSOR MANUALS

The BREEAM Assessor manuals are available for free download from the BREEAM website.

BREEAM Scheme Manuals available for download include:

BREEAM Courts
BREEAM Education
BREEAM Industrial
BREEAM Healthcare
BREEAM Offices
BREEAM Retail
BREEAM Prisons

What is in the BREEAM Assessor Manuals?

- A definition of the scope of each BREEAM scheme
- Full information on each BREEAM issue including aim, criteria and compliance requirements
- Rating & scoring information
- Technical checklists

Using the BREEAM Manuals

The BREEAM Assessor Manuals are technical guidance documents which have been created to aid licensed BREEAM Assessors in carrying out Assessments. Please note that the manuals and the information detailed therein has been designed for, and to be used by trained and licensed BREEAM Assessors.

This document must be used by non assessors for reference only (in accordance with the Terms and Conditions of use).

BREEAM Category

Issue reference & title

OUTSTANDING

No. of credit required to reach each rating level

Credit aim

To recognise and encourage the use of construction materials with a low environmental impact over the full life cycle of the building.

Aim and description of credit

Credit criteria

Total no. of credits available

Credits	
4	Up to four credits are available, determined by the *Green Guide to Specification* Ratings for the major building elements.

Criteria for awarding credits

Compliance requirements

Requirements to achieve available credit(s)

The following demonstrates compliance;

1. The Green Guide rating for the following building elements must be determined and entered in to the Mat 1 calculator;

Requirements dependant on type of project and stage of assessment

New Build and Refurbishment	Fit Out only
External Walls	Internal Walls
Windows	Ceiling and ceiling finishes
Roof	Floor finishes
Upper Floor Slabs (All floor slabs except ground floor).	-

2. The calculator awards points for each element according to their Green Guide rating as follows:

Green Guide Rating	Points/element
A+	3
A	2
B	1
C	0.5
D	0.25
E	0

3. The calculator translates the total number of points in to BREEAM credits as follows:

New build & Refurbishments	
Total Points	**Credits**
2	1
4	2
8	3
10	4

Fit Out assessments	
Total Points	**Credits**
Floor finishes	
2	1
5	2
Internal walls, ceilings and ceiling finishes	

2	1
5	2

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new build projects.
Refurbishment	For each element that is reused in situ, BREEAM allocates an 'A+' rating and these elements should also be included in the 'A+' rated area in the MW1 calculator. New elements specified as part of a refurbishment project, e.g. windows, must be assessed as outlined above.
Shell Only	There are no additional or different requirements to those outlined above specific to shell only assessments.
Fit Out Only	Based on the high environmental impact of floor finishes/coverings these elements have 2 credits available.
Finding exact Green Guide Ratings	Whilst exact matches in specifications are not always found, it should be possible to identify a similar specification and use its rating for the purposes of assessment. Where no similar specification can be found seek guidance from BRE on the appropriate rating.

Compliance notes to support above requirements

Evidence required by assessor to demonstrate compliance

Schedule of Evidence Required

Req.	Design Stage	PCR Stage
Req. 1	Specification confirming: • A detailed description of the each element and its constituent materials. Design drawings or specification detailing: • Location and area (m^2) of each considered element.	Assessor's building/site inspection and photographic evidence confirming: • Element in-situ (where possible) And • As built drawings and, where relevant, written design team confirmation of any changes to materials specification.

Additional Information & definition of terminology used in compliance requirements

Additional information

Relevant definitions

Green Guide: The Green Guide to Specification is an easy-to-use comprehensive reference website and electronic tool, providing guidance for specifiers, designers and their clients on the relative environmental impacts for a range of different building elemental specifications. The ratings within the Guide are based on Life Cycle Assessment, using the Environmental Profile Methodology.

The Mat 1 calculator: A spreadsheet based calculator required to determine the number of credits achieved for this BREEAM issue. The calculator considers both the environmental impact of the material and the impact of the element in relation to other the elements assessed within the building (e.g. the roof generally has a higher environmental impact than the external walls).

References to be information used in BREEAM issue or for further information

References

1. The Green Guide to Specification; An Environmental Profiling System for Building Materials and Components. 2008.

2. www.bre.co.uk/greenguide/

Scope of the BREEAM Healthcare Scheme

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BREEAM Healthcare 2008

Scope of the Scheme

This section of the BREEAM manual outlines the scope of this non-domestic BREEAM scheme and the type of buildings that it can be applied to.

The following information is provided in this section:

- The BREEAM assessment and certification stages
- Type of building projects that can be assessed using BREEAM
- Type of buildings that can be assessed using this BREEAM scheme

Non-domestic BREEAM schemes can be used to assess the environmental impacts of a building in accordance with this scope document in England, Scotland, Wales and Northern Ireland. Assessments using UK BREEAM schemes can also be carried out in the Republic of Ireland, but it must be recognised that BREEAM is tailored to the UK's construction sector. No concessions are made in the schemes where the Republic of Ireland building standards and design and procurement practices differ from those in the UK.

Where the building requiring assessment does not fall within the scope of this non-domestic BREEAM scheme or one of the other standard BREEAM schemes (domestic or non-domestic) or Code for Sustainable Homes, it can be assessed using the BREEAM *Bespoke* scheme.

Where the building requiring assessment is outside of the UK it can be assessed using the BREEAM *International* scheme; this includes buildings in the Republic of Ireland where it is not appropriate to use a UK scheme. BREEAM *International* can be used to assess a single development or BRE Global can assist in creating a BREEAM scheme for a country or region.

Further information on the BREEAM *Bespoke* and BREEAM *International* schemes is available at www.breeam.org or via the BREEAM helpdesk breeam@bre.co.uk

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BREEAM stages of assessment

This BREEAM scheme can be used to assess the environmental impacts arising as a result of an individual building development (including external site areas) at the following stages:

1. Design Stage (DS) - leading to an Interim BREEAM Certificate
2. Post-Construction Stage (PCS) – leading to a Final BREEAM Certificate

Design Stage
The DS assessment and subsequent interim BREEAM Certification represents the performance of the building at the design stage of assessment, typically prior to the beginning of operations on site. Certification at this stage does not, therefore, represent the building's final 'as built' BREEAM performance.

To complete a formal assessment at this stage the design must be advanced to the point where the relevant information is available to enable the BREEAM assessor to demonstrate, in a robust manner, the building's performance against the reporting and evidential requirements of the technical guidance. The formal DS assessment will therefore be carried out at the scheme design or detailed design stages.

Post-Construction Stage
The PCS assessment and subsequent BREEAM Certification represents the final 'as built' performance and BREEAM Rating. A PCS assessment is carried out after practical completion of the building works, before handover and occupation of the building.

There are two approaches to assessment at the post-construction stage:

1. A post-construction review of an interim design-stage assessment
2. A post-construction assessment

A post-construction review serves to confirm the interim BREEAM rating achieved at the design stage in accordance with the reporting and evidential requirements of the technical guidance. Where a formal interim DS assessment has not been carried out and a BREEAM assessment and rating is required, a full PCS assessment can be conducted.

Type of building projects that can be assessed using BREEAM

A BREEAM assessment can be carried out at the above stages for the following types of building project only:

- Whole new buildings
- Major refurbishments of existing buildings
- New build extensions to existing buildings
- A combination of new-build and existing building refurbishment
- New build or refurbishments which are part of a larger mixed use building

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Major refurbishments to existing buildings
For the purposes of a BREEAM assessment, a major refurbishment project is a project that results in the provision, extension or alteration of thermal elements and/or building services and fittings.

- Thermal elements include walls, roofs and floors.
- Fittings include windows (incl. rooflights), entrance doors
- Building services include lighting, heating and mechanical ventilation/cooling

Minor refurbishments
This BREEAM scheme is not designed to assess a minor refurbishment of an existing building, i.e. works that do not result in the provision, extension or alteration of thermal elements and/or building services and fittings; or a change of use.

Please note the *Offices, Retail, Industrial* and *Bespoke* schemes can be used to carry out an assessment of a building fit-out (see guidance below).

New build extensions to existing buildings
BREEAM can be used to assess new build extensions to existing buildings and, where the existing building is undergoing major refurbishment, the new build extension and existing building.

When assessing only a new-build extension to an existing building, in some BREEAM issues it is necessary to consider services/facilities within the existing building, where such services/facilities will be integral to the new extension or used by the occupants of the new extension. Assessment guidance is provided in the compliance notes table within the specific BREEAM issue for such instances, where relevant.

Similar buildings (or units) on the same site
It is possible to assess a number of separate but similar buildings, or individual units within a larger building development, within one BREEAM assessor's report. This is subject to the following conditions:

1. The buildings/units must all be on the same site

2. The buildings/units must be of the same building type e.g. an office, with the same building functions/spaces and fitted out to a similar specification and therefore assessed using the same BREEAM issues

3. Each BREEAM issue must be assessed, and its credits awarded, based on the worst performing building/unit

4. The assessment and assessors report produces a single BREEAM rating covering all buildings/units assessed

For the above scenario, a single BREEAM certificate will be issued listing all the buildings/units covered by the single BREEAM assessor's report.

Where required, a duplicate of the certificate can be produced for the purposes of display in each individual building/unit. Duplicates of certificates are not chargeable provided they are requested by the BREEAM assessor along with the initial certification request to BRE Global.

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Alternatively, a certificate can be produced specific to each individual building/unit. In such cases an additional charge will be made for each individual certificate requested.

In either case the certification requirements must be confirmed by the assessor on the Certificate Request Form submitted with their formal assessment report to BRE Global.

If one or more building/unit performs markedly better than another on the same site and the client wishes to recognise this, a separate BREEAM assessment and therefore certificate is required.

Type of buildings that can be assessed using this BREEAM scheme

BREEAM *Healthcare* can be used to assess the following types of healthcare developments:

1. Teaching/specialist hospitals
2. General acute hospitals
3. Community and mental health hospitals
4. GP surgeries
5. Health centres and clinics

The table below provides a description of the typical facilities and services offered by and forming a part of one of the above healthcare buildings. Where a healthcare development does not fit one of the above building type descriptions BREEAM *Healthcare* may still be the most appropriate scheme for the assessment. Where in doubt please contact BRE Global for further clarification.

Table A1 Healthcare site types, HTM 07-02 EnCO$_2$de, 2005 (Department of Health)

	Typical descriptions	Facility	Service
1.	**Teaching Hospital** **Specialist Acute Hospital**	In-patient High concentration of energy-intensive engineering services & specialist equipment	Diagnostic & Treatment services for physical healthcare together with specialist services Consultant-led
2.	**General Acute Hospital**	In-patient Medium concentration of energy-intensive engineering services & specialist equipment	Diagnostic & Treatment services for physical healthcare Consultant-led
3.	**Community Hospital** **Cottage Hospital** **Mental Health Hospital/Unit** **Learning Disability Unit**	In-patient Basic engineering services & equipment	Limited Diagnostic & Treatment services for physical healthcare Nurse- or GP-led Care services for physical healthcare Nurse- or GP-led Mental health & learning

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			disability services Consultant- or nurse-led
4.	**GP surgery**	Non in-patient Use typically 50-65 hours/week Basic engineering services & equipment	Primary care consultation GP-led
5.	**Health Centre** **Clinic**	Non in-patient Use typically 35-45 hours / week Basic engineering services & equipment	Primary care & mental health Nurse/dental/visiting consultant or specialist

The building functions/areas listed below are covered by the scope of BREEAM *Healthcare* where they form a part of one of the above types of healthcare building:

Healthcare specific areas

- Clinical areas with controlled environmental conditions, e.g. operating theatres, delivery rooms or pathology
- Consultation Rooms
- Interview Rooms/Counselling
- Dayrooms/leisure areas, e.g. music rooms, audio visual, arts and crafts
- Wards/Bedded areas
- Exercise/Rehabilitation Facilities, e.g. gymnasium, swimming/hydrotherapy pool
- Physiotherapy

Office areas

- Cellular or open plan offices
- Meeting rooms

Other associated functions/areas

- Community areas, e.g. halls
- Faith rooms
- Reception and waiting areas
- Teaching/Training spaces, e.g. classrooms, seminar rooms, lecture theatres
- Laboratories
- Tenanted areas, e.g. pharmacy, small retail unit, café
- Food preparation, servery areas and dining areas
- Staff gym
- Library
- Cold storage
- Crèche/Nursery
- Laundries
- Staff restaurant and/or kitchen facilities
- Restrooms, WCs and changing facilities
- Storage and waste management areas
- I.T. suites, server rooms

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- Ancillary areas e.g. plant room, circulation space

The above list is not exhaustive, but serves to indicate the type of spaces covered by the scope of this BREEAM scheme. Where a proposed building contains a small additional function/area that is not listed above, the building can still be assessed using this scheme. If the assessor has reason to believe that this scheme is not appropriate given the small additional function/area type, BRE Global should be contacted for advice.

BREEAM *Healthcare* cannot be used to assess any of the above functions/spaces as standalone developments, i.e. the Healthcare scheme cannot be used to assess and certify an office or gym that does not form a part of one of the above healthcare facilities. Such buildings can be assessed using one of the other standard BREEAM schemes or, where appropriate, the BREEAM *Bespoke* scheme.

Ambulance Trust buildings
BREEAM *Healthcare* cannot be used to assess Ambulance Trust buildings unless they contain medical facilities. The BREEAM *Bespoke* scheme can be used to BREEAM assess and certify these building types.

Residential care homes and staff residential accommodation
Residential Care Homes and Staff Residential Accommodation cannot be assessed using BREEAM *Healthcare*. The BREEAM *Multi-residential* scheme can be used to BREEAM assess and certify these building types.

Building does not fit the scope of BREEAM *Healthcare*
Building types not covered by the scope of BREEAM *Healthcare* and/or other standard BREEAM scheme can be assessed using the BREEAM *Bespoke* scheme.

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Scoring and Rating Section

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This section of the BREEAM manual explains how an assessed building's certified BREEAM rating is calculated.

There are a number of elements that determine the BREEAM rating; these are as follows:

- BREEAM rating benchmarks
- BREEAM environmental weightings
- Minimum BREEAM standards
- BREEAM credits for Innovation

Each of these elements is described in the sections on the following pages; this is followed by guidance and an example describing how a BREEAM rating is calculated.

In addition, there is a section describing the conditions that must be met in order to award an assessed building a 'BREEAM *Outstanding*' rating, the highest achievable BREEAM rating.

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BREEAM rating benchmarks

The rating benchmarks for the 2008 version of BREEAM are outlined in table 1 for new buildings, major refurbishments and, where applicable to the BREEAM scheme (refer to scope document), fit-out projects:

Table 1: BREEAM 2008 rating benchmarks

BREEAM Rating	% score
UNCLASSIFIED	<30
PASS	≥30
GOOD	≥45
V GOOD	≥55
EXCELLENT	≥70
OUTSTANDING*	≥85

* Please note, there are additional requirements for achieving a BREEAM *Outstanding* rating. Please refer to the guidance below.

BREEAM environmental section weightings

Table 2 outlines the environmental weightings for the nine BREEAM sections for the type of building projects that BREEAM Buildings can be used to assess (refer to scope of the scheme document):

Table 2: BREEAM 2008 environmental weightings

BREEAM Section	Weighting (%)	
	New builds, extensions & major refurbishments	Building fit-out only (where applicable to scheme)
Management	12	13
Health & Wellbeing	15	17
Energy	19	21
Transport	8	9
Water	6	7
Materials	12.5	14
Waste	7.5	8
Land Use & Ecology	10	N/A
Pollution	10	11

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Minimum BREEAM standards

To achieve a BREEAM rating, the minimum percentage score (table 1) must be achieved and the minimum standards (i.e. number of credits achieved) applicable to that rating level (table 3) complied with.

Table 3: Minimum BREEAM standards

BREEAM issue	BREEAM Rating / Minimum number of credits				
	PASS	GOOD	VERY GOOD	EXCELLENT	OUTSTANDING
Man 1 - Commissioning	1	1	1	1	2
Man 2 - Considerate Constructors				1	2
Man 4 - Building user guide				1	1
Man 9 - Publication of building information (BREEAM Education only)					1
Man 10 - Development as a learning resource (BREEAM Education only)					1
Hea 4 - High frequency lighting	1	1	1	1	1
Hea 12 - Microbial contamination	1	1	1	1	1
Ene 1 - Reduction of CO_2 emissions				6	10
Ene 2 - Sub-metering of substantial energy uses			1	1	1
Ene 5 - Low or zero carbon technologies				1	1
Wat 1 - Water consumption		1	1	1	2
Wat 2 - Water meter		1	1	1	1
Wst 3 - Storage of recyclable waste				1	1
LE 4 - Mitigating ecological impact			1	1	1

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BREEAM credits for innovation

Innovation credits provide additional recognition for a building that innovates in the field of sustainable performance, above and beyond the level that is currently recognised and rewarded within standard BREEAM issues. *Innovation credits* therefore enable clients and design teams to boost their building's BREEAM performance and in addition, help support the market for new innovative technologies and practices.

An additional 1% score can be added to a building's final BREEAM score for each *Innovation credit* achieved. The maximum number of *Innovation credits* that can be awarded for any one building assessed is 10; therefore the maximum available score achieved for 'innovation' is 10%. *Innovation credits* can be awarded regardless of the final BREEAM rating i.e. they are awardable at any BREEAM rating level.

There are two different ways in which a building can achieve an *Innovation credit*. The first is by meeting *exemplary performance requirements* for an existing BREEAM issue (table 4 outlines the BREEAM issues with *exemplary performance requirements*). Refer to the relevant section of the technical guidance for the detailed *exemplary performance level* requirements.

Table 4: BREEAM issues with exemplary level requirements.

Man 2 - Considerate Constructors
Hea 1 - Daylighting
Hea 14 - Office Space (BREEAM Retail & Industrial Schemes only)
Ene 1 - Reduction of CO_2 emissions
Ene 5 - Low or Zero Carbon Technologies
Wat 2 - Water Meter
Mat 1 - Materials Specification
Mat 5 - Responsible Sourcing of Materials
Wst 1 - Construction Site Waste Management

The second route is where an application is made to BRE Global by the BREEAM assessor to have a particular building feature, system or process recognised as 'innovative'. If the application is successful an *Innovation credit* can be awarded. The flow chart and eligibility criteria below outline the process to be used when applying for an *Innovation credit*. An additional fee is charged for each innovation credit application received.

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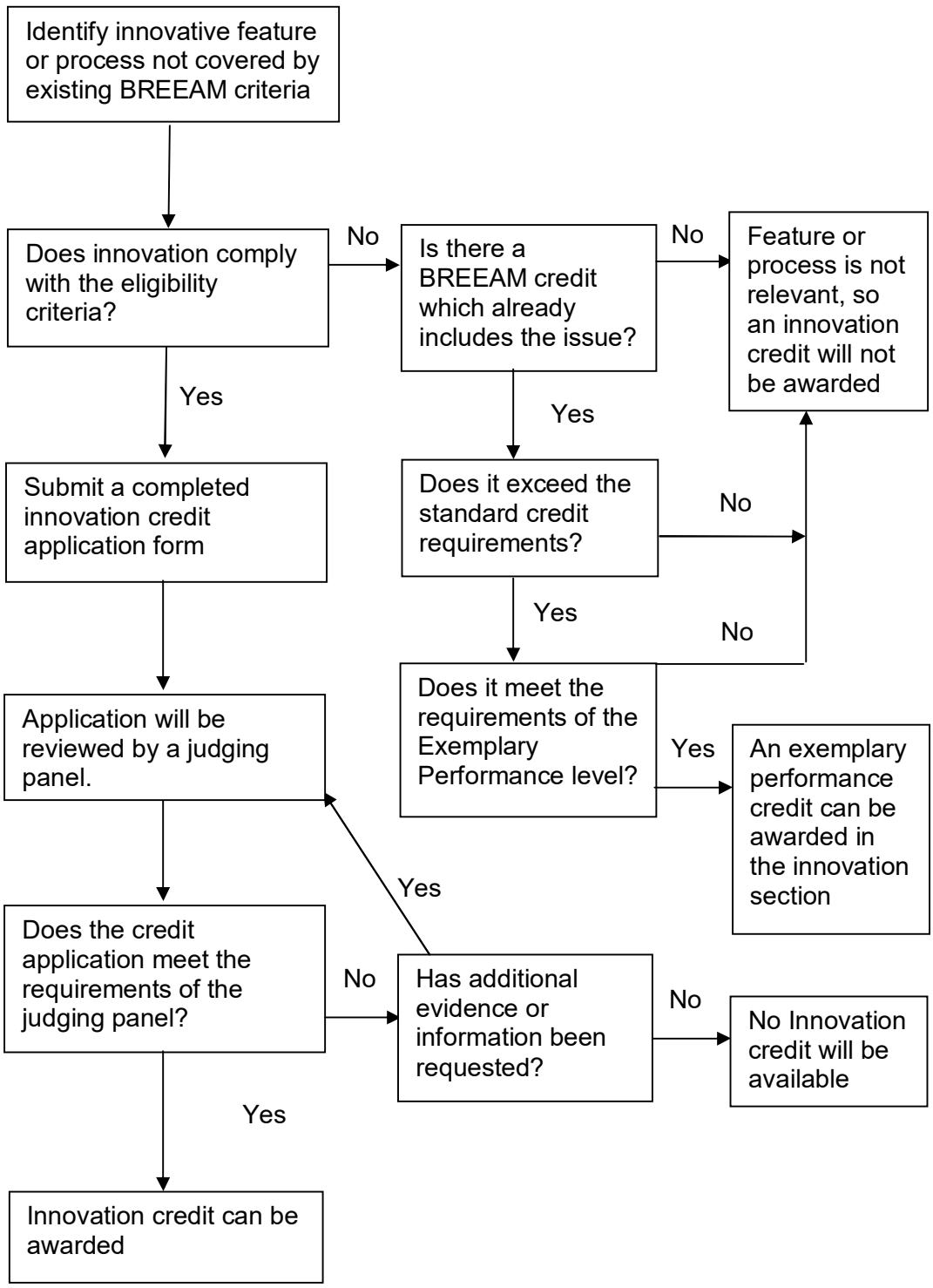
BREEAM Innovation credit: application flow chart



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Eligibility Criteria for Innovation Credits

The following criteria will be used to evaluate the eligibility of claims for proposed Innovation credit status:

1. Does the feature, system or process aim to reduce the building's impact on one of the following overarching environmental/social issues?:

    - Mineral Resource Depletion
    - Fossil Fuel Depletion
    - Acidification
    - Climate Change
    - Nuclear Waste
    - Stratospheric Ozone Depletion
    - Eco-toxicity
    - Eutrophication
    - Human Toxicity
    - Photochemical Ozone Creation (Summer Smog)
    - Waste Disposal
    - Water Use
    - Deforestation
    - Urban Sprawl
    - Reduction of Biodiversity
    - Noise and Nuisance
    - Loss of Heritage
    - Indoor comfort
    - Health and Safety
    - Access and Inclusion

2. Can the impact of the feature, system or process be assessed objectively using clearly defined criteria?

3. Can the sustainability benefits of the feature, system or process be demonstrated?

4. Have a draft aim, credit criteria, compliance requirements and information required to demonstrate compliance been developed (in accordance with the *Innovation credit* application form)?

A BREEAM assessor can obtain the *Innovation credit* application form from the BREEAM Office at BRE Global. The form details the eligibility criteria listed above and the fee payable for each submitted application for an *Innovation credit*.

Innovation credits cannot be awarded until written approval is received from the BREEAM Office.

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Detailed process for calculating a building's BREEAM rating

A BREEAM assessor must determine the BREEAM rating using the *BREEAM Assessor's Spreadsheet Tool* and associated *calculators*. An indication of performance against the BREEAM standard can also be determined using a BREEAM *Pre-Assessment Estimator*. The *Pre-Assessment Estimators* are available from the BREEAM website for each scheme.

The process of determining a BREEAM rating is outlined below and in table 5:

1. For each BREEAM section the number of credits awarded must be determined by a *BREEAM assessor* in accordance with the BREEAM requirements (detailed in the technical sections of the scheme manual).

2. The percentage of the credits achieved is calculated for each BREEAM section.

3. The percentage of credits achieved is then multiplied by the corresponding BREEAM section weighting (see note below). This gives the section score.

4. The section scores are then added together to give the overall BREEAM score. The BREEAM score is compared to the benchmarks in table 1.0 and, provided all minimum standards have been met, the relevant BREEAM rating is achieved.

5. An additional 1% can be added to the final BREEAM score for each *Innovation credit* achieved (up to a maximum of 10%).

Note: Where applicable to the BREEAM scheme (see *Scope of the BREEAM Scheme*), *Fit-Out only* assessments do not assess the BREEAM issues under the Land Use & Ecology section. The section weighting for Land Use and Ecology is re-distributed amongst the remaining eight sections. The re-distribution is determined based on the relative weighting of the remaining sections, so for example, the Energy section receives a greater proportion of the Land Use and Ecology weighting than the Water section. See Table 2 above for details of the respective section weighting.

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Table 5: Example BREEAM score and rating calculation

BREEAM Section	Credits Achieved	Credits Available	% of Credits Achieved	Section Weighting	Section score
Management	7	10	70%	0.12	8.40%
Health & Wellbeing	11	14	79%	0.15	11.79%
Energy	10	21	48%	0.19	9.05%
Transport	5	10	50%	0.08	4.00%
Water	4	6	67%	0.06	4.00%
Materials	6	12	50%	0.125	6.25%
Waste	3	7	43%	0.075	3.21%
Land Use & Ecology	4	10	40%	0.10	4.00%
Pollution	5	12	42%	0.10	4.17%
Total Score				**54.87%**	
Innovation credits achieved				**1**	
FINAL BREEAM Score				**55.87%**	
BREEAM Rating				**VERY GOOD**	

Minimum Standards for BREEAM 'Very Good' rating	Achieved?
Man 1 - Commissioning	**P**
Hea 4 - High frequency lighting	**P**
Hea 12 - Microbial contamination	**P**
Ene 2 Sub-metering of substantial energy uses	**P**
Wat 1 - Water consumption	**P**
Wat 2 - Water meter	**P**
LE 4 - Mitigating ecological impact	**P**

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BREEAM Outstanding Rating

The following conditions must be met in order to certify a building at the *Outstanding* BREEAM rating level:

1. The building must achieve a final BREEAM Score ≥85%
2. The minimum performance standards (table 3) for the *Outstanding* rating level must have been met
3. Provision of material for the production and publication of a case study (refer to guidance below) on the *Outstanding* rated building.

In addition to the above, the 'BREEAM *Outstanding*' building is required to obtain a BREEAM *In Use* Certification of Performance within the first three years of the building's operation and use (with regular reviews in accordance with that scheme) in order to maintain the rating. Where the building is not certified against BREEAM *In Use* during this period, the *Outstanding* rating will be downgraded to an *Excellent* BREEAM rating after the expiry of the three years from issue of the Final BREEAM 2008 (Post Construction) certificate.

Production of case study

One of the most important aspects of the *Outstanding* BREEAM rating will be that projects receiving this rating will act as exemplars for the industry. It is therefore a very important aspect of the new rating that a good-quality case study is produced that design teams can refer to.

The design team and client will be asked via the *certificate request form* to agree to provide relevant building/project information to allow BRE Global to produce a case study. This information will be required with the formal post construction stage BREEAM assessor's report for the assessed building.

Subject to approval from the design team/client, BRE Global will publish the case study on either the BREEAM website, Green Book live website and other BRE/BREEAM-related publications (as appropriate).

Where information is not provided for the production of a case study, the building will be certified to a BREEAM *Excellent* rating level.

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Management Section

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BREEAM : Healthcare : 2008
Management
Man 1 - Commissioning

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	1	1	1	1	2

Credit aim

To recognise and encourage an appropriate level of building services commissioning that is carried out in a co-ordinated and comprehensive manner, thus ensuring optimum performance under actual occupancy conditions.

Credit criteria

Two credits available as follows:

Credits	
1	Where evidence provided demonstrates that an appropriate project team member has been appointed to monitor commissioning on behalf of the client to ensure commissioning will be carried out in line with current best practice.
2	Where, in addition to the above, evidence provided demonstrates that seasonal commissioning will be carried out during the first year of occupation, post construction (or post fit out).

Compliance requirements

The following demonstrates compliance:

First credit

1. An appropriate project team member(s) is appointed to monitor and programme pre-commissioning, commissioning and, where necessary, re-commissioning on behalf of the client.

2. Commissioning to be carried out in line with current Building Regulations and BSRIA/CIBSE guidelines, where applicable.

3. The main contractor accounts for the commissioning programme, responsibilities and requirements within the main programme of works.

4. A specialist commissioning manager is appointed (by either client or contractor) for complex systems such as:
    - Air conditioning
    - Mechanical ventilation, displacement ventilation, complex passive ventilation
    - Building management systems (BMS)
    - Renewable energy sources
    - Microbiological safety cabinets and fume cupboards
    - Cold storage enclosures and refrigeration plant

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Min. credits to achieve rating	1	1	1	1	2

The specialist commissioning manager must have been appointed during the design stage and the scope of their responsibility includes:

- Design input: commissionability design reviews
- Commissioning management input to construction programming
- Commissioning management input during installation stages
- Management of commissioning, performance testing and handover/post handover stages.

5. Where BMS specified, the following commissioning procedures must be carried out:
    a. Commissioning of air and water systems is carried out when all control devices are installed, wired and functional
    b. In addition to air and water flow results, commissioning results include physical measurements of room temperatures, off coil temperatures and other key parameters as appropriate
    c. The BMS/controls installation should be running in auto with satisfactory internal conditions prior to handover
    d. All BMS schematics and graphics (if BMS is present) are fully installed and functional to user interface before handover
    e. The occupier will be fully trained in the operation of the system.

6. Where specified, all built-in cold storage and chilled rooms are commissioned in accordance with the requirements for refrigeration equipment as set out in the Carbon Trust publication GPG347 *Installation and commissioning of refrigeration systems*.

7. All cold storage and chilled rooms over 20m^2 meet the requirements of Section 9.1 of the Cold Store Code of Practice, Part 1.

8. Where specified, fume cupboards and microbiological safety cabinets are installed and commissioned in accordance with the following standards:
    a. Fume cupboards in accordance with BS EN 14175-2
    b. Microbiological safety cabinets in accordance with BS EN 12469 (2000).

Second credit

1. The first credit has been achieved.

2. The above appointment(s) include the following seasonal commissioning responsibilities over a minimum 12 month period, once the building becomes occupied:

    Complex Systems – Specialist commissioning manager
    a. Testing of all building services under full load conditions, i.e. heating equipment in mid-winter, cooling/ventilation equipment in mid-summer, and under part load conditions (spring/autumn)
    b. Where applicable, testing should also be carried out during periods of extreme (high or low) occupancy

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Rating Level	P	G	VG	E	O
Min. credits to achieve rating	1	1	1	1	2

c. Interviews with building occupants (where they are affected by the complex services) to identify problems or concerns regarding the effectiveness of the systems
d. Re-commissioning of systems (following any work needed to serve revised loads), and incorporating any revisions in operating procedures into the O&M manuals.

Where specialist building services systems such as fume cupboards, microbiological safety cabinets and a cold storage system are present then the assessor must ensure that these systems are included in the specialist commissioning agent's responsibilities.

Simple Systems (naturally ventilated) – External Consultant/Facilities Manager
Review thermal comfort, ventilation, and lighting, at three, six and nine month intervals after initial occupation, either by measurement or occupant feedback.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.
Commissioning agent (simple systems)	The commissioning agent (being monitored by the commissioning monitor) can be a person from within the contractor or sub-contractor organisation, provided they are not involved in the general installation works.
Specialist commissioning manager	The commissioning manager for complex systems must be a specialist contractor rather than a general sub-contractor.
Naturally ventilated buildings	Where the building is largely naturally ventilated, using simple cross-flow ventilation relying solely on openable windows and/or trickle vents (except in areas where mechanical ventilation is legally required), the appointment of a specialist commissioning agent is not required to award this credit. If a BMS system is employed, however, to control the natural ventilation and/or if renewable energy sources are utilised in the development, the requirement for a specialist commissioning agent remains.
Process related equipment	Any process- or manufacture-related equipment specified as part of the building fit-out may be excluded from this requirement except where they form an integral part of the building HVAC services, such as some heat recovery systems.

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Min. credits to achieve rating	1	1	1	1	2

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
First Credit		
1&4	A copy of a letter or commissioning responsibilities schedule confirming the appointment of [or commitment to appoint]: • Design team member(s) as commissioning monitor and scope of their commissioning role. • Specialist commissioning manager and scope of their commissioning role.	Commissioning records/reports confirming: • Monitoring actions carried out by the nominated design team member. • Specialist commissioning manager's actions/role.
2	A copy of the specification clause stating: • The standards and codes of practice to which commissioning procedures are to comply with.	Commissioning records/reports confirming: • Commissioning procedures executed in compliance with relevant standards.
3	A copy of the specification clause confirming: • The managing contractor's responsibilities with respect to this requirement. **OR** A copy of a commissioning schedule highlighting: • Managing contractor's commissioning responsibilities.	A copy of the main contract programme highlighting; • Commissioning, performance testing and handover period.
5	A copy of the specification clause/commissioning schedule confirming: • The stages of the BMS/Controls commissioning procedures.	Commissioning records/reports confirming that; • BMS/controls commissioning activities were carried out in compliance with the commissioning schedule/specification clause.
6&7	A copy of the specification clause requiring: • The standards and codes of practice to which commissioning procedures are to comply with.	Commissioning records/reports confirming: • Commissioning procedures executed in compliance with relevant standards.

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Min. credits to achieve rating	1	1	1	1	2

8	A copy of the specification clause stating: • The standards and codes of practice to which commissioning procedures are to comply with.	Commissioning records/reports confirming: • Commissioning procedures executed in compliance with relevant standards.
Second Credit		
1	Evidence (as outlined above) confirming compliance with the first credit.	Evidence (as outlined above) confirming compliance with the first credit.
2	As evidence requirements for 1 & 3 of the first credit. This evidence must confirm the scope of seasonal commissioning responsibilities/tasks (as required).	A copy of the seasonal commissioning schedule/programme. **OR** A copy of the letter of appointment of commissioning specialist and scope of their responsibilities.

Additional information

Relevant definitions
None.

References

1. CIBSE Commissioning Codes: Set of Seven Codes (2003)
    a. CIBSE Commissioning Code A: Air Distribution Systems
    b. CIBSE Commissioning Code B: Boilers
    c. CIBSE Commissioning Code C: Automatic Controls
    d. CIBSE Commissioning Code L: Lighting
    e. CIBSE Commissioning Code M: Management
    f. CIBSE Commissioning Code R: Refrigeration
    g. CIBSE Commissioning Code W: Water Distribution Systems

2. BSRIA Commissioning Guides:
    a. Application Guide 1/91 - Commissioning of VAV systems in Buildings
    b. Application Guide 20/95 - Commissioning of Pipework Systems
    c. Technical Memoranda 1/88.1 - Commissioning HVAC Systems
    d. Application Guide 3/89.3 - Commissioning of Air Systems in Buildings
    e. Application Guide 1/2001.1 - Pre-commission Cleaning of Pipework Systems
    f. Application Guide 2/89.3 - Commissioning of Water Systems in Buildings
    g. Application Guide 2/89.3 – Commissioning water systems application principles
    h. Application Guide 5/2002 - Commissioning Management
    i. AG16/2002 - Variable flow water systems: design, installation and commissioning guidance

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Rating Level	P	G	VG	E	O
Min. credits to achieve rating	1	1	1	1	2

j. Photovoltaics in buildings - Testing, commissioning and monitoring guide, S/P2/00290/REP.

3. Good Practice Guide 347: "*Installation and commissioning of refrigeration systems*", Carbon Trust, 2003.

4. Cold Store Code of Practice Part 1 "*Enclosure Construction*", The Institute of Refrigeration, 1996.

Best practice guidance on pre-commissioning, commissioning and re-commissioning of engineering systems for the healthcare sector are covered in the following Health Technical Memoranda and sector specific guidance:

5. Model Engineering Specifications (MES) - essential guidance for those responsible for the design, installation and operation of engineering services in healthcare buildings. (www.dh.gov.uk)

6. HTM 00. "*Best practice guidance for healthcare engineering*". Department of Health 2006.

7. HTM 2005, "*Building Management Systems, Validation and verification*". NHS Estates 1996.

8. HTM 2005, "*Building Management Systems Part 3:, Validation and verification*". Health Facilities Scotland, 2001.

9. HTM 03-01 "*Specialised Ventilation for Healthcare Premises*". NHS Estates, 2007.

10. HTM 04-01 "*The control of Legionella, hygiene, "safe" hot water, cold water and drinking water systems*". NHS Estates, 2003.

11. HTM 05-01 Firecode – "*Fire Safety in the NHS*". Department of Health 2006.

12. Firecode Suite, Health Facilities Scotland.

13. SHTM 00 Policies and Principles – "*Best Practice Guidance for Healthcare Engineering*". Health Facilities Scotland, 2008

14. HFN 06 "*Operational commissioning strategy - a manager's guide*". NHS Estate, 1995.

15. SHTM 02-01 "Medical Gas Pipeline Systems, Part A". Health Facilities Scotland.

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Management
Man 2 - Considerate Constructors

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	1	2

Credit aim

To recognise and encourage construction sites which are managed in an environmentally and socially considerate and accountable manner.

Credit criteria

Two credits available as follows:

Credits	
1	Where evidence provided demonstrates that there is a commitment to comply with best practice site management principles.
2	Where evidence provided demonstrates that there is a commitment to go beyond best practice site management principles.

Compliance requirements

The following demonstrates compliance:

1. The main contractor has complied with and achieved formal certification under the Considerate Constructors Scheme(CCS), credits awarded as follows: (see Checklist A1)
    a. One credit where the contractor achieved a CCS *Code of Considerate Practice* score between 24 and 31.5.
    b. Two credits where the contractor achieved a CCS *Code of Considerate Practice* score between 32 and 35.5.

OR

2. The main contractor has complied with an **alternative, independently assessed scheme** (equivalent to CCS), credits awarded as follows: (see Checklist A2)
    a. One credit where the site has been independently assessed using the alternative scheme, **AND** the alternative scheme addresses all the mandatory items plus 50% of the optional items in Checklist A2.
    b. Two credits where the site is to be independently assessed using the alternative scheme **AND** the alternative scheme addresses all the mandatory items plus 80% of the optional items in Checklist A2.

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Management
Man 2 - Considerate Constructors

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	1	2

Exemplary level requirements

The following outlines the exemplary level requirements to achieve an *innovation credit* for this BREEAM issue.

1. Where post construction, a Considerate Constructors Scheme certificate can be provided demonstrating that the site achieved CCS *Code of Considerate Practice* with a score of at least 36.

OR

2. Where post construction, the site has complied in full with the alternative, independently assessed scheme, and the alternative scheme addresses all the mandatory and optional items in Checklist A2.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.
Considerate Constructors score	No credits can be awarded for the Considerate Constructors Scheme where any of the section scores within the scheme are less than 3, as this represents non compliance with the CCS *Code of Considerate Practice*.
Contractor not yet appointed	At the interim design stage of assessment, where the contractor is not yet appointed, the client must either include within the specification, or commit to including, a requirement for the appointed contractor to comply with one of the above requirements. The assessor must use this information to complete the appropriate checklist.
Alternative scheme	Where the project is using an alternative scheme to the CCS, it is the alternative scheme and its assessment criteria that are assessed against Checklist A2, NOT the project or its contractor.
Site clearance	The scope of this credit applies to the main contractor and their scope of works. If the scope of the main contractor's works includes demolition and site clearance then this stage of work falls within the scope of the credit requirements.

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Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	1	2

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1	A copy of the relevant section of the main contract specification confirming: • A requirement to comply with the CCS • The minimum score to be achieved in each CCS section. **OR** A formal letter from the client/developer confirming: • The main contract will include a clause requiring CCS certification • The scope of the main contractor's works • A completed copy of checklist A1.	A copy of the Considerate Constructors Scheme certificate of compliance. The Considerate Constructors Monitors report highlighting the total score and the sub scores in each section.
2	A copy of the assessment criteria for the alternative scheme that allows the assessor to complete checklist A2. **AND** A formal letter from the client/developer confirming: • The main contract will include a clause requiring compliance with the alternative scheme • The procedure, and individual/ organisation responsible for third party assessment of site compliance. • The scope of the main contractor's works	A copy of the compliance report (and any certification) for the alternative scheme.
Exemplary Credit		
1-2	A formal letter from the main contractor confirming their commitment to: • Gaining CCS or equivalent certification • A minimum score of ≥36 or equivalent.	Evidence as outlined above for req.1.

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Min. credits to achieve rating	-	-	-	1	2

Additional information

Relevant definitions

Considerate Constructors Scheme is a UK certification scheme that encourages the considerate management of construction sites. The scheme is operated by the Construction Confederation and points are awarded in increments of 0.5 over the following eight sections:

- Considerate
- Environmentally Aware
- Site Cleanliness
- Good Neighbour
- Respectful
- Safe
- Responsible
- Accountable

To achieve certification under this scheme a score of at least 24 is required.

Alternative local or national schemes: Where the client/contractor has not used the Considerate Constructors Scheme (CCS) but has made a firm commitment to adopt an alternative independently assessed scheme covering the key issues in Checklist A2, the credits can still be achieved. The purpose of Checklist A2 is to enable the assessor to check whether an alternative, independently assessed scheme complies with the BREEAM credit criteria. It is not in itself an equivalent construction site management scheme.

References

1. http://www.considerateconstructorsscheme.org.uk/

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Management
Man 3 - Construction site impacts

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To recognise and encourage construction sites managed in an environmentally sound manner in terms of resource use, energy consumption and pollution.

Credit criteria

Four credits available as follows:

Credits	
1	Where evidence provided demonstrates that 2 or more of items a-g (listed below) are achieved.
2	Where evidence provided demonstrates that 4 or more of items a-g (listed below) are achieved.
3	Where evidence provided demonstrates that 6 or more of items a-g are achieved: a. Monitor, report and set targets for CO_2 or energy arising from site activities b. Monitor, report and set targets for CO_2 or energy arising from transport to and from site c. Monitor, report and set targets for water consumption arising from site activities d. Implement best practice policies in respect of air (dust) pollution arising from the site e. Implement best practice policies in respect of water (ground and surface) pollution occurring on the site f. Main contractor has an environmental materials policy, used for sourcing of construction materials to be utilised on site g. Main contractor operates an Environmental Management System.
1	Where evidence provided demonstrates that at least 80% of site timber is responsibly sourced and 100% is legally sourced.

Compliance requirements

The following demonstrates compliance:

1. The requirements in the relevant section of Checklist A3 have been met and, as a minimum requirement of awarding any of the three available credits, the following measure is achieved:
    a. The main contractor operates an Environmental Management System.

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Management
Man 3 - Construction site impacts

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.
Site timber	The fourth credit (for responsibly sourced site timber) is not dependent on any of the first three credits being achieved. For the purposes of this credit, site timber is considered to be timber used to facilitate construction, including formwork, site hoardings and other temporary site timber used for the purpose of facilitating construction. It does not cover structural timber and timber used for fit-out items (this is addressed in BREEAM credit Mat 5).
Site clearance	The scope of this credit applies to the main contractor and their scope of works. If the scope of the main contractor's works includes demolition and site clearance then this stage of work falls within the scope of the credit requirements.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1	A copy of the relevant section from the main contract specification confirming: • Contractor's obligations in respect to each item on the checklist • Site timber will be sourced from suppliers capable of providing certification to the level required for the particular tier claimed (see table 1 of BREEAM credit MAT 5) • All timber will come from a 'legal source' and is not on the CITES list*. **OR** Where the main contract specification is not yet available, a formal letter from the client/developer including: • Completed checklist A3 identifying which items will form part of the main contractor's obligations.	Site records demonstrating monitoring and recording of the following (where relevant): • Site energy/CO_2 consumption • Site deliveries • Site water consumption Project targets set for water and energy consumption. Copies of the documented procedures used on site for working to best practice pollution management guidelines. A letter from the main contractor confirming: • Procedures for pollution management and mitigation were implemented • Name/job title of individual

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Min. credits to achieve rating	-	-	-	-	-

	• The policy for sourcing site timber for the project. • Confirmation that the above will be implemented in compliance with BREEAM's requirements. * Or in the case of Appendix III of the CITES list, it has not been sourced from the country seeking to protect this species as listed in Appendix III.	responsible for monitoring and managing construction site impacts throughout the project. A copy of the certification document or Chain of Custody (CoC) certificate(s) for the site timber. Where any non-certified timber is used, written confirmation from the supplier(s) confirming that: • All timber comes from a legal source. • All timber species and sources used in the development are not listed on any of the CITES appendices for endangered or threatened species (Appendix I, II, or III*).

Additional information

Relevant definitions

CITES (Convention on International Trade in Endangered Species) Appendices I and II of the CITES list illustrate species of timber that are protected outright. Appendix III of the CITES list illustrates species that are protected in at least one country. If a timber species used in the development is on Appendix III it can be included as part of the assessment as long as the timber is not obtained from the country(s) seeking to protect this species (see additional information for further details).

Chain of Custody: This is a process used to maintain and document the chronological history of the evidence/path for products from forests to consumers. Wood must be tracked from the certified forest to the finished product. All the steps, from transporting wood from the forest to a sawmill, until it reaches the customer, must maintain adequate inventory control systems that allow for separation and identification of the certified product. Chain-of-custody certification ensures that a facility has procedures in place to track wood from certified forests and avoid confusing it with non certified wood. Chain-of-custody is established and audited according to relevant forest certification systems rules.

Pollution
BRE publishes guidance on construction site dust management, and the Environment Agency publishes guidance on water pollution control measures. There are significant statutory requirements in this area under environmental health legislation and the Environmental Protection Act. The Environment Agency and local Environmental Health Officers police these.

Energy
Energy Management on site has been a key focus for the Construction Confederation, and they have published specific guidance (referenced below) to help achieve this. Monitoring and

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Min. credits to achieve rating	-	-	-	-	-

reporting at site level are the key factors in raising awareness of the impacts of energy consumption. Whilst total energy is frequently monitored, this information is predominantly used to feedback into the tendering process and is seldom used to seek improvements on the site in question.

Targets
Targets are requested in the BREEAM credit to promote the process of setting, monitoring and achieving targets. BREEAM does not set targets, as these are very project specific. For guidance on setting targets, refer to DTI's Construction Industry KPI Pack; this series of documents guides the reader through setting targets for their own projects.

References

1. Sustainability Action Plan (or Achieving Sustainability in Construction Procurement); Government Construction Client's Panel (GCCP), Office of Government Commerce (OGC).

2. DTI Construction Industry KPI Pack includes Methods of Measurement, Handbook, KPI Wall Chart, (www.constructingexcellence.org.uk), 2005.

3. PPG 1 – *General guide to the prevention of pollution*. Environment Agency
   PPG 5 – *Works in, near or liable to affect watercourses*. Environment Agency
   PPG 6 – *Working at demolition and construction sites*. Environment Agency
   http://www.netregs.gov.uk/netregs/resources/278006/277807/?version=1&lang=_e

4. *"Control of Dust from Construction and Demolition Activities"*. V Kukadia, S Upton, D Hall BRE Press, 2003.

5. *"Controlling particles, vapour and noise pollution from construction sites"* - set of five Pollution Control Guides. V Kukadia, S Upton, C Grimwood, BRE Press, 2003.

6. "*Construction Site Transport*", April 2003. Measures for traffic movements and distances, BRE and DTI. Available from: www.bre.co.uk/pdf/constructiontraffic.pdf

7. "*Guidelines for Company Reporting on Greenhouse Gas Emissions*", Annex 6 Transport conversion tables, DEFRA 2002.

8. "*COPERT II Computer programme to Calculate Emissions from Road Transport - Methodology and Emissions Factors*". Technical report No 6. http://reports.eea.eu.int/TEC06/en

9. Good Practice Guide (GPG) 273, "*Computerised Routing and Scheduling for Efficient Logistics"*. Freight Transport Association, 2000.

10. BS8555 2003 "*Environmental Management Systems – Guide to the phased implementation of an environmental management system including the use of environmental performance evaluation"*. BSI 2003.

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Min. credits to achieve rating	-	-	-	-	-

11. http://www.smartwaste.co.uk

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Management
Man 4 - Building User Guide

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Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	1	1

Credit aim

To recognise and encourage the provision of guidance for the non technical building user so they can understand and operate the building efficiently.

Credit criteria

Credits	
1	Where evidence provided demonstrates the provision of a simple guide that covers information relevant to the tenant/occupants and non-technical building manager on the operation and environmental performance of the building.

Compliance requirements

The following demonstrates compliance:

1. A Building User Guide that contains the information described under the '*User Guide Contents*' heading (see additional guidance) has been developed.

2. The *guide* is relevant to the non-technical building user and appropriate to the stakeholder(s) that will occupy the building.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.
Operation and Maintenance manual	The presence of a building O&M manual does not meet this requirement. The latter provides the detailed specialist information required by technical Facilities Managers (FMs) and maintenance staff/contractors. The guide can be contained in the Operation & Maintenance (O&M) manual, but must be an extractable or 'stand alone' section.

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Management
Man 4 - Building User Guide

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	1	1

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1&2	A copy of the specification clause confirming: • Requirement to develop a Building User Guide • Scope of the Guide's contents. **OR** A formal letter from the client/developer confirming: • That the design team will be required to develop a Building User Guide. • The contents of the Guide will be developed in compliance with the BREEAM requirements.	A copy of the Building User Guide. Written confirmation from the design team that the guide has been distributed to the building's owner, tenant(s) or fit out contractor (for completion), as appropriate.

Additional information

User Guide Contents

The list below indicates the type of information that should be included to meet the needs of the Facilities Management (FM) Team/Building Manager and the general users (staff).

1. **Building Services Information**
   a. General User - Information on heating, cooling and ventilation in the building and how these can be adjusted, e.g. thermostat location and use, implications of covering heating outlets with files, bags etc., and use of lifts and security systems.
   b. FM – As above, plus a non-technical summary of the operation and maintenance of the building systems (including BMS if installed) and an overview of controls.

2. **Emergency Information**
   a. General User - Include information on the location of fire exits, muster points, alarm systems and fire fighting systems.
   b. FM - As above, plus details of location and nature of emergency and firefighting systems, nearest emergency services, location of first aid equipment.

3. **Energy & Environmental Strategy**
   This should give owners and occupiers information on energy-efficient features and strategies relating to the building, and also provide an overview of the reasons for their use, e.g. economic and environmental savings. Information could include:
   a. General User – Information on the operation of innovative features such as automatic blinds, lighting systems etc., and guidance on the impacts of strategies covering window opening and the use of blinds, lighting and heating controls

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b. FM - As above, plus information on airtightness and solar gain (e.g. the impact of leaving windows/doors open in an air conditioned office, or use of blinds in winter with respect to solar gain); energy targets and benchmarks for the building type, information on monitoring such as the metering and sub-metering strategy, and how to read, record and present meter readings.

4. **Water Use**
   a. General User – details of water saving features and their use and benefits, e.g. aerating taps, low flush toilets, leak detection, metering etc.
   b. FM – As above, plus details of main components (including controls) and operation. Recommendations for system maintenance and its importance, e.g. risk of legionella.

5. **Transport Facilities**
   a. General User – details of car-parking and cycling provision; local public transport information, maps and timetables; information on alternative methods of transport to the workplace, e.g. car sharing schemes; local 'green' transport facilities.
   b. FM - As above, plus information on conditions of access, maintenance and appropriate use of car parking and cycling facilities, e.g. number of spaces provided.

   The above information in point 5 does not need to be included in the user's guide if there is a separate dedicated travel information space, accessible to the staff, and in compliance with BREEAM Credit T7. However, the guide must reference the travel information space, the information provided and its location.

6. **Materials & Waste Policy**
   a. General User – Information on the location of recyclable materials storage areas and how to use them appropriately.
   b. FM – As above, plus information on recycling, including recyclable building/office/fit out components, waste storage and disposal requirements; examples of Waste Management Strategies and any cleaning/maintenance requirements for particular materials and finishes.

      In addition to the above, the general user information must explicitly state any requirements and colour coding related to safe storage and disposal of hazardous/clinical waste in accordance with HTM 07-01[6].

7. **Re-fit/Re-arrangement Considerations**
   a. General User – an explanation of the impact of re-positioning of furniture, i.e. may cover grilles/outlets, implications of layout change, e.g. installation of screens, higher density occupation etc.
   b. FM - As above, plus environmental recommendations for consideration in any refit. Relevant issues covered in BREEAM should be highlighted, e.g. the use of natural ventilation, use of Green Guide 'A' rated materials, reuse of other materials etc., the potential impact of increasing occupancy and any provision made in the original design to accommodate future changes.

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BREEAM : Healthcare : 2008
Management
Man 4 - Building User Guide

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	1	1

8. **Reporting Provision**
   a. General User – Contact details of FM/manager, maintenance team, and/or help desk facility; and details of any building user group if relevant.
   b. FM – As above, plus contact details of suppliers/installers of equipment and services and their areas of responsibility for reporting any subsequent problems.

9. **Training**
   Details of the proposed content and suggested suppliers of any training and/or demonstrations in the use of the building's services, features and facilities that will be needed. This could include:
   a. General User - Training in the use of any innovative/energy saving features.
   b. FM – As above, plus training in emergency procedures and setting up, adjusting, and fine tuning, the systems in the building.

10. **Links & References**
    This should include links to other information including websites, publications and organisations. In particular, the 'Carbon Trust' programme should be referenced and links provided to its website and good practice guidance.

11. **General**
    Where further technical detail may be required by the FM Team or manager there should be references to the appropriate sections in the Operation and Maintenance Manual.

Building Log Book

The Building Regulations Part L requires the provision of a 'Building Log-Book' to the owner and/or occupier of the building. In addition on completion, the Construction Design and Management Regulations require the Health and Safety file to be passed onto the building user.

BREEAM requires an additional 'Building User Guide' that contains the necessary details about the everyday operation of the development in a form that is easy for the intended users to understand.

Without the provision of adequate information and guidance it is likely that the building will be used inappropriately leading to the dissatisfaction of occupants and wasted resources. For example: Some ventilation and/or lighting systems can be impaired by inappropriate positioning of partitions, office furniture etc. so causing inefficiencies, a lack of comfort and poor performance.

The aim of the credit is to ensure that design features are used efficiently and that changes to office space are managed in the most appropriate manner. For example, the design team of a speculative, open plan office, are likely to have considered the need for meeting or cellular space, and may have provided additional riser or duct space to assist future use. The design of the building may require additional or expanded systems to be installed if occupant levels rise above those designed for. This information should be passed on to the personnel making management decisions, so that they are aware of the implications of such decisions on the management of the building.

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Man 4 - Building User Guide

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	1	1

References

1. Construction (Design and Management) Regulations 1994.
2. Building Regulations 2006 - Approved document, Part L.
3. BRE Digest 474 "*HOBO protocol - Handover of Office Building Operations*" 2003.
4. CIBSE Building Log Book Toolkit (CD-ROM) 2003.
5. Carbon Trust : www.thecarbontrust.co.uk/carbontrust/
6. HTM 07-01: "*Safe Management of Healthcare Waste"*, 2006.
7. HTM 07-03: "*Transport Management and Car Parking*", 2006.
8. SHTM 07-02: "*EnCO2de, Making energy work in Healthcare*", Health Facilities Scotland 2006.
9. Health Technical Memorandum 07-04: "*Water Management and Water Efficiency – best practice advice for the healthcare sector*", Department of Health 2008.

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BREEAM : Healthcare : 2008
Management
Man 5 - Site Investigation

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit not assessed in this version.

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BREEAM : Healthcare : 2008
Management
Man 6 - Consultation

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To involve the relevant stakeholders (including building users, business, residents and local government) in the design process in order to provide buildings fit for purpose and to increase local "ownership".

Credit criteria

Two credits available as follows:

Credits	
1	Where evidence provided demonstrates that consultation has been, or is being, undertaken and feedback given to the local community and building users. In addition, advice should also have been sought from any relevant national and local history, archaeological bodies or military history groups regarding the heritage value of the building/site/surroundings.
2	Where, in addition to the above, evidence provided demonstrates that changes to the design and/or action has been taken as a result of the above consultation process. This should include the protection of any parts of the building (or site) having historic or heritage value in accordance with independent advice from the *relevant body*.

Compliance requirements

The following demonstrates compliance:

First credit

1. During the preparation of the brief (equivalent to RIBA stage B) the following was undertaken:
    a. Members of the local community and *appropriate stakeholders* identified with whom the design team consulted
    b. Knowledge and experience collated from the existing buildings of the same type (if relevant) to identify existing partnerships and networks. If the building is a new development in an existing community or for a community still under construction, a representative consultation group should be identified from similar buildings of the same type in the same authority/area
    c. A consultation plan was prepared and included a timescale and methods of consultation, clearly identifying at which points consultees can usefully contribute and how they will be kept informed about progress on the project.

2. The consultation included at least the following issues:

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Management
Man 6 - Consultation

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

a. Functionality, building quality and local impact (including aesthetics)
b. Building user satisfaction/productivity
c. Management and operational implications
d. Maintenance resources/burdens
e. Good and bad examples of buildings of the same type.
f. Local traffic/transport impact.
g. Opportunities for shared use of facilities and infrastructure with the community
h. Consultation with the *relevant bodies to* confirm whether the building (or site) is classified as any of the following:
   - A Building of local architectural or historic interest referred to in a local authority development plan
   - A Building within an area of outstanding natural beauty and national parks
   - A Building/site that is within the curtilage of, or contains on site, a scheduled ancient monument
   - Buildings or sites with distinguishing local architectural characteristics
   - Buildings within areas of archaeological significance.

3. Feedback has been given to the consultation group regarding suggestions made, and this feedback covered:
   a. What was proposed during the consultation exercise
   b. How each of these proposals were considered
   c. The outcome, e.g. implementation of suggestions or description of why options have not been deemed feasible.

Second Credit

1. The first credit has been achieved.

2. The project team demonstrate the following:
   a. How the results of the consultation process have influenced, or resulted in modifications to, the proposed design and building operation/use
   b. The measures taken, as agreed with the *relevant bodies*, to protect any areas or features of historic/heritage value.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.
Relevant Bodies	The relevant bodies, depending on the UK region, will typically include: the Local Authority, English Heritage, Historic Scotland, Environment and Heritage Service (NI) or appropriate agency department of the Assembly Government (Wales).

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Management
Man 6 - Consultation

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Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Appropriate stakeholders	Includes the following (as appropriate): • Local residents and volunteer group(s) • Patient groups • Local NHS Trust • NHS Staff groups or unions e.g. BMA, RCN, RCM etc. • Local businesses • Design team members and main contractor • Community groups/associations • Local Authority and/or local education service providers.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
First Credit		
1	A list of the stakeholders consulted.	Evidence as outlined at the design stage of assessment.
2	A consultation plan setting out the process and the scope of the consultation. Copies of agendas and minutes of meetings with the stakeholders demonstrating: • The consultation plan in action • The stage in plan of works that consultation occurred.	
3	Copies of documentation demonstrating consultation feedback, including (where relevant): • Newsletters, posters, circulars etc. • Agenda and minutes from meetings.	
Second Credit		
1	As above.	As above.
2	Marked-up design plans and/or copy of the relevant sections of the specification documents illustrating: • The influence of the consultation process on the final design • Measures taken to protect features of historic value.	Assessor's building/site inspection and photographic evidence confirming: • Existence/installation of identified features on marked-up design plan or in specification.

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Management
Man 6 - Consultation

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Additional information

Relevant definitions

Functionality: The way in which the building is designed to be useful and is split into use, access and space.

Build quality: The engineering and construction performance of a building.

Impact: The building's ability to create a sense of place, and have a positive effect on the local community and environment. This includes character and innovation, form and materials, internal environment and urban and social integration.

Consultation guidance and methodologies

There is a great deal of guidance available on community consultation, and many specialist organisations offer such services. Much of it is focussed on community planning, but is adaptable. Examples of guidance and methodologies in the public domain are:

- The National Charrette Institute is a non-profit educational institution that help communities achieve healthy transformation through collaborative planning processes that harnesses the talents and energies of all interested parties to create and support a buildable plan. www.charretteinstitute.org
- Planning for Real is a participative planning initiative. www.nifonline.org.uk
- For a guide to neighbourhood renewal and various resources see: www.renewal.net
- The Design Quality Indicator is a method to assess the design quality of buildings. www.dqi.org.uk
- The Commission for Architecture and the Built Environment has various publications to provide guidance on design, and a section on education on design for young people. www.cabe.org.uk

References

1. www.dqi.org.uk

2. www.cabe.org.uk

3. http://design.dh.gov.uk/content/connections/aedet_evolution.asp

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BREEAM : Healthcare : 2008
Management
Man 7 – Shared facilities

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To recognise and encourage flexible buildings designed to cater for shared use with the local community.

Credit criteria

Two credits available as follows:

Credits	
1	Where evidence provided demonstrates that shared facilities have been provided as a consequence of consultation feedback.
2	Where evidence provided demonstrates that these facilities can be accessed without compromising the safety and security of the building and its occupants.

Compliance requirements

The following demonstrates compliance:

First credit

1. At least one credit has been achieved under M6 Consultation.

2. The design team confirms that:
    a. Potential users of the shared facilities (such as operators of clubs and community groups) have been consulted and their requirements have informed the brief.
    b. They met formally to consider feedback according to the consultation plan
    c. A document was produced describing the facilities to be shared and how access to them will be arranged
    d. This document has been communicated to all consultees.

Second credit

1. The first credit is achieved.

2. Shared facilities are provided in a separate and secured zone that can be accessed by members of the public/community without gaining uncontrolled access to other parts of the building.

3. Instructions and guidance on access and use of shared facilities has been developed and handed over to the building occupants (this can be included in the building user guide where such a guide is provided).

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BREEAM : Healthcare : 2008
Management
Man 7 – Shared facilities

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.
Existing shared facilities	Where existing shared facilities are present on site that comply with the above compliance requirements (including the involvement of users and community in the consultation stage), the credits can be awarded.
Type of shared facilities	No requirements have been set in this respect as the types of space will vary according to the building size, type, and use and consultation feedback. Typical facilities may however include: • Sports facilities • Meeting and conference rooms • Drama and theatre space
Scope of the credit	This credit is applicable only to healthcare buildings that provide primary and intermediate care services.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
First Credit		
1	As outlined under credit Man 6 Consultation.	As outlined under credit Man 6 Consultation.
2	Agenda & minutes from design team meeting. A copy of the document, and its distribution list, outlining the strategy for shared facilities.	There is no additional evidence required at the post construction stage of assessment.
Second Credit		
2	A marked-up design plan highlighting: • The facilities that will be shared • Access and security zones for and around the shared facilities.	Assessor's building/site inspection and photographic evidence confirming: • Existence of shared facilities. • Access and security arrangements for the facilities.

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BREEAM : Healthcare : 2008
Management
Man 7 – Shared facilities

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

3	A copy of the document containing the instructions and guidance on access and use of shared facilities. **OR** A formal letter from the design team confirming that such a document will be written and handed over to the building occupants.	A copy of the document containing the instructions and guidance on access and use of shared facilities.

Additional information

Relevant Definitions:

Primary care: The term for the health services that play a central role in the local community including GPs, pharmacists and dentists.

Intermediate care: Intermediate care can be described as those healthcare services that do not require the resources of a general hospital but are beyond the scope of the traditional primary care team. Examples of the type of buildings that provide Intermediate care include day centres, community hospitals or nursing homes.

Allowing community buildings such as healthcare facilities to be used out of hours by members of the public maximises the building use and increases a sense of community. This is especially valid for Primary and Intermediate Care, in which the use of the buildings is often limited to office hours.

References

1. "*Designed with care: design and neighbourhood healthcare buildings",* CABE, 2006. www.cabe.org.uk

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BREEAM : Healthcare : 2008
Management
Man 8 – Security

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To recognise and encourage the implementation of effective design measures that will reduce the opportunity for and fear of crime on the new development.

Credit criteria

Credits	
1	Where evidence provided demonstrates that an *Architectural Liaison Officer* (ALO) or *Crime Prevention Design Advisor* (CPDA) from the local police force has been consulted at the design stage and their recommendations incorporated into the design of the building and its parking facilities (if relevant).

Compliance requirements

The following demonstrates compliance:

1. The design team has consulted with and sought the advice of the local police *Architectural Liaison Officer* (ALO) or *Crime Prevention Design Advisor* (CPDA) on designing out the opportunity for crime, in accordance with the principles and guidance of *Secured by Design*.

2. Consultation with the ALO/CPDA occurred during or prior to the *Outline Proposals* stage (RIBA stage C) or equivalent.

3. The final design embodies the recommendations of the ALO/CPDA and is built to conform to the principles and guidance of *Secured by Design*.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.
SBD Award	An actual Secured by Design Award/certificate is not required, though this does provide a means of demonstrating compliance at the post construction stage of assessment.

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BREEAM : Healthcare : 2008
Management
Man 8 – Security

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Public car parks	The Secured by Design equivalent for parking facilities is the Safer Parking Scheme. In addition to designing in accordance with SBD principles, the parking facilities should be designed in accordance with the principles and guidance of the Safer Parking standards.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1&2	Correspondence from or a copy of the report/feedback from the ALO/CPDA confirming: • Scope of their advice/involvement • The stage of design in which their advice was sought • Summary of their recommendations	No additional evidence required to that outlined for the design stage of assessment.
3	A marked-up copy of the site/design plan(s) highlighting examples of: • The development conforming to ALO/CPDA recommendations and SBD principles and guidance. **OR** If the timing of assessment does not permit the above, a copy of the specification clause confirming: The development will conform to ALO/CPDA recommendations and SBD principles and guidance.	Assessor's building/site inspection and photographic evidence providing examples of: • The site/development conforming to key ALO/CPDA recommendations. **OR** Correspondence from the ALO/CPDA confirming: • The as-built development or design complies with their recommendations. **OR** A copy of the development's '*Secured by Design*' certificate.

Additional information

Relevant definitions:

Secured by Design (SBD): A police initiative that seeks to encourage the construction industry to adopt crime prevention measures in the design of developments, to assist in reducing the opportunity for and fear of crime.

Secured by Design is owned by the *Association of Chief Police Officers (ACPO)* and has the support of the Home Office Crime Reduction & Community Safety Group and the Planning Section of the Department for Communities and Local Government.

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BREEAM : Healthcare : 2008
Management
Man 8 – Security

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

The Association of Chief Police Officers for England Wales and Northern Ireland (ACPO) and the Association of Chief Police Officers for Scotland (ACPOS) represent the police forces of the United Kingdom and both organisations endorse and support the Secured by Design programme.

The Safer Parking Scheme: An initiative of the Association of Chief Police Officers aimed at reducing crime and the fear of crime in parking facilities. Safer parking status, Park Mark®, is awarded to parking facilities that have met the requirements of a risk assessment conducted by the Police. The scheme is managed by the British Parking Association (BPA) and supported by the Home Office and Scottish Executive.

Development Managers: DMs are independent persons appointed by the SPS scheme managers (the British Parking Association) and will assist designated police staff in carrying out site assessments of individual parking facilities.

Crime reportedly costs the National Health Service £600 million every year. The open access of healthcare environments can render them particularly vulnerable to crime, it is therefore important to design out opportunities for crime to occur in new build, refurbishment and extensions to healthcare buildings.

References

1. http://www.securedbydesign.com
2. http://www.securedcarparks.com
3. http://www.britishparking.co.uk
4. *"Secured By Design – Hospitals"*. ACPO Crime Prevention Initiatives Limited, 2005. http://www.securedbydesign.com/guides/index.aspx

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BREEAM : Healthcare : 2008
Management
Man 9 – Publication of building information

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	1

Credit not assessed in this version.

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BREEAM : Healthcare : 2008
Management
Man 10 – Development as a learning resource

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	1

Credit not assessed in this version.

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BREEAM : Healthcare : 2008
Management
Man 11 – Ease of maintenance

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To recognise and encourage the specification of a building and building services that can be easily maintained during their lifecycle.

Credit criteria

Credits	
1	Where evidence provided demonstrates that specifications for the building and the building services/systems and landscaping have considered ease and efficiency of maintenance in line with best practice.

Compliance requirements

The following demonstrates compliance:

1. The items identified for each of the key procurement stages in the checklist '*design guide to maintainable buildings*', outlined in Appendix 2 A1 of CIBSE *guide to ownership, operation and maintenance of building services,* have been addressed.

2. A critical appraisal has been completed at the feasibility stage of building procurement, covering the maintenance implications for different design options. This appraisal must comply with the following:
    a. Service life planning in accordance with ISO 15686 *Buildings and constructed assets* - Service life planning Part 1
    b. HTM 2023 *Access and accommodation for engineering services.*

3. A maintenance strategy has been developed from the critical appraisal and formulated at the design stage. The maintenance strategy must cover the extent to which maintenance can be designed out and how support systems can be built into the specification to facilitate efficient and cost-effective operation and maintenance.

    The strategy must include an indication on how all major plant and equipment is to be removed and replaced within the design life of the building, including the access openings, lifting arrangement and route to and from the plant room at a delivery point.

4. Where there is a management plan for the landscaping (for example, as defined in credit LUE 6 Long term impact on biodiversity), this has been included in the maintenance strategy.

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BREEAM : Healthcare : 2008
Management
Man 11 – Ease of maintenance

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1	A formal letter from the design team with: • Confirmation of use and compliance with the CIBSE checklist at the feasibility, outline proposal, system design and detailed design stages • A signed, dated and completed copy of the checklist for the relevant stages. • Indicative examples of how items on the checklist were addressed at each stage of design for the building.	A formal letter from the design team or main contractor with: • Confirmation of use and compliance with the CIBSE checklist at the Production information, tender, pre-construction, construction and commissioning stages. • A signed, dated and completed copy of the checklist for the relevant stages. • Indicative examples of how items on the checklist were addressed at each stage for the building.
2	A copy of the feasibility stage appraisal for the design options. A formal letter from the design team confirming: • Compliance of the appraisal with the relevant standard(s).	No additional evidence required to that outlined for the design stage of assessment.

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BREEAM : Healthcare : 2008
Management
Man 11 – Ease of maintenance

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

3&4	A copy of the maintenance strategy (including the landscaping plan if appropriate). OR A formal letter from the design team confirming that: • A compliant maintenance strategy will be developed. • This will include the landscape maintenance plan, if relevant.	A copy of the maintenance strategy (including the landscaping plan if appropriate).

Additional information

Relevant definitions
None.

References

1. *"Guide M: Maintenance Engineering and Management",* CIBSE, 2008.

2. ISO 15686 Buildings and constructed assets - Service life planning.
   a. Part 1 - General principles, 2000
   b. Part 2 - Service life prediction procedures, 2001
   c. Part 3 - Performance audits and reviews, 2002
   d. Part 6 - Procedures for considering environmental impacts, 2004

3. The national specifications for cleanliness in the NHS: "*A framework for setting and measuring performance outcomes*". National Patient Safety Agency 2007.

4. National standards of cleanliness for the NHS, "*Implementation guidanc*e". NHS Estate 2001.

5. "*Infection control in the built environment – Design and Planning*". NHS Estate 2002.

6. HTM 2023, "*Access and accommodation for engineering services*". NHS Estates 1995.

7. HTM 00, "*Policies and principles - Best practice guidance for healthcare engineering*". Department of Health 2006.

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BREEAM : Healthcare : 2008
Management
Man 12 – Life cycle costing

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To recognise and encourage the development of a Life Cycle Cost (LCC) analysis model for the project to improve design, specification and through-life maintenance and operation.

Credit criteria

Two credits available as follows:

Credits	
1	Where evidence provided demonstrates that a Life Cycle Cost (LCC) analysis based on the feasibility study proposals has been undertaken on the building design at a strategic and system level.
2	Where evidence provided demonstrates that the results of the feasibility study and consideration of LCC have been implemented.

Compliance requirements

The following demonstrates compliance:

First credit

1. A Life Cycle Cost (LCC) analysis has been carried out based on the proposals developed during RIBA Work Stages B/C (feasibility study/outline proposals), or equivalent.

2. The Life Cycle Costs analysis based on the feasibility study proposals covers the following stages:
    a. Construction
    b. Operation - includes, as a minimum, utilities
    c. Maintenance - includes, as a minimum, planned maintenance, replacements and repairs, cleaning, management costs
    d. End of life.

3. The LCC analysis uses a study period of 25 or 30 (as applicable) **AND** 60 years, shown in real, discounted and non-discounted cash flow terms.

4. The feasibility study demonstrates that at least two of the following issues have been analysed at a strategic and system level (as per figure 6, Different levels of analysis at different stages of the life cycle, ISO 15686-1), comparing alternative options:
    a. Structure
    b. Envelope
    c. Services
    d. Finishes

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BREEAM : Healthcare : 2008
Management
Man 12 – Life cycle costing

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

The chosen solution is the one that best meets the performance requirements for the built asset.

5. The option(s) with the lowest discounted LCC over the period is preferred, assuming that their selection results in at least one of the following:
    a. The lowest building energy consumption over the operational life span of the building (compared to other options/alternatives analysed)
    b. A reduction in maintenance requirement/frequency
    c. Prolonged replacement intervals of services infrastructure/systems or building fabric
    d. Dismantling and recycling or reuse of building components.

6. The model was updated during RIBA Work Stages D/E (detailed/final proposals) or equivalent.

Second credit

1. The first credit is achieved.

2. The results of the feasibility study have been implemented in the specification, design and final construction of the assessed building.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
First Credit		
1-4	A copy of the feasibility stage LCC analysis. The details of the cost consultant who has completed the analysis.	No additional evidence required to that outlined for the design stage of assessment.

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BREEAM : Healthcare : 2008
Management
Man 12 – Life cycle costing

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

5	A formal letter from the design team or cost consultant confirming: • The preferred option.	No additional evidence required to that outlined for the design stage of assessment.
6	An updated copy of the LCC analysis for the detailed and final design. **OR** A formal letter from the design team confirming: • The LCC analysis will be updated to reflect the detailed and final design proposals. • Any proposed change(s) made to the specification will be on the basis that they will minimise life cycle costs and impacts.	An updated copy of the LCC analysis for the final design.
Second Credit		
2	A formal letter from the design team confirming: • The option(s) with the lowest discounted life cycle costs have been, or will be, implemented in the design and specification.	Assessor's building/site inspection confirming: • The completed building reflects the preferred option identified in the LCC analysis.

Additional information

Relevant definitions

Life Cycle Cost analysis: A procurement evaluation technique which determines the total cost of acquisition, operation, maintenance and disposal of the building.

The assessor should note that BREEAM places fixed requirements on the time at which the Life Cycle Cost feasibility study should be carried out in order that maximum benefit from undertaking this is achieved.

The *strategic level* analysis (looking at issues such as location and external environment, maintainability and internal environment, etc.) and *system level* analysis (looking at issues such as foundations, solid or framed wall and floors, types of energy, ventilation, water capacity, communications etc.) should be carried out early in the design process to influence the fundamental decisions taken regarding the building without having an adverse affect on either cost or design programme. It is however important that this is revisited as the design develops to ensure that an optimal solution is retained throughout the procurement process.

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BREEAM : Healthcare : 2008
Management
Man 12 – Life cycle costing

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

References

1. BS/ISO 15686-5 "*Service Life Planning – Life Cycle Costing*". BSI.
2. OGC guidance Achieving Excellence in Construction 7 – "*Whole Life Costing and Cost Management*".
3. OGC guidance Achieving Excellence in Construction 11 – "*Sustainability*".
4. Green Book – Treasury guidance "*Appraisal and Evaluation in central government*". Crown Copyright 1997 and 2000.
5. HM Treasury "*How to construct a public sector comparator - Technical Note No. 5*", Treasury Taskforce, London 1999.
6. CCF "*Whole Life Costing - A Clients' Guide, BRE report funded by DETR*". Clients Construction Forum London: 1999.
7. BS/ISO 15686 Buildings – "*Service Life Planning - Part 1 - General Principles*". BSI 2000.
8. "*Applying facilities expertise in building desi*gn". Jaunzens D, Warriner D, Garner U and Waterman A London: CRC Ltd.2001
9. BRE Digest 452 "*Whole life costing and life cycle assessment for sustainable building design*". Bartlett E, Edwards S, Garston CRC 2000.
10. OGC Common Minimum Standards for the procurement of built environments in the public sector, downloadable from: http://www.ogc.gov.uk/documents/Common_Minimum_Standards_PDF.pdf
11. Treasury's Value for Money (VfM) Initiative for PFI projects. Treasury website: http://www.hm-treasury.gov.uk./documents/public_private_partnerships/additional_guidance/ppp_vfm_index.cfm
12. Capital Investment Manual, NHS, 2004

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BREEAM : Healthcare : 2008
Management
Man 13 – Good corporate citizen

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To encourage the sustainable development of the NHS through the improvement of daily corporate activities.

Credit criteria

Credits	
1	Where evidence provided demonstrates that the Good Corporate Citizen model has been used to assess the development and that there is a commitment to continue to use the model to re-assess the development regularly.

Compliance requirements

The following demonstrates compliance:

1. Consultation involving the design team and the client/senior management and staff representatives will be, or has been carried out during stage K (operations on site) or equivalent using the Good Corporate Citizen model, New Buildings section.

2. The development scores, or there is a commitment to score, a minimum average of 6 under the Good Corporate Citizen model.

3. There is a commitment from the client/facility manager/senior management to:
    a. Annually re-assess the development using the Good Corporate Citizen model for existing buildings in operation
    b. Review accordingly policies and strategies concerning the issues covered by the model
    c. Report progress to the NHS Trust Board.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.

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BREEAM : Healthcare : 2008
Management
Man 13 – Good corporate citizen

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Healthy Sustainable Wales	In Wales where the NHS Contribution toolkit is used, the requirements are the same as those for the Good Corporate Citizen model (except for minimum average score). As a minimum, all of the '*Getting There*' requirements must be achieved for the credit to be awarded.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1&2	A formal letter from the design team or letters of appointment confirming: • Their commitment to consult with the relevant stakeholders using the Good Corporate Citizen model • The minimum average score required. **AND** A formal commitment from the client requiring client/senior management and staff representatives to participate in this process. **AND** A copy of the clause within the general conditions and preliminaries setting out the requirement for the contractor to cooperate with this consultation process **OR** Where the contractor is not yet appointed, a formal commitment from the client to require this of the contractor.	Copies of agenda and minutes from the consultation meeting. A copy of the model output showing the score achieved.
3	A formal letter from the client or facility manager (as appropriate) confirming their commitment to: • Annually re-assess the development using the model • Review policies and strategies accordingly • Report to the NHS Trust Board.	No additional evidence required to that outlined for the design stage of assessment.

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BREEAM : Healthcare : 2008
Management
Man 13 – Good corporate citizen

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Additional information

The Good Corporate Citizen website (http://www.corporatecitizen.nhs.uk) contains several case studies of NHS trusts that have successfully used the model and other material to support the use of this model, including links to other assessment tools, guidance and useful resources.

References

1. Good Corporate Citizen: http://www.corporatecitizen.nhs.uk

2. Healthy Sustainable Wales: the NHS Contribution: http://wales.gov.uk/about/departments/dhss/publications/health_pub_index/whc07/1512275/

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Health & Wellbeing Section

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 1 - Daylighting

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To give building users sufficient access to daylight.

Credit criteria

Credits	
2	Where at least 80% by floor area of occupied *staff* and *public areas* have an average daylight factor of 2% or more. **AND** Where at least 80% by floor area of occupied *patient areas* (dayrooms, wards) and consulting rooms have an average daylight factor of 3% or more.

Compliance requirements

The following demonstrates compliance:

1. At least 80% by floor area of the *staff* and *public areas* has an average daylight factor of 2% or more.

2. At least 80% by floor area of the occupied *patient's areas* (dayrooms, wards) has an average daylight factor of 3% or more.

3. The provision of daylight has been designed in accordance with the guidance in CIBSE Lighting Guide 10 Daylighting and window design, BS8206 Part 2 and the BRE Site Layout Guide.

Exemplary level requirements
The following outlines the exemplary level requirements to achieve an *innovation credit* for this BREEAM issue.

1. At least 80% of the floor area (for the building spaces/room identified above in the standard requirements) has an average daylight factor of 3% in multi-storey buildings and 4% in single-storey buildings.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 1 - Daylighting

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Extensions to existing buildings	The requirements of this credit apply only to the scope of the assessed building. If this scope includes the existing building as well as the new building then the relevant areas within the existing building must be assessed against the requirements of this BREEAM credit. If the assessment covers only the new building, then the areas in the existing building do not need to be assessed.
Percentage of assessed area	Where the compliance requirement specifies that 80% of office or other *occupied space* floor area must be adequately daylit, it refers to 80% of the total floor area of all the rooms that must be assessed i.e. the compliant area. If for example a development has 6 rooms that must be assessed, each 150m^2 (total area 900m^2) then 720m^2 must comply with the requirements; this is equal to 4.8 rooms. The number of rooms that must comply must always be rounded up; therefore in this example, five rooms must meet the requirements to achieve the credit.
Borrowed light	For areas where borrowed light is used, calculations or results from appropriate lighting design software must be provided to demonstrate that such areas meet the BREEAM requirements (if contributing to the percentage of compliant area). Examples of borrowed light include: light shelves, clerestory glazing, sun pipes or internal translucent/transparent partitions (such as those using frosted glass).
Excluded areas	*Clinical areas* with controlled environmental conditions, e.g. operating theatres, delivery rooms or pathology can be excluded from the assessment of this BREEAM issue. However, BREEAM strongly advise that the benefits from daylighting and view out are seriously considered when designing areas of critical and intensive care. These may provide energy-saving benefits that have an impact on credits in the Energy section.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 1 - Daylighting

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
All	Design plans for each floor in the building with each room/area appropriately labelled for use. **AND** Daylight calculations confirming: • Building areas assessed • The daylighting variables/criterion measured • Average daylight factor for each area • Compliance with room depth criterion, uniformity ratio, view of sky (if required) • The daylight provision is in compliance with the relevant standards.	Daylight calculations for the building 'as built' confirming compliance with all requirements. **OR** Assessor's site inspection report or 'as-built' drawings confirming: • The window sizes and room layout and dimensions are as per design-stage daylighting compliant room • A letter from the design team or main contractor confirming that window specification, size and/or room layout have not changed since the design stage assessment. Where there have been changes, revised calculations are required to demonstrate compliance for the relevant areas/rooms. **OR** Results from on-site measurements* that have been carried out. *These must be in accordance with methodology detailed in BRE IP 23/93[3].

Additional information

Relevant definitions

Occupied space: A room or space within the assessed building that is likely to be occupied for 30 minutes or more by a building user.

Point daylight factor: A point daylight factor is the ratio between the illuminance (from daylight) at a specific point on the working plane within a room, expressed as a percentage of the illuminance received on an outdoor unobstructed horizontal plane. This is based on an assumed overcast sky, approximated by the 'CIE (Commission Internationale de l'Eclairage) overcast sky'.

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Health & Wellbeing
Hea 1 - Daylighting

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Average daylight factor: The average daylight factor is the average indoor illuminance (from daylight) on the working plane within a room, expressed as a percentage of the simultaneous outdoor illuminance on a horizontal plane under an unobstructed CIE Standard Overcast Sky.

Illuminance: The amount of light falling on a surface per unit area, measured in lux.

Uniformity: The uniformity is the ratio between the minimum illuminance (from daylight) on the working plane within a room (or minimum daylight factor) and the average illuminance (from daylight) on the same working plane (or average daylight factor).

View of sky / no-sky line: Areas of the working plane have a view of sky when they receive direct light from the sky, i.e. when the sky can be seen from working plane height. The no-sky line divides those areas of the working plane, which can receive direct skylight, from those that cannot.

Working plane: CIBSE LG10[1] defines the working plane as the horizontal, vertical or inclined plane in which a visual task lies. The working plane is normally taken as 0.7 m above the floor for offices and 0.85 m for industry.

Computer simulation: Software tools that can be used to model more complex room geometries for daylighting.

Public areas: Areas of the building designed for public use where no medical functions are carried out (e.g. reception, retail unit, waiting areas).

Staff areas: Areas of the building used mainly by staff (e.g. offices, meeting rooms, staff rooms) and medical areas where patients are admitted but that do not require restricted environmental conditions (e.g. consulting rooms, physiotherapy, etc).

Clinical areas: Areas of the building in which medical functions are carried out that require specific restricted environmental conditions such as humidity, daylighting, temperature, etc. (e.g. X-ray, operating department, delivery room, etc).

Patient areas: Areas of the building used mainly by inpatients (e.g. wards, dayrooms, etc).

References

1. Lighting Guide 10 "*Daylighting and window design*", CIBSE, 1999.
2. BS 8206 "*Lighting for buildings - Code of practice for daylighting Part 2*", 1992.
3. Information Paper IP 23/93 "*Measuring daylight*", BRE, 1993.
4. "*Site layout planning for daylight and sunlight, A guide to good practice*", P. J. Littlefair, BRE Press, 1998.
5. SHTM 55 "*Building Components - Windows*", Health Facilities Scotland, 2006.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 1 - Daylighting

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

6. HTM 55 "*Building Components - Windows*", NHS Estates, 1998.

7. H. Dalke, P.J. Littlefair, D.L. Loe. "*Lighting and colour for hospital design*", NHS Estates, 2004.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 2 – View out

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To allow occupants to refocus their eyes from close work and enjoy an external view, thus reducing the risk of eyestrain and breaking the monotony of the indoor environment.

Credit criteria

Two credits available as follows:

Credits	
1	Where evidence provided demonstrates that all workstations/benches and desks and at least 80% by floor area of public areas have an adequate view out.
1	Where evidence provided demonstrates that all *patient-occupied* spaces have an adequate view out.

Compliance requirements

The following demonstrates compliance:

First credit – All building types

1. The *relevant building areas* are within 7m distance of a wall with a window or permanent opening providing an *adequate view out*, where the window/opening is ≥20% of the total inside wall area *(*refer to compliance notes for a definition of *relevant building areas* and *adequate view out)*.

2. At least 80% by floor area of the following public spaces (excluding corridors and circulation) have an *adequate view* out:
    a. Waiting areas,
    b. Children's crèche,
    c. Café / dining / vending areas.

    For the above spaces to comply, any point within the space must be within 7m distance of a window or permanent opening providing a *view*. Where the room depth is greater than 7m, compliance is only possible where the percentage of window/opening is the same as or greater than the values in table 1.0 of BS 8206[2].

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 2 – View out

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Second credit – Buildings designed for inpatients

1. All patient-occupied spaces (e.g. wards and dayrooms) must be within 7m distance of a window or permanent opening providing a *view*. Where the room depth is greater than 7m, compliance is only possible where the percentage of window/opening is the same as or greater than the values in table 1.0 of BS 8206[2].

2. In patient-occupied areas the distance between the wall with the window/opening and nearest external solid object (i.e. buildings, screens, walls/fences) is ≥10m.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.
Adequate view out	The view out should ideally be through an external window providing a view of a landscape or buildings (rather than just the sky) at seated eye level (1.2 – 1.3m) in the *relevant building areas.* A view in to an internal courtyard or atrium will comply provided the distance from the opening to the back wall of the courtyard/atrium is at least 10m (therefore allowing enough distance for the eyes to refocus). The view cannot be an internal view across the room, as this is likely to become obstructed by partitions, filing cabinets etc.
High level windows	Roof lights and high level windows that do not provide an *adequate view out* do not meet the requirements of this BREEAM credit.
Relevant building areas	Where the term '*relevant building areas'* is referenced in this BREEAM credit it refers to any areas of the building where there are, or will be, workstations/benches or desks for building users. In the case of the second BREEAM credit the definition also includes relevant patient areas; this includes wards and dayrooms.
Planting	Though it is not a requirement for awarding the BREEAM credit, wards, dayrooms and waiting rooms should ideally have a view out of a soft landscaped area, including planting (refer to the additional information section).
Second credit	The second credit is not assessed for building types that are not designed to receive inpatients. The second credit is also not dependent on the first credit being awarded.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 2 – View out

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
All	Design plan and elevation showing: • All *relevant building areas* and room depths • Actual or notional workstations/desk layout • Window/open areas Site plan showing: • Building location and proximity to external obstructions.	Assessor's site inspection report and photographic evidence confirming: • All *relevant building areas* comply. **OR** As built drawings or a formal letter form the design team confirming: • No changes have occurred since design stage, therefore design stage evidence demonstrates compliance post construction.

Additional information

Relevant definitions

Occupied space: refer to BREEAM credit Hea 1.

Roger S. Ulrich, professor at Texas A & M University's College of Architecture, has conducted scientific research on the influences of healthcare facilities on patient medical outcomes.

His paper '*Effects of Healthcare Environmental Design on Medical Outcomes'* [4] describes the benefits on patient wellbeing and recovery from having adequate views, particularly of natural landscapes.

References

1. "*Computers and Eyestrain*", E. Lawrence Bickford, O.D, The EyeCare Reports, 1996.

2. BS8206-2 "*Lighting for Buildings - code of practice for daylighting*", British Standards Institute, 1999.

3. Lighting Guide 10 "*Daylighting and window design*", CIBSE, 1999.

4. Health Technical Memorandum 55 "*Building Components - Windows*", NHS Estates, 1998.

5. Roger S. Ulrich, "*Effects of Healthcare Environmental Design on Medical Outcomes*", A. Dilani, ed. *Design and Health: Proceedings of the Second International Conference on Health and Design.* Stockholm, Sweden: Svensk Byggtjanst, 2001.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 3 – Glare control

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To reduce problems associated with glare in occupied areas through the provision of adequate controls.

Credit criteria

Credits	
1	Where evidence provided demonstrates that an occupant-controlled shading system (e.g. internal or external blinds) is fitted in *relevant building areas*.

Compliance requirements

The following demonstrates compliance:

1. An occupant-controlled shading system on all windows, glazed doors and rooflights in all *relevant building areas*.

2. In all other *occupied areas* the potential for disabling glare has been designed out by one or more of the following measures:
    a. Brise-soleil
    b. Low eaves
    c. Bioclimatic design that provides shading from high level summer and low level winter sun.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	Where the existing building falls within the scope of the assessment, then the requirements extend to the *relevant building areas* and *occupied spaces* of the existing building. If only the new extension is being assessed then the requirements apply to the relevant areas of the new building.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 3 – Glare control

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Relevant building areas	Where the term '*relevant building areas'* is referenced in this BREEAM credit it refers to any areas of the building where there are, or will be, workstations/benches, desks and/or close work will be undertaken or visual aids used. It also includes 'bedded areas'.
Excluded areas	The following spaces are omitted from the credit requirements: • Exercise areas, e.g. physiotherapy and hydrotherapy
Nurseries	Where nursery/crèche spaces are included within the scope of the development, occupant control need be provided only for the child carer in these spaces.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1	Marked-up copy of the design plan(s) confirming: • A description of the function of each of the building spaces. A copy of the relevant specification clause(s), window schedule or design plan confirming: • Type of shading system(s) and control to be installed.	Assessor's building/site inspection and photographic evidence confirming: • Installation of compliant glare control system.
2	Marked-up copy of the design plan(s) demonstrating: • The design measures that limit glare in all other occupied areas.	As above for requirement 1.

Additional information

Relevant definitions

Occupied space: A room or space within the assessed building that is likely to be occupied for 30 minutes or more by a building user and, with respect to this credit, where it would be desirable to limit the potential for glare or provided a system of glare control.

References

1. Lighting Guide 10, "*Daylighting and window design*", CIBSE, 1999.

2. Lighting Guide 3, "*The visual environment for display screen use*", CIBSE, 1996.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 4 – High frequency lighting

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	1	1	1	1	1

Credit aim

To reduce the risk of health problems related to the flicker of fluorescent lighting.

Credit criteria

Credits	
1	Where evidence provided demonstrates that high frequency ballasts are installed on all fluorescent and compact fluorescent lamps.

Compliance requirements

The following demonstrates compliance:

1. All fluorescent and compact fluorescent lamps are fitted with high frequency ballasts.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	Where the existing building falls within the scope of the assessment, then the requirements extend to the existing building. If only the new extension is being assessed then the requirements apply to the new building only.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1	A copy of the specification clause or room data sheets confirming: • A compliant lighting strategy.	Assessor's building/site inspection and photographic evidence confirming: • Installation of high frequency ballasts. **OR** As-built drawings/specification confirming: • No changes have occurred since design stage assessment. • Where changes have occurred, a compliant lighting strategy is installed.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 4 – High frequency lighting

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	1	1	1	1	1

Additional information

Relevant definitions

Occupied space: refer to BREEAM credit Hea 1.

High frequency ballast: High frequency ballasts increase the frequency of the power coming from the grid (50Hz) to a frequency optimising the performance of fluorescent lamps, typically around 30kHz.

There are several advantages to running fluorescent lamps at higher frequencies. At 30kHz, the frequency of re-ignition of a fluorescent lamp is too quick to be detected by the human eye, therefore reducing visible flicker that some fluorescent lamps running on mains frequency fail to do. Additionally, 30kHz being above the audible range of the human ear, the buzzing noise coming out of low quality main frequency ballasts is avoided. Finally, the luminous efficacy of fluorescent lamps increases with frequency; it can be optimised by up to 10% when they are running at 30kHz compared to those operating at 50Hz.

References

No references.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 5 – Internal and external lighting levels

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To ensure lighting has been designed in line with best practice for visual performance and comfort.

Credit criteria

Credits	
1	Where evidence provided demonstrates that all internal and external lighting, where relevant, is specified in accordance with the appropriate maintained illuminance levels (in lux) recommended by CIBSE.

Compliance requirements

The following demonstrates compliance:

1. Illuminance (lux) levels in all internal areas of the building are specified in accordance with Part Two of the CIBSE Code for Lighting 2002 and its 2004 Addendum.

2. For areas where computer screens are regularly used, the lighting design complies with CIBSE Lighting Guide 7 [2] sections 3.3, 4.6, 4.7, 4.8 and 4.9. This gives recommendations highlighting:
    a. Limits to the luminance of the luminaires, to avoid screen reflections. (Manufacturers' data for the luminaires should be sought to confirm this).
    b. For up-lighting, the recommendations refer to the luminance of the lit ceiling rather than the luminaire; a design team calculation is usually required to demonstrate this.
    c. Recommendations for direct lighting, ceiling illuminance, and average wall illuminance.

3. Illuminance levels for lighting in all external areas within the *construction zone* are specified in accordance with CIBSE Lighting Guide 6, '*The outdoor environment*'.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	Where the existing building falls within the scope of the assessment, then the requirements extend to the existing building. If only the new extension is being assessed then the requirements apply to the areas of the new building only.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 5 – Internal and external lighting levels

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

No external areas	Where no external light fittings are specified, the requirements relating to external lighting do not apply and the credit can be awarded on the basis of compliance with the internal requirements.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
All	**EITHER** A copy of the specification or relevant room schedules confirming: • The internal/external maintained illuminance levels **AND/OR** • The standards that the illuminance levels are specified to. **OR** A formal written declaration of conformity from the relevant member of the design team confirming: • The maintained illuminance levels for each internal/external space are in compliance with the relevant Standard.	A formal written declaration from the design team or main contractor confirming: • Light fittings have been installed in compliance with the lighting specification. • No changes have occurred in the lighting specification used to demonstrate design stage compliance. Where changes have occurred, a further declaration is required confirming that the revised lighting specification is in compliance with the BREEAM requirements.

Additional information

Relevant definitions

Occupied space: Refer to BREEAM credit Hea 1.

Construction zone: For the purpose of this BREEAM credit the construction zone is defined as the site which is being developed for the BREEAM-assessed building, and the external site areas that fall within the scope of the new works.

References

1. "*Code for Lighting: Part 2*", CIBSE, 2004.

2. Lighting Guide 7 "*Office Lighting*", CIBSE 2005.

3. Lighting Guide 6 "*The Outdoor Environment*", CIBSE 1992.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 5 – Internal and external lighting levels

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

4. BS 5489 Part 1 “Code of practice for the design of road lighting: lighting of roads and public amenity areas”, BSI, 2003.

5. Lighting Guide 2 “*Hospitals and Health Care Buildings*”, CIBSE, 1989.

6. “*Addendum to Lighting Guide 2*”, CIBSE, 1999.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 6 – Lighting zones & controls

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To ensure occupants have easy and accessible control over lighting within each *relevant building area*.

Credit criteria

Credits	
1	Where evidence provided demonstrates that, in all relevant building areas, lighting is appropriately zoned and occupant controllable.

Compliance requirements

The following demonstrates compliance:

1. Zoning of lighting control allows for varying occupancy and/or uses within each space, appropriate to the usage of that space. In particular, lighting is zoned to allow separate user-control as follows:
    a. Wards/bedded areas: zoned lighting control for individual bed spaces and control for staff over groups of bed spaces
    b. Treatment areas, dayrooms, waiting areas: zoning of seating and activity areas and circulation space with controls accessible to staff
    c. Office and circulation spaces
    d. In office areas and consulting rooms, zones of no more than four workplaces
    e. Workstations adjacent to windows/atria and other building areas separately zoned and controlled
    f. Seminar and lecture rooms: zoned for presentation and audience areas
    g. Library spaces: separate zoning of stacks, reading and counter areas
    h. Auditoria: zoning of seating areas, circulation space and lectern area
    i. Dining, restaurant, café areas: separate zoning of servery and seating/dining areas
    j. Retail: separate zoning of display and counter areas.

    For rooms/spaces not listed above, the assessor can exercise an element of judgement when determining whether what is specified is appropriate for the space given its end use and the aim and criteria of this BREEAM issue

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 6 – Lighting zones & controls

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to new building extensions to existing buildings.
Occupancy / workstation layout unknown	Where occupancy/workstation layout is not known, lighting control can be zoned on the basis of 40m^2 grids i.e. an assumption of 1 person/workspace per 10m^2.
Small spaces	Where the building consists entirely of small rooms/spaces (less than 40m^2) which do not require any subdivision of lighting zones/control or meet the requirements by default, then this credit may be awarded.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
All	Design plans for each floor of the building highlighting: • Space arrangement and room type **AND** Specification or design plans confirming: • Lighting zones • Location and scope of user-controls.	Assessor's site inspection report, or as-built drawings/specification confirming: • No changes have occurred since design stage; therefore, design stage evidence can be used to demonstrate compliance at post construction stage. • Where changes have occurred since design stage, the amended features still comply with the design stage requirements.

Additional information

Relevant definitions
None.

References

1. HTM 07-02: EnCO_2de, "*Making energy work in Healthcare*", Department of Health 2005.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 7 – Potential for natural ventilation

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To recognise and encourage adequate cross flow of air in naturally ventilated buildings and flexibility in air-conditioned/mechanically ventilated buildings for future conversion to a natural ventilation strategy.

Credit criteria

Credits	
1	Where evidence provided demonstrates that fresh air is capable of being delivered to the *occupied spaces* of the building via a natural ventilation strategy, and there is sufficient user-control of the supply of fresh air.

Compliance requirements

The following demonstrates compliance:

1. *Occupied spaces* of the building are designed to be capable of providing fresh air entirely via a natural ventilation strategy, demonstrated via **EITHER** of the following:
    a. The *openable window area* in each *occupied space* is equivalent to 5% of the gross internal floor area of that room/floor plate. For room/floor plates between 7m-15m depth, the *openable window area* is on opposite sides and evenly distributed across the area to promote adequate cross-ventilation. **OR**
    b. The design demonstrates (by calculation, using ventilation design tool types recommended by CIBSE AM10 [2]) that the natural ventilation strategy provides adequate cross flow of air to maintain required thermal comfort conditions and ventilation rates.

    For a strategy which does not rely on *openable windows*, or which has *occupied spaces* with a plan depth greater than 15m, the design must demonstrate (by calculation in accordance with requirement 1b above) that the ventilation strategy can provide adequate cross flow of air to maintain the required thermal comfort conditions and ventilation rates.

2. The strategy is capable of providing at least two levels of user-control on the supply of fresh air to the *occupied space* with higher rates of ventilation achievable to remove short-term odours and/or prevent summertime overheating.

    This would typically be demonstrated by providing a large enough area of manually opening windows or powered window actuators. Any opening mechanisms must be easily accessible and provide adequate user-control over air flow rates to avoid draughts.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 7 – Potential for natural ventilation

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	Where the existing building falls within the scope of the assessment, then the requirements extend to the existing building. If only the new extension is being assessed then the requirements apply to the areas of the new building only.
Mechanically ventilated/cooled buildings	The aim of this BREEAM issue is to ensure that a building is capable of providing fresh air using a natural ventilation strategy. As a result, buildings that employ a mechanically ventilated/cooled strategy are still able to achieve the credit, provided they can demonstrate compliance with the above requirements (for future adaptability).
Openable window area	The *openable window area* is defined as the geometric free ventilation area created when a ventilation opening, e.g. window, is open to its normal operational fully designed extent (i.e. this excludes open areas created when reversible windows are opened for cleaning etc). It is not the glazed area of a façade or the glazed area of the part of the window that is openable (unless it opens fully).

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 7 – Potential for natural ventilation

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Excluded areas	Rooms or departments where control of ventilation is required for prevention of cross infection and/or controlled environmental conditions can be excluded from the definition of *occupied spaces*, including: • operating theatres • laser surgery unit • operative imaging unit • intensive treatment unit • infectious diseases isolation unit • wards housing immuno-compromised patients • manufacturing pharmacy • specialised imaging, X-ray and scanning unit • pathology containment laboratories • mortuary and dissection suite • research laboratories and associated animal houses; • sterilising and disinfecting unit (SDU) • emerging treatment technologies including gene therapy and stem cell units. Areas immediately adjacent to the above are excluded if it can be demonstrated that reverse air flow would be likely with natural ventilation. Other excluded areas are: • Swimming/hydrotherapy pools • Corridors • Stairwells • Store rooms • Plant rooms • Catering and small staff kitchens • Toilets • Any other areas which require mechanical ventilation to satisfy building regulations or HTMs.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 7 – Potential for natural ventilation

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1-2	Design plans and elevations, specification or calculations confirming: • Ventilation strategy in each *occupied space* • The depth of the room • Gross internal floor area of each *occupied space* • The type of window/ventilator and total *openable area* * • The location of openings • The type and degree of user-control. **AND** (where relevant) A copy of the results from the appropriate software modelling tool demonstrating compliance. *Manufacturers'/suppliers' literature may also be used as evidence.	Assessor's site inspection report and photographic evidence confirming: • The ventilation openings and controls are installed in accordance with compliant design stage evidence. * A formal letter from the design team or main contractor confirming: • No changes have occurred since design stage. Where changes have occurred since design stage, 'as-built' drawings, specification and calculations (as outlined under design stage evidence) that re-confirms compliance. * A random spot check of a selection of *occupied spaces* is sufficient. The assessor is not required to check each opening in all spaces/rooms.

Additional information

Relevant definitions

Occupied space: refer to BREEAM credit Hea 1.

In healthcare buildings some openings in public and patient areas need to be provided with restricted opening areas of not more than 100mm (HTM 55, Windows). This is due to health and safety reasons, especially where windows are within reach of the elderly, mentally ill or children. However, it is felt that good design can overcome these restrictions and provide compliant natural ventilation solutions, even in safety-sensitive areas.

References

1. The Building Regulations 2000 Approved Document F "*Means of Ventilation*", ODPM, 2005.

2. AM10 "*Natural Ventilation in Non Domestic Buildings*", CIBSE, 2005.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 7 – Potential for natural ventilation

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

3. Good Practice Guide 290 "*Ventilation and cooling option appraisal, a clients' guide*", The Carbon Trust.

4. Health Technical Memorandum 03-01 "*Specialised ventilation for healthcare premises*", Department of Health, 2007.

5. SHTM 2025 "*Ventilation in Healthcare Premises*", Health Facilities Scotland, 2006.

6. Scottish Technical Handbooks: "*Non-Domestic – Section 3: Environments*", Scottish Building Standards, 2007.

7. Health Technical Memorandum 55 "*Building Components - Windows*", NHS Estates, 1998.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 8 – Indoor air quality

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To reduce the risk to health associated with poor indoor air quality.

Credit criteria

Credits	
1	Where air intakes serving occupied areas avoid major sources of external pollution and recirculation of exhaust air.

Compliance requirements

The following demonstrates compliance:

1. **Air-conditioned and mixed-mode buildings**: Where the building's air intakes and exhausts are over 10m apart to minimise recirculation **AND** intakes are over 20m from *sources of external pollution*.

2. **Naturally-ventilated buildings**: Where openable windows/ventilators are over 10m from *sources of external pollution*.

3. In addition to the specific BREEAM requirements above, the building has been designed to provide fresh air rates to dilute pollutants in accordance with the following good practice:
    a. In general office type areas fresh air is provided in accordance with the top of the range recommended in the British Council for Offices *"Guide to Best Practice in the Specification of Offices"* i.e. 12 litres per second per person.
    b. All clinical areas with controlled environmental conditions comply with HTM 03-01 "*Specialised ventilation for healthcare premises"*.

4. Areas of the building subject to large and unpredictable or variable occupancy patterns have CO_2 or air quality sensors specified and:
    a. In mechanically ventilated spaces, the sensor(s) are linked to the mechanical ventilation system and provide demand-controlled ventilation to the space.
    b. In naturally ventilated spaces, the sensors either have the ability to alert the building owner/manager when CO_2 levels exceed the recommended set point, or are linked to controls with the ability to adjust the quantity of fresh air, i.e. automatic opening windows/roof vents.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 8 – Indoor air quality

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.
Measuring the distance	The distance requirement does not necessarily mean the plan distance, but the three dimensional distance around and over objects; e.g. on plan the air intakes may be less than 20m from a source of external pollution, but the intake may be on the roof of a 10 storey building and therefore over 20m from the source of pollution.
Sources of external pollution	This includes the following: • Highways and the main access roads on the assessed site. • Car parks and delivery/vehicle waiting bays • Other building exhausts, including from building services plant industrial/agricultural processes
Excluded sources	Service and access roads with restricted and infrequent access (for example roads used only for waste collection) are unlikely to represent a significant source of external pollution. These roads can therefore be excluded from the requirements of this credit. This does not include vehicle pick-up/drop-off or waiting bays.
Filters	It must be noted that filters fitted on the air supply are not considered by BREEAM to provide adequate protection from sources of external pollution. As such the distance requirements cannot be relaxed where filters are specified.
Fresh air requirements for other areas/spaces	Fresh air requirements are not specified for other areas of the building (i.e. those not listed above) as the provision of fresh air is adequately covered in Approved Document Part F '*Ventilation*' (and the standards referenced there in).
Areas with a large and unpredictable occupancy	The following are examples of these types of space: • Auditoria • Gyms • Retail stores/malls • Cinemas • Waiting rooms Where the assessed building does not have any areas deemed to be large with an unpredictable pattern of occupancy, the fourth BREEAM requirement does not comply.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 8 – Indoor air quality

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1&2	A marked-up proposed site plan highlighting: • Locations of intakes, extracts, openable windows, ventilators • Any existing or proposed sources of external pollution.	Assessor's building/site inspection and as built drawings confirming: • Locations of intakes, extracts, openable windows, ventilators • Proximity of any sources of external pollution to the above.
3	Design team calculations and/or performance specification requirements confirming: • The fresh air rate set for each space • That the fresh air rate can be met using the chosen strategy • The relevant standard(s) to which the design is in accordance with.	For a naturally ventilated building, a formal letter of declaration from the design team or main contractor confirming the building has been built in accordance with a design compliant with the BREEAM requirements. For a mechanically ventilated building, the commissioning manager's performance testing report confirming: • The required fresh air rates are achieved.
4	A copy of the design plans for the internal areas of the building. A copy of the relevant clause(s) of the specification confirming: • Air quality monitoring sensors • How these boost ventilation when set points are triggered.	Assessor's building/site inspection and as built drawings confirming: • Installation of air quality sensors. • The sensors boost ventilation when set points are triggered

Additional information

Relevant definitions

Occupied space: Refer to BREEAM credit Hea 1.

Clinical areas: Refer to BREEAM credit Hea 1.

References

1. CIBSE TM 21 "Minimising pollution at air intakes", 1999.

2. Guide B - "*Heating, Ventilating, Air Conditioning and Refrigeration*", CIBSE, 2005.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 8 – Indoor air quality

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

3. Guide A "*Environmental Design*", CIBSE, 1999.

4. BCO Guide 2005 "*Best Practice in the Specification of Offices*", BCO, 2005.

5. Health Technical Memorandum 03-01 "*Specialised ventilation for healthcare premises*", Department of Health, 2007.

6. Health Technical Memorandum 55 "*Building Components - Windows*". NHS Estates, 1998.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 9 – Volatile Organic Compounds

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To recognise and encourage a healthy internal environment through the specification of internal finishes and fittings with low emissions of volatile organic compounds (VOCs).

Credit criteria

Credits	
1	Where evidence provided demonstrates that the emissions of VOCs and other substances from key internal finishes and fittings comply with best practice levels.

Compliance requirements

The following demonstrates compliance:

1. The following products (where specified) have been tested against and meet the relevant standards outlined in table 1.0 (below) for Volatile Organic Compound (VOC) emissions:

Table 1.0: VOC requirements by product type

Product	European Standard	Emission level required
Wood Panels • Particleboard, • Fibreboard including MDF, • OSB, • Cement-bonded particleboard • Plywood • Solid wood panel and acoustic board	BS EN 13986:2002	Formaldehyde E1[1] Verify that regulated wood preservatives are absent and of the minimum content.
Timber Structures • Glued laminated timber	BS EN 14080:2005	Formaldehyde E1[1]
Wood flooring • e.g. parquet flooring	BS EN 14342:2005	Formaldehyde E1[1] Verify that regulated wood preservatives are absent and of the minimum content.
Resilient, textile and laminated Floor coverings • Vinyl/linoleum • Cork and rubber • Carpet • Laminated wood flooring	BS EN 14041:2004	Formaldehyde E1[1] Verify that regulated preservatives are absent and of the minimum content.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 9 – Volatile Organic Compounds

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Suspended ceiling tiles	BS EN 13964:2004	Formaldehyde E1[1] No asbestos.
Flooring adhesives	BS EN 13999-1:2007	Verify that carcinogenic or sensitising volatile substances are absent.[2-4]
Wall-coverings • Finished wallpapers • Wall vinyls and plastic wall-coverings • Wallpapers for subsequent decoration. • Heavy duty wall-coverings • Textile wall-coverings	BS EN 233:1999 BS EN 234:1989 BS EN 259:2001 BS EN 266:1992	Formaldehyde[5] and Vinyl chloride monomer (VCM)[5] release should be low and within the BS EN standard for the material. Verify that the migration of heavy metals[5] and other toxic substances are within the BS EN standard for the material.
Adhesive for hanging flexible wall-coverings	BS 3046:1981	No harmful substances and preservatives used should be of minimum toxicity.
Decorative paints and varnishes	BS EN 13300:2001 referred to the requirements of Decorative Paint Directive 2004/42/CE	VOC (organic solvent) content[6], requirement for Phase 2. Fungal and algal resistant.
Testing requirement: 1. BS EN 717-1:2004 2. BS EN 13999-2:2007 - Volatile Organic Compounds (VOCs) 3. BS EN 13999-3:2007 - Volatile aldehydes 4. BS EN 13999-4:2007 - Volatile diisocyanates 5. BS EN 12149:1997 6. BS EN ISO 11890-2:2006		

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.
Furnishings	The scope of this BREEAM issue does not extend to furnishings e.g. desks/shelving, it focuses on the key internal finishes and fittings integral to the building.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 9 – Volatile Organic Compounds

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1	A copy of the relevant specification clause confirming: • The VOC content of the relevant specified product types will comply with the standards specified above.	For each relevant product, a formal letter from or copies of the manufacturer's literature confirming: • The standard(s) against which the product is tested • The VOC emissions achieved • The VOC emissions meet the required level.

Additional information

Relevant definitions
None.

Volatile Organic Compounds
VOCs are emitted by a wide array of products numbering in the thousands. Examples include: paints and lacquers, paint strippers, cleaning supplies, pesticides, building materials and furnishings, glues and adhesives, Urea-formaldehyde foam insulation (UFFI), pressed wood products (hardwood plywood wall panelling, particleboard, fibreboard) and furniture made with these pressed wood products.

'No' or 'low' VOC paints are available from most standard mainstream paint manufacturers. There 'eco-friendly' paints are made from organic plant sources and also powdered milk-based products. The emissions of VOCs from paints and varnishes are regulated by the Directive 2004/42/CE, implemented in the UK by the Volatile Organic Compounds in Paints, Varnishes and Vehicle Refinishing Products Regulation 2005. Products containing high organic solvent content should also be avoided (EU VOC Solvent Directive 1999/13/EC).

Wood products that contain phenol-formaldehyde (PF) generally emit formaldehyde at considerably lower rates than those containing urea-formaldehyde (UF). Although formaldehyde is present in both types of resins, pressed woods that contain PF would be preferable to those containing UF resin.

Exposure risk assessment of any possible release of chemicals from manufactured products and their possible impact on health and the environment generally, is an important requirement of European regulations. The possible impact of a building product on indoor air quality is included in the European Construction Products Directive, 89/106/EEC. The amended Directive, 93/68/EEC provided the requirements for CE Marking of products.

Products to be fitted in buildings should not contain any substances regulated by the Dangerous Substances Directive 2004/42/CE, which could cause harm to people by inhalation or contact. Materials containing heavy metals (e.g. antimony, barium, cadmium, lead and mercury) and other toxic elements (e.g. arsenic, chromium and selenium) or regulated biocides (e.g. pentachlorophenol) should be avoided.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 9 – Volatile Organic Compounds

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Various labelling schemes identify products that have been tested and shown to be low emitting and these have been summarised in BRE Digest 464 [1].

Dangerous substances are defined in the Dangerous Substances Directive (67/548/EEC)

References

1. BRE Digest 464 VOC Emissions from Building Products - Part 1: "*Sources, testing and emission data*", Chuck Yu, Derrick Crump, CRC Ltd, 2002
2. BRE Digest 464 VOC Emissions from Building Products - Part 2: "*Control, evaluation and labelling schemes*", Chuck Yu, Derrick Crump, CRC Ltd, 2002.
3. BS EN 717-1:2004 "*Wood-based panels Determination of formaldehyde release. Formaldehyde emission by the chamber method*".
4. BS EN 13986:2002 "*Wood-based panels for use in construction – Characteristics, evaluation of conformity and marking".*
5. BS EN 14080:2005 "*Timber structures – Glued laminated timber – Requirements*".
6. BS EN 14342:2005 "*Wood flooring – Characteristics, evaluation of conformity and marking*".
7. BS EN 14041:2004 "*Resilient, textile and laminate floor coverings. Essential characteristics*".
8. BS EN 13964:2004 "*Suspended ceilings. Requirements and test methods*".
9. BS EN 13999-1:2007 "*Adhesives – Short term method for measuring the emission properties of low-solvent or solvent-free adhesives after application – Part 1: General procedures*".
10. BS EN 13999-2:2007. Part 2: "*Determination of volatile organic compounds*".
11. BS EN 13999-3:2007. Part 3: "*Determination of volatile aldehydes*".
12. BS EN 13999-4:2007. Part 4: "*Determination of volatile diisocyanates*".
13. BS EN 233:1999. "*Wallcoverings in roll form – Specification for finished wallpapers, wall vinyls and plastics wallcoverings*".
14. BS EN 234: "*Specification for wallcoverings for subsequent decoration*".
15. BS EN 259-1:2001 "*Wallcoverings in roll form – Heavy duty wallcoverings – Part 1: Specifications*".
16. BS EN 266:1992 "Specification for Textile wallcoverings".
17. BS EN 12149:1997 "Wallcoverings in roll form – Determination of migration of heavy metals and certain other elements, of vinyl chloride monomer and of formaldehyde release".
18. BS 3046:1981 "Specification for Adhesives for hanging flexible wallcoverings".
19. BS EN 13300:2001 "Paints and varnishes – water-borne coating materials and coating systems for interior walls and ceilings – Classification".
20. Directive 2004/42/CE of the European Parliament and of the Council of 21 April 2004 on the limitation of emission of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and vehicle refinishing products and amending Directive 1999/13/EC. Official Journal of the European Union L.143/87, 30.4.2004.
21. Statutory Instrument 2005 No. 2773. "*The Volatile Organic Compounds in Paints, Varnishes and Vehicle Refinishing Products Regulations 2005*". ISBN 0 11 073431 9.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 10 – Thermal comfort

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To ensure, with the use of design tools, that appropriate thermal comfort levels are achieved.

Credit criteria

Credits	
1	Where evidence provided demonstrates that thermal comfort levels in *occupied spaces* of the building are assessed at the design stage to evaluate appropriate servicing options, ensuring appropriate thermal comfort levels are achieved.

Compliance requirements

The following demonstrates compliance:

1. Thermal modelling has been carried out using software selected and applied in accordance with CIBSE AM11 "*Building Energy and Environmental Modelling*" [1].

2. The modelling demonstrates that the building design and services strategy can deliver thermal comfort levels in *occupied spaces* in accordance with the requirements set out in HTM 03-01, Appendix 1. In particular, internal summer temperatures in patient areas do not exceed 28°C dry bulb for more than 50 hours per year as defined in HTM 03-01.

3. The software used to carry out the simulation at the detailed design stage must provide *full dynamic thermal analysis*. For smaller and more basic building designs an alternative less complex means of analysis may be appropriate (such methodologies must still be selected and applied in accordance with CIBSE AM11).

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	Where the existing building falls within the scope of the assessment, then the requirements extend to all *occupied spaces* of the new and existing building. If only the new extension is being assessed then the requirements apply to the occupied areas of the new building.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 10 – Thermal comfort

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1&3	A copy of the relevant specification clause confirming: • The requirements for thermal comfort analysis. **OR** Correspondence (e.g. letter, email or meeting minutes) from the design team confirming: • The name of the thermal comfort modelling software used. • The software has been selected and applied in accordance with CIBSE AM11.	Formal written confirmation from the design team confirming: • No changes have occurred since design stage thermal comfort assessment was carried out, therefore design stage evidence demonstrates compliance at the post construction stage. Where changes have occurred, an updated copy of the results from the modelling demonstrating the internal temperatures in compliance with the relevant standards.
2	A copy of the results from the modelling demonstrating the internal temperatures in compliance with the relevant standards.	

Additional information

Relevant definitions

Occupied space: For the purpose of this BREEAM credit an occupied space is a room or space within the assessed building that is likely to be occupied for 30 minutes or more by a building user. The definition excludes the following:

a. Atria/concourses
b. Entrance halls/reception areas
c. Ancillary space e.g. circulation areas, storerooms and plantrooms

Thermal Dynamic Analysis: Thermal comfort analysis tools can be subdivided into a number of methods of increasing complexity. The most complex of these and the one that provides greatest confidence in results is the full dynamic model. This type of model enables annual heating/cooling loads, overheating risks and control strategies to be assessed [1].

Patient areas: refer to BREEAM credit Hea 1.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 10 – Thermal comfort

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

References

1. CIBSE Applications Manual AM11 "*Building energy and environmental modelling*", CIBSE, 1998.
2. CIBSE Guide A "*Environmental Design*", 7th Edition, Issue 2, CIBSE, 2007.
3. BRE's Environmental Design Guide for Naturally Ventilated and Daylit Offices. Report 345.
4. CIBSE Guide J "*Weather, solar and illuminance data*", CIBSE, 2002.
5. HTM 07-02 "*EnCO_2de Making energy work in Healthcare*", Department of Health, 2005.
6. HTM 03-01 "*Specialised ventilation for healthcare premises*", Department of Health, 2007.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 11 – Thermal zoning

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To recognise and encourage the provision of user controls which allow independent adjustment of heating/cooling systems within the building.

Credit criteria

Credits	
1	Where evidence provided demonstrates that local occupant control is available for temperature adjustment in each *occupied space* to reflect differing user demands.

Compliance requirements

The following demonstrates compliance:

1. The heating/cooling system is designed to allow occupant control of zoned areas within all *occupied spaces* in the building.

2. The zoning allows separate occupant control (within the *occupied space*) of each perimeter area (i.e. within 7m of each external wall) and the central zone (i.e. over 7m from the external walls).

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	Where the existing building falls within the scope of the assessment, then the requirements extend to the *occupied spaces* of the existing building. If only the new extension is being assessed then the requirements apply to the relevant spaces of the new building.
Long lag systems	Where *long-lag systems* are specified, the requirements can be met where they are designed to service the base load only and a responsive secondary heating system and controls are provided, zoned in compliance with the above requirements.
Distance requirement	The distance requirement is approximate; however, the assessor must use sound judgement considering fully the aims of this credit, before accepting solutions that do not strictly meet the above requirements.

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Health & Wellbeing
Hea 11 – Thermal zoning

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Controls for wet heating systems	Adequate TRVs (thermostatic radiator valves) placed in zones around the building perimeter, and the provision of local occupant controls to internal areas, such as fan coil units, would satisfy the requirements for this credit.
Occupant regulated thermal controls	The provision of locally occupant regulated thermal controls placed around the building perimeter and to internal areas would satisfy the criteria for this credit. Examples of compliant heating control measures can be found in Technology Guide CTG002 Heating control.
Occupant-controlled temperature detectors	For more complex servicing strategies, adequate provision of occupant-controlled temperature detectors that enable air-conditioned spaces to be adjusted within pre-set parameters satisfy the requirements for this credit.
Exercise areas	Exercise areas e.g. physiotherapy and hydrotherapy, can be considered to be single zoned spaces for the purpose of assessing this BREEAM credit.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1&2	A copy of the relevant clauses of specification and/or marked-up M&E drawings confirming: • Scope of the heating/cooling system • The type of user controls for the above systems • The scope of the controls i.e. control zone.	Assessor's building/site inspection and photographic evidence confirming: • Installation of user controls in each *occupied space.** *For large buildings it would not be expected that the assessor check every individual *occupied space*, but a random selection of spaces that confirm compliance.

Additional information

Relevant definitions

Long-lag systems: These low temperature systems use the thermal mass of the building to provide a consistent supply of heat to the space during the occupied period. As the mass of the building is used to regulate and supply the heat, the temperature in the space lags behind any change required by the occupants via the systems controls. An example of a long-lag system is underfloor heating.

Occupied space: For the purpose of this BREEAM credit an occupied space is a room or space within the assessed building that is likely to be occupied for 30 minutes or more by a building user. The definition excludes areas where building users would not expect, or be expected, to control temperature in the space, including the following:

a. Atria/association space

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Health & Wellbeing
Hea 11 – Thermal zoning

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

b. Entrance halls/reception areas
c. Circulation areas
d. Storerooms

References

1. CTG002 Technology Guide "*Heating control: maximising comfort, minimising energy consumption*", The Carbon Trust, 2006.

2. HTM 07-0: "*EnCO_2de Making energy work in Healthcare*", Department of Health, 2005.

3. HTM 03-01 "*Specialised ventilation for healthcare premises*", Department of Health, 2007.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 12 – Microbial contamination

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	1	1	1	1	1

Credit aim

To ensure the building services are designed to reduce the risk of legionellosis in operation.

Credit criteria

Credits	
1	Where evidence provided demonstrates that the risk of waterborne and airborne legionella contamination has been minimised.

Compliance requirements

The following demonstrates compliance:

1. All *water systems* in the building are designed in compliance with the measures outlined in the following standards:
    a. HTM 04-01 "*The control of Legionella, hygiene, "safe" hot water, cold water and drinking water systems*"
    b. Health and Safety Executive's "*Legionnaires' disease - The control of legionella bacteria in water systems*". Approved Code of Practice and guidance, 2008.

2. Where no humidification is specified or only steam humidification is provided.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	If the extended and existing building share the same water systems, then these systems must be assessed against the requirements regardless of whether the existing building forms a part of the assessment or not. If the extension is served by independent systems, only these need be assessed against the compliance requirements. If it is the intention that building users of the extended building will use water systems in the existing building, then it must be confirmed that the existing systems comply with the requirements.

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Health & Wellbeing
Hea 12 – Microbial contamination

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	1	1	1	1	1

CIBSE TM13	Design teams may refer to CIBSE TM13 "*Minimising the risk of Legionnaires disease*", 2002 in demonstrating that the design meets the requirements of ACoP.
Assessor's responsibility	The BREEAM assessor **is not** required to confirm that the design is compliant with the relevant standard; this is the responsibility of the design team. The assessor is simply required to record, for the purposes of validation, whether or not the design team confirms compliance.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1&2	A copy of the relevant specification clause(s) confirming: • All types of water system in the building and on the assessed site. • The standards to which all water systems in the building will be designed. Where design responsibility is to be passed on to the contractor/installer, a copy of the relevant specification clause(s) stating: • The requirements on the contractor/installer with regards to minimising the risk of Legionnaires disease from the specified water systems.	For all water systems in the building, a formal letter of declaration from the design team, main contractor or installer of the relevant systems confirming: • The design and installed systems comply with the HSE's ACoP. • If relevant, any existing water systems comply with the HSE's ACoP.

Additional information

Relevant definitions

Water systems: For the purpose of this credit, this refers to:

- Cooling towers
- Evaporative condenser
- Domestic hot and cold water systems
- Other plant and systems containing water which is likely to exceed 20°C and which may release a spray or aerosol during operation or when being maintained, for example:
    - humidifiers and air washers
    - spa baths and pools
    - car/bus washes
    - wet scrubbers
    - Indoor fountains and water features.

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Health & Wellbeing
Hea 12 – Microbial contamination

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	1	1	1	1	1

Legionnaires disease: The HSE describes Legionnaires disease as a type of pneumonia caused by the bacterium Legionella pneumophilia. People catch Legionnaires' disease by inhaling small droplets of water suspended in the air, which contain the bacteria.

Humidification Units
Humidification options fall into two broad groups; the first group relies on a heated air stream evaporating water vapour either from a pond or stream of water. This includes so-called 'trickle-down' systems. These are dependent on sterilisation technologies such as UV, ultrasonic etc, to ensure that the water vapour is not contaminated. Whilst these systems are effective when working properly, any partial failure will allow untreated water into a warmed air stream. Where this occurs, the health-related consequences are likely to be significant.

The second group relies on failsafe systems that minimise risk if the plant fails. The only option in this group is steam humidification. This process sterilises the water vapour and ensures that untreated water cannot enter the air stream when no steam is being produced.

References

1. "*Legionnaires' disease - The control of legionella bacteria in water systems*". Approved Code of Practice and guidance, 3rd ed. HSE, 2000.
2. AG 10/94.1 "Efficient humidification in buildings", KM Bennett, BSRIA.
3. TM13 "*Minimising the risk of Legionnaires disease*", CIBSE, 2002.
4. Health and Safety Executive: Legionnaires disease: http://www.hse.gov.uk/legionnaires/
5. Health technical Memorandum 04-01 "*The control of Legionella, hygiene, "safe" hot water, cold water and drinking water systems*", Department of Health, 2006.
6. SHTM 20-40 "The *Control of Legionella in Healthcare Premises: A Cod of Practice*", Health Facilities Scotland, 1999.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 13 – Acoustic performance

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To ensure the acoustic performance of the building meets the appropriate standards for its purpose.

Credit criteria

Up to two credits are awarded as follows:

Credits	
1	Where evidence provided demonstrates that indoor ambient noise levels and airborne and impact sound insulation levels achieve the recommended performance benchmarks outlined HTM 08-01 Part A.
1	Where evidence provided demonstrates that reverberation times are compliant with the recommended performance benchmarks outlined HTM 08-01 Part A.

Compliance requirements

The following demonstrates compliance:

First credit

1. The indoor ambient noise levels and airborne and impact sound insulation levels achieve the recommended performance benchmarks outlined in Health Technical Memorandum 08-01 Part A: Design and Construction Considerations.

2. Pre-completion acoustic testing is carried out by a *suitably qualified acoustician* in accordance with HTM 08-01 Part B: Validation and Verification to ensure that all relevant spaces (as built) achieve the performance standards required, and any required remedial works in spaces that do not meet the standards are completed prior to handover and occupation.

Second credit

3. The reverberation times are compliant with the recommended performance benchmarks outlined Health Technical Memorandum 08-01 Part A: Design and Construction Considerations.

4. Pre-completion acoustic testing is carried out by a *suitably qualified acoustician* in accordance with HTM 08-01 Part B: Validation and Verification to ensure that all relevant spaces (as built) achieve the performance standards required, and any required remedial works in spaces that do not meet the standards are completed prior to handover and occupation.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 13 – Acoustic performance

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to assessments of extensions to existing buildings.
Awarding the second credit	The first credit does not have to be achieved to award the second credit.
Unoccupied spaces	Where the term '*unoccupied space'* is referenced in this BREEAM issue, it refers to the nature of the space for the purpose of carrying acoustic calculations or measurements i.e. such measurements must be carried when the space is unoccupied and therefore devoid of sources of noise. Care should be taken to avoid confusing this term with the definition "*occupied space*" (see relevant definitions) as they have two different meanings within the context of this BREEAM issue.
Measurement procedures	The additional information section outlines the requirements for carrying out measurements and calculations to demonstrate compliance with this BREEAM issue. The appointed acoustician must confirm that the acoustic performance has been measured/calculated in accordance with these procedures. Where the acoustician has felt it necessary to deviate from these procedures, they must give justifiable reasons why they have done so.
Privacy	Where ranges of noise levels are specified where privacy is not deemed by the final occupier to be an issue, it is acceptable to disregard the lower limit of the range and consider the noise levels to be lower or equal to the upper limit of the range.
Reverberation times	Where the reverberation times stated above or in the referenced documents are not appropriate for the type of space/building assessed, the acoustician must confirm why this is the case. In addition the acoustician must set alternative appropriate reverberation times and provide these to demonstrate compliance.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 13 – Acoustic performance

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1-3	A copy of the design plan for each level of the building with each room/area clearly labelled. A copy of the specification clause confirming: • The building will comply with the performance standards required by HTM 08-01. **OR** A copy of the acoustician's calculations confirming: • The specific performances standards achieved for each room/area • The standards comply with the levels required in HTM 08-01.	Copies of acoustic field test report/results confirming: • The required performance levels have been achieved for each room/area of the completed building. • Where relevant, any remedial work/actions required to meet the performance standards. Evidence, such as a formal letter from the acoustician or their test report confirming that they meet BREEAM's definition of a *suitably qualified acoustician*. A letter from the design team or main contractor confirming: Any and all required remedial works have been carried out in accordance with the acoustician's recommendations.
2-4	A copy of the specification clause or a formal letter from the project team confirming: • A programme of pre-completion acoustic testing by a *suitably qualified acoustician* will be commissioned. • Where rooms/areas do not comply with the required levels, appropriate remedial works will be actioned and completed.	As outlined above.

Additional information

Relevant definitions

Suitably qualified acoustician: Those organisations or individuals having UKAS accreditation or accredited by a European equivalent of UKAS. The definition includes organisations or individuals registered to schemes that are UKAS accredited, or equivalent, to ensure consistency and technical competence in sound testing. At the time of writing the Association of Noise Consultants (ANC) Registration Scheme is in the process of obtaining

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 13 – Acoustic performance

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

UKAS accreditation and can be deemed to comply with this requirement until advised otherwise.

Single occupancy offices: cellular office space designed to accommodate one or two desk spaces/workstations (typically no greater than $10m^2$).

Multiple occupancy offices: Office space that is not cellular in nature i.e. it is open-planned, and designed to accommodate more than two desk spaces/workstations.

Occupied space: For the purpose of this BREEAM credit an occupied space is a room or space within the assessed building that is likely to be occupied for 30 minutes or more by a building user (see also description of '*unoccupied space'* in the compliance notes table above).

Measurement/calculation procedures
The following procedures must be followed by the acoustician when measuring or calculating the levels required to demonstrate compliance with this BREEAM issue (see also compliance note above on measurement procedures):

- Noise from both internal sources (e.g. mechanical ventilation systems, plant noise) and external sources (e.g. traffic noise transmitted via the building façade) should be included, and, where windows are openable as part of the ventilation strategy, these should be assumed to be open for the purposes of calculations and open for measurements.
- Noise from occupants and office equipment (e.g. computers) should not be included in the measurements.
- Measurements should be made in at least four rooms in which noise levels can be expected to be greatest either because they are on the noisiest façade or because they are on a naturally ventilated façade.
- Where different ventilation strategies are used, measurements should be conducted in rooms utilising each strategy. Otherwise, measurements should be made in rooms on the noisiest façade.
- T in $L_{Aeq,T}$ is taken as the duration of the normal working day (typically 8 hours between 09.00 and 17.00).
- Measurements need not be made over a period of 8 hours if a shorter measurement period can be used. In this case, measurements should be made when external noise levels are representative of normal conditions throughout the day.
- Measurement periods shorter than 5 minutes should not be used.
- Measurements should be taken in a minimum of 3 locations in rooms at a height of 1.2 m above the floor level and at least 1 m away from any surface.

NR curves
Noise assessments based on NR curves are often used by building services consultants to predict internal noise levels due to mechanical ventilation systems. However, the BREEAM requirement uses the indoor ambient noise level, $L_{Aeq,T}$ which includes external noise transmitted via the façade as well as internal noise such as that from mechanical ventilation systems. In the absence of strong low frequency noise, $L_{Aeq,T}$ can be estimated from the NR rating using the following formula: $L_{Aeq,T} \approx$ NR + 6 dB. Therefore, if the NR rating is known, but not the sound pressure levels in the individual frequency bands, an estimate for the indoor

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Hea 13 – Acoustic performance

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

ambient noise level $L_{Aeq,T}$ can still be determined from the NR rating for the building services noise. The $L_{Aeq,T}$ for the external noise transmitted via the façade must then be combined with the $L_{Aeq,T}$ for the building services.

References

1. BS8233 "*Sound insulation and noise reduction for buildings - code of practice*", BSI, 1999.

2. BS EN ISO 140-4:1998 "*Acoustics – Measurement of sound insulation in buildings and of building elements. Part 4. Field measurements of airborne sound insulation between rooms*", BSI, 1998.

3. BS EN ISO 717-1 "*Acoustics – Rating of sound insulation in buildings and of building elements. Part 1. Airborne sound insulation*", BSI, 1997.

4. BS EN ISO 717-2 "*Acoustics - Rating of sound insulation in buildings and of building elements. Part 2. Impact sound insulation*", BSI, 1997.

5. BS EN ISO 140-7 Acoustics – "*Measurement of sound insulation in buildings and of building elements. Part 7. Field measurements of impact sound insulation of floors*", BSI, 1998.

6. Building Regulations Approved Document E "*Resistance to the passage of sound*", ODPM, 2003.

7. Health Technical Memorandum 08-01 "*Acoustic Performance*", Department of Health, 2007.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 14 – Office space

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit not assessed under this scheme.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 15 – Outdoor Space

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To recognise and encourage the provision of external amenity space for building users.

Credit criteria

Credits	
1	Where evidence provided demonstrates the provision of an adequate outdoor amenity space accessible for use by the building's occupants.

Compliance requirements

The following demonstrates compliance:

1. There is an outside space that:
    a. Is of *adequate size*
    b. Is accessible via safe pedestrian routes to all potential users of the building, regardless of age, disability or gender (as per Approved Document Part M)
    c. Is either an outdoor landscaped area, balcony or terrace
    d. Provides the building users with an external area that is private and not susceptible to disturbance from sources of noise e.g. building services, car parks, delivery areas
    e. Provides appropriate seating and areas that allows building users to gather and socialise.
    f. In the case of buildings with a crèche/nursery and in mental health facilities, the outdoor space is secure (with supervised access only) and of adequate size to allow a reasonable proportion of the staff and patients to sit outside.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 15 – Outdoor Space

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Adequate size	Due to the site specific nature of this issue, BREEAM sets no requirement on the size (m^2) of the outdoor space. When assessing if the space is 'of adequate size' the BREEAM assessor must be satisfied that it provides enough amenity for the predicted number of building users during coffee/lunch breaks, or for other activities where such a space would be of use. Where there is an external space and, in the opinion of the assessor, it does not provide an appropriate amenity given the building type and number of users, the credit must be withheld.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1	A proposed site plan highlighting: • The design and layout of the outdoor amenity area. • The provision of seating • The accessibility of the space from the assessed building • Any potential sources of noise.	Assessor's building/site inspection report and photographic evidence confirming: • The provision of a compliant outdoor space.

Additional information

Relevant Definitions
None.

The Commission for Architecture and the Built Environment (CABE) website contains best practice guidance and information on initiatives associated with the design of the 'public space' and children's play areas (www.cabe.org.uk).

References

1. New Metric Handbook "*Planning and Design Data*", Architectural Press, 1999.

2. Scottish Technical Handbooks: "*Non-Domestic – Section 3: Environments*", Scottish Building Standards, 2007.

3. Scottish Technical Handbooks: "*Non-Domestic – Section 4: Safety*", Scottish Building Standards, 2007.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 16 – Drinking Water

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit not assessed under this scheme.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 17 – Specification of Laboratory Fume Cupboards

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit not assessed under this scheme.

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Health & Wellbeing
Hea 18 – Containment Level 2 & 3 Laboratory Areas

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit not assessed under this scheme.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 19 – Arts in Health

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To recognise and encourage the installation of artwork that enhances the healthcare environment for patients, staff and visitors.

Credit criteria

Credits	
1	Where evidence provided demonstrates that an art co-ordinator has been appointed or an art strategy and policy have been prepared for the development.

Compliance requirements

The following demonstrates compliance;

1. An art co-ordinator has been appointed for the specific project

   OR

2. An art policy and an art strategy have been prepared for the development at the feasibility stage i.e. RIBA stage B (or equivalent) and endorsed by the senior management level. The policy and strategy must address the following:
   a. Enhancing the healthcare environment
   b. Building relationships with the local community
   c. Building relationships with patients and their families
   d. Relieving patient and family anxiety by contributing to treatment or recovery areas, e.g. post-operative areas, paediatric units, etc.
   e. Greening the healthcare environment with inclusion of living plants (where appropriate)
   f. Training generating creative opportunities for staff.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 19 – Arts in Health

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Arts co-ordinator	It is not necessarily required that a full-time arts co-ordinator specific to the assessed project is appointed. The co-ordinator may work on several projects, or with several establishments run by the Trust which has commissioned the assessed building.
	The arts co-ordinator must: • Hold a relevant qualification in an arts or a related subject. • Have at least two years of relevant experience. Such experience should be related to the application of arts in a social context. Examples could be voluntary or paid work within healthcare or educational environments, or with ethnic minority, disabled, elderly or young communities.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1	Correspondence from the design team or Trust (e.g. letter, email, meeting minutes) confirming: • The name and qualifications of the appointed arts co-ordinator. **OR** A copy of the Trust arts policy and strategy.	The evidence required at this stage is no different to that required at the 'interim' design stage of assessment.

Additional information

Relevant definitions

Art: The Arts Council England defines 'Arts' as: "literature and writing, theatre and drama, dance, music, visual arts which include crafts, new media, architecture, design, moving image, and combined arts".

Arts in Health

The implementation of arts in health can have positive effects on patient recovery as well as on staff morale and wellbeing. The benefits include:

- Improving clinical and therapeutic outcomes
- Helping users to express, contain and transform distress and disturbance, creating a less stressful environment for patients, service users, staff and visitors
- Increasing the understanding between clinicians and the people for whom they care
- Developing and delivering more patient-focused services, and improving the experience for all.

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BREEAM : Healthcare : 2008
Health & Wellbeing
Hea 19 – Arts in Health

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

For these very reasons arts need to find a bigger place within health environments and should be planned from the very early stages of development.

Paintings in Hospitals
Paintings in Hospitals is a charitable organisation whose objective is to improve the environment of hospitals and other healthcare establishments by providing original works of art on loan. (www.paintingsinhospitals.org.uk)

References

1. "*A prospectus for arts and health*", Arts Council England, 2007.
2. "*Report of the Review of Arts and Health Working Group*", Department of Health, 2007.
3. "*The role of the physical environment in the hospital of the 21st century*". Ulrich, R & Zimring, C, The Centre for Health Design, 2007.
4. "*A study of the effects of visual and performing arts in healthcare*", Staricoff, R. Duncan, J and Wright, M. Chelsea and Westminster Hospital, 2004.
5. "*Improving the Patient Experience: The Arts of Good Health, A Practical Handbook*", NHS Estates, 2002.
6. "*Improving the Patient Experience: Using Visual Arts in Healthcare*", NHS Estates, 2002.

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Energy Section

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BREEAM : Healthcare : 2008
Energy
Ene 1 - Reduction of CO_2 emissions

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	6	10

Credit aim

To recognise and encourage buildings that are designed to minimise the CO_2 emissions associated with their operational energy consumption.

Credit criteria

Up to 15 credits are available:

Credits	
15	Where evidence provided demonstrates an improvement in the energy efficiency of the building's fabric and services and therefore achieves lower building operational related CO_2 emissions.

Compliance requirements

The following demonstrates compliance:

1. The number of credits achieved is determined by comparing the building's CO_2 index (EPC Rating), taken from the Energy Performance Certificate (EPC), with the table of benchmarks below:

BREEAM Credits	CO_2 Index (EPC Rating)	
	New Build	Refurbishment
1	63	100
2	53	87
3	47	74
4	45	61
5	43	50
6	40	47
7	37	44
8	31	41
9	28	36
10	25	31
11	23	28
12	20	25
13	18	22
14	10	18
15	0	15
Exemplar credit 1	<0	≤0
Exemplar credit 2	*True zero carbon building*	

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Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	6	10

2. The CO_2 index for the assessed building must be entered in to the relevant box of the *Ene 1 Reduction of CO_2 emissions* calculator.

3. The building has been modelled using a method compliant with the National Calculation Method (NCM) and an Energy Rating and certificate produced using *Approved software* by an *Accredited Energy Assessor*.

Historic Buildings only
In addition to the above an additional 2 credits may be awarded (up to a maximum of 15) for carrying out the following:

1. A specialist study has been undertaken by a heritage conservation specialist, who is a full Member of the Institute of Historic Building Conservation, to investigate the implications of improving building fabric performance whilst minimising the potential negative impacts on both the historic character of the building and the condition of the building fabric.

2. The report makes recommendations for potential improvements to the building fabric in accordance with the guidance given in English Heritage's "*Balancing the needs for energy conservation with those of building conservation: an Interim Guidance Note on the application of Part L*" and, as a minimum, covers the following issues:
    a. Each element of the following building elements (as a minimum) must be considered and recommendations for improvements made:
        i. Roof
        ii. External/Sheltered walls
        iii. Ground floor
        iv. Upper floors
        v. Windows and external doors
        vi. Junctions between building elements such as between roof and walls.
        vii. Junctions between different parts of the building such as between different ages or methods of construction.

    Where significant improvement cannot be made to an element then the report should state the reason, setting out in detail the conservation and/or building performance issues that have resulted in this recommendation.

    b. The potential for improvements in ventilation, air tightness and moisture control within the building, ensuring that these are considered in balance with that of the welfare of the historic building fabric. In general, tighter building fabric can be balanced with controlled ventilation improvements (passive and mechanical) and the benefits and disadvantages must be set out together with the recommendations.

3. The study must have been carried out at or prior to outline design proposals stage (equivalent to RIBA stage C or earlier).

4. The building design has implemented and accounted for the study's recommended improvements and, in particular, demonstrates:

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Ene 1 - Reduction of CO_2 emissions

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	6	10

- The design strategy chosen is that which has the greatest impact in terms of potential improvements in energy use, whilst minimising the detrimental impacts on the historic building fabric.
- That any improvements made to the thermal insulation of the building have been specified in accordance with the recommendations of '*Thermal Insulation: avoiding risks'* [2].

Exemplary level requirements

The following outlines the exemplary level requirements to achieve an *innovation credit* for this BREEAM issue:

1. One additional innovation credit can be awarded where evidence provided demonstrates the building is designed to be a *carbon neutral* building as defined by the NCM (i.e. in terms of building services energy demand), as follows:
   a. A new building achieves a CO_2 index **less than** 0 on the benchmark scale.
   b. A refurbished building achieves a CO_2 index **equal to or less than** 0 on the benchmark scale.

2. Two additional innovation credits can be awarded where evidence provided demonstrates the building is designed to be a *True zero carbon building* (in terms of building services and operational energy demand).

Compliance notes	
New Build	New buildings should compare their Energy Rating to the New Build benchmark scale.
Refurbishment	Existing buildings that have undergone or are undergoing major refurbishment should compare their Energy Rating to the Refurbishment benchmark scale. This separate scale aims to better recognise and encourage the energy-efficient refurbishment of existing buildings which results in a significant reduction in the energy demand for that building.
Extensions to existing buildings	Where an existing building is being extended and it has building services plant that will be common to both the new extension and existing building, the Energy Assessment and CO_2 Index must cover the entire building. This rule must be applied regardless of whether the existing building falls within the scope of assessment or the existing plant is being added to, removed or altered.
Part new-build extension part refurbishment	For assessments of buildings that are a mixture of new build and refurbishment a weighted benchmark scale is used. The area (m^2) for new build and area (m^2) for refurbishment must be entered in to the relevant box of the *E1 Reduction of CO_2 emissions* calculator. The calculator will then determine the number of credits achieved.

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Energy
Ene 1 - Reduction of CO_2 emissions

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	6	10

Renewable and low carbon Installations	Where included as part of the project and therefore assessed under this BREEAM issue, the installation of low or zero carbon technologies can be used to off-set the assessed building's CO_2 emissions. The LZC technology can be installed *on-site, near-site* where a *private wire arrangement* is in place (see relevant definitions) or *off-site* via *accredited external renewables (*see compliance note below).
Accredited external renewables	For the purpose of this BREEAM credit *accredited external renewables* are renewable energy schemes located off-site, but within the UK, which: • Are accredited renewables (as defined by the Energy Act 2004). These will be Renewable Energy Guarantee of Origin (REGO) certified • Create new installed generation capacity, designed to meet the loads of the building (i.e. not just units of carbon) • Are additional to capacity already required under the Renewables Obligation At the time of writing, BRE Global are not aware of a mechanism for accrediting off-site renewables and therefore any renewable energy schemes that meet the above definition; though some ESCOs may achieve these requirements.
Energy exported to the grid	Any electricity from an *onsite* LZC energy source that is exported to the grid may be included in the calculations as if it were used within the building.

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Energy
Ene 1 - Reduction of CO_2 emissions

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	6	10

EPC certificates, BREEAM & building use/tenancy arrangement	The legislative requirements for an Energy Performance Certificate vary according to building size, use, services and tenancy arrangement. In some instances an EPC will be required for the whole building, in others an EPC will be required for each individual unit or tenanted area within a building. The scope of a BREEAM assessment typically covers the whole building, regardless of whether that building consists of a number of units to be sub let. Where an EPC is required for each unit, for the purposes of determining the number of BREEAM credits, the CO_2 index is the total of the area-weighted average of the CO_2 index of each individual unit. Where the development contains conditioned common and/or landlord spaces, the area of these spaces, unless otherwise accounted for, should be divided and attributed amongst the separate units. The proportion of common area attributed to each unit must be equivalent to the ratio of each unit's area as a proportion of the total area of all units. All units, heating systems and common areas within the assessed building must be accounted for in the assessment of Ene 1. For further information on the EPC requirements, refer to guidance on the Communities and Local Government Website (see references section).
EPC in Scotland	The approach adopted in Scotland for determining an Energy Rating differs from that used in England, Wales and Northern Ireland. Scotland bases its EPC rating on actual CO_2 emissions, regardless of building type, whereas an EPC certificate for the other UK countries uses a CO_2 Index. Whilst both approaches have their merit, for the purpose of comparing BREEAM-assessed buildings on a 'level playing field' a decision has been taken to adopt one approach – the CO_2 Index. Using the *approved software*, buildings located in Scotland can easily determine their CO_2 Index by changing the '*Building Regulations & EPBD parameters'* in the '*Project details*' tab of the NCM-compliant approved software from '*EPC Scotland*' to '*EPC England'* or '*EPC Wales'* or '*EPC Northern Ireland'*.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1-3	A copy of the EPC output from the *approved software* for the assessed building at the design stage. The *accredited energy assessor's* name and accreditation number (this information will be on the EPC).	A copy of the final registered EPC from the *approved software* for the constructed building*. For buildings assessed in Scotland, a copy of the EPC Output from the *approved software* demonstrating the building's CO_2 Index.

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BREEAM : Healthcare : 2008
Energy
Ene 1 - Reduction of CO_2 emissions

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	6	10

		The *accredited energy assessor's* name and accreditation number. *The final rating must account for any changes to the specification during construction; and the measured air leakage rate, ductwork leakage and fan performances (as required by Building Regulations).
Historic buildings only		
1-3	A copy of the heritage conservation specialist's report. A letter from the specialist confirming the qualifications, experience and IHBC status.	The evidence required at this stage of assessment does not differ from that outlined at the design stage of assessment.
4	Marked-up drawings or a specification document demonstrating: • Implementation of the study's recommendations • Compliance with 'Thermal Insulation: avoiding risks' [2]. **OR** Where a formal letter from the design team confirming the above will be implemented.	'As built' drawings and specification demonstrating: • Implementation of the study's recommendations • Compliance with 'Thermal Insulation: avoiding risks' [2]. Assessor's building/site inspection and photographic evidence demonstrating: • Examples of the recommendations of the study having been manifested in the actual complete building (as highlighted by the design team during the building inspection).

Additional information

Relevant definitions

Accredited energy assessor: An individual trained and qualified to use *approved software* and produce EPC ratings for non-domestic buildings who are members of an accredited scheme. A register of non-domestic *accredited energy assessors* can be found here: https://www.ndepcregister.com/

For a full list of approved accreditation schemes for Non-dwelling Energy Assessment's visit www.communities.gov.uk

Approved Software: Software approved by Communities and Local Government to produce Energy Performance Certificates (EPC) for non-domestic buildings and check compliance with building regulations.

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BREEAM : Healthcare : 2008
Energy
Ene 1 - Reduction of CO_2 emissions

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	6	10

Carbon neutral building: Where net carbon dioxide emissions resulting from energy consumed in the operation of the space heating/cooling, hot-water systems, ventilation and internal lighting is zero or better.

The calculation of CO_2 emissions can take account of contributions from *on-site*, *near-site* and *accredited external* renewable/low carbon installations. Off-site renewables that are not accredited cannot be used to meet this definition.

CO_2 Index: The energy performance of a building (for England, Wales and N.I.) is shown on the EPC as a Carbon Dioxide (CO_2) based index. It is this index that is used to determine where the building falls on the A+ to G rating scale and the number of BREEAM credits that can be awarded.

Dynamic Simulation Model (DSM): A software tool that models energy inputs and outputs for different types of building over time. In certain situations, SBEM will not be sophisticated enough to provide an accurate assessment of a building's energy efficiency. In these cases Government-approved proprietary dynamic simulation models may be used. Communities and Local Government provide such approval.

Historic buildings - For the purpose of assessing this BREEAM credit, historic buildings are defined as:

a. Listed buildings
b. Existing buildings situated in conservation areas (where the existing building itself has conservation status and contributes to the status of the conservation area)
c. Existing buildings which are of architectural and historical interest and which are referred to as a material consideration in a local authority's development plan
d. Existing buildings of architectural and historic interest within national parks, areas of outstanding natural beauty, and world heritage sites.

Institute of Historic Building Conservation (IHBC): The Institute of Historic Building Conservation (IHBC) is the professional institute which represents conservation professionals in the public and private sectors in the United Kingdom and Ireland. The IHBC exists to establish the highest standards of conservation practice to support the effective protection and enhancement of the historic environment. Full Membership of the IHBC is open to all whose principal skill, expertise, training and employment is in providing specialist advice for the conservation of the historic environment. Full Members are normally expected to demonstrate skills and experience under all of the IHBC's eight Areas of Competence.

Energy Performance Certificate: A certificate that confirms the energy rating of the building from A to G, where A is the most efficient and G is the least efficient. The better the rating, the more energy-efficient the building is, and the lower the fuel bills are likely to be. The energy performance of the building is shown as a Carbon Dioxide (CO_2) based index. EPCs are generated using *approved software* by *accredited energy assessors*.

Non-Domestic Energy Performance Certificate Register: A register of *accredited energy assessors* and *Energy Performance Certificates*. Using the certificate reference number the validity of the EPC rating for a constructed building can be confirmed.

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Energy
Ene 1 - Reduction of CO_2 emissions

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	6	10

Near-site LZC: renewable energy generated near to the site that is provided for all or part of the community, including the assessed building, e.g. decentralised energy generation linked to a community heat network or renewable connected via private wire.

On-site LZC: renewable energy generated on the site of the assessed development.

Private wire arrangement: Where used in the context of BREEAM for low or zero carbon technology installations, a private wire arrangement is where any electricity generated on or in the vicinity of the site is fed directly to the building being assessed, by dedicated power supplies. If electricity is generated which is surplus to the instantaneous demand of the building this electricity may be fed back to the National Grid. The carbon benefit associated with any electricity fed into the grid in this manner can only be allocated against an individual installation or building. In cases where a building is supplied by a communal installation, no carbon benefit can be allocated to buildings which are not connected to the communal installation.

Simplified Building Energy Model (SBEM): SBEM is a computer program that provides an analysis of a building's energy consumption. The SBEM tool is designed to cover buildings that are not dwellings. It has been adopted by government as part of the UK national methodology for calculation of the energy performance of buildings. For more information visit: www.ncm.bre.co.uk/.

True zero carbon building: Where net carbon dioxide emissions resulting from energy consumed in the operation of the space heating/cooling, hot-water systems, ventilation, internal lighting AND process related energy consumption is zero or better.

The calculation of CO_2 emissions can take account of contributions from *on-site*, *near-site* and *accredited external* renewable/low carbon installations. Off-site renewables that are not accredited cannot be used to meet this definition.

References

1. "*Improving the energy efficiency of our buildings: A guide to energy performance certificates for the construction, sale and let of non-dwellings",* Communities and Local Government, 2008*.* www.communities.gov.uk/publications/planningandbuilding/guidancenondwellings

2. "*Thermal insulation: avoiding risks*", C Stirling, BRE Press, 2002.

3. Approved Document L2A: "*Conservation of fuel and power (New buildings other than dwellings)",* ODPM*,* 2006.

4. Scottish Technical Handbooks: "*Non-Domestic – Section 6: Energy*", Scottish Building Standards, 2007.

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BREEAM : Healthcare : 2008
Energy
Ene 2 - Sub-metering of substantial energy uses

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	1	1	1

Credit aim

To recognise and encourage the installation of energy sub-metering that facilitates the monitoring of in-use energy consumption.

Credit criteria

Two credits are available as follows:

Credits	
1	Where evidence provided demonstrates the provision of direct sub-metering of energy uses within the building.
2	Where, in addition to the above, evidence provided demonstrates that sub meters are connected to a BMS or other type of automated control device.

Compliance requirements

The following demonstrates compliance:

First Credit

1. Separate *accessible energy sub-meters*, labelled with the end energy consuming use, are provided for the following systems (where present):
    a. Space Heating
    b. Domestic Hot Water
    c. Humidification
    d. Cooling
    e. Fans (major)
    f. Lighting
    g. Small Power (lighting and small power can be on the same sub-meter where supplies are taken at each floor/department).
    h. Other major energy-consuming items where appropriate (see compliance notes).

Second credit

2. The first credit is achieved.

3. All energy sub-meters are connected to a Building Management System (BMS) or other automated control system, e.g. outstations linked to a central PC, for the monitoring of energy consumption.

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BREEAM : Healthcare : 2008
Energy
Ene 2 - Sub-metering of substantial energy uses

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	1	1	1

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	Where an existing building is being extended and it has existing building services plant and systems that will be common to both the new extension and existing building, the requirements for energy metering cover the entire building.
Lighting & small power	Due to traditional distribution methods, it can be difficult to cost-effectively separate lighting and small power. It is acceptable, within a single floor, for lighting and small power to be combined for metering purposes, provided that sub-metering is provided for each floor plate.
Other major energy-consuming items	Other major energy-consuming items, depending on the building type, might include, for example, plant used for swimming or hydrotherapy pools, kitchen plant, cold storage plant, laboratory plant, sterile services equipment, transportation systems (e.g. lifts & escalators) drama studios and theatres with large lighting rigs.
Modular boiler systems	Where the building uses a modular system and the rated input power of the lead boiler is less than the figure in table 1, but greater than 10kW (see additional information), sub-metering of the lead boiler is still required to comply with the requirements of this credit.
Accessible meters	The energy meters must be located in an area of the building that allows for easy access to facilitate regular monitoring and readings by the buildings staff and facilities manager. Typically this will be the plant room, main distribution room or control room (where BMS is installed).
Medical-based systems	Large-scale medical equipment/systems can be ignored when assessing compliance with this credit (although it is recommended that sub-metering is considered in such instances).

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
All	Specification document or technical drawings confirming: • Energy-consuming systems and their rated outputs • Metering arrangements for each system, type and location of meter specified. • If applicable, scope of BMS and its energy-monitoring capability.	Assessor's building/site inspection and photographic evidence confirming: • Location and labelling/function of the individual sub-meters or BMS.

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Energy
Ene 2 - Sub-metering of substantial energy uses

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	1	1	1

Additional information

Relevant definitions

BMS: Building (energy) Management System is a central computer controlling, monitoring and optimising building services and systems such as heating, air-conditioning, lighting and security.

Common areas: Developments that have several tenant units, particularly large retail developments, may also share common facilities and access that is not owned or controlled by any one individual tenant, but used by all. Common areas are typically managed and maintained by the development's owner, i.e. landlord or their managing agent. Examples of common areas include an atrium, external areas e.g. parking, stairwells and main entrance foyers/reception.

Table 1: Size of plant for which separate metering would be required [1]

Plant Item	Rated input power (kW)
Boiler installation comprising one or more boilers or CHP plant feeding a common distribution circuit	50
Chiller installations comprising one or more chiller units feeding a common distribution circuit	20
Electric humidifiers	10
Motor control centres providing power to fans and pumps	10
Final electrical distribution boards	50

Detailed guidance on how to develop an appropriate metering strategy for the energy requirements of a new building is available in General Information Leaflet 65: Metering energy use in new non-domestic buildings.

References

1. GIL065 "*Metering and Energy Use in New Non-Domestic Buildings - A Guide to help designers meet Part L2 of the Building Regulations*", Carbon Trust, 2002.

2. CIBSE TM39 "*Building energy metering - A guide to energy sub-metering in non-domestic buildings*", CIBSE, 2006.

3. HTM 07-02: EnCO_2de, "*Making energy work in Healthcare*", Department of Health 2005.

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Energy
Ene 3 - Sub metering of high energy load and tenancy areas

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To recognise and encourage the installation of energy sub-metering that facilitates the monitoring of in-use energy consumption by tenant or end user.

Credit criteria

Credits	
1	Where evidence provided demonstrates sub-metering of energy consumption by tenancy/building function area is installed within the building.

Compliance requirements

The following demonstrates compliance:

1. Provision of *accessible* sub-meters covering the *energy supply* to all tenanted, or in the case of single occupancy buildings, *relevant function areas or departments* within the building/unit.

2. The meters are labelled with the end energy consuming use.

3. All energy sub-meters are connected to a Building Management System (BMS) or other automated control device, e.g. outstations linked to a central PC, for the monitoring of energy consumption.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.

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BREEAM : Healthcare : 2008
Energy
Ene 3 - Sub metering of high energy load and tenancy areas

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Relevant function areas / departments	This list is not exclusive and where other areas/departments exist these should also be metered: • Operating department • X-ray department • Radiotherapy department • Pathology department • Dialysis department • Medical physics • Mortuary and post-mortem department • Rehabilitation, when including hydrotherapy pools • Central Sterile Supplies Department (or equivalent) • Process areas, e.g. commercial-scale kitchens and laundries • IT rooms • Pharmacy department • Laboratories • Tenancy areas.
Small healthcare buildings	In small buildings (<999 m2) with no high-energy load areas (as defined above), a single meter per floor plate is sufficient to achieve this credit. Individual areas within each floor plate do not need to be sub-metered.
Accessible meters	Refer to the compliance notes in BREEAM credit Ene 2 for a description.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1	Marked-up drawings and site plan detailing: • Building areas by department/function and/or tenancy • Location of meters. Specification document or technical drawings confirming: • Metering arrangements for each department/function and/or tenancy area • Type of meter specified.	Assessor's building/site inspection and photographic evidence confirming: • Location and function of the individual sub-meters or BMS.
2	Specification document or technical drawings confirming: • Scope of BMS or other automated control system and its energy monitoring capability.	As above.

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Energy
Ene 3 - Sub metering of high energy load and tenancy areas

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Additional information

Relevant definitions

BMS: Refer to definitions in BREEAM credit Ene 2.

References

No references.

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BREEAM : Healthcare : 2008
Energy
Ene 4 - External lighting

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To recognise and encourage the specification of energy-efficient light fittings for external areas of the development.

Credit criteria

Credits	
1	Where energy-efficient external lighting is specified and all light fittings are controlled for the presence of daylight.

Compliance requirements

The following demonstrates compliance (where provided):

1. All external light fittings for the building, access ways and pathways have a luminous efficacy of at least 50 lamp lumens/circuit Watt when the lamp has a colour rendering index (Ra) greater than or equal to 60. **OR** 60 lamp Lumens / circuit Watt when the lamp has a colour rendering index (Ra) less than 60.

2. All external light fittings to car parking areas, associated roads and floodlighting has a luminous efficacy of at least 70 lamp lumens/circuit Watt when the lamp has a colour rendering index (Ra) greater than or equal to 60. **OR** 80 lamp Lumens / circuit Watts when the lamp has a colour rendering index (Ra) less than 60.

3. All external light fittings for signs and uplighting have a luminous efficacy of at least 60 lamp lumens/circuit Watt when the lamp wattage is greater than or equal to 25W. **OR** 50 lamp lumens/circuit Watt when the lamp wattage is less than 25W.

4. External light fittings are controlled through a time switch, or daylight sensor, to prevent operation during daylight hours. Daylight sensor override on a manually switched lighting circuit is acceptable.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	Refer to the guidance below for single building assessments on large existing developments/campuses.

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Energy
Ene 4 - External lighting

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Single building assessments on larger developments/ campuses	Where the building being assessed forms part of larger development (or is an extension to an existing building) containing common areas and other buildings, the scope of the external lighting requirements apply only to external new and existing lighting within the *construction zone* of the assessed building.
No external lighting specified	Where the building is designed to operate without external lighting, including external lighting on the building, signs and at entrances, the credit can be awarded.
Low energy innovative light fittings	Any fitting that consumes less than 5W complies with the requirements provided each individual fitting is a direct replacement for an alternative, individual BREEAM-compliant fitting and provides an equivalent amount of light for the necessary task. The assessor must ensure that several low watt fittings are not being specified in place of one higher watt but overall more energy-efficient fitting. This compliance note is to allow for the specification of innovative low energy light sources, such as LEDs.
Decorative and floodlighting	Decorative lighting and floodlighting must not be exempt from the credit requirements although temporary lighting such as theatrical, stage or local display installations, where specified, may be excluded.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1-4	Marked-up site plan and building elevations showing: • Location and purpose of all external lighting fittings. Lighting specification or lighting designer's calculations confirming: • Lamp lumens/circuit watt for each type of fitting as well as the colour rendering index Ra (where appropriate) • External lighting control strategy..	As design stage, but 'as built' documentation. **AND** Assessor's building/site inspection and photographic evidence confirming: • External lighting controls. Manufacturers' literature confirming: 1. Technical spec for the installed external light fittings.

Additional information

Relevant definitions

Colour rendering index (Ra): A measure, between 0 and 100, of the ability of a lamp to reproduce the colour of objects in comparison to their aspect under a natural or reference source of light. An incandescent source has a Ra of 100 and a low pressure sodium source a Ra of 0 (see below for further information on colour rendering).

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Ene 4 - External lighting

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Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Construction zone: For the purpose of this credit the construction zone is defined as the site which is being developed for the BREEAM-assessed building and its external site areas i.e. the scope of the new works.

Daylight Sensors: A type of sensor that detects daylight and switches lighting on at dusk and off at dawn.

Luminous efficacy in lamp Lumens per circuit Watt: The ratio between the luminous flux produced by a lamp (in Lumens) and the total power consumed by both the lamp and its associated control gear (in Watts).

Time switch: A switch with an inbuilt clock which will allow lighting to be switched on and off at programmed times.

Colour Rendering
At night time, the sensitivity of the eye is shifted towards the blue region of the visual spectrum. As a result, lamps with poor colour rendering index, such as some sodium lamps that emit light between the yellow and red region of the visual spectrum, require more luminous output to light an object with the same level of brightness than a source with better colour rendering index. Sources with a poor colour rendering index also make the differentiation of coloured objects more difficult for individuals.

In BS 5489-1:2003 Code of practice for the design of road lighting - Part 1: Lighting of roads and public amenity areas, this is acknowledged by allowing a relaxation of the lighting levels (illuminance levels) required when the source specified has a colour rendering index Ra greater than or equal to 60.

The colour rendering index requirement means compliance with this credit using sources of light with a poor colour rendering index is harder to achieve than those with an index greater than or equal to 60. Other benefits of using sources with an index greater than 60 include an increased feeling of safety for individuals, making recognition of spaces and other individuals easier. In areas where CCTV is used, the colour rendering index of lighting sources is critical; an Ra value of at least 80 is recommended (but not required by BREEAM).

References

1. Lighting Guide 007 "*Installers' Guide to the Assessment of Energy Efficient Lighting Installations*", Carbon Trust, 2004.

2. Lighting Guide 6 "*The outdoor environment*", Society of Light and Lighting, 1992.

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Energy
Ene 5 – Low or zero carbon technologies

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	1	1

Credit aim

To reduce carbon emissions and atmospheric pollution by encouraging local energy generation from renewable sources to supply a significant proportion of the energy demand.

Credit criteria

Up to a maximum of three credits can be awarded as follows:

Credits	
1	Where evidence provided demonstrates that a feasibility study considering local (*on-site* and/or *near site*) low or zero carbon (LZC) technologies has been carried out and the results implemented.
2	Where evidence provided demonstrates that the first credit has been achieved and there is a 10% reduction in the building's CO_2 emissions as a result of the installation of a feasible local LZC technology.
3	Where evidence provided demonstrates that the first credit has been achieved and there is a 15% reduction in the building's CO_2 emissions as a result of the installation of a feasible local LZC technology.

Alternatively a maximum of one credit is awarded as follows:

Credits	
1	Where evidence provided demonstrates that a contract with an energy supplier is in place to provide sufficient electricity used within the assessed building/development to meet the above criteria from a 100% renewable energy source. (Note: a standard Green Tariff will not comply)

Compliance requirements

The following demonstrates compliance:

First credit

1. A feasibility study has been carried out by an *energy specialist* (see compliance notes) to establish the most appropriate local (on-site or near-site) LZC energy source for the building/development. This study covers as a minimum:
    a. Energy generated from LZC energy source per year
    b. Payback
    c. Land use
    d. Local planning requirements

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Min. credits to achieve rating	-	-	-	1	1

e. Noise
f. Feasibility of exporting heat/electricity from the system
g. Life cycle cost/lifecycle impact of the potential specification in terms of carbon emissions
h. Any available grants
i. All technologies appropriate to the site and energy demand of the development.
j. Reasons for excluding other technologies.

2. A local LZC energy technology has been specified for the building/development in line with the recommendations of the above feasibility study.

3. The feasibility study has been carried out at RIBA stage C (outline proposals) or equivalent procurement stage.

OR

4. The organisation that occupies the building has in place a contract with an energy supplier to provide electricity for the assessed building/development from a 100% renewable energy source. This supply must be delivered by an *accredited external renewable* source. The contract must be valid for a minimum of 3 years from the date the assessed building becomes occupied.

Second credit

1. The first credit for a feasibility study must be achieved.

2. A local LZC energy technology has been installed in line with the recommendations of the above feasibility study and this method of supply results in a 10% reduction in the building's CO_2 emissions.

3. Figures used for calculations of the percentage carbon reduction provided by LZC technology are based on the output from *approved energy modelling software*.

Third credit

1. The first credit for a feasibility study must be achieved.

2. A local LZC energy technology has been installed in line with the recommendations of the above feasibility study and this method of supply results in a 15% reduction in the building's CO_2 emissions.

3. Figures used for calculations of the percentage carbon reduction provided by LZC technology are based on the output from *approved energy modelling software*.

Exemplary level requirements
The following outlines the exemplary level requirements to achieve an *innovation credit* for this BREEAM issue.

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Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	1	1

1. The first credit for a feasibility study must be achieved.

2. A local LZC energy technology has been installed in line with the recommendations of the above feasibility study and this method of supply results in a 20% reduction in the building's CO_2 emissions.

3. Figures used for calculations of the percentage carbon reduction provided by LZC technology are based on the output from *approved energy modelling software*.

Buildings complying with the exemplary level requirements would therefore achieve four credits for this issue.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.
Feasibility study	When undertaking a feasibility study at a later stage than *outline proposals*, an additional element will need to be included in the report to highlight the local LZC energy sources which have been discounted due to the constraints placed on the project by the late consideration, and the reason for their omission. If the feasibility study discounts all local LZC as unfeasible due to the late stage in the project that the study was commissioned, then the credit for the feasibility study must be withheld.
	If the feasibility was commissioned at the *outline proposals* stage or earlier and in the unlikely event the study concludes that the specification of any local LZC technology is unfeasible, the first credit can still be awarded. Subsequent credits for installing LZC technology that meets a percentage of building energy demand will not be achievable.
List of recognised LZC technologies	Technologies recognised by the Department for Business Enterprise and Regulatory Reform (BERR) Low Carbon Buildings Programme (LCBP) may be considered as part of a low or zero carbon emissions solution. The following list details the technologies recognised by the BERR, LCBP at the time of going to print: **Solar** • Solar hot water • Photovoltaics **Water**

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Min. credits to achieve rating	-	-	-	1	1

	• Small scale hydro power • Tidal power • Wave power **Wind** • Wind turbines **Biomass** • Biomass single room heaters/stoves • Biomass boilers • Biomass community heating schemes **Combined Heat and Power (CHP) for use with the following fuels:** • Biomass • Natural gas • Sewerage gas and other biogases CHP systems must meet the threshold criteria for good quality CHP as set by DEFRA's CHPQA programme[4]. **Community heating**, including utilising waste heat from processes such as large scale power generation where the majority of heating comes from waste heat (see also compliance notes below). **Heat Pumps** • Ground source heat pumps • Water source heat pumps • Geothermal heating systems • Air source heat pumps For heat pumps to comply, the heat source (ground or water) must be from a renewable source, for example soil, outside air, ground water, or a river. **Other** • Fuel cells using hydrogen generated from any of the above 'renewable' sources The list above is not a definitive list of technologies compliant with BREEAM, but a list of those technologies that may be considered to comply. If the assessor has a justified reason to doubt the low or zero carbon credentials/feasibility of the above technologies, where specified for a development they are assessing, they can justifiably withhold the available BREEAM credits.

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Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	1	1

LZC technology not listed	Other systems may be acceptable as part of a LZC strategy under this credit but are not inherently considered as LZC technologies. Acceptability will be dependent on the nature of the system proposed. The BREEAM Assessor must confirm acceptability with BRE if in doubt.
Waste heat from a building related operational process	Waste heat from a process that takes place within the assessed building (or on the assessed site), for the purpose of this BREEAM credit, can be considered as 'Low carbon'. This is on the condition that the generation of the heat from the process is integral to the assessed building.
Waste incineration	Waste heat from an incineration plant can only be considered as a low carbon for the purpose of this BREEAM credit under the following circumstances: 1. All other LZC technologies have been considered and discounted in the feasibility study. **And either** 2. The Local Authority or region in which the incineration plant is located is demonstrably meeting its annual waste reuse/recycling targets and waste management policies. **Or** 3. A near- or onsite facility connected to the building, via a *private wire arrangement*, which demonstrably removes re-usable and recyclable waste material prior to incineration.
Community and off-site schemes	'Local' does not have to mean *on-site* and community schemes (near site) can be used as means of demonstrating compliance. As this BREEAM credit seeks to encourage the installation of *on-site* and *near-site* LZC technologies, *accredited external renewables* (accept where stated to achieve one credit) cannot be used to demonstrate compliance with the requirements of this BREEAM credit.
Export to the grid	Any electricity from an *onsite* LZC energy source that is exported to the grid may be included in the calculations as if it were used within the building.
More than one technology	The percentage can be made up from more than one of the above technologies.
Building assessed part of a larger development	Where the building under assessment forms part of a larger development and either a new or existing LZC installation is provided for the whole site, then the amount of LZC energy generation counted for in this credit, and subsequent CO_2 emissions saved, should be proportional to the building's energy demand compared to the total energy demand for the site (see also note below on existing LZC technology).

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Min. credits to achieve rating	-	-	-	1	1

LZC technology already available on site	For developments where there is an existing LZC energy source that can supply a compliant percentage of energy to the assessed building, a feasibility study will still have to be carried out to demonstrate that the existing technology is the most appropriate for the assessed building/development. The study should seek to identify any other options to supply a higher proportion of the building's energy demand in addition to that supplied by the existing source.
Calculation of the CO_2 emissions saved	When calculating the energy contribution and CO_2 emissions saved from the LZC installation, the net yield of the LZC installation(s) must be used (i.e. subtract any energy used by the LZC technology itself such as pumps, inverters, controllers, etc).
Process-related energy	For the purpose of assessing this BREEAM credit, energy and subsequent CO_2 emissions from process-related activities can be excluded from the total when calculating the percentage reduction in CO_2 emissions. For example energy required for cold storage, catering facilities and laundry equipment can be excluded. Display lighting energy demand, where specified, must not be excluded.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
First Credit		
1&3	A copy of the feasibility study report. Letter from the energy specialist confirming: • Compliance with the definition of an energy specialist • The timing of the feasibility report within the plan of works.	Assessor's building/site inspection (or "as built" drawings) and photographic evidence confirming: • Installation of LZC technology.
2	Marked-up design plan or specification confirming: • Proposed installation of LZC energy technology. Manufacturer's technical data and details or calculations stating the carbon savings as a result of the installed LZC technology.	

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Min. credits to achieve rating	-	-	-	1	1

4	Where an offsite supply is being used as a method of compliance, supplier's documentation confirming: • Name and details of supplier • Details of the source of supply. A copy of the contract or other formal documentation confirming the length of contract to supply 100% renewable energy.	As design stage evidence.
Second, Third & Exemplary Level Credit		
1	Evidence (as outlined above) confirming compliance with the first credit.	Evidence (as outlined above) confirming compliance with the first credit.
2&3	A copy of the report produced by the *approved energy modelling software* illustrating; • The name of the approved software used to carry out the modelling • Confirmation of the expertise and experience of the individual carrying out the modelling • Total CO_2 emissions for the assessed building (without LZC energy technology). **AND** Calculations/outputs from the manufacturer, supplier, engineer or *approved software* confirming: • Total carbon savings as a result of the installed LZC technology.	Where there have been changes to the proposed design or LZC technology specification, a copy of the 'as built' report produced by the Building Regulations-compliant energy model confirming the same data as outlined at the design stage.

Additional information

Relevant definitions

Accredited External Renewables: Please refer to the compliance notes in BREEAM credit Ene 1.

Approved Energy Modelling Software: Please refer to the relevant definitions in BREEAM credit Ene 1.

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Min. credits to achieve rating	-	-	-	1	1

Energy Specialist: An individual who has acquired substantial expertise or a recognised qualification for undertaking assessments, designs and installations of low or zero carbon solutions in the commercial buildings sector; and is not professionally connected to a single low or zero carbon technology or manufacturer.

Life Cycle Costs: the total cost of a building or its parts throughout its life, including the costs of planning, design, acquisition, operations, maintenance and disposal, less any residual value, in terms of carbon emissions.

Life cycle impact: this is the requirement to look at the carbon balance of each technology over its whole life. Encouraging people to not just the savings or emissions over its operational life but also the savings or emissions over the whole life of the technology (from 'cradle to grave'), therefore reflecting the fact that different technologies have different life spans.

Near-site LZC: Please refer to the relevant definitions in BREEAM credit Ene 1.

On-site renewable: Please refer to the relevant definitions in BREEAM credit Ene 1.

Private wire arrangement: Please refer to the relevant definitions in BREEAM credit Ene 1.

Payback period: the period of time needed for a financial return on an investment to equal the sum of the original investment.

Feasibility credit objective: The objective of the feasibility study is to make sure that LZC energy technologies installed on a particular site are the most appropriate for this site and ensure maximum reduction of pollutants to the atmosphere. Therefore, no credit can be awarded if a feasibility study has not been undertaken.

References

1. Planning Policy Statement 22: "*Renewable Energy*", ODPM, 2004
2. Planning for Renewable Energy: "*A Companion Guide to PPS22*", ODPM, 2004
3. London Renewables Toolkit, available to download from http://www.london.gov.uk/mayor/environment/energy/renew_resources.jsp
4. Quality Assurance for Combined Heat and Power: http://www.chpqa.com/
5. Scottish Planning Policy (SPP) 6: "*Renewable Energy*", The Scottish Government, 2007.
6. www.scottishrenewables.com
7. SHTM 07-02: EnCO_2de, "*Making energy work in Healthcare*", Health Facilities Scotland, 2006.
8. HTM 07-02: EnCO_2de, "*Making energy work in Healthcare*", Department of Health, 2005.

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Energy
Ene 6 - Building fabric performance & avoidance of air infiltration

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit not assessed under this scheme.

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Energy
Ene 7 - Cold storage

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit not assessed under this scheme.

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BREEAM : Healthcare : 2008
Energy
Ene 8 - Lifts

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To recognise and encourage the specification of energy-efficient transportation systems.

Credit criteria

Credits	
2	Up to two credits are available where evidence provided demonstrates the installation of energy-efficient lift(s).

Compliance requirements

The following demonstrates compliance:

One credit

1. An analysis of transport demand and patterns for the building has been carried out by the design team to determine the optimum number and size of lifts and *counterbalancing ratio* on the basis of anticipated passenger demand.

2. The energy consumption for at least two types of lift or lift strategy 'fit for purpose' has been estimated and the system with the lowest energy consumption specified.

Two credits

3. The first credit is achieved.

4. Of the following energy-efficient features, the three that offer the greatest potential energy saving are specified:
    a. The lifts operate in a stand-by mode during off-peak and idle periods. For example the power side of the lift controller and other auxiliary equipment such as lift car lighting and ventilation fan switch off when the lift is not in motion.
    b. Where lift motors use a drive controller capable of variable-speed, variable-voltage, variable-frequency control of the drive motor.
    c. The lift has a regenerative unit so that energy generated by the lift (due to running up empty and down full) is returned back to the grid or used elsewhere on site.
    d. The lift car uses energy-efficient lighting and display lighting (>60 Lumens/watt or fittings that consume less than 5W e.g. LEDS).

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Energy
Ene 8 - Lifts

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.
Building has no lifts	Please note that this credit will not be assessed where a building contains no lifts. In such instances the BREEAM assessor's spreadsheet tool will filter this issue from the list of applicable credits.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1-2	A copy of the relevant report or documentation detailing the analysis undertaken and findings/recommendations. A copy of the lift specification.	The evidence required at this stage is the same as that outlined at the design stage.
3-4	A copy of the lift specification. **OR** Formal letter from the lift manufacturer/supplier confirming that the lift to be installed on the project meets the relevant requirements for the number of credits sought.	The evidence required at this stage is the same as that outlined at the design stage.

Additional information

Relevant definitions

Counterbalancing ratio: Lifts use a counterweight to balance the weight of the car plus a proportion of the maximum weight of the passengers; this reduces the size of the drive motor required for the lift. Lowering the counterbalancing ratio means a smaller motor and controlling drive unit are required, thus saving energy.

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Energy
Ene 8 - Lifts

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

ISO Draft standard CD25745-1 "Energy performance of lifts, escalators and moving walks – Part 1 Energy and conformance"
It has been estimated that between 5-15% of a building's total energy consumption can be attributed to the operation of lifts and 58% [1] of the energy consumption of lifts is attributable to stand-by mode.

A Working Group of an International Standards Organisation's Technical Committee is developing a draft standard for the Energy performance of lifts, escalators and moving walkways. This standard draft standard outlines proposed procedures to be used when making energy measurements of lifts, escalator and moving walkways.

References

1. "*Energy consumption and efficiency potentials of lifts*", Jürg Nipkow, Max Schalcher, Swiss agency for efficient energy use S.A.F.E.

2. "*Code of Practice for Energy Efficiency of Lift & Escalator Installations*", Electrical and Mechanical Services Department, HKSAR, 2007.

3. Guide D "*Transportation systems in buildings*"; 2nd Ed, CIBSE, 2000.

4. Towards low carbon lifts, G Barney (http://www.cibseliftsgroup.org/CIBSE/Feature.htm

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Energy
Ene 9 - Escalators & travelling walkways

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit not assessed in this scheme.

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Energy
Ene 10 - Free cooling

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit not assessed under this scheme.

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Energy
Ene 11 - Energy Efficient fume cupboards

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit not assessed in this scheme.

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Energy
Ene 12 - Swimming pool ventilation and heat loss

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit not assessed in this scheme.

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Energy
Ene 13 - Labelled lighting controls

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

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Energy
Ene 14 - BMS

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit not assessed under this scheme.

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BREEAM : Healthcare : 2008
Energy
Ene 15 - Provision of energy efficient equipment

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To recognise and encourage procurement and commissioning of energy-efficient equipment to ensure optimum performance and energy savings.

Credit criteria

Credits	
1	Where evidence provided demonstrates procurement of office and domestic scale equipment on the basis of energy-efficient performance over the product life cycle.

Compliance requirements

The following demonstrates compliance:

1. The following equipment for the assessed building has been procured in accordance with OGC's Sustainability Mandatory Standards – Quick Wins and ECG72: *Energy consumption in hospitals*.
    a. Office equipment
    b. White goods
    c. Supplementary electric heating
    d. Small powered equipment.

2. The procurement of *Large scale equipment* (where present) and sets of electrical equipment (where numbering more than 50) has been informed and selected by life cycle costing analysis in accordance with EnCO2de, Chapter 3.0 [1].

3. For each piece of equipment at least two options '*fit for purpose'* have been analysed and the option(s) specified are those that demonstrate better performance in terms of:
    a. Direct running costs
    b. Indirect running costs and additional administration costs
    c. Cost of disposal
    d. Spending to save
    e. Recyclability
    f. Improved manageability
    g. Energy performance
    h. Reduced harmful emissions to the atmosphere
    i. Improved services, comfort and productivity.

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Energy
Ene 15 - Provision of energy efficient equipment

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.
Large-scale equipment	This includes commercial-scale catering and laundry equipment, built-in cold storage and chilled rooms, lifts and escalators and all other equipment with connected electrical loads in excess of 10kW rated input power. All medical equipment can be exempted from complying with the credit requirements.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1	A copy of the relevant clause from the specification or the occupying stakeholders compliant Environmental Procurement Policy. **OR** A formal letter from the project team or Trust confirming the specific undertaking.	Occupying stakeholder's compliant Environmental Procurement Policy. A formal letter from the Trust (or appropriate occupying stakeholder) confirming: • Makes and models of equipment installed • The procurement of equipment based on lowest LCC

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BREEAM : Healthcare : 2008
Energy
Ene 15 - Provision of energy efficient equipment

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

2-3	A copy of the relevant clause from the specification or the occupying stakeholder's compliant Environmental Procurement Policy. **OR** Scoring matrices for selection of equipment indicating that energy performance is a consideration (10% or greater weighting) in the selection decision-making process. **AND** Equipment tender documentation showing schedules of performance which are to be completed by each equipment supplier.	• The installation of equipment selected in accordance with the policy and LCC study.

Additional information

Relevant definitions

Life Cycle Cost analysis: A procurement evaluation technique which determines the total cost of acquisition, operation, maintenance and disposal of a product.

Fit for purpose: This refers to the functional requirements that the piece of equipment is required to meet. Any option that is not fit for the purpose must not be considered or included in the analysis.

White goods: Domestic appliances such as washing machines, fridges and freezers, tumble dryers etc. For the purpose of this BREEAM issue this also includes smaller equipment such as kettles, toasters, electric cookers etc.

Small powered equipment: Includes staff and patients' vending machines, TV and music systems, air-movement fans, etc.

References

1. HTM 07-02: "*EnCO_2de, Making energy work in Healthcare*", Department of Health, 2005.

2. Energy Consumption Guide 72: "*Energy consumption in hospitals*", Carbon Trust.

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Energy
Ene 15 - Provision of energy efficient equipment

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

3. CTV002 Technology Overview – *"Refrigeration*", Carbon Trust.

4. Good Practice Guide 347: "*Installation and commissioning of refrigeration systems*", Carbon Trust, 2003.

5. Cold Store Code of Practice Part 1 "*Enclosure Construction*", The Institute of Refrigeration, 1996.

6. Office of Government Commerce, Department for Environment, Food and Rural Affairs: "*Joint note on environmental issues in purchasing*", October 2003.

7. Guide D "*Transportation systems in buildings*", 3rd Ed, CIBSE, 2005.

8. Office of Government Commerce (OGC), "*Quick Wins*". Updated every year and downloadable from the Sustainable Development Website: http://www.sustainable-development.gov.uk/publications/

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BREEAM : Healthcare : 2008
Energy
Ene 16 - CHP Community Energy

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To recognise and encourage CHP community energy schemes.

Credit criteria

Credits	
1	Where evidence provided demonstrates that a feasibility study has been carried out on the potential for the building to set up, contribute to or benefit from a local CHP community energy scheme.

Compliance requirements

The following demonstrates compliance:

1. A study is carried out to explore the feasibility of:
    a. Connecting the building to an existing local community CHP system or source of waste heat or power **OR**
    b. Specifying a building/site CHP system or source of waste heat or power with the potential to export excess heat or power via a local community energy scheme.

2. Where the scope exists to specify a CHP system or make use of an existing system or source of waste energy, the feasibility study covers as a minimum:
    a. Economic appraisal, including as a minimum simple payback period, annual capital, operating and maintenance expenditures and annual revenues from the sale of heat and electricity (where applicable)
    b. Local planning requirements / initiatives
    c. Expected net energy yield per annum of the proposed system
    d. Life cycle impact of the proposed system in terms of carbon emissions.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.

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BREEAM : Healthcare : 2008
Energy
Ene 16 - CHP Community Energy

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1&2	A copy of the study.	The evidence required at this stage is the same as that outlined at the design stage.

Additional information

Relevant definitions
None.

References

1. HTM 07-02: "*EnCO_2de, Making energy work in Healthcare*", Department of Health 2005.
2. Good Practice Guide 234: "*Guide to community heating and CHP"*, Carbon Trust, 1998.
3. Combined Heat and Power Association: www.chpa.co.uk

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Transport Section

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BREEAM : Healthcare : 2008
Transport
Tra 1 – Provision of public transport

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To recognise and encourage development in proximity to good public transport networks, thereby helping to reduce transport-related emissions and traffic congestion.

Credit criteria

Credits	
5	The credits are awarded on a sliding scale based on the assessed buildings' accessibility to the public transport network.

Compliance requirements

The following demonstrates compliance:

1. The public transport *Accessibility Index* for the building is calculated and BREEAM credits awarded in accordance with table 1:

Table 1: AI benchmarks and BREEAM credits

Accessibility Index	BREEAM credits: Acute, teaching, specialist, mental health hospitals	Accessibility Index	BREEAM credits: GP surgery, health centres, community hospitals
≥2	1	**≥2**	1
≥4	2	**≥4**	2
≥8	3	**≥8**	3
≥12	4	**≥10**	4
≥18	5	**≥12**	5

The *Accessibility Index* is determined by entering the following information in to the BREEAM assessor's *Tra1 Provision of Public Transport calculator:*

a. The distance (m) from the *main building entrance* to each *compliant public transport node*
b. The public transport type serving the compliant node e.g. bus or rail
c. The *average number of services* stopping per hour at each *compliant node* during the standard *operating hours* of the building for a *typical day* (see additional guidance).

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BREEAM : Healthcare : 2008
Transport
Tra 1 – Provision of public transport

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.
Operating hours	BREEAM seeks to define the building's accessibility to the public transport network for the period during which the majority of building users will travel to and from the building. In most cases the normal operating hours of the building can be used; however, some buildings will operate for 24 hours a day and on a shift work basis. As a result, during what typically would be deemed unsociable hours and therefore periods where a) there is little if any public transport operating and b) the number of total building users travelling to the building during this time is a minority; such periods are not required to be accounted for in the assessment of this issue. Where the assessed building operates on a 24-hour basis, or the operating hours are unknown at the time of assessment, then refer to and use the table of default operating hours, which can be found in the additional information section of this credit.
Compliant public transport node	A compliant node includes any bus stop within 650m and any railway station within 1000m of the assessed building's main entrance, measured via a safe pedestrian route (not '*as the crow flies*'). The service stopping at each node must provide transport from, or onward travel to, either an urban centre, major transport node or a community focal point e.g. doctor's surgery, library, school or village centre. There is no limit on the number of nodes that can be considered when calculating the AI, provided they all meet the above requirements.
Average number of services	For the purpose of the calculation, the frequency of public transport is the average number of services per hour. This is calculated by determining the number of stopping services at the node during the operating hours, divided by the number of hours within the operating period. For example: the average number of services for an assessment of a building that operates between 8am - 7pm (11 hours) and is within proximity of a bus stop with 35 stopping services during this period is 3 (equivalent to an average service frequency of 20 minutes).

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BREEAM : Healthcare : 2008
Transport
Tra 1 – Provision of public transport

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Typical day	The typical day is that which represents the period when travel to and from the building by staff and visitors will be at its highest. For most buildings this should be taken as a mid-week day. In choosing a typical day the assessor should check that the timetabled information for that day is, within reason, representative of the public transport provision for the entire operating week (excluding Sundays).
Multiple services	Services that operate from more than one node within proximity of the building, i.e. two separate bus stops served by the same bus, must be considered only once - at the node in closest proximity to the building. Different services at the same node, however, should be considered as separate entities.
Bi-directional routes	Routes will be bi-directional; however for the purpose of calculating the index, consider only the direction with the highest frequency.
Dedicated transport services	Where a dedicated company bus service is provided for staff during, or before or after, *operating hours* (as defined in above), the building entrance can be substituted for the drop-off/pick-up destination point of this service and therefore public transport accessibility measured from that point.
Phased developments	In the case of a large phased development where new transport facilities will be provided, but at a later stage than the building being assessed, the assessment can consider such facilities provided that: • A commitment to provide transport facilities has been made in the General Contract Specification or in the form of a Section 106 Agreement. **And the shortest of the following periods - Either** • The transport facilities will be available for use by the time 25% of all phases have been completed and are ready for occupation. **Or** • The transport facilities will be available for use within 25% of the total build time for the phase in which the assessed building forms a part, measured from the completion date of that phase. The most appropriate rule for the development in question must be used, ensuring that the time building users have to wait before having use of the transport facilities is as short as possible. Where the transport facilities will not be available for use within a period of five years from occupation of the building, they cannot be considered for determining compliance with the BREEAM requirements.
Buildings in Greater London	Buildings in Greater London should refer to the guidance in the additional information section of this credit for details of demonstrating compliance via other complementary means.

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BREEAM : Healthcare : 2008
Transport
Tra 1 – Provision of public transport

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Schedule of Evidence Required

Req.	Design Stage	Post Construction Stage
1	A copy of the output from the *Tra1 Provision of Public Transport calculator* *. *Or via the alternative means for buildings in Greater London (see additional information).	The evidence required at this stage is the same as that outlined at the design stage. Where relying on a calculation carried out at the design stage to demonstrate compliance post construction, if the period between design and post construction stage reporting is greater than 12 months, then the AI must be re-calculated using up-to-date public transport timetable information.
2	Scale map highlighting the location of the building and all public transport nodes in proximity of the building. Timetables for each service at each public transport node considered.	

Additional information

Relevant definitions

Accessibility Index: A measure that provides an indicator of the accessibility and density of the public transport network at a point of interest (in the case of BREEAM, a building). The index is influenced by the proximity and diversity of the public transport network and the level or frequency of service at the accessible node.

Tra 1 Provision of Public Transport calculator: A spreadsheet-based calculator used to determine the *Accessibility Index* for the assessed building and the number of BREEAM credits achieved. BREEAM calculators are provided in the BREEAM Assessor's spreadsheet tool.

Main building entrance: The main building entrance is the entrance to the assessed building accessed by the majority of the building's staff and visitors, not the site entrance (unless the site entrance is also the building entrance e.g. building with a boundary on a public highway).

AI Indicator of performance – comparison with previous version of BREEAM
For comparison with the requirements of previous versions of BREEAM, a building that has a single public transport node 500m from its main building entrance with one service stopping every 15 minutes i.e. 4 services per hour on average, will score an AI of approximately 1.90. Alternatively, the same node with one service every 15 minutes, but 300m from the building entrance will achieve an AI of 2.26. The same node with two services stopping every 15 minutes will score an AI of 2.85. The greater the number of compliant nodes, services and their proximity to the building, the higher the AI.

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BREEAM : Healthcare : 2008
Transport
Tra 1 – Provision of public transport

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Table 1: Default hours of operation for a typical day

Building type	AM	PM
Office	8.00am - 7.00pm	
Industrial	8.00am - 7.00pm	
School	7.30am -10.00am	3.00pm - 5.30pm
Further Education	8.00am - 7.00pm	
Courts	8.00am - 7.00pm	
Prison	7am - 8pm (encompassing visiting hours and the typical daytime shift pattern)	
Healthcare	7am - 8pm (encompassing visiting hours and the typical daytime shift pattern)	
Shopping centre	9.00am - 7.00pm	
Supermarket	8.00am - 10.00pm	
Bank/Service provider	8.00am - 6.00pm	
Convenience store	7.00am - 10.00pm	
DIY/retail park	8.00am - 8.00pm	
Other retail	8.00am - 6.00pm	
Bespoke & other	8.00am - 7.00pm Or use any of the above hours, as appropriate to the building type.	
24 hour use building	7am - 8pm	

Calculation methodology

The methodology for calculating the *Accessibility Index* uses Transport for London's *Public Transport Accessibility Level* (PTAL) method, itself based on a methodology developed in 1992 by the London Borough of Hammersmith and Fulham. For a description of the PTAL methodology and how it works refer to appendix B of *Transport Assessment Best Practice; Guidance Document*: http://www.tfl.gov.uk/assets/downloads/corporate/TAGuidance_LQ.pdf

Buildings in Greater London

There is a public transport accessibility map for Greater London which can be used for determining the *Accessibility Index* for assessed buildings, without necessarily having to complete a separate calculation. This map can be found at:
http://www.london.gov.uk/thelondonplan/maps-diagrams/map-2a-03.jsp

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Transport
Tra 1 – Provision of public transport

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

The map shows the Public Transport Accessibility Levels throughout London (PTALs range from 1-6); the PTAL is determined using the AI as follows:

PTAL	AI
1	0.00 – 5.00
2	5.01 – 10.00
3	10.01 – 15.00
4	15.01 – 20.00
5	20.01 – 25.00
6	25.01 +

As an example, if the building is located in an area of London that has a PTAL of 2 this could have an AI at any point in the 5-10 range. As such, for the purpose of BREEAM, the lower AI of 5 must be assumed and the credit awarded accordingly, or alternatively the specific AI for the assessed building can be determined using the *Tra1 Provision of Public Transport calculator* and, potentially, a higher number of credits awarded.

References

1. "*Transport Assessment Best Practice; Guidance Document*", Transport for London, 2006.

2. Information sheet FH05 *"Safe routes to healthcare",* SUSTRANS. (http://www.sustrans.org.uk/default.asp?sID=1095157705812)

3. Health Technical Memorandum 07-03, "*Transport Management and Car Parking*". Department of Health, 2006.

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BREEAM : Healthcare : 2008
Transport
Tra 2 – Proximity to amenities

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To encourage and reward a building that is located in proximity to local amenities, thereby reducing the need for extended travel or multiple trips.

Credit criteria

Credits	
1	Where evidence provided demonstrates that the building is located within 500m of *accessible local amenities* appropriate to the building type and its users.

Compliance requirements

The following demonstrates compliance:

1. Where the building is within 500m of the following amenities:
    a. Grocery shop and/or food outlet
    b. Post box
    c. Cash machine
    d. Pharmacy

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.
Food Outlet	This includes the following: • Grocery shop • Supermarket • Sandwich shop • On- or off-site cafeteria or staff canteen
Collective amenities	One type of amenity may also exist within or a part of other types of amenities e.g. grocery store in a petrol station, cash point or pharmacy in a supermarket etc. It is not a requirement of the credit that each amenity is 'stand alone'.

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BREEAM : Healthcare : 2008
Transport
Tra 2 – Proximity to amenities

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Accessible local amenities	The distance must be measured via safe pedestrian routes e.g. pavements and safe crossing points or, where provided, dedicated pedestrian crossing points. The distance should not be measured in a straight line, '*as the crow flies*'.
Amenities within building	Amenities within the building or on the site (provided within 500m of assessed building) meet the credit requirements.
Phased developments	The guidance provided in BREEAM credit Tra 1, concerning phased developments, also applies to this issue.

Schedule of Evidence Required

Req.	Design Stage	Post Construction Stage
1	Marked-up site plan or map highlighting: • Location of assessed building • Location and type of amenities • The route to the amenities • Plan/map scale	Assessor's building/site inspection and photographic evidence confirming: • The existence of the local amenities • The route and distance to the amenities.
	Where the amenities do not currently exist, but are due to be developed, a letter from the client/developer confirming: • The location and type of amenities to be provided • The timescale for development of the amenities.	Evidence as outlined at the design stage of assessment. **OR** As above where amenities developed, or under development at the time of post construction review/assessment.

Additional information

Relevant definitions
None.

References

1. Planning Policy Guidance Note 13 – "*Transport*", Department for Transport, 2002.

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BREEAM : Healthcare : 2008
Transport
Tra 3 – Cyclist facilities

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To encourage building users to cycle by ensuring adequate provision of cyclist facilities.

Credit criteria

Credits	
1	Where evidence provided demonstrates that covered, secure and well-lit cycle storage facilities are provided for all *building users*.
2	Where, in addition to the above, adequate changing facilities are provided for staff use.

Compliance requirements

The following demonstrates compliance:

First credit

1. The number of *compliant cycle storage spaces* provided is as follows:
    a. 10% of *building users* up to 500 **PLUS**
    b. 7% for *building users* in the range of 501 – 1000 **PLUS**
    c. 5% for *building users* over 1000

    AND

    Buildings designed for outpatients only:
    d. 1 *compliant cycle storage space* provided for every two consulting rooms, subject to a minimum of 4 *compliant cycle storage spaces*.

    OR

    Buildings designed for inpatients:
    e. 1 *compliant cycle storage space* provided for every 10 beds, subject to a minimum of 4 *compliant cycle storage spaces*.

Second credit

1. The first credit must be achieved.

2. At least two of the following *compliant facilities* must be provided for the *building users*:
    a. Compliant showers
    b. Compliant changing facilities and lockers for clothes

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BREEAM : Healthcare : 2008
Transport
Tra 3 – Cyclist facilities

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

c. Compliant drying space for wet clothes

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	Refer to the compliance note below on existing compliant facilities.
Compliant cycle storage space	Compliant cycle storage facilities are those that meet the following: • The space is covered overhead and protected from the rain • The covered area and the cycle racks are set in or fixed to a permanent structure (building or hardstanding) and allow both the wheel and frame to be locked securely (e.g. Sheffield type). Or racks are located in a locked structure fixed to or part of a permanent structure with CCTV surveillance. • There is a minimum distance of 1.0m between cycle racks, where the racks allow for two-sided parking, and 0.8m for one-sided parking to enable bikes to be easily stored and accessed. • Racks positioned in a circular array are spaced in accordance with the guidance in the New Metric Handbook [5]. • There is a minimum distance from any obstruction e.g. wall (located either to the side of the stand or in front of it) of 300mm for single-sided use and 900mm for double-sided use. • Adequate lighting is provided in accordance with BS5489 Part 1 – *Lighting of roads and amenity areas*. • The facilities are in a prominent site location that is viewable from the building. • The majority of the cycle racks are within 100m of a building entrance (ideally within 50m).
Vertical bike racks	Vertical racks, which allow direct access (without the need to get alongside the locked bike) and permit one bike per vertical stack can comply with the requirements (provided all other requirements are met). For this type of rack, the distance between each rack can be less than 1.0m but not less than 600mm (the typical width of a bike across the handlebars).
Non compliant cycle racks	These types of cycle storage devices do not comply with BREEAM: • Hooks and wall attachments • Single wheel (butterfly) bike rack holders (these racks provide less security and can cause damage to bike wheels).
Compliant showers	One shower must be provided for every 10 cycle storage spaces and both male and female users catered for i.e. either separate showers within shared gender-specific facilities or single shower cubicles and

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BREEAM : Healthcare : 2008
Transport
Tra 3 – Cyclist facilities

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

	changing space for mixed use. The showers can be available for others to use in addition to cyclists.
Compliant changing facilities & lockers	Changing facilities and locker requirements; • For each shower provided, there is a minimum of 1m^2 of changing space adjacent to the shower(s) with hooks for hanging clothes. • The number of lockers is at least equal to the number of cycle spaces provided. • Lockers are either in or adjacent to compliant changing rooms. Where the changing space is a cubicle the locker(s) must not be located within the cubicle. • Each locker is at least 900mm X 300mm X 450mm, or a locker with dimensions that provide an equivalent volume of storage space. • Both male and female users are catered for i.e. either gender specific, shared facilities or single changing cubicles in mixed use areas. • Toilet/shower cubicles do not count as changing facilities.
Compliant drying space	The drying space (for wet clothes) must be a specially designed and designated space with adequate heating/ventilation. A plant room is not a compliant drying space.
Existing compliant facilities	For assessments of new *infill* buildings on an existing site, where there are existing compliant facilities, such facilities can be assessed against the requirements of this credit. The number of existing compliant facilities must be large enough to cater for the building users of the assessed building, in addition to the users from any existing buildings.
Minimum number of facilities	Where more than the minimum number of compliant cycle spaces is provided, it is not necessary to also provide more than the minimum number of showers/lockers/changing facilities.
Building users	The number of staff that will work within the building must be used to determine the number of compliant facilities that must be provided. Where the term *building users* is referenced this refers to the staff, visitors and patients who will travel to and use or work within the building. As such the compliant cycle facilities must be accessible to all these *building users*. Staff numbers are the means by which compliance with the credit criteria is determined.
City centre locations	Sites in city centre locations can reduce by 50% the requirements for *compliant cycle spaces* where at least **three** of the available BREEAM credits for provision of public transport (T1) have been awarded.
Rural locations	Sites in rural locations can reduce by 50% the requirements for *compliant cycle spaces* where the average building user commuting distances are likely to be greater than 10 miles. A rural location is one where the site is on land clearly not within or on an urban boundary; this includes village locations and green field sites.

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Transport
Tra 3 – Cyclist facilities

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Schedule of Evidence Required

Req.	Design Stage	Post Construction Stage
First Credit		
1	Site plan, design drawings and/or a copy of the specification confirming: • The location of the cycle storage facilities • The number of cycle spaces provided • The type, dimensions and layout of cycle racks • The materials and construction specified for the facility. • The lighting for the facility is in accordance with BS5489 Part 1. • Building occupancy or, where relevant, net lettable/floor area. Where the building is in a city centre location, and the benchmarks reduced, evidence as outlined under BREEAM credit T1 demonstrating the relevant number of credits achieved.	Assessor's building/site inspection and photographic evidence confirming the installation of the compliant facilities.
Second credit		
1	Evidence (as outlined above) confirming compliance with the first credit.	Evidence (as outlined above) confirming compliance with the first credit.
2	Design drawings or a copy of the specification confirming: • Number of showers • Changing room • Secure locker locations, dimensions and numbers • Drying space	Assessor's building/site inspection and photographic evidence confirming the installation of the compliant facilities.

Additional information

Relevant definitions
None.

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Transport
Tra 3 – Cyclist facilities

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

References

1. "*Providing for cyclists - A code of practice*", Sustrans/cyclists' Public affairs group/CTC, 1997.

2. Transport for London Street Management "*Cycle Parking Standards TfL Proposed Guidelines*", TFL.

3. "*London Cycling Design Standards*", Transport for London, 2005.

4. BS 5489-1 :2003 Code of practice for the design of road lighting *"Lighting of roads and public amenity areas*", BSI.

5. "*Metric handbook – planning and design data*", Adler, Architectural Press 3rd Ed. 2007.

6. "*Transport Interventions Promoting Safe Cycling and Walking*", National Institute for Health and Clinical Excellence (NICE), 2005.

7. Health Technical Memorandum 07-03 "*Transport Management and Parking*", Department of Health, 2006.

8. Information Sheet FH05: "*Safe Routes to Healthcare*", Sustrans.

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BREEAM : Healthcare : 2008
Transport
Tra 4 – Pedestrian and cyclist safety

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To recognise and encourage the provision of safe and secure pedestrian and cycle access routes on the development.

Credit criteria

Small healthcare buildings e.g. GP surgery, NHS walk-in centres

Credits	
1	Where evidence provided demonstrates that the site layout has been designed in accordance with best practice to ensure safe and adequate pedestrian and cycle access.

Medium and large buildings e.g. acute, teaching, specialist and mental health hospitals

Credits	
1	Where evidence provided demonstrates that the site layout has been designed in accordance with best practice to ensure safe and adequate cycle access.
1	Where evidence provided demonstrates that the site layout has been designed in accordance with best practice to ensure safe and adequate pedestrian access.

Compliance requirements

The following demonstrates compliance:

1. Where external site areas form part of the assessed site and these areas contain vehicle access roads, parking and/or pedestrian access to the building, adequate cycle lanes and pedestrian pathways must be provided. If the building does not have any external areas and internal access is directly from the public highway/footpath, then the credit(s) can be awarded on a default basis

Cycle access requirements (First credit - large developments)

2. The cycle lanes have been designed and constructed in accordance with the guidance in the National Cycle Network "*Guidelines and Practical Details – issue 2*", Sustrans[1] and the relevant parts of Appendix VI *NCN Design and Construction Checklist*

3. The cycle lanes and pedestrian paths meet the following minimum width dimensions:

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BREEAM : Healthcare : 2008
Transport
Tra 4 – Pedestrian and cyclist safety

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

a. Where pedestrian and cycle routes are shared the minimum total width of the combined path is 3.0m
b. Where the cycle lane is segregated from both the pedestrian route and carriageway the minimum width of the cycle path is 2.0m and the minimum width of the pedestrian path is 1.5m
c. Where the cycle route forms a part of the carriageway, the minimum width of the lane is 1.5m

Minimum widths should not be regarded as the design target, where possible best practice as detailed in the Sustrans[1] and DfT[2] guidance must be aimed for.

4. Cycle lanes provide direct access to any cycle storage facilities provided on the site, without the need to deviate from the cycle path and, if relevant, connect to offsite cycle paths where these run adjacent to the development's boundary.

Pedestrian access requirements (Second credit - large developments)

5. Onsite footpaths connect to public footpaths off site, providing access to local transport nodes and other offsite amenities (where present).

6. Where provided, drop-off areas are designed off the access road and provide direct access to pedestrian pathways/areas, therefore avoiding the need for the pedestrian to cross vehicle access routes.

7. Where dedicated pedestrian crossing of a vehicle access route is provided, the road is raised to the pavement level (i.e. the pavement is not lowered to road level).

8. For larger developments with a high number of public users/visitors, pedestrian pathways must be signposted to other local amenities off site, including public transport nodes.

Combined cyclists and pedestrian access requirements

9. Delivery areas are not accessed through parking areas and do not cross or share pedestrian and cyclist routes and other outside amenity areas accessible to building users and general public.

10. Lighting design of pedestrian pathways and cycle paths on site are in compliance with CIBSE Lighting Guide 6, 1992 (LG6)[6] and BS5489 Part 1[5].

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.

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Transport
Tra 4 – Pedestrian and cyclist safety

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Second Credit	The credits can be awarded independently of each other i.e. one credit can still be awarded for compliant pedestrian routes where cycle routes do not comply and vice versa.
NCN Design and Construction checklist	The checklist can be downloaded from: http://www.sustrans.org.uk/webfiles/guidelines/appendix.pdf
Covered parking area	Where the assessed building has no external areas but does have a covered parking facility and cyclists and/or pedestrians access the assessed building via this area, then the requirements apply and this area must be assessed against them.

Schedule of Evidence Required

Req.	Design Stage	Post Construction Stage
1 & 3-9	A scaled proposed site plan, specification and/or design details highlighting all necessary features and dimensions.	Assessor's building/site inspection and photographic evidence confirming compliance. **AND/OR** 'As built' site plan and design details.
2	A copy of the specification or scaled proposed site plan confirming: • Cycle routes have been or will be designed in accordance with the best practice guidance[1] **AND** • A signed and dated copy of the *NCN Design and Construction Checklist* from the design/project team (or completed by the assessor using design information).	A signed and dated post construction copy of the *NCN Design and Construction Checklist* from the design/project team (or completed by the assessor during their site visit).
10	A copy of the specification, site plan and/or manufacturer's technical details. confirming: • External lighting design strategy.	Assessor's building/site inspection and photographic evidence confirming compliant installation. The assessor is not expected to check every detail but that the lighting strategy is broadly compliant with the relevant guidance, demonstrated by checking compliance at their discretion with select key issues.

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BREEAM : Healthcare : 2008
Transport
Tra 4 – Pedestrian and cyclist safety

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Additional information

Relevant definitions
None.

References

1. The National Cycle Network – "*Guidelines and Practical Details issue 2*", Sustrans, 1997. (www.sustrans.org.uk/default.asp?sID=1149001882109)

2. LTN 2/04 – "*Adjacent and Shared Use Facilities for Pedestrians and Cyclists*", DfT, 2005. (www.dft.gov.uk/consultations/archive/2004/ltnwc/ltn204adjacentandsharedusefa1692?page=1)

3. Local Transport Note 2194: "*Directional Information Signs*" - Interim Design Note, DfT.

4. Information Sheet FF04 "*Shared Use Routes*", Sustrans, 1998.

5. BS5489-1:2003 "*Lighting of roads and public amenity areas*", BSI.

6. Lighting Guide 6 (LG6) - "*The outdoor environment*", CIBSE, 1992.

7. "*Transport Interventions Promoting Safe Cycling and Walking*", National Institute for Health and Clinical Excellence (NICE), 2005.

8. Health Technical Memorandum 07-03 "*Transport Management and Parking*", Department of Health, 2006.

9. Information Sheet FH05: "*Safe Routes to Healthcare*", Sustrans.

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BREEAM : Healthcare : 2008
Transport
Tra 5 – Travel plan

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To recognise the consideration given to accommodating a range of travel options for building users, thereby encouraging the reduction of user reliance on forms of travel that have the highest environmental impact.

Credit criteria

Credits	
1	Where evidence provided demonstrates that a travel plan has been developed and tailored to the specific needs of the *building users*.

Compliance requirements

The following demonstrates compliance:

1. A travel plan has been developed as part of the feasibility and design stages which considers all types of travel relevant to the building type and *users*.

2. The travel plan is structured to meet the needs of the particular site and takes into consideration the findings of a site-specific transport survey and assessment that covers the following (as a minimum):
    a. Where relevant, existing travel patterns and opinions of existing *building or site users* towards cycling and walking so that constraints and opportunities can be identified
    b. Travel patterns and transport impact of future *building users*
    c. Current local environment for walkers and cyclists (accounting for visitors who may be accompanied by young children)
    d. Disabled access (accounting for varying levels of disability and visual impairment)
    e. Public transport links serving the site
    f. Current facilities for cyclists

3. The travel plan includes a package of measures that have been used to steer the design of the development in order to meet the travel plan objectives and minimise car-based travel patterns. This is demonstrated via specific examples such as:
    a. Providing parking priority spaces for car sharers
    b. Providing dedicated and convenient cycle storage and changing facilities
    c. Lighting, landscaping and shelter to make pedestrian and public transport waiting areas pleasant
    d. Negotiating improved bus services, i.e. altering bus routes or offering discounts
    e. Restricting and/or charging for car parking
    f. Requirements for lobby areas where information about public transport or car sharing can be made available

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BREEAM : Healthcare : 2008
Transport
Tra 5 – Travel plan

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

g. Pedestrian and cycle friendly (for all types of user regardless of the level of mobility or visual impairment) via the provision of cycle lanes, safe crossing points, direct routes, appropriate tactile surfaces, well lit and signposted to other amenities, public transport nodes and adjoining offsite pedestrian and cycle routes.

4. The travel plan will be implemented post construction and supported by the building's management during building operation.

Acute buildings and those with on-site catering/laundry facilities

5. The travel plan includes measures tailored to minimise the impacts of operational-related works on site, deliveries of food and other supplies / equipment / services to the building.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.
Building users	Where the term *building users* is referenced, this refers to members of staff (who travel to, from and around the site), patients and visitors, community users and personnel who make deliveries to the development.
Existing Travel Plan	The credit can be awarded if the building being assessed is a refurbishment or infill new build on an existing site that has an existing up-to-date travel plan that is compliant with BREEAM and applicable to all building users (in the existing and assessed buildings).

Schedule of Evidence Required

Req.	Design Stage	Post Construction Stage
1-3	A copy of the Travel Plan. A copy of the site-specific transport survey/assessment.	The evidence required at this stage is the same as that outlined at the design stage.

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BREEAM : Healthcare : 2008
Transport
Tra 5 – Travel plan

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

3	A marked-up copy of the site plan demonstrating examples of design measures, implemented in support the travel plan's findings. OR Where a detailed site plan is not available, a formal letter from the client confirming that measures will be implemented into the final design in support the travel plan's findings.	Assessor's building/site inspection and photographic evidence confirming: • The installation of measures that support the travel plan.
4	Written confirmation from the Trust board or senior NHS management that the travel plan will be implemented once the building/site becomes occupied.	The evidence required at this stage is the same as that outlined at the design stage.
5	For *acute developments*, a section within the Travel Plan or written confirmation that the plan will address deliveries and contractors.	

Additional information

Relevant definitions

Travel Plan: A travel plan is a strategy for managing all travel and transport within an organisation, principally to increase choice and reduce reliance on the car by seeking to improve access to a site or development by sustainable modes of transport. A travel plan contains both physical and behavioural measures to increase travel choices and reduce reliance on single-occupancy car travel.

Acute Buildings: Buildings for patients having an acute illness or injury or recovering from surgery, usually general and specialist hospitals.

References

1. "*A travel plan resource pack for employers*", DfT, 2000.
2. "*A good practice guide to green travel plans*" BCO, 2004.
3. "*The Essential Guide to Travel Planning*", DfT, 2008.
4. Transport Energy Best Practice "*A Guide on Travel Plans for Developers*", DfT, 2005.

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BREEAM : Healthcare : 2008
Transport
Tra 5 – Travel plan

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

5. Traffic Advisory Leaflet 2/00 "*Framework for a local walking strategy*", DETR, 2000.
6. BS 8300:2001 "*Design of buildings and their approaches to meet the needs of disabled people – code of practice*", BSI, 2001.
7. Approved Document Part M "*Access to and Use of Buildings*", ODPM, 2006.
8. "*Guidance on the use of Tactile Paving Surfaces*", DETR & The Scottish Office,1998.
9. "*Building Sight*", RNIB, 1995.
10. "*Transport Interventions Promoting Safe Cycling and Walking*", National Institute for Health and Clinical Excellence (NICE), 2005.
11. Health Technical Memorandum 07-03 "*Transport Management and Parking*", Department of Health, 2006.
12. SHTM 07-03 "*Transport Management and Car Parking*", Health Facilities Scotland.
13. "*Travel Plans: An Overview*" The Scottish Government, 2002.
14. Scottish Planning Policy (SPP) 17 "*Planning for Transport*", The Scottish Government, 2005.
15. Planning Advice Note (PAN) 75 "*Planning for Transport*", Scottish Executive, 2005.
16. Information Sheet FH05: "*Safe Routes to Healthcare*", Sustrans.

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BREEAM : Healthcare : 2008
Transport
Tra 6 – Maximum car parking capacity

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To encourage the use of alternative means of transport to the building other than the private car, thereby helping to reduce transport related emissions and traffic congestion.

Credit criteria

Credits	
1	Where evidence provided demonstrates that the number of parking spaces provided for the building has been limited.

Compliance requirements

The following demonstrates compliance:

Buildings designed for outpatients e.g. GP surgeries, NHS walk-in centres, Health centres

1. The maximum number of parking spaces provided must not be greater than the total of the following:
    a. One parking space for every two medical staff **PLUS**
    b. One parking space for every three non-medical staff **PLUS**
    c. Two parking spaces for each consulting, examination, treatment, therapy room and A&E cubicle.

Buildings designed for inpatients e.g. acute, teaching, specialist, mental health hospitals

1. The maximum number of parking spaces provided must not be greater than the total of the following:
    a. One parking space for every four staff. **PLUS**
    b. One parking space for every four beds. **PLUS**
    c. Two parking spaces for each consulting, examination, treatment, therapy room and A&E cubicle **PLUS**
    d. One parking space for every two staff residential beds.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.

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BREEAM : Healthcare : 2008
Transport
Tra 6 – Maximum car parking capacity

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.
Variable occupancy	Where the number of building users is variable, provision of parking spaces should be based on the maximum number of building users likely to be using the building at any time.
Disabled, mother & baby & motorbike spaces	Parking spaces for these building users can be excluded from the assessment of this issue provided these spaces are dedicated for this use and they are sized accordingly with the appropriate signage/markings.
Car share spaces	Car share spaces can be excluded from the assessment provided these spaces are dedicated for this use with the appropriate signage and the future building occupier confirms they have an enforceable car share policy. The assessor must obtain a copy of the policy and related documentation. Where there is no policy these spaces must be included within the calculation.
Parking shared with other buildings	Where the building being assessed forms part of a wider site development and parking is not designated to specific buildings, then this credit must be assessed on the provision of parking spaces for the whole development, accounting for all existing and new users and parking spaces.
	Where the numbers of users for the whole site cannot be confirmed, then the parking spaces can be attributed to the assessed development on the basis of the ratio of assessed building floor area to total building floor area of the whole site. E.g. if the assessed building is 20% of the total building area for the site then attribute 20% of the parking spaces to the building for the purpose of the assessment.
Number of parking spaces	The car parking spaces required are cumulative, and include patient and visitor spaces as well as staff spaces.

Schedule of Evidence Required

Req.	Design Stage	Post Construction Stage
1	A site plan or copy of the specification confirming: • Number and type of parking spaces provided for the building.	Assessor's building/site inspection and photographic evidence confirming: • Number and type of parking spaces provided for the building.

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BREEAM : Healthcare : 2008
Transport
Tra 6 – Maximum car parking capacity

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

	Relevant documentation or correspondence from the design team or client confirming: • The maximum number of staff using the building during a typical shift • The number of patients' and residential beds • The number of consulting, examination, treatment, therapy room and A&E cubicle rooms.	Evidence as outlined at the design stage. **OR** A physical check by the assessor of the relevant numbers (if practical).

Additional information

Relevant definitions
None.

References

1. Health Technical Memorandum 07-03; "*Transport management and car-parking*", Department of Health, February 2006.

2. SHTM 07-03; "*Transport Management and Car-parking*", Health Facilities Scotland, (under production at time of publication).

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BREEAM : Healthcare : 2008
Transport
Tra 7 – Travel information point

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To ensure the building has the capacity to provide users with up-to-date information on local public transport routes and timetables.

Credit criteria

Credits	
1	Where evidence provided demonstrates there is a dedicated space within the development for the provision of real-time public transport information.

Compliance requirements

The following demonstrates compliance:

Medium and large healthcare buildings e.g. acute, teaching, specialist, mental health hospitals

1. A real-time public transport information system, where *building users* can access up-to-date public transport information and plan their journey, is provided.

2. The system must be in a publicly accessible area with adequate signage at its point of use and throughout appropriate areas of the development indicating its purpose and location/existence.

Small healthcare buildings e.g. GP surgery and NHS walk-in centres

1. There is a dedicated space for the provision of local public transport and taxi information.

2. There are no specific size requirements as the information could be presented using a wall-mounted lockable noticeboard or electronically. However, the following apply;
    a. The space is secure and tamper-proof
    b. A power point and network access point is provided within the space to facilitate future installation and connection of an electronic 'real-time' system or internet access point.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.

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BREEAM : Healthcare : 2008
Transport
Tra 7 – Travel information point

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.
Building users	Where the term *building users* is referenced this refers to patients, all staff and visitors/community users.
Location of 'Travel Information Point'	The information point does not necessarily have to be situated internally. If sited externally however, it must be covered, in an area that is readily accessible to building users and within close proximity of the main entrance or pedestrian routes to and from local public transport nodes, parking areas and the main building entrance.
Existing travel information facilities	The credit can be awarded where there is an existing maintained real-time information point within 250m of the assessed development's main entrance via a safe pedestrian route (not '*as the crow flies*').

Schedule of Evidence Required

Req.	Design Stage	Post Construction Stage
1&2	Design plan and/or a copy of the relevant specification clause(s) confirming: • Location and scope of the travel information point/facility	Assessor's building/site inspection and photographic evidence confirming compliant installation of the travel information point(s).

Additional information

Relevant definitions

Real time passenger information system: An electronic system that provides up-to-date, i.e. real time, information on local public transport service(s). Primarily how close the service is running to time and when it is due at a node/interchange and, potentially, incidents that affect service operations, platform changes etc.

References

1. "*Wayfinding: effective wayfinding and signing systems - guidance for healthcare facilities",* NHS Estates, 2005.

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BREEAM : Healthcare : 2008
Transport
Tra 8 – Deliveries and manoeuvring

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To ensure that safety is maintained and disruption due to delivery vehicles minimised through well-planned layout and access to the site.

Credit criteria

Credits	
1	Where evidence provided demonstrates that vehicle access areas have been designed to ensure adequate space for manoeuvring delivery vehicles and provide space away from manoeuvring area for storage of refuse skips and pallets.

Compliance requirements

The following demonstrates compliance:

1. Parking and turning areas are designed for simple manoeuvring according to the type of delivery vehicle likely to access the site, thus avoiding the need for repeated shunting.

2. There is a separate parking area for waiting goods vehicles, away from the manoeuvring area and staff/visitor car parking.

3. Delivery areas are not accessed through parking areas and do not cross or share pedestrian and cyclist routes and other outside amenity areas accessible to building users and general public.

4. There is a dedicated space for the storage of refuse skips and pallets away from the delivery vehicle manoeuvring area and staff/visitor car parking.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.

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BREEAM : Healthcare : 2008
Transport
Tra 8 – Deliveries and manoeuvring

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Small buildings	For the purpose of this credit, smaller buildings/units (i.e. <999m^2) and developments where heavy goods vehicles are unlikely to access the site, the requirements for the manoeuvring area need be sized only to accommodate large delivery vans (i.e. transit type or similar).

Schedule of Evidence Required

Req.	Design Stage	Post Construction Stage
1-3	Proposed site plan clearly showing: • Manoeuvring area • Delivery vehicle waiting area • Designated area for skips/pallets Appropriate documentation or correspondence from the design team confirming: • Likely vehicle delivery type that will access the development. • Predicted frequency of deliveries	Assessor's building/site inspection and photographic evidence confirming the existence of a compliant delivery area.

Additional information

Relevant definitions
None.

The Metric Handbook contains details of typical delivery/freight vehicle sizes and turning circles.

References

1. "*Metric handbook – planning and design data*", Adler, Architectural Press 3rd Ed. 2007.

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Water Section

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BREEAM : Healthcare : 2008
Water
Wat 1 – Water Consumption

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	1	1	1	2

Credit aim

To minimise the consumption of potable water in sanitary applications by encouraging the use of low water use fittings.

Credit criteria

Credits	
3	Where evidence provided demonstrates that the specification includes taps, urinals, WCs and showers that consume less potable water in use than standard specifications for the same type of fittings.

Compliance requirements

The following demonstrates compliance:

First credit

1. All WCs have an *effective flush volume* of 4.5 litres or less.

2. Where dual flush toilets are specified they have guidance or symbols instructing the user on the appropriate operation of the flushing device. This can be provided on the flush control buttons, cistern, or nearby for a group of cisterns.

3. The flushing control is suitable for operation by patients with frail or infirm hands or activated by electronic sensors.

Second credit

4. Taps have a maximum flow rate less than 6 litres/min for a water pressure of 0.3MPa and are one of the following types:
   - Timed automatic shut-off taps e.g. push taps
   - Electronic sensor taps.

   This requirement does not apply to 'scrub' facilities in clinical areas, cleaners' taps, kitchen and external taps or other instances where such fittings would be inappropriate for medical/health-related reasons (such instances must be justified by the design team).

Third credit

5. First and second credits are achieved.

6. Of the following, the two that offer the greatest possible reduction in annual water consumption have been specified:

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BREEAM : Healthcare : 2008
Water
Wat 1 – Water Consumption

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	1	1	1	2

a. All WCs have an effective flush volume of 4 litres or less, or 4.5 litres and fitted with a *delayed action inlet valve* and, where specified:
   - Dual flush toilets have guidance or symbols instructing the user on the appropriate operation of the flushing device. This can be provided on the flush control buttons, cistern, or nearby for a group of cisterns.
   - The flushing control is suitable for people with frail hands or activated by electronic sensors.

b. All showers, where specified, have a measured flow rate that does not exceed 9 litres per minute for a water pressure of 0.3MPa, assuming a delivered water temperature of 37ºC.

c. All urinals are either:
   - Fitted with individual presence detectors that operate the flushing control after each use.
   - Ultra low flush or waterless urinals.

d. All baths have a capacity of 100 litres to the overflow and each bath is fitted with a device that automatically stops the flow from the taps when the bath's maximum capacity is reached.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	Where a project under assessment consists solely of an extension, and no new sanitary facilities are to be provided, facilities provided in the existing building should be assessed (this refers to the nearest accessible facilities for each gender/function, where appropriate, i.e. those likely to be used by the occupants and visitors in the extension building).
No Fittings specified	Where no sanitary fittings are to be installed in the building being assessed then the credit must be assessed on the basis of the nearest accessible facilities likely to be used by the occupants of the assessed building.
Showers with a range of flow rates	Where a shower head delivers a range of flow rates, the average or typical flow rate should be used.
Swimming / Hydrotherapy Pools	Where the assessment is of a building containing a swimming pool or hydrotherapy pools, the requirements of this credit, with respect to showers, are also applicable to all 'pre-swim-showers, in addition to all 'post-swim' showers within the wet change facilities.
Scrub taps	Although scrub taps are excluded from the scope of this credit, HTM07-04[3] contains guidance on water savings from medical related activities.

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Water
Wat 1 – Water Consumption

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	1	1	1	2

Waterless urinals	Due to overriding health and safety concerns in some healthcare facilities, the specification of waterless urinals may not be feasible. In such cases, compliance can be sought by one of the other available means, e.g. ultra low flush volume or infra-red proximity.
Infection control in healthcare facilities	In some cases, the use of water-efficient fittings and appliances may not be appropriate to the needs of the patient, and inappropriate specification may adversely affect the incidence and propagation of infections. In such instances, the assessor will need to confirm with the BREEAM office the approach for assessing this credit in these building areas. Furthermore, the design team should consult NHS guidelines concerning appropriate selection of sanitary fittings and fixtures and the control of legionella.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
All	A copy of the relevant section of the M&E specification and/or manufacturer's details confirming: • Technical specification for sanitary fittings (flow rate) and controls to be installed. Design plan showing the location within the building of the sanitary facilities.	Assessor's building/site inspection report and photographs confirming: • The type and amount of fittings and controls installed. Manufacturer's details for installed fittings/controls confirming the technical specification.

Additional information

Clinical areas: Refer to BREEAM issue Hea 2.

Delayed action inlet valve: Devices that prevent water entering the WC cistern until it has completely emptied, enabling a precise volume of water to be discharged independent of water pressure.

Effective flush volume: The volume of water needed to clear the toilet pan and transport any content far enough to avoid blocking the drain.

Dual Flush Cisterns: Devices that have the facility to provide lower flush volume for liquids and higher flush volume for solids and paper.

Calculating the effective flushing volume of dual flush toilets: For dual flush WCs the ratio *full flush:reduced flush* is taken to be 1:3 for non-domestic buildings. The effective flush volume can therefore be calculated as follows, using a 6/4 litre dual flush volume WC:

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Water
Wat 1 – Water Consumption

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	1	1	1	2

((6 Litre*1) + (4 Litre*3))/4

= 4.5 Litre effective flushing volume

Product Certification of Low Flush WCs
Product certification schemes provide specifiers and clients with greater assurance of manufacturers' claim regarding the performance of the actual flush volume of their products and therefore the potential water savings of different products. At present BREEAM does not require that the flushing volume of WCs (or any other water-consuming device) meet an approved standard to gain BREEAM credits.

BRE Global currently operates a certification and listing scheme for low flush WCs and products certified to this standard will be listed on www.greenbooklive.com. Green Book Live is a free-to-view online database designed to assist specifiers and end users in the identification of environmentally beneficial products and services. If you would like to know more information about the Certification and Listing of Low Flush WCs Scheme please contact BRE Global at enquiries@breglobal.com

References

1. "*Water Supply (Water Fittings) Regulations*", DEFRA, 1999.

2. Water Systems - Health Technical Memorandum 04-01: Parts A and B: "*The control of Legionella, hygiene, 'safe' hot water, cold water and drinking systems – part A: design, installation, and testing*". Department of Health 2006.

3. Health Technical Memorandum 07-04: "*Water Management and Water Efficiency – best practice advice for the healthcare sector*", Department of Health 2008.

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BREEAM : Healthcare : 2008
Water
Wat 2 – Water Meter

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	1	1	1	1

Credit aim

To ensure water consumption can be monitored and managed and therefore encourage reductions in water consumption.

Credit criteria

Credits	
1	Where evidence provided demonstrates that a water meter with a pulsed output will be installed on the mains supply to each building/unit.

Compliance requirements

The following demonstrates compliance:

1. The specification of a water meter on the mains water supply to each building; this includes instances where water is supplied via a borehole or other private source.

2. The water meter has a pulsed output to enable connection to a Building Management System (BMS) for the monitoring of water consumption.

   Where the site has an existing BMS, the pulsed water meter for the new building must be connected to this BMS.

3. If there is a swimming pool on site within the scope of the assessment, the building housing it must be covered by a separate meter in accordance with the above requirements. The changing facilities (including showers, toilets etc) housed in this building should also be covered by this meter.

Exemplary level requirements
The following outlines the exemplary level requirements to achieve an *innovation credit* for this BREEAM issue:

1. Where sub meters are fitted to allow individual water-consuming plant or building areas to be monitored such as cooling towers, car washes, catering areas, etc. If the building does not have any major water consuming plant this exemplar credit is not available.

2. Each sub meter has a pulsed output to enable connection to a Building Management System (BMS) for the monitoring of water consumption.

3. In addition to the above, for sites with multiple departments e.g. large health centres or acute hospitals, separate pulsed sub meters are fitted on the supply to the following areas where present:

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BREEAM : Healthcare : 2008
Water
Wat 2 – Water Meter

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	1	1	1	1

a. Staff and public areas
b. Clinical areas and wards
c. Letting areas: On the water supply to each tenant unit
d. Laundries
e. Main production kitchen
f. Hydrotherapy pools
g. Laboratories
h. CSSD/HSDU, pathology, pharmacy, mortuary and any other major process water user.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	If no new water supply is being installed because occupants of the extended building will use the facilities in, and therefore water supply to the existing building, then the credit should be assessed on the basis of whether a compliant water meter is installed on the existing supply.
No water supply to the building/unit	If there is no water supply to the building during operation because there will be no installed water-consuming fittings in the building, then the credit must be assessed on the basis of the water supply to the nearest accessible building with such facilities, likely to be used by the future occupants of the assessed building.
Cold water tank	Where water supply to the building is supplemented by a supply from a separate cold water tank, the supply from the tank should be separately metered.
Existing BMS	Where the site has an existing BMS, the pulsed water meter for the new building must be connected to this BMS.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
All	A copy of the specification clause confirming: • The specification and type of water meter(s). • Where relevant, connection of the meter to an existing BMS. Design plan(s) showing: • Location of the water meter(s) in each assessed building/unit.	Assessor's building/site inspection report and photographs or 'as built' drawings confirming: • The location of the water meter(s). Manufacturer's details confirming: • The specification of a pulsed output on the installed meter(s). If connected to a BMS, the assessor's site inspection confirming live meter

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BREEAM : Healthcare : 2008
Water
Wat 2 – Water Meter

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	1	1	1	1

		readings can be used in lieu of manufacturer's details confirming specification of a pulsed output.

Additional information

Relevant definitions

Staff areas: Refer to BREEAM issue Hea 2.

Clinical areas: Refer to BREEAM issue Hea 2.

Patient areas: Refer to BREEAM issue Hea 2.

CSSD: Central Sterile Supply Department

HSDU: Hospital Sterilisation and Disinfection Unit

The requirement for a pulsed output has been included to encourage the use of meters capable of transmitting (by wire or wirelessly) a continuous or pulsed signal with water management information such as total water consumed or flow rate to a Building Management System. This allows demand patterns on water systems to be monitored and evaluated over time. A significant increase in demand may indicate the presence of a leak or inappropriate or unexpected water consumption.

References

1. Water Systems: Health Technical Memorandum 04-01, Parts A and B: "*The control of Legionella, hygiene, 'safe' hot water, cold water and drinking systems – part A: design, installation, and testing*", Department of Health 2006.

2. Health Technical Memorandum 07-04: "*Water Management and Water Efficiency – best practice advice for the healthcare sector*", Department of Health 2008.

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BREEAM : Healthcare : 2008
Water
Wat 3 – Major leak detection

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To reduce the impact of major water leaks that may otherwise go undetected.

Credit criteria

Credits	
1	Where evidence provided demonstrates that a leak detection system is specified or installed on the buildings water supply.

Compliance requirements

The following demonstrates compliance:

1. A leak detection system capable of detecting major leaks on the water supply has been installed. The system must cover all mains water supply between and within the building and the site boundary.

2. The leak detection system is:
    a. Audible when activated
    b. Activated when the flow of water passes through the water meter/data logger at a flow rate above a pre-set minimum for a pre-set period of time
    c. Able to identify different flow and therefore leakage rates, e.g. continuous, high and/or low level, over set time periods
    d. Programmable to suit the owner/occupiers' water consumption requirements
    e. Where applicable, designed to avoid false alarms caused by normal operation of large water-consuming plant such as chillers.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	If the water supply to the new extension is via the existing building then the water supply to the existing building must be assessed against the requirements of this credit.
Ancillary or multiple buildings	The requirements apply to the water supply to all buildings falling within the scope of the assessment.

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BREEAM : Healthcare : 2008
Water
Wat 3 – Major leak detection

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Mains supply shut-off	It is not a requirement of this credit that the leak detection system shut off the water supply when the alarm is triggered.
No water supply to the building/unit	If there is no water supply to the building because there will be no installed water-consuming fittings in the building, then the credit must be assessed on the basis of the water supply to the nearest accessible building with such facilities, likely to be used by the future occupants of the assessed building.
Leakage Rates	This credit does not specify what the high and low level leakage rates should be; however, the equipment installed must have the flexibility to distinguish between different flow rates to enable it to be programmed to suit the owner/occupier's usage patterns.
Pre-set flow rates	Pre-set flow rates and time periods will vary depending on the building type and usage.
System requirements	It is anticipated that this credit will usually be achieved by installing a system which detects higher than normal flow rates at meters and/or sub-meters. It does not require a system that would directly detect water leakage along part or the whole length of the water supply system.
Water authority meters	Where there is a water authority meter at the site/building boundary, it may be necessary to install a separate flow meter to detect leaks; however, if the water authority agrees to some form of leak detection being installed on their meter, this would also be acceptable.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1&2	A copy of the specification clause confirming: • Scope and performance requirements of leak detection system. **AND/OR** Manufacturer's details confirming: • The technical specification the specified systems.	Assessor's building/site inspection and photographic evidence confirming: • The installation and operation of the leak detection system. • The pre-set variables of the system for triggering the alarm and the flexibility of the building occupier to vary these*. * This can be confirmed in a letter from the contractor/installer to the assessor.

Additional information

Relevant definitions
None.

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BREEAM : Healthcare : 2008
Water
Wat 3 – Major leak detection

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

References

No references.

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BREEAM : Healthcare : 2008
Water
Wat 4 – Sanitary supply shut-off

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To reduce the risk of minor leaks in toilet facilities.

Credit criteria

Credits	
1	Where evidence provided demonstrates that proximity detection shut-off is provided to the water supply to all toilet areas.

Compliance requirements

The following demonstrates compliance:

1. Solenoid valves are installed on the water supply to each toilet area in the building and the flow of water through that supply is controlled by a link to either:
   - Infra-red movement detectors within each toilet facility **OR**
   - Sensors or switches placed at or on entry doors to each facility.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	If the facilities are within the existing building then it is those existing facilities that must be assessed against the requirements of this credit.
No toilet facilities in the assessed building	If no toilet areas exist in the building then the credit must be assessed on the basis of the nearest accessible building with such facilities likely to be used by the occupants of the assessed building.
Shut-off systems	Shut-off systems may control combined toilet areas, such as male and female toilets within a core.
Proximity detection requirements	Proximity detection shut-off is not required for each individual sanitary appliance to achieve the credit. The requirement is for the water supply to be isolated for each toilet block on a floor when not being used by the occupants.
Single WCs	The requirements of this credit apply to facilities with a single WC (potentially within smaller or low occupancy buildings). In these instances shut-off can be provided via the same switch that controls the lighting (whether proximity detection or a manual switch).

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BREEAM : Healthcare : 2008
Water
Wat 4 – Sanitary supply shut-off

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

WCs in common public areas	Programmable timed controllers linked to the shut-off device are an acceptable means of compliance for facilities in this type of space, where constant public use is to be expected during opening or visiting hours.
Clinical areas	The requirements of this credit do not apply to toilet facilities in clinical areas.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1	A copy of the specification clause confirming: • The specification of shut-off valves • The controls for the shut-off valves. A design plan showing: • The location of the toilet facilities.	Assessor's building/site inspection and photographic evidence confirming: • The location and installation of proximity detection controls. **AND** 'As built' drawings showing: • The specification of shut-off valves

Additional information

Relevant definitions

Clinical areas: Refer to BREEAM issue Hea 2.

Solenoid valve: An electrically operated shut-off device that controls the flow of water in pipes.

Volume controller: An automatic control device to turn off the water supply once a maximum preset volume is reached.

Programmed time controller: An automatic time switch device to switch the water supply on and/or off at predetermined times.

Light fittings in toilets are often controlled by proximity detection by IR movement detectors or sensors placed at entry doors (the latter can be less accurate as more than one person can enter or depart in the opening of one door). The sensors used to control the lighting can also be linked to a solenoid valve in the cold water supply. This will then act as a proximity detection system.

Small water leaks can result in significant losses over time, increasing costs as well as causing damage. There is a significant risk of leaks going undetected, particularly as toilet accommodation is often unoccupied for long periods. A proximity detection shut-off system

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BREEAM : Healthcare : 2008
Water
Wat 4 – Sanitary supply shut-off

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

prevents waste water from minor leaks by shutting off the water supply when toilet accommodation is not occupied.

Valves in cisterns supplying urinals and WCs are especially prone to failure, leading to wastage of water via the overflow. Whilst leakage from any valve is variable, a typical value for a leaking valve toilet might be 4 litres/day.

References

No references.

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BREEAM : Healthcare : 2008
Water
Wat 5 – Water recycling

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To encourage the collection and re-use of waste water or rainwater to meet toilet flushing needs and reduce the demand for potable fresh water.

Credit criteria

Credits	
2	Where evidence provided demonstrates the specification of systems that collect, store and, where necessary treat, rainwater or greywater for WC and urinal flushing purposes.

Compliance requirements

The following demonstrates compliance:

Where **one** of the following water recycling strategies has been implemented:

1. Where a rainwater collection tank has been installed and the tank is sized to collect at least 50% of **EITHER:**
    a. The total predicted rainwater run-off from the roof catchment area for the *defined period of collection*. **OR**
    b. The rainwater run-off required to meet the total predicted flushing demand for the *defined period of collection*.

2. Waste water from wash hand basins and showers is collected from ≥80% of fittings and recycled to meet part (minimum of 10%) or the total of WC/urinal flushing demand within the building(s).

3. A combination of waste water and rainwater collection that meets at least 50% of **EITHER:**
    a. The total predicted toilet and urinal flushing demand for the *defined period of collection* **OR**
    b. The total predicted toilet and urinal flushing demand for the *defined period of collection* and (where specified) irrigation of planting and landscaping.

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BREEAM : Healthcare : 2008
Water
Wat 5 – Water recycling

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	If the assessment is of the new extension only, then the roof catchment area can be taken as the roof area of the extended building. If feasible however, the total roof area of the new extension and existing building can be used. If the assessment is of the new build extension and existing building i.e. whole building, then the roof catchment area is taken as the whole roof area of the building.
Rainwater collection tank size	Of the two options available for demonstrating compliance, it is the option with the lesser of the two figures (litres) that should be specified and therefore used to demonstrate compliance. For example it would not be expected to size a system that collected significantly more rainwater over the defined period than was required to meet flushing demand in the building over the same period, unless the collection system is being used to meet landscape irrigation demand or forms part of a storm water management strategy.
Greywater system	No BREEAM requirements have been set in terms of the period of collection that the tank should be sized to meet. Where a greywater collection system is specified, the size of the tank should be appropriate to the building occupancy and frequency of the facilities usage, bearing in mind that greywater tanks have a typical maximum retention period of 24 hours.
Calculation requirements	See additional guidance for an example of calculating compliance with the requirements of this credit.
Run-off from paved areas	Run-off from paved areas can also be collected and included in the calculation. Where the run-off is collected from part roof, part paved areas, the total catchment area must be at least equivalent to the plan area of the roof.
Using rainwater to meet irrigation and other process demands	Using rainwater collection for WC/urinal flushing is the first priority. Where this demand is met, additional rainwater resources can be used to meet water demand for irrigation or building/operational processes.
Clinical areas	Toilet facilities in clinical areas can be excluded from the assessment of this issue where the use of recycled water for flushing is deemed by the client unfeasible on the grounds that it presents a risk to patient health.

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BREEAM : Healthcare : 2008
Water
Wat 5 – Water recycling

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Calculating total predicted flushing demand	Total predicted flushing demand can be estimated by the design team on the basis of the following variables: • Number of building users (staff and visitors) • Effective flush volume of WCs/urinals • Estimated number* of WC/urinal uses per person per day (multiplied by the defined period of collection) * For staff use, unless other data is available, assume 1.3 WC uses per person per day and 2 urinal uses per person per day (assume that only 50% of the building occupants will use urinals).

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
All	A copy of the specification clause confirming: • Type of collection system specified. • WC, urinal, taps and shower specification (where appropriate). Design team calculations for the *defined period of collection* demonstrating (where appropriate): • Rainwater yield for the catchment area (mm) • Predicted WC/urinal flushing demand • Estimated potential for waste water collection from taps/showers. • Size (litres) of the rainwater/greywater collection tank specified.	Assessor's building/site inspection and photographic evidence confirming: • The installation of the collection system. Where changes have occurred since design stage assessment, a revised copy of the technical specification and sizing calculations for the installed system.

Additional information

Relevant definitions

Clinical areas: Refer to BREEAM issue Hea 2.

Defined period of collection: For the purpose of assessing this credit the defined period of collection is 18 days. This is equivalent to approximately 5% of annual rainfall yield.

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Water
Wat 5 – Water recycling

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Potable water: Defined as drinkable and/or mains supplied water. This definition includes water obtained by borehole abstraction and water sourced from rivers, mountain streams, lakes etc.

Catchment area: An area that catches rainfall and delivers it to a collection tank for re-use.

Greywater: Waste water from taps, showers and laundries.

Calculating compliance
The following formula can be used to calculate the volume of collectable rainwater for the assessed building's catchment area for the defined period of collection:

$\sum (A_{RF} \times C \times R_{co\text{-}ef} \times F_{co\text{-}ef} \times D_{col})$

Where:

A_{RF} = Annual rainfall for the site location (mm)
C = Rainwater catchment area (m^2)
$R_{co\text{-}ef}$ = Run-off co-efficient
$F_{co\text{-}ef}$ = Filter co-efficient.
D_{col} = Defined period of collection: 18 days/365 days = 0.05

Annual rainfall: The local EA, SEPA, EHS office or the Met Office should be able to supply rainfall data.

Run-off co-efficient: A coefficient is used to adjust the tank size calculation to allow for the fact that not every drop of rain that falls within the catchment area will be collected by the tank. Drainage co-efficient is dependent on the type of roof specified for the building, flat roofs having a lower co-efficient. Below are some typical co-efficient factors:

Roof type	Run-off co-efficient
Pitched roof tiles	0.75 - 0.9
Flat roof smooth tiles	0.5
Flat roof with gravel layer	0.4 – 0.5

Filter co-efficient: Not all the water that drains from the roof down the gutters will reach the holding tank; the filter co-efficient accounts for this. Most manufacturers/installers of systems will recommend a filter co-efficient of 90% i.e. 0.9.

Drainage and filter co-efficiencies can be found in CIRIA guidance [2], though these should be in the design team's sizing calculations.

Example calculation:

Average annual rainfall for the site location (mm)	757mm

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Water
Wat 5 – Water recycling

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Roof catchment area (m^2)	3,500m^2
Drainage co-efficient (tiled pitched roof)	0.8
Filter co-efficient.	0.9
Defined period of collection	0.05
Volume of rainwater for the defined period of collection	95,382 Litres

An installed rainwater collection tank with a capacity of 50,000 litres would therefore collect 52.4% of the total predicted rainwater run-off from the roof catchment area for the defined period of collection.

Design issues
BS4800:1989 Schedule of paint colours for building purposes. This BS covers the need to have pipework in standardised colours to avoid cross contamination and sets colours for rainwater and greywater system pipes' flow and return.

BS1710:1984 Specification for identification of pipelines and services. This BS covers the identifying marks that should be placed on pipes containing different substances, including greywater pipes, and references the colours in the above BS.

References

1. Figures for UK rainfall are available from the Met Office www.met-office.gov.uk
2. "*Rainwater and Greywater Use in Building, Best Practice Guidance*"; CIRIA, 2001.
3. "*Reclaimed water systems – information about installing, modifying or maintaining reclaimed water systems*"; 9-02-04, WRAS 1999.
4. BS4800: "*Schedule of paint colours for building purposes*", 1989 (BSI)
5. BS1710: "*Specification for identification of pipelines and services*", 1984 (BSI)
6. BS EN 12056-3:2000: "*Gravity drainage systems inside buildings. Roof drainage, layout and calculation*", 2000.
7. Water Systems - Health Technical Memorandum 04-01: Parts A and B: "*The control of Legionella, hygiene, 'safe' hot water, cold water and drinking systems – part A: design, installation, and testing*". Department of Health 2006.
8. Health Technical Memorandum 07-04: "*Water Management and Water Efficiency – best practice advice for the healthcare sector*", Department of Health 2008.

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BREEAM : Healthcare : 2008
Water
Wat 6 – Irrigation systems

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To reduce the consumption of potable water for ornamental planting and landscape irrigation.

Credit criteria

Credits	
1	Where evidence provided demonstrates that a low-water irrigation strategy/system has been installed, or where planting and landscaping is irrigated via rainwater or reclaimed water.

Compliance requirements

The following demonstrates compliance:

1. Where the irrigation method specified for internal or external planting and/or landscaping complies with **ANY ONE** of the following:
    a. Drip feed subsurface irrigation that incorporates soil moisture sensors. The irrigation control should be zoned to permit variable irrigation to different planting assemblages.
    b. Reclaimed water from a rainwater or greywater system.
    c. External landscaping and planting that relies solely on precipitation, during all seasons of the year.
    d. The only planting specified is restricted to species that thrive in hot and dry conditions.
    e. Where no dedicated, mains-supplied irrigation systems (including pop-up sprinklers and hoses) are specified, and planting will rely solely on manual watering by building occupier or landlord.

2. Where a sub surface drip feed irrigation system is installed for external areas, a rainstat must also be installed to prevent automatic irrigation of the planting and the landscape during periods of rainfall.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects..
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.

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Water
Wat 6 – Irrigation systems

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

No landscaped areas	This credit does not apply where there are no landscaped areas within the construction zone of the assessed building. In such instances the BREEAM assessor's spreadsheet tool will filter the credit from the list of applicable issues.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
First Credit		
1&2	Design team confirmation via assessment meeting minutes, letter or email confirming the irrigation strategy for the site **AND** Proposed site plan, marked up to illustrate the scope of the irrigation specified **AND** One of the following: A copy of the specification clause confirming: • Type of irrigation system and controls. **OR** Manufacturer's information detailing: • The technical details of the specified system.	Assessor's building/site inspection and photographic evidence confirming: • The implementation of the proposed strategy. • If relevant, the installation of the specified system.

Additional information

Relevant definitions

Construction zone: For the purpose of this credit the construction zone is defined as the site which is being developed for the BREEAM-assessed building and its external site areas i.e. the scope of the new works.

References

No references.

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Materials Section

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BREEAM : Healthcare : 2008
Materials
Mat 1 - Materials specification (major building elements)

Minimum BREEAM Standards					
Rating Level	**P**	**G**	**VG**	**E**	**O**
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To recognise and encourage the use of construction materials with a low environmental impact over the full life cycle of the building.

Credit criteria

Credits	
6	Up to six credits are available, determined by the *Green Guide to Specification* ratings for the major building/finishing elements.

Compliance requirements

The following demonstrates compliance:

1. The Green Guide rating for the specifications for the following building elements must be determined and entered in to the BREEAM assessor's *Mat 1 Calculator*. Green Guide ratings for the specification(s) of each element can be found at: www.thegreenguide.org.uk

Building Element	Applicable elements to assessment stage
External Walls	**P**
Windows	**P**
Roof	**P**
Upper Floor Slabs	**P**
Internal Walls	**P**
Floor Finishes / Coverings	**P**

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BREEAM : Healthcare : 2008
Materials
Mat 1 - Materials specification (major building elements)

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

The calculator awards points for each applicable element according to its Green Guide rating as follows:

Green Guide Rating	Points/element
A+	3
A	2
B	1
C	0.5
D	0.25
E	0

The calculator translates the total number of points in to BREEAM credits as follows:

New build & Refurbishments	
Total Points	Credits
2	1
5	2
8	3
10	4
12	5
14	6

Exemplary level requirements

The following outlines the exemplary level requirements to achieve an *innovation credit* for this BREEAM issue.

1. One exemplary BREEAM credit can be awarded as follows:
    a. Where assessing four or more applicable building elements, the building achieves at least two points additional to the total points required to achieve maximum credits under the standard BREEAM requirements.
    b. Where assessing fewer than four applicable building elements, the building achieves at least one point additional to the total points required to achieve maximum credits under the standard BREEAM requirements.

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BREEAM : Healthcare : 2008
Materials
Mat 1 - Materials specification (major building elements)

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	For each element that is reused in situ, BREEAM allocates an 'A+' rating and these elements should also be included in the 'A+' rated area in the MW1 calculator. New elements specified as part of a refurbishment project, e.g. windows, must be assessed as outlined above.
Extensions to existing buildings	Any applicable new-build elements, forming part of the new extension, must be assessed as outlined above. If the existing building forms part of the scope of the assessment, then any existing applicable element that is reused in situ achieves an 'A+' rating, as outlined above for refurbishments.
Green Guide Online	Refer to the additional information section below for guidance on using the Green Guide online and accessing the appropriate ratings for the assessed elements.
Element consisting of more than one specification	Where more than one specification is present for a given element, the rating and area for each specification should be entered into the tool and an average points score is calculated (by area).
Finding exact Green Guide Ratings	Whilst exact matches in specifications are not always found, it should be possible to identify a similar specification and use its rating for the purposes of assessment. Where no similar specification can be found, assessors should seek guidance from BRE on the appropriate rating.
New elements containing reused materials	If a new element is specified e.g. external wall, and part of that element includes a reused material e.g. reclaimed bricks, assessors should seek guidance from BRE on the appropriate rating.
Mixed use developments	Where the assessment covers only some of the floors in the building, the roof must still be assessed as it is protecting the assessed building below. If the roof is directly above domestic accommodation (e.g. flats), the equivalent domestic Green Guide rating for the roof must be used as opposed to the ratings for non-domestic roofs. Roof areas not protecting parts of the assessed building/space can be omitted from the assessment.
Single storey buildings and upper floors	Where the assessed building is a single storey building and therefore has no upper floors, the upper floor element does not need to be assessed. In such instances the BREEAM assessor's *Mat 1 Calculator* will re-calculate the requirement and award the available credits in accordance with the Green Guide ratings for the remaining applicable elements.

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BREEAM : Healthcare : 2008
Materials
Mat 1 - Materials specification (major building elements)

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1 & Exemp. level req.	Specification confirming: • A detailed description of each applicable element and its constituent materials. Design drawings or specification detailing: • Location and area (m^2) of each applicable element. A copy of the output from the Mat 1 Calculator, including Green Guide rating and element number for each specification assessed.	Assessor's building/site inspection and photographic evidence confirming: • Element in-situ (where possible) **AND** As built drawings and, where relevant, written design team confirmation of any changes to materials specification.

Additional information

Relevant definitions

Green Guide: The *Green Guide to Specification* is an easy-to-use comprehensive reference website and electronic tool, providing guidance for specifiers, designers and their clients on the relative environmental impacts for a range of different building elemental specifications. The ratings within the Guide are based on Life Cycle Assessment, using the Environmental Profile Methodology.

Ecopoint: The Ecopoint used in the Green Guide online is single score that measures the total environmental impact of a product or process as a proportion of overall impact occurring in Europe - 100 Ecopoints is equivalent to the impact of a European Citizen. Green Guide ratings are derived by sub-dividing the range of Ecopoints/m^2 achieved by all specifications considered within a building element.

Reused materials: are materials that can be extracted from the waste stream and used again without further processing, or with only minor processing, that does not alter the nature of the material (e.g. cleaning, cutting, fixing to other materials).

The Mat 1 Calculator: A spreadsheet-based calculator required to determine the number of credits achieved for this BREEAM issue based on each applicable element's Green Guide rating. The Mat 1 Calculator makes four adjustments to the points achieved for each specification/element assessed, as follows:

1. The first is the scoring based on the Green Guide rating; A+ =3, A=2, B=1, C=0.5, D=0.25 and E=0.

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Materials
Mat 1 - Materials specification (major building elements)

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

2. The second, where an element consists of several different specifications, is to weight the points achieved according to the relative area and Green Guide rating of each of the individual specifications. So if 50% of an element was A+ and 50% was C, the score would be (50%*3) + (50%*0.5) = 1.75.
3. The third is to weight based on the overall area of different elements - this is done by multiplying the area of each element by the weighted Green Guide score, adding the total for all elements and then dividing by the total area of the assessed elements. As a 20 storey office block will have a smaller roof area than floor area, so the area weighting will take this into account by giving a smaller weighting to the score for the roof than the external walls.
4. The final adjustment relates to the *Ecopoints* range for each assessed element. This adjustment ensures the environmental impact of the element in relation to the impacts of other assessed elements within the building is considered. For example; the external walls have a larger *Ecopoints* range than the internal walls, therefore, if both elements achieve the same Green Guide rating the rating of the external walls achieves a higher proportion of the overall points than the rating for the internal walls, thus recognising the relatively higher reduction possible in the environmental impact of the external walls, due to the larger *Ecopoints* range for that element.

Using the Green Guide to Specification

The Green Guide categorises ratings by building type and element. When using the Green Guide online, (www.thegreenguide.org.uk), the main page asks the user to select a building type. To obtain the appropriate ratings for the assessed building elements, select the corresponding building type for this BREEAM scheme.

The following elements, for the purpose of non domestic buildings, have common Green Guide ratings irrespective of the building type:

- External walls
- Landscaping
- Windows - commercial

The user can therefore search for ratings for the above elements under any building category.

References

1. The Green Guide to Specification: www.thegreenguide.org.uk

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BREEAM : Healthcare : 2008
Materials
Mat 2 - Hard landscaping and boundary protection

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To recognise and encourage the specification of materials for boundary protection and external hard surfaces that have a low environmental impact, taking account of the full life cycle of materials used.

Credit criteria

Credits	
1	Where evidence provided demonstrates that at least 80% of the combined area of external hard landscaping and boundary protection specifications achieve an A or A+ rating, as defined by the *Green Guide to Specification*.

Compliance requirements

The following demonstrates compliance:

1. Where at least 80% of all external hard landscaping and boundary protection (by area) achieves an A or A+ rating, as defined in the *Green Guide to Specification*.

   Green Guide ratings for the specification(s) of each element can be found at: www.thegreenguide.org.uk

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment & existing elements	For each element that is reused in situ, BREEAM allocates an 'A+' rating. New elements specified as part of a refurbishment must be assessed as outlined above.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.

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Materials
Mat 2 - Hard landscaping and boundary protection

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Green Guide Online	When using the Green Guide for the purpose of assessing this BREEAM credit, ratings for landscaping elements are common across all building types. The rating will therefore be the same irrespective of the building type selected via the Green Guide online.
Finding exact Green Guide Ratings	Whilst exact matches in specifications are not always found, it should be possible to identify a similar specification and use its rating for the purposes of assessment. Where no similar specification can be found, seek guidance from BRE for the appropriate rating.
Minor alteration of existing elements	Where less than 20% of the total area of existing hard landscaping and boundary protection elements are subject to minor alterations or maintenance, these elements are awarded an A+ rating for the purposes of this analysis.
No hard landscaping or boundary protection	If one of the elements is not present, e.g. boundary protection, then the credit must be assessed on the basis of the specification of the single element e.g. hard landscaping. Where the development has neither element, the credit can be awarded.
Building façade forming boundary	Any part of an external building façade (of either the assessed building or any other neighbouring building) that forms a part of the site boundary should be excluded from the assessment of this credit.
Existing natural features	Any existing or specified natural boundary protection (such as hedging or other living barrier) should be awarded with an A+ rating for the purposes of this analysis.
Scope of hard landscaping	For the purpose of assessment, hard landscaping includes parking areas, but excludes access/approach roads and designated vehicle manoeuvring areas.

Schedule of evidence required

Req.	Design Stage	PCR Stage
1	Specification confirming: • A detailed description of each applicable element and its constituent materials. Design drawings or specification detailing: • Location and area (m^2) of each applicable element. The Green Guide rating and element number for the assessed specifications.	Assessor's building/site inspection and photographic evidence confirming: • Element in-situ (where possible) As built drawings/calculations. Written confirmation from the design team or contractor of any changes to the specification.

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BREEAM : Healthcare : 2008
Materials
Mat 2 - Hard landscaping and boundary protection

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Additional information

Relevant definitions

Green Guide: See MAT 1.

References

1. The Green Guide to Specification: www.thegreenguide.org.uk

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BREEAM : Healthcare : 2008
Materials
Mat 3 - Reuse of building façade

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To recognise and encourage the in-situ reuse of existing building façades.

Credit criteria

Credits	
1	Where evidence provided demonstrates that at least 50% of the total final façade (by area) is reused in situ and at least 80% of the reused façade (by mass) comprises in-situ reused material.

Compliance requirements

The following demonstrates compliance:

1. At least 50% of the total final building façade (by area) is reused.

2. At least 80% of the reused façade (by mass) comprises in-situ reused material.

3. Where an existing building is being reused and/or extended and the function/purpose of the new building will be the same as that which the existing building was used for, i.e. there is no change of use, the credit can be awarded where:

   a. At least 25% of the façade by area of the **total** building is to be reused;
   b. At least 80% of the façade by mass of the **existing** building is made up from in-situ reused material.

   The requirements in this instance are reduced as the existing building is likely to require less remedial work as it is not subject to a change of use.

Compliance notes	
New Build	New-build schemes with retained façades provide a means of achieving the credit.
Refurbishment	Refurbishment projects are likely to achieve this credit without difficulty.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.
Curtain walling & windows	Where existing windows are being replaced they may be excluded from the calculation of façade area; however, curtain walling counts as façade.

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Materials
Mat 3 - Reuse of building façade

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1&2	Drawings detailing: • The elevations of the existing and the new-build façades. Calculations demonstrating: • The % of façade comprising in situ material. These calculations should be simply based on the volume of each material and its density, with totals compared for the new and retained parts of the structure.	Assessor's building/site inspection and photographic evidence confirming: • The existence of the reused façade. As built drawings/calculations. Written confirmation from the design team or contractor of any changes to the specification for the façade.
3	As above.	As above.

Additional information

Relevant definitions

Façade: Any exposed building face, not just the front elevation. The definition excludes party walls.

In practice, reusing façades will often require extensive renovation and/or reinforcement, hence the BREEAM requirement for at least 80% by mass of the reused façade to be in situ reused material. Façades with new external cladding or internal lining therefore can gain this credit provided that this criterion is met.

References

None.

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Materials
Mat 4 - Reuse of building structure

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To recognise and encourage the reuse of existing structures that previously occupied the site.

Credit criteria

Credits	
1	Where evidence provided demonstrates that a design reuses at least 80% of an existing primary structure and, for part refurbishment and part new build, the volume of the reused structure comprises at least 50% of the final structure's volume.

Compliance requirements

The following demonstrates compliance:

1. Where at least 80% by volume of an existing primary structure is reused without significant strengthening or alteration works.

2. Where a project is part refurbishment and part new build, the reused structure comprises at least 50% by volume of the final building, i.e. any new-build extension to a building being refurbished should not be larger than the original building to qualify for this credit.

3. Where an existing building is being reused and/or extended and the function/purpose of the new building will be the same as that which the existing building was used for, i.e. there is no change of use, the credit can be awarded where;
    a. 80% of the **existing** building structure, by gross building volume, is reused without significant strengthening or alteration works.
    b. The reused structure comprises at least 25%, by gross building volume, of the **final total** building structure.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to the assessment of new-build projects.
Refurbishment	Refurbishment projects are likely to be the only buildings to achieve this credit.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.

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Materials
Mat 4 - Reuse of building structure

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1&2	Drawings or design team calculations detailing: • The sections of the existing structure to be reused. • Any parts of the structure to be demolished and the total new structure. • Where appropriate, calculations confirming any strengthening/alteration are not deemed 'significant' in terms of the credit requirements for the mass of materials used.	As built drawings/calculations. Written confirmation from the design team or contractor of any changes to the structural specification.
3	As above.	As above.

Additional information

Relevant definitions

Significant strengthening or alteration: Defined as where the mass of new material is equal to or greater than 50% of the total mass of the reused structure.

Primary structure: Defined as structural floors, columns, beams, load bearing walls and foundations i.e. where required for structural use by the new building.

References

None.

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Materials
Mat 5 - Responsible sourcing of materials

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To recognise and encourage the specification of responsibly sourced materials for key building elements.

Credit criteria

Credits	
3	Up to 3 credits are available where evidence provided demonstrates that 80% of the assessed materials in the following building elements are responsibly sourced: a. Structural Frame b. Ground floor c. Upper floors (including separating floors) d. Roof e. External walls f. Internal walls g. Foundation/substructure h. Staircase Additionally 100% of any timber must be legally sourced.

Compliance requirements

The following demonstrates compliance:

1. At least 80% of the following applicable materials comprising the building elements (listed above) must be responsibly sourced:
    a. Brick (including clay tiles and other ceramics)
    b. Resin-based composites and materials, including GRP and polymeric render
    c. Concrete (including in-situ and pre-cast concrete, blocks, tiles, mortars, cementious renders etc.)
    d. Glass
    e. Plastics and rubbers (including EPDM, TPO, PVC and VET roofing membranes including polymeric renders)
    f. Metals (steel, aluminium etc.)
    g. Dressed or building stone including slate
    h. Timber and wood panel (including MDF, chipboard and Cement Bonded Particleboard)
    i. Plasterboard and plaster
    j. Bituminous materials, such as roofing membranes and asphalt
    k. Other mineral-based materials, including fibre cement and calcium silicate
    l. Products with recycled content

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Materials
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Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Note: Insulation materials, fixings, adhesives and additives are excluded from the assessment. For any other materials that form a part of an applicable building element, but do not fit into the applicable materials list or the exclusions list, please refer to BRE who will identify the relevant Key Process and Supply Chain Process or Processes.

2. Each applicable material is assigned to a responsible sourcing tier level based on the level and scope of certification achieved by the material supplier(s)/manufacturer(s) (see *Table 1: Tier Levels and Compliance* and *Table 2 EMS requirements* in the additional guidance section).

3. Follow the *Calculation Procedure* outlined in the additional guidance section, and use the *Responsible Sourcing Calculator* to determine the number of credits to be awarded.

4. Any non-certified timber used in the development comes from a legal source and is not included on the CITES list (see definition for legally sourced timber).

Exemplary level requirements

The following outlines the exemplary level requirements to achieve an *innovation credit* for this BREEAM issue:

1. Where, in addition to the above requirements, 95% of the applicable materials, comprised within the applicable building elements, have been responsibly sourced.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	In the case of a refurbishment assess the newly specified applicable and reused materials (reused as defined below).
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.
Building element not present	Where an element is not present in a project (e.g. an assessment of a ground floor of a building only and therefore no roof in the scope of the assessment), the points for this/these element(s) will be redistributed by the calculator to reward only the elements being assessed.
Reused in-situ materials	Materials reused in-situ can be excluded from the assessment. The aim of the credit is to focus on the responsible sourcing of new specified materials.
Specified reused Materials	Reused materials specified for the development e.g. recycled aggregates are considered equivalent to materials covered by certification schemes that fall within tier 1 of table 1.

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Minimum BREEAM Standards					
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Min. credits to achieve rating	-	-	-	-	-

CITES list	CITES (Convention on International Trade in Endangered Species) Appendices I and II of the CITES list illustrate species of timber that are protected outright. Appendix III of the CITES list illustrates species that are protected in at least one country. If a timber species used in the development is on Appendix III it can be included as part of the assessment as long as the timber is not obtained from the country(ies) seeking to protect this species (see additional information for further details).
A Government licence	A Government licence e.g. UK Forestry Commission felling licence certificate, does not comply as a third party timber certification scheme for this credit, but can be used as evidence of legally sourced timber.
Pre or post consumer waste	Where materials being assessed (including timber) are part of a pre- or post-consumer waste stream, the EMS sections of the credit can be applied for; however, using an EMS scheme (ISO, EMAS etc.) for new timber does not demonstrate timber certification and therefore does not qualify for any of these BREEAM credits.
Checklist A5	Checklist A5 is contains information for the BREEAM assessor, including an explanation of what is required for each of the responsible sourcing tiers.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1	Design plan and/or specification confirming: • the location of elements and materials specified • Details of the materials specified.	As built drawings or as built specifications confirming that the building has been constructed in accordance with the design stage drawings/specifications. Copies of purchase orders or receipts or certificate/letter of conformity for all applicable materials, including those recycled or reused
2&3	A copy of the output from the Responsible Sourcing of Materials Calculator Tool. For materials certified through the EMS route, a letter of intent from the design team confirming: • The relevant materials shall be sourced from suppliers who can provide an EMS certificate (or equivalent) for the process and/or extraction stages of their product.	A copy of the output from the Responsible Sourcing of Materials Calculator Tool (if different from Design Stage calculation). For materials certified through the EMS route, any one of the following must be provided as appropriate: • Copy of the ISO 14001 certificate. • Copy of the EMAS certificate. • For *Small* companies, (see *Relevant Definitions*) confirmation that the company EMS is structured in compliance with BS 8555 2003 (or

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Materials
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Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

	Certified timber requires a letter of intent from the design team confirming: • The timber shall be sourced from suppliers capable of providing certification to the level required for the particular tier claimed.	equivalent) and the EMS has completed phase audits one to four as outlined in BS 8555. This evidence can be found from company documentation demonstrating the process and typical outputs from phase four audits such as an EMS manual/paperwork and guidance to staff. Where independent certification exists to demonstrate these phases, it can be used as evidence. A copy of the certification document or Chain of Custody (CoC) certificate(s).
4	Written confirmation from the developer confirming that: • All timber will come from a 'legal source' and one not on the CITES list*. * Or in the case of Appendix III of the CITES list, it has not been sourced from the country seeking to protect this species as listed in Appendix III.	Where any non-certified timber is used, written confirmation from the supplier(s) confirming that: • All timber comes from a legal source. • All timber species and sources used in the development are not listed on any of the CITES appendices for endangered or threatened species (Appendix I, II, or III*). * Or in the case of Appendix III of the CITES list, it has not been sourced from the country seeking to protect this species as listed in Appendix III.

Additional information

Calculation Procedure (using the Mat 5 calculator)

1. Choose from the list of options in the drop down box of the calculator the appropriate type of assessment and press the select button.
2. Choose from the list of options in the drop down box the relevant BREEAM scheme and press the select button (this selection ensures the appropriate 'generic specifications' for the building types are used).
3. For each element, select the number of different types of element you wish to enter in the relevant drop down box and press the select button. If the element is not present select '0'. Note: this will adjust the points required benchmarks accordingly.
4. For each element, select the 'data type' from the relevant drop down box. There are two or three options depending on the element type, 'Generic specification', 'Volume' or 'Percentage'. Generic specification' is not available for all element types.

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Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Generic Specification

a. Choose the specification from the relevant drop down box that matches the element specification for the building. If more than one construction specification is present for an element, select additional construction specifications from the list in element type 2, 3, 4 etc. (see point 3 for adding additional types). If no specification matches, then the specification will need to be assessed using one of the 'User Defined' methods.

   Based on the specification selected from the drop down list the material types and their percentage will automatically be entered in the relevant cell of the *material type* and *percentage/volume of relevant materials present* columns. The assessor can then enter the percentage of each material that complies with either tier 1, 2, 3 or 4, as appropriate. At least 80% of the materials that make up an element type must comply with one or more of the tiers to achieve any points for that element type.

User Defined - Volume

a. For all present elements, enter the names of the material types comprising each individual element in the relevant cell of the column *materials types*.

b. Enter the volume of each individual material type in the relevant cell of the column titled *percentage/volume of relevant materials present*.

c. Enter the total combined volume of the material types in the cell *total volume of element present.*

d. Enter the volume of each material that complies with either tier 1, 2, 3 or 4, as appropriate. At least 80% of the total volume must comply with one or more of the tiers to achieve any points for that element type.

User Defined - Percentage

a. For all present elements, enter the names of the material types comprising each individual element in the relevant cell of the column *materials types*.

b. Enter the percentage of each individual material type (as a percentage of the whole element type) in the relevant cell of the column titled *percentage/volume of relevant materials present*.

c. Enter the percentage of each material (as a percentage of the whole element type) that complies with either tier 1, 2, 3 or 4, as appropriate. At least 80% of the materials that make up an element type must comply with one or more of the tiers to achieve any points for that element type.

Combination

a. A combination of *generic* and *user defined* data can be entered for any of the elements, simply select the number of element types you wish to enter for an element (point 3) and follow the above guidance.

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Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

3. Once all data has been entered correctly and in compliance with the requirements, the tool will calculate the total number of points achieved and translate this into the number of credits awarded.

   The following scale is used to award credits for new builds and major refurbishment projects:

   a. ≥15 points 3 credits awarded
   b. ≥10 points 2 credits awarded
   c. ≥5 points 1 credit awarded

   Note: Where not all applicable elements are specified within the development, the number of points required to credits available are re-allocated based on the number of elements that are specified.

   Although only 80% of the materials in an element have to be assessed, it may be beneficial to include even small percentages of materials that are in the higher tiers.

Table 1: Tier Levels and Requirements

Tier level	Issue assessed	Points available per element	Evidence / measure assessed	Examples of compliant schemes
1	Legality & responsible sourcing	3	Certification scheme	FSC, CSA, SFI with CoC, PEFC, Reused Materials
2	Legality & responsible sourcing	2	Certification scheme	There are currently no schemes allocated to this tier.
3	Legality & responsible sourcing	1.5	Certification scheme/ EMS	Timber: MTCC, Verified,, SGS, TFT
				Other materials: Certified EMS for the Key Process and *Supply Chain*.
				Recycled Materials with certified EMS for the *Key Process*
4	Legality & responsible sourcing	1	Certification scheme/EMS	Certified EMS for key process stage.

Note:
Where any timber is used, it must be legally sourced. Where evidence cannot be provided to demonstrate legal sourcing for any element, no points can be awarded for the Responsible Sourcing Issue.

Where new in situ concrete (not existing concrete) is used, certification of the manufacture of the cement as the primary process, extraction of the aggregate and limestone used to make the cement as well as supply chain processes to be provided.

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Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

* “Verified ” is the name of a scheme produced by SmartWood.

Table 2: EMS Requirements

Material	Key Process	Supply chain processes
Brick (including clay tiles and other ceramics)	Product Manufacture	Clay Extraction
Resin-based composites and materials (including GRP and polymeric render)	Composite product manufacture	Glass fibre production Polymer production
In situ Concrete (including ready mix and cemetitious mortars and renders)	Ready mixed concrete plant	Cement production Aggregate extraction and production
Precast concrete and other concrete products (including blocks, cladding, precast flooring, concrete or cementitious roof tiles)	Concrete product manufacture	Cement production Aggregate extraction and production
Glass	Glass production	Sand extraction Soda Ash production or extraction
Plastics and rubbers (including polymeric renders, EPDM, TPO, PVC and VET roofing membranes)	Plastic/rubber product manufacture	Main polymer production
Metals (steel, aluminium etc)	Metal Product manufacture - e.g. cladding production, steel section production	Metal production: Steel: Electric arc furnace or Basic oxygen furnace process, Aluminium, ingot production, Copper: ingot or cathode production.
Dressed or building stone (including slate)	Stone product manufacture	Stone extraction
Plasterboard and plaster	Plasterboard or plaster manufacture	Gypsum extraction Synthetic gypsum (from flue gas desulphurisation) by default (recycled content)
Virgin timber	Timber from certified sources	Timber from certified sources
Cement Bonded Particle Board	Due to the significant cement content, in addition to requiring timber certification, the key supply chain process must also be considered to obtain the relevant tier for timber certification. Production of Cement Bonded Particleboard	Cement production Timber from certified sources
Wood panel products such as Oriented Strand Board, plywood, chipboard/particle board, etc.)	Wood panel products, including those with recycled content, can only use the Timber Certification route	
Bituminous materials, such as roofing membranes and asphalt	Product manufacture	Bitumen production Aggregate extraction and production
Other mineral-based materials, including fibre cement and calcium silicate	Product manufacture	Cement production lime production other mineral extraction and production
Products with 100% recycled content	Product manufacture	Recycled input by default

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Mat 5 - Responsible sourcing of materials

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Products with lower % of recycled content	Product manufacture	Supply chain process/processes for any virgin material in the relevant product type above. Recycled input by default
Any other product	Key processes is likely to be product manufacture	1 or 2 main inputs with significant production or extraction impacts should be identified
Excluded products: insulation materials, fixings, adhesives, additives	N/A	N/A

Timber and Environmental Management Schemes (EMS)
Where an Environmental management scheme is used to assess products made from recycled timber, 100% of the timber content must be recycled or sourced from one of the recognised timber certification schemes in Table 1. A timber product with 50% recycled timber and 50% legally sourced timber will not comply with the criteria and will not be awarded any points.

Using an EMS for new timber does not demonstrate timber certification and therefore does not qualify for points.

Calculation procedure: Post Construction/Post Fit Out stage

1. Check that the *As Built* construction matches that proposed at design stage (see *Schedule of Evidence*). Where there are any differences in the specification, obtain the relevant volumes and/ or percentages of materials for each element that differs.

2. Obtain the relevant confirmation of tier certification for post construction stage (see *Schedule of Evidence*) for all materials, from all sources/suppliers.

3. Confirm and/or re-assign a tier level to each material based on the level of certification provided (see *Table 1: Tier Levels and Compliance* and *Information Required to Demonstrate Compliance).*

4. Adjust the design stage Responsible Sourcing Calculator accordingly to include any revised information following the calculation procedure used at design stage.

Chain of Custody
This is a process used to maintain and document the chronological history of the evidence/path for products from forests to consumers. Wood must be tracked from the certified forest to the finished product. All the steps, from transporting wood from the forest to a sawmill, until it reaches the customer, must maintain adequate inventory control systems that allow for separation and identification of the certified product. Chain-of-custody certification ensures that a facility has procedures in place to track wood from certified forests and avoid confusing it with non-certified wood. Chain-of-custody is established and audited according to relevant forest certification systems rules.

Third party certification process

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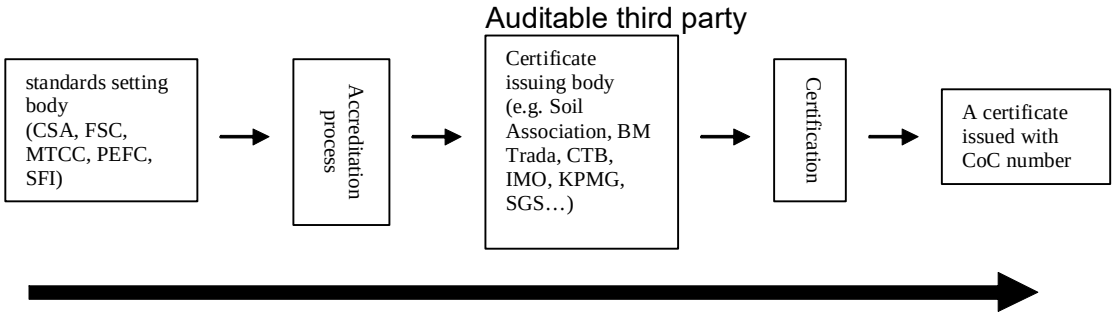
Materials
Mat 5 - Responsible sourcing of materials

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-



Timber certification process

CITES - Convention on International Trade in Endangered Species of wild fauna and flora (extract taken from the CITES website)

''CITES works by subjecting international trade in specimens of selected species to certain controls. All import, export, re-export and introduction from the sea of species covered by the Convention has to be authorized through a licensing system. Each Party to the Convention must designate one or more Management Authorities in charge of administering that licensing system and one or more Scientific Authorities to advise them on the effects of trade on the status of the species.

The species covered by CITES are listed in three Appendices, according to the degree of protection they need.

1. Appendix I includes species threatened with extinction. Trade in specimens of these species is permitted only in exceptional circumstances.
2. Appendix II includes species not necessarily threatened with extinction, but in which trade must be controlled in order to avoid utilization incompatible with their survival.
3. Appendix III contains species that are protected in at least one country, which has asked other CITES Parties for assistance in controlling the trade.''

Calculation of Timber Volumes

a. Most of the information on areas, lengths and volumes of timber will be available from the component manufacturers or estimator, who should provide a detailed breakdown of quantities of materials.

b. In order to calculate the volume of wood in timber frame windows, the total length of frame must be obtained. This can then be converted to a volume by multiplying the length of frame on fixed windows by 0.00653 and the length of frame on opening windows by 0.01089.

c. In order to calculate the volume of timber in composite timber doors such as a flush door, calculate the total area of all doors summed over the whole building and multiply this by 0.02187 (this factor gives the total volume of timber in the doors and frames).

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Minimum BREEAM Standards					
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Min. credits to achieve rating	-	-	-	-	-

Future RSM certification schemes & standards
At the time of writing it is recognised that there is a shortage of standards against which a manufacturer can demonstrate responsible souring of their product. In turn this has made it difficult to demonstrate compliance with this BREEAM issue and achieve the credits on offer.

In response to this, BRE Global have developed a draft framework standard (BSS 6001: Draft Issue 1.3, March 2008) for the responsible sourcing of construction products. The Standard seeks to provide a generic framework for the assessment of the responsible souring criteria of construction products, to give a route to certification for construction companies, systems and material sectors.

The development of this standard and subsequent certification schemes will, it is envisaged, provide construction products, not wholly covered under current recognised standards, a means for demonstrating their responsibly sourced credentials. Future standards for responsible sourcing of materials will provide a certifiable framework for independent licensed certification bodies to confirm compliance and accreditation. In turn this will allow clients, developers and design teams to specify responsibly sourced construction products with greater assurance and provide a means of demonstrating compliance with the requirements of this issue in BREEAM.

To view a copy of the standard visit: www.bre.co.uk/responsiblesourcing/

Relevant Definitions

Frame: The frame is any of the main structural elements that are not included in the roof, external walls and floors. For example, timber or metal studwork within a plasterboard partition would be included within the internal walls, and timber joists would be included within the floor construction.

Where a concrete or steel frame is used, this would be treated as the Frame as it would not be integral to the internal walls for example.

Key Processes: the final major aspects of processing that are carried out. There may be a single process or multiple processes requiring assessment, depending on the end product. The requirements for each of the assessed materials are detailed in Table 2: EMS Requirements.

Legally Sourced Timber: BREEAM follows the UK Government's definition of legally sourced timber, as outlined in the CPET 2nd Edition report on UK Government Timber Procurement Policy, which states that legal timber and wood derived products are those which originate from a forest where the following requirements are met:

1. The forest owner/manager holds legal use rights to the forest.
2. There is compliance by both the forest management organisation and any contractors with local and national legal requirements including those relevant to:
    a. Forest management
    b. Environment
    c. Labour and welfare

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Min. credits to achieve rating	-	-	-	-	-

   d. Health & safety
   e. Other parties' tenure and use rights
3. All relevant royalties and taxes are paid.
4. There is compliance with the requirements of CITES.

Relevant documentation demonstrating the above must be provided or made available on request subject to the availability of such materials in the country concerned. Certification from any of the timber certification schemes identified in tiers 1, 2 and 4 for this credit demonstrate legally sourced timber.

Pre-consumer waste stream: Waste material generated during manufacturing processes. Excluded is reutilisation of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it.

Post-consumer waste stream: Waste material generated by households or by commercial, industrial and institutional facilities in their role as end-users of the product, which can no longer be used for its intended purpose. This includes returns of material from the distribution chain.

Responsible Sourcing: Demonstrated through auditable third party certification schemes.

Reused materials: Materials that can be extracted from the waste stream and used again without further processing, or with only minor processing, that does not alter the nature of the material (e.g. cleaning, cutting, fixing to other materials).

Recycled Material: Materials diverted from the pre-consumer and/or post-consumer waste streams that require significant processing before they can be used again. For further information please see *Calculating and declaring recycled content in construction products, "Rules of Thumb" Guide* (WRAP, 2008).

Responsible Sourcing Calculator: A BRE spreadsheet-based tool designed to simplify assessment of this credit. Access is provided to all BRE licensed BREEAM assessors.

Supply Chain EMS: covers all of the major aspects of processing and extraction involved in the supply chain for the end product. Note that recycled materials are not required to demonstrate a Supply Chain EMS. If EMS certification is provided for the Key Processes for recycled materials, this is assumed by default.

Small Company: A company is defined as 'small' if it satisfies at least two of the following criteria:
   a. A turnover of not more than £5.6 million;
   b. 50 employees or fewer.

This is based on the definition stated in the Companies Act of 1985.

Tier levels – a graded scale to reflect the rigour of the certification scheme used to demonstrate responsible sourcing, forming the basis for awarding points (all as detailed in Table 1).

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Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

References

1. FERN - European NGO campaigning for forests (www.fern.org)
2. ProForest (www.ProForest.net)
3. WWF (www.panda.org)
4. UK Tropical Forest forum (www.forestforum.org.uk)
5. Greenpeace Ancient Forest Campaign (www.greenpeace.org.uk)
6. Forests Forever Campaign (www.forestsforever.org.uk)
7. UK Woodland Assurance Scheme (www.forestry.gov.uk/ukwas)
8. Wood for Good (www.woodforgood.com)
9. TFT - Tropical Forest Trust publication "*Good Wood, Good Business*" – (www.tropicalforesttrust.com)
10. "*Good Wood Guide*", Friends of the Earth/ Flora and Fauna International, 2002- (www.goodwoodguide.com)
11. "*The Environment in Your Pocket*", DEFRA, 2001.
12. "*Certification of Forest Products*", BRE, 1999.
13. Briefing Sheet – The UK's Footprint: "*The UK Timber Industry and its Impact on the World's Forest*", Friends of the Earth, 2000.
14. Saving the Wood, Building for a Future (Autumn 2001)
15. EU Eco-Management and Audit Scheme (EMAS) (www.emas.org.uk/aboutemas/mainframe.htm) (http://europa.eu.int/comm/environment/emas/index_en.htm)
16. International Standards for Organisation (ISO) www.iso.org/iso/en/ISOOnline.frontpage
17. Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) (http://www.cites.org/)
18. EU Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan (http://europa.eu.int/)

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Mat 5 - Responsible sourcing of materials

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

19. SGS timber tracking programme (http://www.sgs.com/forest_services_?serviceId=8535&lobId=5548)

20. TFT – Tropical Forest Trust (http://www.tropicalforesttrust.com/)

21. Scottish Procurement Policy Note (SPPN (09)) "*Procurement of Timber and Timber Products*", Scottish Procurement Directorate, 2005.

22. UK Government Timber Procurement Policy "*Definition of 'legal' and 'sustainable' for timber procurement",* Second Edition, CPET, 2006.

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BREEAM : Healthcare : 2008
Materials
Mat 6 - Insulation

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To recognise and encourage the use of thermal insulation which has a low embodied environmental performance relative to its thermal properties and has been responsibly sourced.

Credit criteria

Up to two credits are available as follows:

Credits	
1	Where evidence provided demonstrates that thermal insulation products used in the building have a low embodied impact relative to their thermal properties, determined by the *Green Guide to Specification* ratings.
1	Where evidence provided demonstrates that thermal insulation products used in the building have been responsibly sourced.

Compliance requirements

The following demonstrates compliance:

1. Any new insulation specified for use within the following building elements must be assessed:
    - External walls
    - Ground floor
    - Roof
    - Building services

First credit - Embodied Impact

2. The Green Guide rating for the thermal insulation materials must be determined. Green Guide ratings for thermal insulation can be found at: www.thegreenguide.org.uk

3. Where the *Insulation Index* for the building insulation is the same as or greater than 2.

4. The *Insulation Index* is calculated using the Mat 6 *Insulation Index Calculator Tool* in the BREEAM assessor's spreadsheet tool. For each type of thermal insulation used in the relevant building elements, the volume weighted thermal resistance provided by each type of insulation is calculated as follows:
    a. (Area of insulation (m^2) * thickness(m)) / Thermal Conductivity (W/ m.K) **OR**
    b. Total volume of insulation used (m^3) / Thermal conductivity (W/m.K)

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Mat 6 - Insulation

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

The volume weighted thermal resistance for each insulation material is then multiplied by the relevant Green Guide point(s) from the following table:

Green Guide Rating	Points/element
A+	3
A	2
B	1
C	0.5
D	0.25
E	0

To calculate the *Insulation Index*, the sum of these values is divided by the sum of the volume weighted thermal resistance values (an example calculation is provided in the additional information section).

Second credit - Responsible Sourcing

5. At least 80% of the thermal insulation used in the building elements identified in Item 1 must be responsibly sourced, i.e. each insulation product must be certified in accordance with Levels 1, 2 or 3 described in Table 1: *Tier levels and requirements*, as outlined in Mat 5. Table 3 below shows the Key Processes and Supply Chain processes required for common insulation products.

Table 3: EMS requirements for insulation products

Material	Key Process	Supply chain processes
Foam Insulation	Insulation manufacture	Principal Polymer production, e.g. Polystyrene, MDI , Phenolic resin or equivalent
Stone wool, glass & cellular glass made using < 50% recycled input	Product manufacture	Any quarried or mined mineral over 20% of input
Wool	Product manufacture	Wool Scouring
Products using > 50% recycled content except those using timber	Product manufacture	Recycled content by default
Timber-based insulation materials including those using recycled timber	Product manufacture	Recycled timber by default, all other timber from one of the recognised timber certification schemes in Table 1.
Other renewable-based insulation materials using agricultural by-products (e.g. straw)	Product manufacture	By-product manufacture by default
Any other product	Product manufacture	1 or 2 main inputs with significant production or extraction impacts should be identified

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Mat 6 - Insulation

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Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment and materials reused in-situ	For each element that is reused in-situ, BREEAM allocates an 'A+' rating. For the purpose of responsible sourcing, existing in-situ insulating materials are not assessed. If no new insulating products are being specified as part of the refurbishment both credits can be awarded.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.
Awarding credits	Both credits can be awarded independently of each other - i.e. it is not a requirement of the second credit that the first is achieved, and vice-versa.
Element consisting of more than one insulation	Where more than one insulation type is present for a given element, the rating, area and conductivity for each insulation should be entered into the tool and an average is calculated (by area).
Finding exact Green Guide Ratings	Where no similar insulation can be found assessors should seek guidance from BRE on the appropriate rating.

Schedule of Evidence Required

Req.	Design Stage	Post Construction Stage
1-4	Marked-up design plan/elevations and/or a copy of the specification confirming: • The location of insulating materials. • The area (m^2) and thickness (m) or volume (m^3) of insulation specified. Manufacturer's technical details confirming: • Thickness and thermal conductivity of the insulating materials specified. A copy of the output from the Insulation Index Calculator Tool. The Green Guide rating and element number for the assessed insulation specifications.	Assessor's building/site inspection and photographic evidence confirming: • Element in-situ (where possible) **AND** As built drawings and, where relevant, written design team confirmation of any changes to the materials specification.

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Mat 6 - Insulation

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

5	Evidence (as outlined in Mat 5) confirming compliance for the insulating materials.	Evidence (as outlined Mat 5) confirming compliance.

Additional information

Relevant definitions

Insulation Index: A measure of performance used in BREEAM that seeks to assess the thermal properties of insulation products used in the building relevant to the embodied impact of that insulating material.

Insulation Index Calculator Tool: A spreadsheet tool used by the BREEAM assessor to determine the Insulation Index and therefore, whether the BREEAM credit is achieved.

Example calculation

The Insulation Index is calculated for a building using the following types of insulation as follows:

Type 1 Walls
Area = 450m^2. Thermal insulation thickness = 100mm. Thermal conductivity = 0.023 W/mK
Green Guide rating = A (2 points)
Area weighted thermal resistance: ((450*0.100)/0.023) = 1956
Green Guide rating correction: 1956* 2.0 = 3912

Type 2 Building Services
Volume of insulation used = 21m^3. Thermal conductivity = 0.022 W/mK
Green Guide rating = C (0.5 points)
Area weighted thermal resistance: (21/0.022) = 955
Green Guide rating correction: 955 * 0.5 = 477

Type 3 Roof
Area = 210m^2. Thermal insulation thickness = 120mm. Thermal conductivity = 0.027 W/mK
Green Guide rating = A+ (3 points)
Area weighted thermal resistance: ((210*0.120)/0.027) = 933
Green Guide rating correction: 933 * 3.0 = 2799

Type 4 Ground Floor
Area = 210m^2. Thermal insulation thickness = 120mm. Thermal conductivity = 0.027 W/mK
Green Guide rating = B (1 point)
Area weighted thermal resistance: ((210*0.120)/0.027) = 933
Green Guide rating correction: 933 * 1.0 = 933

Total area weighted thermal resistance = 1956+955+933+933 = 4777
Green Guide rating correction = 3912 + 477 + 2799 +933 = 8121

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Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Insulation Index: Green Guide Rating Correction / Total Area weighted thermal resistance = 8121/4777 = 1.7 (credit not achieved).

References

1. See BREEAM credits Mat 1 and Mat 5.

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Materials
Mat 7 - Designing for robustness

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To recognise and encourage adequate protection of exposed parts of the building and landscape, therefore minimising the frequency of use of replacement materials.

Credit criteria

Credits	
1	Where protection is given to vulnerable parts of the building such as areas exposed to high pedestrian traffic, vehicular and trolley movements.

Compliance requirements

The following demonstrates compliance:

1. Internal and external areas of the building where vehicular, trolley and pedestrian movement occur have been identified.

2. Suitable durability and protection measures or design features have been specified to prevent damage to the vulnerable parts of these building areas from such traffic. This must include, but not be limited to:
    a. Protection from the effects of high pedestrian traffic in main entrances, public areas and thoroughfares (corridors, lifts, stairs, doors etc).
    b. Protection against any internal vehicular/trolley movement within 1m of the internal building fabric in storage, delivery, corridor and kitchen areas.
    c. Protection against, or prevention from, any potential vehicular collision where vehicular parking and manoeuvring occurs within 1m of the external building façade for all car parking areas and within 2m for all delivery areas.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to the assessment of new-build projects.
Refurbishment	Where the assessment is of a refurbished building on an existing site then the requirements apply to the areas that form a part of the works or hard landscape for that building.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.

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Materials
Mat 7 - Designing for robustness

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Suitable durability measures	Suitable durability and protection measures to vulnerable parts of the building can include: • Bollards/barriers/raised kerbs to delivery and vehicle drop-off areas • Robust external wall construction, up to 2m high • Corridor walls specified to Severe Duty (SD) as per BS 5234-2. • Protection rails to walls of corridors • Kick plates/impact protection (from trolleys etc) on doors • Hard-wearing and easily washable floor finishes in heavily used circulation areas (i.e. main entrance, corridors, public areas etc) • Corridor walls specified to Severe Duty (SD) as per BS 5234-2 and HTM 56 – Partitions (as applicable).
Vehicle Impact Protection	Any vehicle impact protection measures specified must be positioned at an adequate distance from the building to protect the fabric from impact from any vehicle with a measurable overhang of the body from the wheel track, in particular for any goods delivery areas. In vehicle movement areas only; where the specification of external robust wall construction is specified to comply with the credit, additional protection must be provided to ensure against potential damage to the robust façade from vehicle movement, i.e. specifying bollards or protection rails.
Public / Common Areas	Consideration should be given to materials specification in public/common areas (especially public waiting areas and toilet areas) to provide protection against potential malicious or physical abuse in as far as it is possible.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1&2	Design drawings marked up to illustrate: • Vulnerable areas/parts of the building.	Assessor's building/site inspection and photographic evidence confirming: • Vulnerable areas of the building • The durability measures in-situ.
2	Design drawings and/or specification confirming: • The durability measures specified.	

Additional information

Relevant definitions

Public areas: Refer to BREEAM issue Hea 2.

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Materials
Mat 7 - Designing for robustness

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

References

1. BS 5234-2: Partitions (including matching linings) – "*Specification for performance requirements for strength and robustness including methods of test*", BSI1992.

2. HTM 69 "*Protection*" , 2nd Edition, Department of Health, 2005.

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Waste Section

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Waste
Wst 1 - Construction Site Waste Management

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To promote resource efficiency via the effective and appropriate management of construction site waste.

Credit criteria

Credits	
3	Up to three credits are available where evidence provided demonstrates that the amount of non-hazardous construction waste (m^3/100m^2 or tonnes100m^2) generated on site by the development is the same as or better than good or best practice levels.
1	Where evidence provided demonstrates that a significant majority of non-hazardous construction waste generated by the development will be diverted from landfill and reused or recycled.

Compliance requirements

The following demonstrates compliance:

Up to three credits are available

1. Where non-hazardous construction waste generated by the building's construction phase (excluding demolition and excavation waste) meets or exceeds the following resource efficiency benchmarks:

	Amount of waste generated per 100m^2 (gross internal floor area)	
BREEAM credits	m^3	tonnes
One credit	13.0 - 16.6	6.6 - 8.5
Two credits	9.2 – 12.9	4.7 - 6.5
Three credits	<9.2	<4.7

* Volume (m^3) is actual volume of waste (not bulk volume)

2. Where there is a Site Waste Management Plan (SWMP) that contains:
   a. The target benchmark for resource efficiency i.e. m^3 of waste per 100m^2 or tonnes of waste per 100m^2
   b. Procedures and commitments for minimising non-hazardous waste in line with the benchmark
   c. Procedures for minimising hazardous waste

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Waste
Wst 1 - Construction Site Waste Management

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

d. Procedures for monitoring, measuring and reporting hazardous and non-hazardous site waste
e. Procedures for sorting, reusing and recycling construction waste into defined waste groups (see additional guidance section), either on site or through a licensed external contractor
f. The name or job title of the individual responsible for implementing the above.

Demolition & refurbishment projects

3. In addition to the above, sites with existing buildings that will be refurbished or demolished, where demolition forms a part of the principal contractor's works contract, must comply with the following:
    a. Completed a pre-demolition/pre-refurbishment audit of the existing building to determine if, in the case of demolition, refurbishment is feasible and, if not, to maximise the recovery of material from demolition or refurbishment for subsequent high-grade/value applications. The audit must be referenced in the SWMP and cover:
        i. Identification of the key refurbishment/demolition materials.
        ii. Potential applications and any related issues for the reuse and recycling of the key refurbishment and demolition materials.

One credit is available (New build, Refurbishment and Fit Out only projects):

1. Where at least 75% by weight or 65% by volume of non-hazardous construction waste generated by the project has been diverted from landfill and either:
    a. Reused on site (in-situ or for new applications)
    b. Reused on other sites
    c. Salvaged/reclaimed for reuse
    d. Returned to the supplier via a 'take-back' scheme
    e. Recovered from site by an approved waste management contractor and recycled.

2. For demolition projects, in addition to the above requirement for construction-related waste, 90% by weight or 80% by volume of non-hazardous demolition waste has been diverted from landfill.

3. Where there is a Site Waste Management Plan (SWMP) complying with the above requirements.

4. Waste materials will be sorted into separate key waste groups (according to the waste streams generated by the scope of the works) either onsite or offsite through a licensed contractor for recovery.

Exemplary level requirements
The following outlines the exemplary level requirements to achieve an *innovation credit* for this BREEAM issue.

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Waste
Wst 1 - Construction Site Waste Management

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

1. Where non-hazardous construction waste generated by the building's development meets or exceeds the resource efficiency benchmark required to achieve three credits (as outlined above).

2. Where at least 90% by weight (80% by volume) of non-hazardous construction waste and 95% of demolition waste by weight (85% by volume) (if applicable) generated by the build has been diverted from landfill and either:
    a. Reused on site (in-situ or for new applications)
    b. Reused on other sites
    c. Salvaged/reclaimed for reuse
    d. Returned to the supplier via a 'take-back' scheme
    e. Recovered from site by an approved waste management contractor and recycled.

3. All key waste groups are identified for diversion from landfill at pre-construction stage SWMP.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	If the building is part refurbishment part new-build extension then the whole building must be used to determine compliance with this issue. For assessments of extensions to existing buildings, where only the extension is being assessed, it is the extension only that must comply.
Pre-demolition/pre-refurbishment audit	A pre-demolition/pre-refurbishment audit should be carried out using an appropriate methodology. At the time of writing BRE are currently developing a tool as part of the SMARTWaste system for carrying out such audits, and the ICE has produced guidance on pre-demolition audits, including 'A report on the Demolition Protocol' (see references).
SWMP	Since April 2008 any construction project in England costing over £300k requires a Site Waste Management Plan. To achieve any of the construction site waste management credits the assessed development, regardless of value or locality, must have a SWMP compliant with best practice (see relevant definitions in additional guidance section).
Limited site space for segregation and storage	Where space on site is too limited to allow waste materials to be segregated, a waste contractor may be used to separate and process recyclable materials off site. Similarly, manufacturers' take-back schemes could also be used. Where this is the case, sufficient documentary evidence must be produced which demonstrates that segregation of materials is carried out to the agreed levels and that materials are reused/recycled as appropriate.

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Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
All Credits and Exemplary level		
All	A copy of the compliant Site Waste Management Plan containing the appropriate benchmarks, commitments and procedures. Where relevant, a copy of the pre-demolition/pre-refurbishment audit. **OR** A copy of the specification clause that: • Requires the principal contractor to produce a SWMP in line with the requirements • Contains the detailed requirements with respect to resource efficiency benchmarks and target(s) and procedures to be included in the SWMP • Where relevant, requires the principal contractor to carry out a pre-demolition/pre-refurbishment audit. **OR** A letter from the client or their representative containing: • Confirmation that the specification will contain a clause on site waste management requirements. • An outline of the detailed requirements that will be included in that specification clause.	A copy of the SWMP summary datasheets or equivalent monitoring records/report confirming: • The total waste arising for the development. • Comparison of the total waste arising against the benchmark • Quantities of waste by groupings • Where required, the amount and proportion of waste arising that was reused, recycled and landfilled • Custody/application/destination of reused/recycled materials.

Additional information

Relevant definitions

Significant Majority: Defined as meeting at least the percentages required within the Credit Compliance section of this manual

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BREEAM : Healthcare : 2008
Waste
Wst 1 - Construction Site Waste Management

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Site Waste Management Plan (SWMP): SWMP aims to promote resource efficiency and to prevent illegal waste activities. Resource efficiency includes minimising waste at source and ensuring that clients, designers and principal contractors assess the use, reuse and recycling of materials and products on and off the site.

Best Practice SWMP: Best practice (site waste management) is a combination of commitments to:

a. design out waste
b. reduce waste generated on site
c. develop and implement procedures to sort and reuse/recycle construction waste on and off site (as applicable).
d. follow guidance from:
   - DEFRA (Department of Environment, Food and Rural Affairs)
   - BRE (Building Research Establishment)
   - Envirowise
   - WRAP (Waste & Resources Action Programme)

Table 1: Construction waste groups

European Waste Catalogue)	Key Group	Examples
170102	Bricks	Bricks
170101	Concrete	Pipes, kerb stones, paving slabs, concrete rubble, precast and in situ
170604	Insulation	Glass fibre, mineral wool, foamed plastic
1501	Packaging	Paint pots, pallets, cardboard, cable drums, wrapping bands, polythene sheets
170201	Timber	Softwood, hardwood, boards products such as plywood, chipboard, medium density fibreboard (MDF)
1602	Electrical and electronic equipment	Electrical & electronic TVs, fridges, air-conditioning units, lamps equipment
200301	Canteen/office	Office waste, canteen waste, vegetation
1301	Oils	Hydraulic oil, engine oil, lubricating oil
1703	Asphalt and tar	Bitumen, coal tars, asphalt
170103	Tiles and ceramics	Ceramic tiles, clay roof tiles, ceramic, sanitaryware
1701	Inert	Mixed rubble/excavation material, glass
1704	Metals	Radiators, cables, wires, bars, sheet
170802	Gypsum	Plasterboard, render, plaster, cement, fibre cement sheets, mortar

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BREEAM : Healthcare : 2008
Waste
Wst 1 - Construction Site Waste Management

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

170203	Plastics	Pipes, cladding, frames, non-packaging sheet
200307	Furniture	Tables, chairs, desks, sofas
1705	Soils	Soils, clays, sand; gravel, natural stone
Most relevant EWC	Liquids	Non-hazardous paints, thinners, timber treatments
Most relevant EWC	Hazardous	Defined in the Hazardous Waste List (HWL) of the European Waste Catalogue (EWC)
Most relevant EWC	Floor coverings (soft)	Carpets, vinyl flooring
Most relevant EWC	Architectural Features	Roof tiles, reclaimed bricks, fireplaces
170904 (Mixed)	Mixed/ other	Efforts should be made to categorise waste into the above categories wherever possible

BREEAM construction waste benchmarks
The benchmarks used have been derived from BRE's SMARTWaste system and through a DEFRA-funded project for predicting construction waste and will be updated annually for the purposes of BREEAM. The benchmarks are based on real-life data and have been subject to a number of statistical and logical tests. The benchmarks used apply to actual volume, and standard conversion factors have been used for tonnages from the Environment Agency. Compliance with the benchmarks can be demonstrated using either volume of weight of construction waste.

For more information on these benchmarks and to break them down by waste type, please go to www.smartwaste.co.uk

Tools for preparing, implementing and reviewing a SWMP
SMARTWaste Plan is a free web-based tool for preparing, implementing and reviewing a SWMP. This tool includes an integrated waste measurement tool (a revised SMARTStart) which is aligned to defined waste groups. SMARTWaste Plan will manage all aspects of creating SWMPs and measuring waste generated on projects. Templates are available to meet the BREEAM credits and can also be downloaded. The tool includes online waste measurement, industry waste benchmarks and links to BREMAP. A carbon calculator and economic assessment of waste will also be added.

BREMAP is a geographical information system of waste management facilities. See www.bremap.co.uk

References

1. "*A Report on the Demolition Protocol*", commissioned by London Remade prepared by EnviroCentre Ltd. (www.ice.org.uk)

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Waste
Wst 1 - Construction Site Waste Management

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

2. For information and further advice on Site Waste Management Plans and to freely download BRE's new SMARTWaste Plan tool visit: www.smartwaste.co.uk

3. Environment Agency guidance on waste: www.environment-agency.gov.uk/subjects/waste/ and www.netregs.gov.uk

4. DEFRA provides information and associated guidance on the Site Waste Management Plan Regulations 2008: www.defra.gov.uk/constructionwaste

5. For help in finding local waste management companies and opportunities to reuse and recycle materials try BREMAP free of charge at: www.bremap.co.uk

6. Both WRAP and Envirowise can provide advice and guidance on SWMPs: www.wrap.org.uk/construction and www.envirowise.gov.uk

7. www.remade.org.uk

8. Waste Management Regulations Scotland: www.aggregain.org.uk/waste_management_regulations/waste_management_regulations_scotland/index.html

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BREEAM : Healthcare : 2008
Waste
Wst 2 - Recycled aggregates

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To recognise and encourage the use of recycled and secondary aggregates in construction, thereby reducing the demand for virgin material.

Credit criteria

Credits	
1	Where evidence provided demonstrates the significant use of recycled or secondary aggregates in 'high-grade' building aggregate uses.

Compliance requirements

The following demonstrates compliance:

1. Where the amount of recycled and secondary aggregate specified is over 25% (by weight or volume) of the total *high-grade* aggregate uses for the building. Such aggregates can be **EITHER**:
    a. Obtained on site **OR**
    b. Obtained from waste processing site(s) within a 30km radius of the site; the source will be principally from construction, demolition and excavation waste (CD&E) – this includes road planings **OR**
    c. Secondary aggregates obtained from a non-construction post-consumer or post-industrial by-product source (see compliance notes).

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	This credit can be awarded automatically where no new aggregate is being used. Potentially the case in most refurbishments.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.

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Waste
Wst 2 - Recycled aggregates

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Secondary aggregates	Recognised non-construction post-consumer or post-industrial by-products include: • China clay waste • Slate overburden • Pulverised Fuel Ash (PFA) • Ground Granulated Blast Furnace Slag (GGBFS) • Air-cooled blast furnace slag • Steel slag • Furnace bottom ash (FBA) • Incinerator bottom ash • Foundry sands • Recycled glass • Recycled plastic • Tyres • Spent oil shale • Colliery spoil • Municipal Solid Waste Treatment Residues

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1	A copy of the relevant specification or contract clause confirming: • Recycled and secondary aggregate use requirements for the project. A letter from the design team or main contractor confirming: • The source of recycled/secondary aggregates • The amount and quality required can be obtained from this source.	Structural engineers calculations demonstrating the weight/volume of: • Total high grade aggregate used. • Total recycled and secondary aggregates used. Third party documentation as follows: Delivery notes for all recycled and secondary aggregates confirming: • Source of recycled/secondary aggregate. **AND/OR** A letter or email from the aggregate/ concrete supplier confirming that: • The aggregate supplied and used was from a recycled/secondary source • Source of recycled/secondary aggregate.

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Waste
Wst 2 - Recycled aggregates

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Additional information

Relevant definitions

High Grade aggregate uses are considered to be:

Bound
- Structural frame;
- Floor slabs including ground floor slabs;
- Bitumen or hydraulically bound base, binder, and surface courses for paved areas and roads.

Unbound
- Asphalt-based or similar road surfaces
- Granular fill and capping
- Pipe bedding
- Sub bases/building foundations
- Gravel landscaping.

Crushed masonry used as fill material for general landscaping is not considered to be *high grade.* This practice is now common place on construction sites due to landfill costs.

Pre-consumer waste stream: Waste material generated during manufacturing processes. Excluded is reutilisation of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it.

Post-consumer waste stream: Waste material generated by households or by commercial, industrial and institutional facilities in their role as end-users of the product, which can no longer be used for its intended purpose. This includes returns of material from the distribution chain.

Recycled aggregates: are those derived from reprocessing materials previously used in construction, e.g. crushed concrete or masonry from construction and demolition waste material.

Secondary aggregates: By-products of industrial processes that can be processed to produce secondary aggregates. Secondary Aggregates are sub-divided into manufactured and natural, depending on their source.

References

1. AggRegain website (managed by WRAP) has many case studies, guidance and specifications for using recycled and secondary aggregates: www.aggregain.org.uk

2. BREMAP and Salvo Materials Information Exchange can help identify sources of recycled and secondary aggregates: www.bremap.org.uk and www.salvomie.co.uk

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Waste
Wst 2 - Recycled aggregates

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

3. MINRES website has technical information and case studies relating to the use of recycled and secondary aggregates in a number of high value applications e.g. bricks, concrete etc., and can also help users to locate sources of secondary aggregates: www.minres.co.uk

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BREEAM : Healthcare : 2008
Waste
Wst 3 - Recyclable waste storage

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	1	1

Credit aim

To recognise the provision of dedicated storage facilities for a building's operational-related recyclable waste streams, so that such waste is diverted from landfill or incineration.

Credit criteria

Credits	
1	Where a central, dedicated space is provided for the storage of the building's recyclable waste streams.

Compliance requirements

The following demonstrates compliance:

1. A dedicated storage space to cater for recyclable materials generated by the building during occupation, compliant with the following:
    a. Compliant with HTM 07-01: Safe management of healthcare waste
    b. Clearly labelled for recycling
    c. Located within a dedicated centralised waste management unit or alternatively within easy reach of the assessed building(s) (e.g. less than 20m away from an appropriate building entrance)
    d. In a location with good vehicular access to facilitate collections.

2. The size of the space allocated must be adequate to store the likely volume of recyclable materials generated by the building's occupants/operation. Whilst a fixed area cannot always be given, the following must be complied with as a minimum:
    a. At least $2m^2$ per $1000m^2$ of net floor area for buildings $<5000m^2$
    b. A minimum of $10m^2$ for buildings $\geq 5000\ m^2$
    c. An additional $2m^2$ per $1000m^2$ of net floor area where catering is provided (up to an additional minimum of $10m^2$ $\geq 5000m^2$).

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	Where there are facilities within the existing building, these can be used to assess compliance. The scope of these facilities must be adequate to cater for the total volume of predicted waste from the new and existing buildings.

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BREEAM : Healthcare : 2008
Waste
Wst 3 - Recyclable waste storage

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	1	1

Multiple building assessments	Where the assessment applies to a number of buildings then a dedicated centralised storage space should be provided on site and this should be sized to accommodate the likely amount of recyclable materials for all buildings. Building areas that do not generate any operational waste, e.g. swimming pool or sports hall, can be excluded.
Accessible reach of the building	Typically 'accessible reach' is defined in BREEAM as within 20m of a building entrance. In some circumstances, depending on the size of the building, site restrictions or tenancy arrangements, it may not be possible to meet a 20m requirement. If it is the opinion of the assessor that it is not feasible to meet this 20m requirement then they can use their judgement to determine if the facility is in an easily accessible location for building occupants and vehicle collection and to state their reasons in the assessment report.
Individual Recycling Bins	Individual recycling bins located at convenient locations throughout the building are necessary to maximise recycling rates. These on their own, however, are not sufficient to obtain this credit.
Internal storage areas	Where the facilities are situated internally, vehicular gate heights/widths and manoeuvring and loading space must be sized correctly to ensure ease of access for vehicles collecting recyclable materials.
General waste	The area for recyclable materials storage must be provided in addition to areas and facilities provided for dealing with general waste and other waste management facilities, e.g. compactors and balers.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
All	Marked-up building/site plan and/or copy of the specification confirming: • The location of the dedicated recyclable storage area • Storage area for general waste • The area (m^2) of the storage space(s) • Description of the labelling. A letter from the design team confirming: • Facilities have been designed in compliance with HTM 07-01	Assessor's building/site inspection and photographic evidence confirming: • The location, size and capacity of the storage provision • Labelling of the dedicated facilities. A letter from the design team confirming: • Facilities have been constructed in accordance with the HTM 07-01 compliant design.

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Waste
Wst 3 - Recyclable waste storage

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	1	1

Additional information

Relevant Definitions

Clinical Waste: Waste derived from medical practices and defined as bodily fluids and wastes, drugs and medical equipment; and other waste which, unless rendered safe, may prove hazardous or infectious to persons coming into contact with it.

The following footprint dimensions can act as a guide when determining size and accessibility requirements for the recyclable storage space:

- **Compactor dimensions:** about the size of one car parking bay; 4.8 x 2.4m
- **Skip:** The footprint of an 8 and 12 cubic yard skip measures 3.4m x 1.8m, therefore allow a minimum of 2.0m width and 4.0m length or 8m^2 area for the storage and access of such containers
- **Wheeled bins:** 360 litre = 0.86m x 0.62 / 660L= 1.2m x 0.7m / 1100L = 1.28m x 0.98m
- **Roll-on-roll-off containers:** allow a minimum of 6.1m x 2.4m.
- **Vehicle access:** The following are dimensions for lorry types that are typically used to collect waste. Therefore gate height/widths should not be smaller than these measurements:
    - **Dustcart:** medium capacity; length = 7.4m Height = 4m width 3.1m
    - **Skip lorry:** length = 7m Height = 3.35m width 3.1m

Consideration must also be given to any other types of vehicle requiring access to this area, e.g. lorries for roll on/off containers.

References

1. "*Metric handbook – Planning and design data*", Adler, Architectural Press, 2nd Ed., 1999.

2. HTM 07-01: "*Safe management of healthcare waste"*, Department of Health, 2006.

3. SHTN 3 Guidance "*EWC Coding guide for Healthcare Wastes*", Health Protection Scotland, 2007.

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Waste
Wst 4 - Compactor / Baler

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To recognise and encourage the provision of facilities which enable efficient and hygienic waste sorting and storage.

Credit criteria

Credits	
1	Where evidence provided demonstrates that either an industrial waste compactor or baler is installed for compacting/baling waste materials generated on site and a. A water outlet is provided for cleaning b. The development achieves the BREEAM credit for storage of recyclable waste.

Compliance requirements

The following demonstrates compliance:

1. A static waste compactor or baler is installed and situated in a service area or dedicated waste management space.

2. At least one water outlet is provided for each waste sorting and/or storing facility.

3. The recyclable waste storage requirements of BREEAM credit WST 3 have been met.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.
Scope of Wst 4	This BREEAM issue is applicable to acute and teaching hospitals and any healthcare development >5000 m^2. Where it is not applicable the assessor's spreadsheet tool will filter this BREEAM issue from the list of applicable credits.

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BREEAM : Healthcare : 2008
Waste
Wst 4 - Compactor / Baler

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1 - 2	Marked-up design plan and/or a copy of the specification confirming: • Provision of waste compactor/baler • Location and size of space for waste compactor/baler • Water outlet Manufacturer/supplier literature confirming • The type of compactor/baler specified.	Assessor's building/site inspection and photographic evidence confirming: • The installation of the compactor/baler (or space for installation for speculative developments) • Installation of a water outlet • The location, size and capacity of the recyclable storage provision (as required for compliance with WST 3)
3	As defined in the schedule of evidence for BREEAM credit WST 3.	As defined in the schedule of evidence for BREEAM credit WST 3.

Additional information

Relevant definitions

Waste compactor or baler: A machine that is designed to compress waste streams in order to improve storage and transport efficiency.

The requirement to achieve the credit for storage of recyclable materials is set in order to encourage the minimisation of the assessed development's waste streams by encouraging a more integrated approach to the issue of waste management, recycling and disposal. The provision of adequate recycling and waste management facilities helps to ensure that this objective can be achieved.

Compacting dry waste can significantly reduce the volume of waste sent to landfill. Furthermore, whether for recycling or landfill, compacting waste at source will reduce the number of trips required for the collection and delivery of the waste and therefore result in reduced fuel consumption and vehicle emissions. Reduced vehicle movements will also provided social and health & wellbeing benefits to the surrounding community and economic benefits to the building occupier.

References

None.

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BREEAM : Healthcare : 2008
Waste
Wst 5 - Composting

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To encourage the provision of facilities that help facilitate the reduction in volume of compostable organic waste going directly to landfill during the building's operation.

Credit criteria

Credits	
1	Where evidence provided demonstrates there is a vessel on site for composting food waste, and adequate storage for such waste generated by the building's users and operation. OR Where space or access is limited, there is a dedicated space for compostable food waste to be stored prior to removal and composting at an alternative site.

Compliance requirements

The following demonstrates compliance:

1. A vessel is installed on site for composting suitable food waste resulting from the building's daily operation and use.

2. There is adequate space for storing segregated food waste and composted organic material.

3. At least one water outlet is provided for cleaning in and around the facility.

OR

4. Where there are space or access limitations on site, the following demonstrates compliance:
    a. There is a dedicated segregated space for storing compostable food waste prior to collection and delivery to an alternative composting facility.
    b. At least one water outlet is provided for cleaning in and around the facility.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new-build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.

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Waste
Wst 5 - Composting

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.
Storage Capacity	No requirements are set on the type of vessel or storage capacity required as this will be determined by the end user and predicted volumes of organic compostable waste. The assessor should be satisfied that, within reason, the installation is adequate for the size of development, bearing in mind the likely quantity of organic waste that will be produced by the development.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1-4	Marked-up design plan and/or a copy of the specification confirming (as appropriate): • Specification of composting vessel • Location and size of space for vessel and storage of waste/compost • Water outlet.	Assessor's building/site inspection and photographic evidence confirming: • The installation of the vessel • The provision of adequate storage space/facilities • Installation of a water outlet If appropriate, a letter from the occupier or service provider confirming: • Location of the off-site facility where compostable material will be delivered. • The procedure and frequency for collecting the compostable material.

Additional information

Relevant definitions
None.

References

None.

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Land Use & Ecology Section

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Land Use & Ecology
LE1 – Reuse of land

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To encourage the reuse of land that has been previously developed and discourage the use of previously undeveloped land for building.

Credit criteria

Credits	
1	Where evidence is provided to demonstrate that the majority of the footprint of the proposed development falls within the boundary of previously developed land.

Compliance requirements

The following demonstrates compliance:

1. At least 75% of the proposed development's footprint is on an area of land which has previously been *developed* for use by industrial, commercial or domestic purposes in the last 50 years.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new build projects.
Refurbishment	In the case of refurbishment, the credit can be awarded by default where no new building work or infrastructure is being constructed as part of the refurbishment.
Extensions to existing buildings	Where a refurbishment includes new buildings, hard landscaping, or infrastructure, 75% of the total proposed development footprint (refurbished plus new build and/or hard landscaping and/or infrastructure) must comply with the requirement.
Infill development	New buildings developed within the boundary of existing sites do not automatically comply with the requirements. The land on which at least 75% of the new building will be sited must meet the definition of *previously developed*.
Temporary works	Undeveloped areas of the site to be used for temporary works (e.g. temporary offices/parking, material/machinery storage) must be considered as development on undeveloped land and therefore included in the calculations unless they have been defined as 'land of low ecological value' (Ecological Value and Protection credit, LE3).

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Land Use & Ecology
LE1 – Reuse of land

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Developed more than 50 years ago	Where a site has been previously developed (more than 50 years ago) but is now considered undeveloped, the credit may only be awarded on this basis if the site is deemed to be "contaminated" as defined in BREEAM credit LE2.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1	Existing site plan, report or site photographs confirming: • Previous land use. • Area (m^2) of previous land use. Proposed site plan showing; • Location and footprint (m^2) of proposed development and temporary works.	Assessor's building/site inspection or as built drawings confirming: • The footprint or orientation of the developed area has not altered from that confirmed in the design stage evidence. • Where alteration has occurred the % must be re-calculated using 'as built' plans.

Additional information

Relevant definitions

Proposed Development: Is defined as the area of any building, hard landscaping, car park and access roads that fall within the boundary of the proposed site.

Previously Developed Land: For the purposes of this credit, BREEAM uses the definition from Planning Policy Statement 3 which defines previously developed land as that which is or was occupied by a permanent structure, including the curtilage of the developed land and any associated fixed surface infrastructure.

The definition includes:

a. Defence buildings

The definition excludes:

a. Land that is or has been occupied by agricultural or forestry buildings.
b. Land that has been developed for minerals extraction or waste disposal by landfill purposes where provision for restoration has been made through development control procedures.
c. Land in built-up areas such as parks, recreation grounds and allotments which, although may feature paths, pavilions and other buildings, have not been previously developed.
d. Land that was previously developed but where the remains of the permanent structure or fixed surface structure have blended into the landscape in the process of time (to the extent that it can reasonably be considered as part of the natural surroundings).

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BREEAM : Healthcare : 2008
Land Use & Ecology
LE1 – Reuse of land

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

References

England and Wales

4. Planning Policy Guidance (PPG) 3: Housing. Available from the Government's Planning Portal website: www.planningportal.gov.uk.

Scotland

5. Scottish Planning Policy Guidance (SPPG) 3: Housing. Available from the Scottish Government's website: http://www.scotland.gov.uk/Publications/2003/02/16499/18894

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Land Use & Ecology
LE2 – Contaminated land

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To encourage positive action to use contaminated land that otherwise would not have been remediated and developed.

Credit criteria

Credits	
1	Where evidence is provided to demonstrate that the land used for the new development has, prior to development, been defined as contaminated and adequate remedial steps have been taken to decontaminate the site prior to construction.

Compliance requirements

The following demonstrates compliance:

1. The site is deemed to be *significantly contaminated* as confirmed by a contaminated land specialist's site investigation, risk assessment and appraisal identifying:
    a. the degree of contamination
    b. the contaminant sources/types
    c. the options for remediating sources of pollution which present an unacceptable risk to the site.

2. The client or contractor confirms that remediation of the site will be carried out in accordance with the remediation strategy and its implementation plan.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.
Prior Decontamination	The credit can only be awarded where remediation has taken place to enable current development of the site for the assessed building, or part of a larger phased development that includes the assessed building (see below). The credit is not achievable for instances where historical remediation and development of the site has occurred outside the scope of the current development proposals.

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Land Use & Ecology
LE2 – Contaminated land

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Large sites split into smaller plots	Where a large site has been decontaminated and is then packaged up into smaller plots of land for individual buildings (possibly as part of a phased development strategy), the credit can be awarded regardless of the plot location of the assessed building. This is on the condition that the whole site could not have been developed without remediation work taking place.
Health and Safety-related decontamination	Contaminated land that has been decontaminated solely for health and safety reasons (rather than for the specific purpose of re-development) does not comply.
Asbestos	Where the only decontamination required is for the removal of asbestos within an existing building fabric, this cannot be classified as contaminated land. However, where asbestos is found to be present in the ground this will be classed as contamination for the purposes of assessing this credit.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1	A copy of the specialist's land contamination report confirming: • The degree, type and sources of site contamination. • The options for remediating the site. Existing site plan(s) showing: • Location of areas contaminated and to be remediated in relation to any proposed development.	The evidence required at the post construction stage is the same as for a design stage assessment.
2	A letter from the main contractor or remediation contractor confirming: • The remediation strategy for the site. • Summary details of the implementation plan. If a contractor has not yet been appointed, a letter from the client, or their representative confirming: • That the appointed contractor will undertake necessary remediation works to mitigate the risks identified in the specialist report.	A copy of the verification report (or relevant sections of the report) confirming: • Description of remedial works undertaken. • Description of relevant *pollution linkages* addressed*. * This may not be applicable where the contaminant is a non-native invasive plant species.

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Land Use & Ecology
LE2 – Contaminated land

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Additional information

Relevant definitions

Contaminant: Is defined as any solid, liquid or gaseous material in, or on the ground to be covered by the building, which is classed as a hazard and therefore presents an unacceptable risk to human health and the environment. The definition also includes land significantly infested by *non-native invasive plant species* (see below).

Significant contamination: For the purposes of this credit, significant contamination is contamination compliant with the above and that, without remediation, development of the site is not possible.

Remediation: Activity undertaken to prevent, minimise, remedy or mitigate the risk caused by contaminated land to human health or the environment.

Non-native invasive plant species: Are non-indigenous species that adversely affect the habitats they invade economically, environmentally or ecologically. For the purposes of BREEAM this currently includes Japanese Knotweed and Giant Hogweed only. Further information on the control and disposal and how this fits into the legislative framework relating to such species can be obtained from DEFRA.

Pollution Linkages: A relevant pollutant linkage is one that has been identified during the risk assessment stage as representing unacceptable risks to human health or the environment.

References

1. CLEA Overview Documents (These and other documents relating to CLEA are available from the Environment Agency's website: www.environment-agency.gov.uk):
   a. CLR 7: Assessment of risks to human health from land contamination; an overview of the development of Soil Guideline Values and related research.
   b. CLR 8: Potential contaminants for the assessment of land.
   c. CLR 9: Contaminants in soil: collation of toxicological data and intake values for humans.
   d. CLR 10: The Contaminated Land Exposure Assessment (CLEA) model: technical basis and algorithms.

2. Further advice and technical publications are available for download from the Environment Agency's website: www.environment-agency.gov.uk, including;

   a. Remedial methods for contaminated groundwater.
   b. Verification of treatment performance – How sure can you be?
   c. Issues for the selection of remedial strategies, good practice guidance.
   d. Process-based remediation of land contamination.

3. Approved Document C: "*Site Preparation and Resistance to contaminants and moisture*", 2004 edition, ODPM. (http://www.communities.gov.uk)

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Land Use & Ecology
LE2 – Contaminated land

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

4. "*Environment Agency Guidance on Requirements for Land Contamination Reports*", Environment Agency, 2005.

5. Scottish Environment Protection Agency (SEPA) www.sepa.org.uk

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BREEAM : Healthcare : 2008
Land Use & Ecology
LE3 – Ecological value of site AND Protection of ecological features

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To encourage development on land that already has limited value to wildlife and to protect existing ecological features from substantial damage during site preparation and completion of construction works.

Credit criteria

Credits	
1	Where evidence provided demonstrates that the site's construction zone is defined as land of low ecological value and all existing features of ecological value will be fully protected from damage during site preparation and construction works.

Compliance requirements

The following demonstrates compliance:

1. Land within the *construction zone* is defined as 'land of low ecological value' using either:
   a) BREEAM checklist A4 **OR**
   b) A *suitably qualified ecologist* who has identified the land as being of 'low ecological value' within an ecological assessment report, based on a site survey.

2. All existing features of ecological value surrounding the *construction zone* and site boundary area are adequately protected from damage during clearance, site preparation and construction activities as listed below:
   - Trees of over 100 mm trunk diameter, and/or of significant ecological value, are protected by barriers. Barriers must prohibit construction works in the area between itself and the tree trunk. Minimum distance between tree trunk and barriers must be either the distance of branch spread or half tree height, whichever is the greater.
   - In all cases trees must be protected from direct impact and from severance or asphyxiation of the roots.
   - Hedges and natural areas requiring protection must either have barriers erected and be protected, or, when remote from site works or storage areas, be protected with a prohibition of construction activity in their vicinity.
   - Watercourses and wetland areas are to be protected by cut-off ditches and site drainage to prevent run-off to natural watercourses (as this may cause pollution, silting or erosion).

3. In all cases, the contractor is required to construct ecological protection prior to any preliminary site construction or preparation works (e.g. clearing of the site or erection of temporary site facilities).

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LE3 – Ecological value of site AND Protection of ecological features

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new build projects.
Refurbishment	A refurbishment of a building (with no new construction), must protect any existing ecological features of value. Protection includes clear exclusion procedures for construction traffic/personnel and material storage, as well as physical barriers.
Extensions to existing buildings	Where a refurbishment includes new building work or infrastructure, the land on which the new build area and its associated infrastructure (e.g. roads, pavements, car parks etc) will be situated, must comply with the criteria.
No features of ecological value	Where the construction zone is defined as 'land of low ecological value' and where the surrounding site contains no features of ecological value, this credit can be awarded.
Suitably qualified ecologist report	The suitably qualified ecologist must base their findings on data collected from a site visit conducted at appropriate time(s) of the year, when different plant and animal species are evident. The content of the Ecology Report is to be representative of the existing site's ecology prior to the commencement of initial site preparation works (i.e. before RIBA stage K, Operations On Site). Where the ecologist has made no on-site visit, the credit cannot be awarded. See additional guidance for definition of a suitably qualified ecologist.
Features of little or no ecological value	If a suitably qualified ecologist has confirmed that a feature has little or no ecological value, or where a tree is deemed to create a significant danger to the public or occupants by a statutory body or qualified arboriculturalist, then that feature may be exempt from the protection of ecological features requirement of this credit.
Removal of features of ecological value	If features of ecological value have been removed as part of site clearance then the development cannot achieve this credit, even if they are to be replaced as part of a new landscaping strategy.
Site clearance prior to purchase of the site	For sites that have been cleared more than five years ago, the ecological value of the site would be its present ecological value, on the basis that in the intervening five years, ecological features would have started to re-establish themselves and therefore act as an indicator of the site's ecological value. For sites that have been cleared less than five years before assessment, a suitably qualified ecologist should make an estimation of the site's ecological value immediately prior to clearance on the basis of available desktop information (including aerial photography) and the landscape type/area surrounding the site.

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Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1&2	A completed copy of checklist A4 signed and dated by the client, their representative or a design team member e.g. architect. **AND** One of the following: A plan and/or site photographs of the existing site highlighting any ecological features **OR** A copy of the ecologist's report containing: • Confirmation that the land within the construction zone is of low ecological value. • A description of any ecological features within the site or on the site boundary. • Date(s) of site survey(s).	The evidence required at the post construction stage is the same as for a design stage assessment.
	A completed, signed copy of sections A and B of checklist A6 'Guidance for relating ecology reports to BREEAM' to confirm the ecologist's professional status **OR** A copy of the ecologist's report containing the information in sections A and B from the above.	

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Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

2&3	A copy of the relevant section of the contract specification confirming: • Requirement to protect all identified features of ecological value. • Scope of protection measures required. • Protection measures implemented prior to commencement of site activities.	Assessor site inspection report **OR** ecologist's report confirming: • The boundary of the site and the construction zone has not been altered. • Where applicable, all existing ecological features still remain.

Additional information

Relevant definitions

Construction zone: For the purpose of this BREEAM, credit the construction zone is defined as any land on the site which is being developed (and therefore disturbed) for buildings, hard standing, landscaping, site access, plus a 3m boundary in either direction around these areas. It also includes any areas used for temporary site storage and buildings.

If it is not known exactly where buildings, hard standing, site access and temporary storage will be located it must be assumed that the construction zone is the entire site.

Suitably qualified ecologist (SQE): An individual achieving all the following items can be considered to be "suitably qualified" for the purposes of a BREEAM assessment:

1. Holds a degree or equivalent qualification (e.g. N/SVQ level 5) in ecology or a related subject.

2. Is a practising ecologist, with a minimum of three years relevant experience (within the last five years). Such experience must clearly demonstrate a practical understanding of factors affecting ecology in relation to construction and the built environment; including, acting in an advisory capacity to provide recommendations for ecological protection, enhancement and mitigation measures. Examples of relevant experience are: ecological impact assessments; Phase 1 and 2 habitat surveys and habitat restoration.

3. Is covered by a professional code of conduct and subject to peer review.

Peer review: Is defined as the process employed by a professional body to demonstrate that potential or current full members maintain a standard of knowledge and experience required to ensure compliance with a code of conduct and professional ethics.

Full members of the following organisations, who meet the above requirements, are deemed suitably qualified ecologists for the purposes of BREEAM:
- Association of Wildlife Trust Consultancies (AWTC)
- Chartered Institution of Water and Environmental Management (CIWEM)
- Institute of Ecology and Environmental Management (IEEM)
- Institute of Environmental Management and Assessment (IEMA)

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Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

- Landscape Institute (LI)

Where a suitably qualified ecologist is verifying an Ecology Report produced by another ecologist who does not meet the SQE requirements, they must, as a minimum, have read and reviewed the report and confirm in writing that they have found it to:

a. represent sound industry practice
b. report and recommend correctly, truthfully and objectively
c. be appropriate given the local site conditions and scope of works proposed
d. avoid invalid, biased and exaggerated statements.

Additionally, written confirmation from the third party verifier that they comply with the definition of a *Suitably Qualified Ecologist* is required.

References

1. British Standard BS5837 "*Trees in relation to construction*", BSI, 2005.

2. "*The Hedgerows Regulations 1997*", Office of Public Sector.

3. Environmental good practice on site (CIRIA C502): "*Guidance on how to avoid causing environmental damage and the financial penalties that can follow*", CIRIA, 1999.

4. Environmental good practice on site (CIRIA C503): "*Practical advice on how to carry out construction works without harming the environment*", CIRIA, 1999.

5. Working with wildlife site guide (CIRIA C567): "*Guidance to understand and implement good practice in relation to wildlife on development and construction projects*", CIRIA, 2005.

6. "*RSPB Good Practice Guide for Prospective Developments – General Principles", RSPB,* 1997: www.rspb.org.uk.

7. Pollution Prevention Guideline (PPG) 5: "Works in, near, or liable to affect watercourses", Environment Agency.

8. Pollution Prevention Guideline (PPG) 6: "*Working at construction and demolition sites"*, Environment Agency.

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Land Use & Ecology
LE4 – Mitigating ecological impact

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	1	1	1

Credit aim

To minimise the impact of a building development on existing site ecology.

Credit criteria

Credits	
1	Where evidence provided demonstrates that the change in the site's existing ecological value, as a result of development, is *minimal*.
2	Where evidence provided demonstrates that there is *no negative change* in the site's existing ecological value as a result of development.

Compliance requirements

The following demonstrates compliance:

1. Where the change in ecological value of the site is less than zero and equal to or greater than minus nine plant species i.e. a minimal change (one credit).

2. Where the change in ecological value of the site is equal to or greater than zero plant species i.e. no negative change (two credits).

   The change in ecological value of the site is calculated by **EITHER** of the following:

3. Determine the following information and input this data in to Ecology calculator 1 within the spreadsheet tool:
   a. Plot type(s) and areas (m^2) that define the landscape of the assessed site, in its existing pre-developed state and proposed state (see additional guidance).

   OR

4. Where a *suitably qualified ecologist* has been appointed and, based on a site survey, they confirm the following and the assessor or ecologist inputs this data in to the Ecology calculator 2:
   b. Actual plot/habitat types that define the landscape of the assessed site in its existing pre-developed state and proposed state
   c. Area (m^2) of each plot/habitat type
   d. Number of plant species found within each plot type

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Land Use & Ecology
LE4 – Mitigating ecological impact

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	1	1	1

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings. Refer also to the note below on infill developments.
Completing Ecology Calculator 1	First, define the landscape type (based on the typology of the surrounding sites, table 1). This category is unlikely to change through the development, although it may in some cases, e.g. when a disused site is developed as part of a master plan for a large multi-use or multi-building development/regeneration project. Then, define and calculate the area (m^2) of each vegetation-plot type (table 2) and building or hard landscaped area, both before and after development, for the site. Once the data is entered, the Ecology Calculator 1 will indicate the indicative change in ecological value. The result must be used to award the credits.
Number of plant species	BREEAM measures ecological value using number of plant species. The plant species figures for each land type are programmed into the Ecology Calculator tool 1. These figures are based on national figures from the Countryside Survey prepared for the Digest of Environmental Statistics (see table 3).
Wildlife garden planting	In the 'change of ecological value' table (table 3), 'garden planting (typical)' and 'wildlife garden planting' will always record a score of zero, unless a suitably qualified ecologist has been appointed: whereby they will make the distinction between 'typical' and 'wildlife' garden planting species and record 'actual' species numbers.
Derelict Sites	The ecological value of derelict sites is time dependent (table 3); a linear scale has been used to determine intermediate values between zero ecological value at 1 year from dereliction/demolition to a value at 30 years based on marginal upland figures. This presents a worst case figure which can be amended on the advice of a suitably qualified ecologist.
Assessment of a single development on a larger site	Where the assessment is of a single building that forms part of a larger site development and the landscaping and ecological features form a common part of the whole site, for the purpose of assessing this credit the plot types and areas for the entire site must be used.
Infill developments on existing occupied site	Where a development is an infill (or new building) on an existing occupied site, then the construction zone for the new building would be the area of site assessed for the purposes of this credit.

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Min. credits to achieve rating	-	-	1	1	1

Site clearance prior to purchase of the site	Refer to the compliance note in LE3 on this issue.
Green Roofs	The contribution of species from a Green roof can only be incorporated where a suitably qualified ecologist has been appointed.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
First & Second Credit		
1,2 & 3	Existing and proposed site plans and, if required, maps and aerial photographs confirming: • Landscape and vegetation plot types • Area (m^2) of vegetation plot types **AND** A completed copy of Ecology Calculator 1.	The evidence required at the post construction stage is the same as for a design stage assessment. Plus: Assessor's/ecologist's building/site inspection confirming: • Post construction vegetation plot types and areas are in accordance with design stage evidence.
1,2 & 4	A copy of the suitably qualified ecologist's report confirming prior to and after the development: • Landscape and vegetation plot types • Area (m^2) of vegetation plot types **AND** A completed, signed copy of checklist A6 – Relating ecology reports to BREEAM **OR** a copy of the ecology report containing the information outlined in checklist A6. **AND** A completed copy of Ecology Calculator 2.	

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Land Use & Ecology
LE4 – Mitigating ecological impact

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	1	1	1

Additional information

Relevant Definitions

Construction zone: As defined for credit LE3 – Ecological Value of site AND Protection of ecological features

Suitably qualified ecologist (SQE): As defined for credit LE3 – Ecological Value of site AND Protection of ecological features

Table 1: General Landscape Types

Pastoral	Mainly grasslands.
Arable	Land dominated by cereals and other arable crops, as well as intensively managed grasslands.
Marginal Upland	Areas which are on the periphery of the uplands, and which are dominated by mixtures of low intensity agriculture, forestry and semi-natural vegetation.
Upland	Land generally above a height suitable for mechanised farming and frequently dominated by semi-natural vegetation.
Building & Derelict Land	Land currently or previously occupied by buildings.
Urban Mosaic	A complex mix of habitats located within cities, towns, or villages, which will include; buildings, hard standing, pockets of disused land and scrub, and areas of managed green spaces, such as gardens, allotments, and parkland. Parklands can be characterised as being accessible to the public and will usually be fairly intensively managed spaces, consisting of a matrix of grassland (grazed or mown) with scattered trees at various densities and areas of dense planting. This landscape type is to be used only when no other landscape type in the table is more appropriate / predominates.

Table 2: Vegetation Plot Types

Crops/weeds	Mostly highly disturbed vegetation of arable fields and their boundaries; includes cereal and vegetable crops.
Tall grassland/herb	Typical vegetation of overgrown lowland field boundaries, ditches and roadside verges.
Fertile grass	The bulk of agriculturally improved grasslands, intensive pasture and silage crops; but also includes mown areas of improved grasslands for recreational and amenity purposes, as well as re-sown roadside verges.

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Min. credits to achieve rating	-	-	1	1	1

Infertile grass	A diverse group of semi-improved and semi-natural grasslands; includes acidic to basic, wet to dry grasslands, and tall-herb vegetation mainly present in the lowlands; often found on stream sides and roadside verges.
Lowland wooded	Includes wooded vegetation of hedges and broadleaved woods in the lowlands.
Upland wooded	A varied group of acidic vegetation types usually associated with upland woods, including: semi-natural woodland; conifer plantations; bracken and wooded streamsides.
Moorland grass/mosaic	Typically grazed moorland vegetation, including extensive upland acidic and peaty grassland, and species-rich but very localised flushes.
Heath/bog	Mostly heather moorland, blanket bog and montane heath, but also lowland heath and raised bog.
Wildlife garden planting	Garden planting that uses native species and/or those that have a known attraction or benefit to local fauna, based on the advice of a suitably qualified ecologist.

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Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	1	1	1

Table 3: Number of plant species by plot for different landscape types

	Landscape Types									
Types of Plot	Arable	Pastural	Marginal Upland	Upland	Existing Building/Hard Landscaped Areas	Urban Mosaic	Derelict Land <1 Years	Derelict Land < 10 Years	Derelict Land < 20 Years	Derelict Land <= 30 Years
Crop Weeds	5.4	8.3	-	-	-	-	-	-	-	-
Tall Grassland/Herb	12.7	15.0	-	-	-	17.6	0	6.3	15.8	21.1
Fertile Grassland	11.6	12.7	15.3	-	-	11.6	0	4.6	11.5	15.3
Infertile Grassland	17.1	17.6	21.1	-	-	17.6	0	6.3	15.8	21.1
Lowland Wooded	12.9	12.5	-	-	0	13.8	-	-	-	-
Upland Wooded	-	12.7	13.8	20.4	0	13.8	-	-	-	-
Moorland Grass/Mosaic	-	2.0	20.4	21.0	-	-	-	-	-	-
Heath/Bog	-	-	14.3	20.0	-	-	-	-	-	-
Hard Landscaping	0	0	0	0	0	0	0	0	0	0
Buildings	0	0	0	0	0	0	0	0	0	0
Garden Planting (typical)	-	-	-	-	0	0	0	0	0	0
Wildlife Garden Planting*	-	-	-	-	0	0	0	0	0	0

- Insufficient data to produce national averages, as not all vegetation plot types are found in all landscaped types.
* Only where the rule concerning wildlife garden planting in table 2.0 has been met can actual species values be used.

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Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	1	1	1

Calculating the change and increase in ecological value

BREEAM calculates the change in ecological value by comparing the diversity (number and area) of plant species on the site pre and post construction. The ecological value of the site is expressed as an area-weighted average of plant species for the site's landscape type. This enables BREEAM to use this as an indicator of the proposed development's impact on the site's existing ecological value.

A simple example of the calculation is outlined below.

1. Calculate the ecological value of a previously developed existing site:

   A 2065m^2 existing site consists of the following types of land:

   a. 1865 m^2 hard landscaping = 0 species
   b. 200m^2 urban mosaic - infertile grassland = 17.6 species (Table 3.0).

   The ecological value of the existing site is calculated as follows, for each plot type;

   - Number of species on plot type x plot type area as % of total area.

   Therefore, for our example site:

   a. Hard landscaping: {(0 species x (1865m^2/2065m^2)} = 0 species
   b. urban mosaic-infertile grassland: {(17.6 species x (200m^2/2065m^2)} = 1.70 species
   c. Ecological value of the existing site = 0 + 1.70 = 1.70 species

2. Calculate the ecological value of the proposed site:

   The 2065m^2 post-construction site consists of the following types of land:

   a. 1375m^2 of building = 0 species.
   b. 550m^2 of hard landscaping = 0 species
   c. 140 m^2 has remained as urban mosaic-infertile grassland = 17.6 species

   The ecological value of the proposed site is as follows:

   a. Building: {(0 species x (1375m^2/2065m^2)} = 0 species
   b. Hard landscaping: {(0 species x (550m^2/2065m^2)} = 0 species
   c. Urban mosaic-infertile grassland: {(17.6 species x (140m^2/2065m^2)} = 1.19 species
   d. Ecological value of the proposed site = 0 + 0 + 1.19 = 1.19 species

The ecological impact is the difference between the two ecological values:

Change in ecological value: 1.19 – 1.70 = - 0.51 species

Therefore, for this example 1 credit is achieved.

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LE4 – Mitigating ecological impact

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	1	1	1

References

1. Figures are based on data from the Countryside Survey which can be accessed through the Digest of Environmental Statistics:
    a. http://www.defra.gov.uk/environment/statistics/wildlife/wdcs.htm
    b. http://www.countrysidesurvey.org.uk/archiveCS2000/

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LE5 – Enhancing site ecology

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To recognise and encourage actions taken to maintain and enhance the ecological value of the site as a result of development.

Credit criteria

Credits	
1	Where the design team (or client) has appointed a suitably qualified ecologist to advise and report on enhancing and protecting the ecological value of the site; and implemented the professional's recommendations for general enhancement and protection of site ecology.
2	Where there is a positive increase in the ecological value of the site of up to (but not including) 6 species.
3	Where there is a positive increase in the ecological value of the site of 6 species or greater.

Compliance requirements

The following demonstrates compliance:

First credit

1. A *suitably qualified ecologist* (SQE) has been appointed to report on enhancing and protecting the ecology of the site.
   a. The SQE provides an Ecology Report with appropriate *recommendations* for protection and enhancement of the site's ecology.
   b. The report is based on a site visit/survey by the SQE prior to the commencement of initial site preparation works.

2. The general *recommendations* of the Ecology Report for enhancement and protection of site ecology have been, or will be, implemented.

Second credit

1. The first credit is achieved.

2. The *recommendations* of the Ecology Report for enhancement and protection of site ecology have been implemented, and the *suitably qualified ecologist* confirms that this will result in an increase in ecological value of the site up to (but not including) 6 species.

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Land Use & Ecology
LE5 – Enhancing site ecology

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

3. The increase in plant species has been calculated using Ecology calculator 2, using actual species numbers.

Third credit

1. The first credit is achieved.

2. The *recommendations* of the Ecology Report for enhancement and protection of site ecology have been implemented, and the suitably qualified ecologist confirms that this will result in an increase in ecological value of the site of 6 species or greater.

3. The increase in plant species has been calculated using Ecology calculator 2, using actual species numbers.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.
Timing of Ecologist Report	It is recommended that the suitably qualified ecologist is appointed to carry out site surveys of existing site ecology, on which their report is based, or to provide verification where the report is prepared by others, at the feasibility stage (RIBA Stage B or equivalent) in order to facilitate and maximise potential ecological enhancement.
General recommendations	'General' recommendations for enhancing and protecting the ecological value of the site are to include, and go beyond, compliance requirements for all current EU and UK legislation relating to protected species and habitats. These 'general' recommendations may include ecological recommendations as detailed in the definitions.
Guidance for ecologists and assessors	Please refer to Checklist A6 – Relating ecology reports to BREEAM, section D for assistance in assessing and interpreting the requirements of this credit.
Native species	Only native floral/plant species and those with a known attraction or benefit to local fauna can be considered for the purpose of increasing the number of species on site, as well as general enhancement.
No ecological survey completed or construction works have commenced	Where it is not possible to determine 'actual' number of species per vegetation plot type, either because an on-site ecological survey has not been conducted, or, because construction works have already commenced, the second and third credits cannot be achieved.

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Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
First Credit		
1	A copy of the ecologist's report containing: • Details and scope of the site survey. • Information as outlined in checklist A6 – Relating ecology reports to BREEAM. **OR** A copy of the ecologist's report containing a completed, signed copy of checklist A6.	The evidence required at the post construction stage is the same as for a design stage assessment.
2	Proposed site plan highlighting implementation of the ecologist enhancement recommendations. **AND** One of the following: A copy of the relevant section of the specification requiring the main contractor to implement the SQE's recommendations for protection and enhancement **OR** A letter from the client or design team member confirming: • That the specification will require the main contractor to implement the ecologist's recommendations.	Assessor site inspection report and photographic evidence confirming that the ecologist's recommendations have been implemented. For large mixed-use/multi-building developments, where the whole site has not been completed and ecological enhancements have not been added, or where features are being added at a later date in an appropriate planting season: • A copy of the contract/specification or a letter from the main contractor confirming when the planting will be complete. This must be within 18 months from completion of the development.
Second & Third Credit		

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Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

1-3	Evidence as outlined above, confirming compliance with the first credit. A copy of the SQE's report containing the information outlined in checklist A6 – Relating ecology reports to BREEAM. **OR** A copy of the SQE's report containing a completed, signed copy of checklist A6. **AND** A completed copy of Ecology Calculator 2.	Evidence (as outlined above) confirming compliance with the first credit.

Additional information

Relevant Definitions

Suitably qualified ecologist (SQE): As defined for BREEAM credit LE3.

Ecological recommendations are defined as measures adopted to enhance the ecology of the site, which may include:

- The planting of native species or those with a known attraction or benefit to local wildlife
- The adoption of horticultural good practice (e.g. no, or low, use of residual pesticides)
- The installation of bird, bat and/or insect boxes at appropriate locations on the site
- Development of a full Biodiversity Management Plan including avoiding clearance/works at key times of the year (e.g. breeding seasons)
- The proper integration, design and maintenance of SUDs and Green Roofs, community orchards etc.

Only native floral species or those with a known attraction or benefit to local wildlife can be considered for the purpose of enhancing the ecological value of the site.

References

1. **AWTC:** The Association of Wildlife Trust Consultancies, www.awtc.co.uk
2. **CIWEM:** Chartered Institution of Water and Environmental Management, www.ciwem.org
3. **IEEM:** The Institute of Ecology and Environmental Management, www.ieem.org.uk
4. **IEMA:** The Institute of Environmental Management and Assessment www.iema.net.

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Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

5. **LI** - Landscape Institute www.landscapeinstitute.org

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Land Use & Ecology
LE6 – Long term impact on biodiversity

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To minimise the long term impact of the development on the site's, and surrounding area's, biodiversity.

Credit criteria

Credits	
1	The client has committed to achieving the mandatory requirements listed below and at least two of the additional requirements.
2	The client has committed to achieving the mandatory requirements listed below and at least four of the additional requirements.

Compliance requirements

The following demonstrates compliance:

Mandatory Requirements

1. A *suitably qualified ecologist* (SQE) has been appointed prior to commencement of activities on site.

2. The *suitably qualified ecologist* (SQE) confirms that all relevant UK and EU legislation relating to protection and enhancement of ecology has been complied with during the design and construction process.

3. A landscape and habitat management plan, appropriate to the site, is produced covering at least the first five years after project completion. This is to be handed over to the building occupants and includes:
   - Management of any protected features on site
   - Management of any new, existing or enhanced habitats
   - A reference to the current or future site level or local Biodiversity Action Plan.

Additional Requirements

1. The contractor nominates a 'Biodiversity Champion' with the authority to influence site activities and ensure that detrimental impacts on site biodiversity are minimised in line with the recommendations of a suitably qualified ecologist.

2. The contractor trains the site workforce on how to protect site ecology during the project. Specific training should be carried out for the entire site workforce to ensure they are aware of how to avoid damaging site ecology. Training should be based on the findings

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Min. credits to achieve rating	-	-	-	-	-

and recommendations for protection of ecological features highlighted within a report prepared by a suitably qualified ecologist.

3. The contractor records actions taken to protect biodiversity and monitor their effectiveness throughout key stages of construction. The requirement commits the contractor to make such records available where publicly requested.

4. Where a new ecologically valuable habitat, appropriate to the local area, is created. This includes habitat that supports nationally, regionally or locally important biodiversity, and/or which is nationally, regionally or locally important itself; including any habitat listed in the UK Biodiversity Action Plan (UK BAP), Local Biodiversity Action Plan (LBAP), those protected within statutory sites (e.g. SSSIs), or those within non-statutory sites identified in local plans.

5. Where flora and/or fauna habitats exist on site, the contractor programmes site works to minimise disturbance to wildlife. For example, site preparation, ground works, and landscaping have been, or will be, scheduled at an appropriate time of year to minimise disturbance to wildlife. Timing of works may have a significant impact on, for example, breeding birds, flowering plants, seed germination, amphibians etc. Actions such as phased clearance of vegetation may help to mitigate ecological impacts. This additional requirement will be achieved where a clear plan has been produced detailing how activities will be timed to avoid any impact on site biodiversity in line with the recommendations of a suitably qualified ecologist.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to the assessment of refurbished buildings (unless the building is listed – see below).
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.
Refurbishment of listed buildings	The refurbishment of a listed building may be exempt from the credit requirements if they conflict with the need to maintain the building's listed features, or are counter to the conservation requirements. Confirmation is required from a suitably qualified ecologist that all possible requirements/enhancements have been achieved before the credit can be awarded (i.e. if no suitably qualified ecologist has been appointed then this credit cannot be awarded).
Biodiversity Champion	A Biodiversity Champion does not have to be an ecologist or ecological expert but must have sufficient authority and time on site to influence activities and ensure that they have minimal detrimental impact on biodiversity.

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Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Local biodiversity expertise	Local biodiversity expertise should be sought at, or before, the design stage to help identify species of local biodiversity importance on site. It is likely that their recommendations will draw on the Local Biodiversity Action Plan (LBAP) where one exists.
The site and surrounding areas	The steps taken in the above requirements will depend on the nature of the site, e.g. urban sites, and the surrounding areas. It is likely that either all, or none, of the optional items will apply. Where the optional items and the mandatory item 3, the management plan, are deemed, in writing, by the appointed suitably qualified ecologist not to be applicable, all credits can be awarded. Mandatory items 1 and 2 must be met in all instances. This is likely to be the case in the majority of assessments in central town/city areas which have a high proportion of surrounding and existing development and no existing external landscaped areas within the boundary of the assessed site.
Sites of no ecological value	Where a site is deemed to have no ecological value, it is still necessary to employ a suitably qualified ecologist to achieve this credit. The ecologist must confirm that all the mandatory items (1), (2) and (3) have been achieved and provide guidance on how to achieve optional item (4). Note that in such cases, mandatory item (1) and additional requirement (4) is likely to be applicable in relation to any ecological enhancements (e.g. green roofs, bird boxes, etc.) adopted in order to achieve the Enhancing Site Ecology credit (LE5).
Not all additional items are applicable	Where the SQE confirms that not all additional items are applicable to the development, for example it is a city centre refurbishment on a confined site with no external areas, then the credits can be awarded accordingly:

No. applicable items	No. of BREEAM credits	Requirements
1 item	One credit	Meet mandatory reqs. plus applicable item
	Two credits	
2 items	One credit	Meet mandatory reqs. plus all applicable items
	Two credits	
3 items	One credit	Meet mandatory reqs. plus 2 applicable items
	Two credits	Meet mandatory reqs. plus all applicable items
4 items	One credit	Meet mandatory reqs. plus 3 applicable items
	Two credits	Meet mandatory reqs. plus all applicable items

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
First & Second Credit		

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Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Mandatory Requirements		
1&2	The SQE report or letter confirming: • That they were appointed prior to commencement of activities on site. • All relevant UK and EU legislations will be complied with. **AND** A completed, signed copy of checklist A6 – Relating ecology reports to BREEAM **OR** A copy of ecology report containing the information outlined in checklist A6.	A letter from the SQE confirming: • That all relevant UK and EU legislation relating to protection and enhancement of ecology has been complied with.
3	A copy of the site management plan. **OR** A copy of the specification requiring the development of plan and outlining the scope of its content. **OR** Where the timing of assessment does not permit either of the above, a letter from the client confirming: • A commitment to produce a management plan • The scope of the management plan	A copy of the site's landscape and habitat management plan.
Additional Requirements		
1	A letter from the contractor confirming: • The appointment of the biodiversity champion and their job title. • Their on site role and responsibilities. **OR** Where not yet appointed, a copy of the specification clause requiring the appointment of a biodiversity champion.	A copy of the relevant sections of the site log book, highlighting: • Details of any action/events taken by the biodiversity champion. If no actions required/taken, this should be confirmed in the log book.

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Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

2	Training schedule or letter of confirmation from the contractor committing to provide relevant training. **OR** Where not yet appointed, a copy of the specification clause requiring the training of the site's workforce.	A record of training undertaken by the site workforce confirming: • Who delivered & developed the training • The scope of the training delivered.
3	A letter from the contractor confirming: • Monitoring and reporting requirements for the development. • The records will be publicly available if and when requested. **OR** Where not yet appointed, a copy of the specification clause outlining the contractor's monitoring and reporting requirements.	A copy of the relevant sections of the site log book, highlighting: • Records of monitoring and actions taken to protect biodiversity. • Records and outcome of any requests to view such information.
4	A copy of the proposed site plan highlighting the new ecologically valuable habitat. A SQE's report or letter confirming that the habitat supports the relevant biodiversity action plan(s)	Assessor's (or SQE's) site inspection report and photographic evidence confirming the existence of the proposed habitat.

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Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

5	The SQE's report or letter confirming: • Wildlife on site that needs to be accounted for in programming works. • Actions required with respect to programming site works to minimise disturbance. A copy of the contractor's main programme of works. **OR** A copy of the relevant section of the main contract confirming: • The programme of site works will minimise disturbance to wildlife in accordance with SQE's recommendations.	A letter from the SQE, or a copy of their report confirming: • Site works executed in a manner that minimised disturbance to wildlife in accordance with their recommendations.

Additional information

Relevant definitions

Suitably qualified ecologist (SQE): As defined for credit LE3 – Ecological Value of site AND Protection of ecological features

Biodiversity: Is defined as the variety of life on earth. It includes all species, animal, plants, fungi, algae, bacteria and the habitats that they depend upon.

Biodiversity Action Plan: A plan which sets specific, measurable, achievable, realistic and time bound conservation targets for species and habitats. The UKBAP website www.ukbap.org supports the implementation of the UK Biodiversity Action Plan (UK BAP) on behalf of the UK Biodiversity Partnership and the UK Government.

Steps to produce a site level BAP are outlined in the UK Business and Biodiversity Resource Centre website, hosted by Earthwatch Institute Europe http://www.businessandbiodiversity.org under 'your sector'

References

1. Earthwatch Europe: www.businessandbiodiversity.org
2. UK BAP: www.ukbap.org.uk
3. Construction Industry Key Performance Indicators: www.kpizone.com

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Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

4. Natural Environmental and Rural Communities Act, 2006: www.opsi.gov.uk

5. "*A Handbook of Good Practice for Public Bodies Dealing with Best Value and Biodiversity in Scotland*", The Scottish Government, 2004.

6. Delivering the Scottish Biodiversity Duty: www.biodiversityscotland.gov.uk/duty/index.htm

7. "*Action for Scotland Biodiversity*", Scottish Biodiversity Group.

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Pollution Section

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BREEAM : Healthcare : 2008
Pollution
Pol 1 – Refrigerant GWP - Building services

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To reduce the contribution to climate change from refrigerants with a high global warming potential.

Credit criteria

Credits	
1	Where evidence provided demonstrates the use of refrigerants with a global warming potential (GWP) of less than 5 or where there are no refrigerants specified for use in building services.

Compliance requirements

The following demonstrates compliance:

1. The building has no refrigerants **OR**

2. The refrigerants used within the building services have a GWP less than 5.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	If the extended and existing building share the same building services, then these services must be assessed against the requirements regardless of whether the existing building forms a part of the assessment or not. If the extension is served by independent services, only these need be assessed against the compliance requirements.
Solid refrigerant	The credit can be awarded by default where a solid refrigerant is used.
Refrigerant charge less than 5kg	The credit can be awarded where the total refrigerant charge used in the building services is less than 5kg.
Multiple split units	In the case of multiple split units, through-the-wall or other packaged units, the credit can be awarded where the **total** collective refrigerant charge is less than 5kg. If the **total** collective refrigerant charge in such systems is greater than 5kg, then the refrigerant(s) must comply with the BREEAM requirements.

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Pollution
Pol 1 – Refrigerant GWP - Building services

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Office server and comms rooms	Refrigerants used in services for typical office server and comms rooms cannot be excluded from the assessment. Where air conditioning equipment is provided, the equipment may not be able to achieve this credit as smaller systems often require refrigerants with a GWP > 5. In this instance the credit cannot be awarded by default as there are alternatives for designers to consider. These alternatives include revisiting the design and the room conditions specification to see if the cooling equipment is necessary. In addition, whilst a manufacturer or supplier may specify a narrow temperature band for server equipment, acceptable limits detailed in ASHRAE guidance (*Thermal Guidelines for Data Processing Environments, ASHRAE, 2004*) may allow a greater temperature range without adverse effect and thus the cooling equipment may not be necessary.
GWP data not available	Where GWP data for the specified refrigerant is not available, the credit cannot be awarded on a default basis.
Cold stores	Refrigerants specified in plant used for integral cold storage purposes should not be assessed under this credit. There is a separate credit for such systems.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1&2	A copy of the specification clause confirming either: • Absence of refrigerant in the development OR • Type(s) of refrigerant to be used. **AND** Manufacturer's information confirming: • GWP of each refrigerant.	Assessor's building/site inspection and as built drawings confirming: • Presence or absence of any refrigeration plant. **OR** • A letter from the design team/developer confirming: - The refrigerant type specified remained unchanged. **OR** Where a change has occurred, written confirmation from the design team confirming: • Type of refrigerant(s) used. **AND** Manufacturer's information confirming: • GWP of each refrigerant.

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Pol 1 – Refrigerant GWP - Building services

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Additional information

Global Warming Potential: GWP is defined as the potential for global warming that a chemical has relative to 1 unit of carbon dioxide, the primary greenhouse gas. In determining the GWP of the blowing agent, the Intergovernmental Panel on Climate Change (IPCC) methodology using a 100-year Integrated Time Horizon (or ITH) should be applied.

Ozone Depleting Potential: ODP is the ratio of the relative amount of degradation to the ozone layer caused by a particular substance relative to the calculated depletion for the reference gas CFC 11 (ODP = 1.0). The ODP of the refrigerants is not assessed under this credit and there is no link between GWP and ODP.

Refrigerant: there are three main make-ups of refrigerants:

- Hydrogenated Fluorocarbon Refrigerants (HFCs) are made up of hydrogen, fluorine, and carbon. Because they do not use a chlorine atom (which is used in most refrigerants) they are known to be one of the least damaging to our ozone.
- Hydrogenated Chlorofluorocarbon Refrigerants (HCFCs) are made up of hydrogen, chlorine, fluorine, and carbon. These refrigerants contain minimal amounts of chlorine; they are not as detrimental to the environment as some other refrigerants.
- Chlorofluorocarbon Refrigerants (CFCs) contain chlorine, fluorine and carbon. These refrigerants carry high amounts of chlorine so they are known for being the most hazardous to the ozone layer.

Table of refrigerants and their Global Warming Potentials: table 1.0 includes available substances which are capable of acting as refrigerants. Many are not currently used as such and some have been phased out and withdrawn from the market.

Table 1 Refrigerant GWP

Refrigerant type	GWP	Refrigerant type	GWP
R11 (CFC-11) *	4000	R32 (HCFC-32) *	580
R12 (CFC-12) *	8500	R407C (HFC-407)	1600
R113 (CFC-113) *	5000	R152a (HFC-152a)	140
R114 (CFC-114) *	9300	R404A (HFC blend)	3800
R115 (CFC-115)*	9300	R410A (HFC blend)	1900
R125 (HFC-125)	3200	R413A (HFC blend)	1770
Halon-1211	N/A	R417A (HFC blend)	1950
Halon-1301	5600	R500 (CFC/HFC) *	6300
Halon-2402	N/A	R502 (HCFC/CFC) *	5600
Ammonia	0	R507 (HFC azeotrope)	3800
R22 (HCFC-22) *	1700	R290 (HC290 propane)	3
R123 (HCFC-123) *	93	R600 (HC600 butane)	3
R134a(HFC-134a)	1300	R600a (HC600a isobutane)	3
R124 (HCFC-124) *	480	R290/R170(HC290/HC170)	3
R141b (HCFC-141b) *	630	R1270 (HC1270 propene)	3
R142b (HCFC-142b) *	2000	R143a (HFC-143a)	4400

N/A Indicates that there is insufficient data available to give a GWP value.

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Pol 1 – Refrigerant GWP - Building services

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Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

- Global warming potential (GWP) values are based on best available data at the time of writing and are based on a 100-year time horizon. Other published data may be based on different time horizons.

- All CFC/HCFC refrigerants (marked *) have an ODP > 0 and as such are illegal for new installations. Existing equipment may continue to use them at present. The use of CFCs and HCFCs as refrigerants has been addressed under the Montreal protocols. Phase out programmes have been agreed resulting in these substances no longer being used as refrigerants in all new build and most existing situations. The industry's favoured replacements are currently HFCs which are often potent global warming contributors.

- Whilst it is currently still legal to have an existing system that uses refrigerants with an ozone depleting potential, it is now illegal to top up with CFCs (either new or recycled refrigerant). It will be illegal to top up with new HCFCs from 2010, and it will be illegal to top up with recycled/recovered HCFCs from 2015.

- Hydrocarbons and ammonia-based refrigerants have low or zero GWP and are therefore preferred long-term options. These are now widely available and are valid alternatives to HFCs in all buildings, provided health and safety issues are fully addressed.

References

1. Guidance note 1 "*New CFC's, HCFCs, HFC's and halons, Professional and practical guidance on substances that deplete the ozone layer*", CIBSE, 2000.

2. "*Code of practice for the minimisation of refrigerant emissions from refrigerating systems, Institute of Refrigeration*", Institute of Refrigeration, 1995.

3. "*Thermal Guidelines for Data Processing Environments*", ASHRAE, 2004.

4. BS EN378-1:2000 "*Refrigerating systems and heat pumps – Safety and environmental requirements – Part 1: Basic requirements, definitions, classification and selection criteria*", BSI, 2000.

5. Institute of Refrigeration: www.ior.org.uk

6. F-gas regulations: http://www.defra.gov.uk/environment/climatechange/uk/fgas/pdf/fluorgasreg-guidance.pdf

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Pollution
Pol 2 – Preventing refrigerant leaks

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To reduce the emissions of refrigerants to the atmosphere arising from leakages in cooling plant.

Credit criteria

Credits	
1	Where evidence provided demonstrates that refrigerant leaks can be detected or where there are no refrigerants specified for the development.
1	Where evidence provided demonstrates that the provision of automatic refrigerant pump down is made to a heat exchanger (or dedicated storage tanks) with isolation valves. **OR** Where there are no refrigerants specified for the development.

Compliance requirements

The following demonstrates compliance:

1. The building has no refrigerants **OR**

Refrigerant leak detection

2. Systems using refrigerants are contained in a moderately air tight enclosure (or a mechanically ventilated plant room), and a refrigerant leak detection system is installed covering high-risk parts of the plant. **OR**

3. An automatic permanent refrigerant leak detection system is specified, which is NOT based on the principle of detecting or measuring the concentration of refrigerant in air.

Refrigerant recovery system

4. The automatic shutdown and pump down of refrigerant occurs on the detection of high concentrations of refrigerant in the plant room/enclosure. For the majority of cases only systems in mechanically ventilated/moderately air tight plant rooms (or enclosures) comply.

5. Automatic pump-down to either a separate storage tank or into the heat exchanger is acceptable but only where automatic isolation valves are fitted to contain the refrigerant once fully pumped down.

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Pollution
Pol 2 – Preventing refrigerant leaks

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

6. The alarm threshold that triggers automatic pump down is set to a maximum of 2000ppm (0.2%), but lower levels can be set. The credit cannot be awarded for manual systems.

Note: The first credit must be achieved in order to award the second credit.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	Where an existing building is being extended and it has existing building services plant and systems that will be common to both the new extension and existing building, the existing plant must be assessed against the requirements of this credit. If the extension is served by independent services, only these need be assessed against the compliance requirements.
Type of refrigerant	This credit is applied in instances where any type of refrigerant is present, i.e. even if the ozone depleting potential (ODP) of the refrigerant is zero and the global warming potential (GWP) is less than 5.
Solid refrigerant	The credit can be awarded by default where a solid refrigerant is used.
CO_2 as a refrigerant	When CO_2 is used as a refrigerant, the refrigerant recovery system credit can be awarded by default.
Total refrigerant charge less than 5 kg	The credit can be awarded by default where the total refrigerant charge used in the building is less than 5kg.
Multiple split systems	For installations of small multiple hermetic systems only, where the refrigerant charge in each unit is less than 5kg but the total refrigerant charge in the building is greater than 5kg, the credit can be awarded by default. This is on the basis that the risk of a large refrigerant leak is minimised and individual leaks from each system will be small i.e. <5kg.
High-risk parts	High-risk parts of refrigeration plant typically include the pipe work and compressor. Evaporator or condenser coils can be omitted from the coverage of the system.
Manual refrigerant recovery system	The provision of any manual system, including manual storage cylinders on site, does not comply with the requirements of this credit.

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Pollution
Pol 2 – Preventing refrigerant leaks

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Cold food storage	The requirements of this credit apply to cold food storage refrigeration equipment (where the charge is ≥ 5kg), i.e. cold rooms and/or centralised equipment serving a group of cold storage cabinets. Cabinets and refrigerated bottle shelves with integral refrigeration plant on average have a charge of 0.3kg; therefore in most circumstances, individual or small-scale multiple installations will not fall within the scope of this credit. However, the assessor should ask the design team to confirm that the charge is ≤ 5kg.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1	A copy of the specification clause or design plan confirming: • Absence of refrigerants in the development.	Assessor's building/site inspection and photographic evidence confirming: • Absence of refrigeration plant.
2&3	A copy of the specification clause or letter from the M&E engineer confirming: • Type of leak detection system(s). • Scope of the system(s) • Where relevant, containment strategy for such equipment.	Assessor's building/site inspection and photographic evidence confirming: • Installation of leak detection system(s) • Installation of automatic refrigerant recovery equipment • Pre-set threshold level for automatic pump down.
4,5&6	A copy of the specification clause or letter from the M&E engineer confirming: • Type, scope and operation of automatic refrigerant recovery equipment • Details of the plant room enclosure where the refrigeration plant is installed • Alarm threshold for triggering automatic pump down.	

Additional information

Relevant definitions

Moderately airtight enclosure: this can be defined as an enclosure that does not produce a draught or significant fresh air ingress that would dilute any leaked refrigerant gas (dilution may prevent detection).

Refrigerant Leak Detection: a permanently installed multi-point sensing system; this may be aspirated or have multiple sensor heads linked to a central alarm unit or BMS. Various sensor

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Min. credits to achieve rating	-	-	-	-	-

types are available including infra-red, semi-conductor or electro-chemical. Please see below for further guidance on the coverage of refrigerant leak detection systems.

Refrigerant Recovery: The process of removing refrigerant from a system and storing it in an airtight container.

Leak detection systems/devices

- Handheld detectors (which include semi-conductor and corona discharge types) do not comply with BREEAM requirements.
- Corona discharge detectors are not suitable where flammable refrigerants are used, or in potentially explosive atmospheres.
- Indicator dyes: these consist of fluorescent or coloured dyes added to the refrigerant to show leakage sites. The use of the dye should be approved by the compressor manufacturer. Some compressor manufacturers do not approve the use of indicator dyes, in which case either an alternative type of equipment should be used, or an alternative type of leak detection specified.
- Halide torch detectors: this type of detection is only appropriate for chlorine-based substances such as CFCs and HCFCs, and should not be used in areas where naked flames are prohibited. Compounds which do not contain chlorine, e.g. HFCs, cannot be detected by this method. When awarding this credit in instances where these detectors are in use, the assessor should confirm that the refrigerant is chlorine based.
- Electronic leak detectors: these must be designed to detect a certain type of, or multiple types of, refrigerant, i.e. CFC, HFC, HCFC, etc.
- Standing hold test: systems based on monitoring pressure drops within the pipe work are not necessarily compliant with the BREEAM requirements. There are natural fluctuations to the pressure of the refrigerant due to changes in volume and temperature of the system, and to the ambient temperature of the surroundings. Low pressure and high pressure switches, which are standard equipment on refrigerant plant, are therefore not sufficient to award the credit. Other methods exist, such as pressurising the system with a high pressure, dry nitrogen gas for a period of time and then identify whether or not the pressure drops during this time. However, this requires systems to be shut down for a period of time (usually overnight or longer).
- Systems NOT based on the principle of detecting or measuring the concentration of refrigerant in air: Such systems (for example based on sensing the presence of refrigerant vapour in liquid-carrying pipes) are now commercially available.

Refrigerant pump down

The specification of automatic refrigerant pump down can further limit potential losses and damage to the environment and have subsequent economic benefits to the building owner. Under the United Kingdom 1990 Environmental Protection Act unwanted refrigerant and refrigerating system oil are classified as either controlled or hazardous waste. Not only is it an offence to discharge them to the environment, but there are procedures regarding transport, storage, transfer of ownership and ultimate disposal. Article 16 of EC regulation 2037/2000 specifies that used CFCs and HCFCs must be recovered for destruction or recycling/reclamation.

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Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

References

1. "*Code of practice for the minimisation of refrigerant emissions from refrigerating systems*", Institute of Refrigeration, 1995.

2. Guidance Note 01 – "*New CFC's, HCFC's, HFC's and halons, Professional and practical guidance on substances that deplete the ozone layer*", CIBSE, 2000.

3. GPG 178 "*Cutting the Cost of Refrigerant Leakage*", Carbon Trust, 1997.

4. BSEN 378 1-4 "*Refrigerating Systems and Heat Pumps – Safety and Environmental Requirement, British Standards Institution*"; British Standards Institute, 2000.

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Pollution
Pol 3 – Refrigerant GWP - Cold storage

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To reduce the contribution to climate change from refrigerants with a high global warming potential.

Credit criteria

Credits	
1	Where evidence provided demonstrates the use of refrigerants within cold storage systems with a global warming potential (GWP) of less than 5.

Compliance requirements

The following demonstrates compliance:

1. All refrigerant types used in cold storage systems have a global warming potential (GWP) of less than 5.

2. The requirement applies to refrigerants used in systems integral to the building, including where specified:
    a. Cold storage enclosures.
    b. Cold store services including: Chilled water pipework, refrigerant pipework and ductwork etc
    c. Fixed cold or chilled storage cabinets
    d. Fixed cold drink coolers.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.
Domestic-scale refrigeration equipment & small plug-in chillers	The scope of the credit excludes domestic-scale refrigeration equipment and small 'plug-in' chillers and therefore plant not integral to the building.

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Pollution
Pol 3 – Refrigerant GWP - Cold storage

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

GWP data not available	Where GWP data is not available, the credit cannot be awarded by default.
No cold food storage	For developments where the tenant or end use function is known and cold food storage is not required, then this credit does not need to be assessed.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1&2	A marked-up design plan highlighting the cold food storage areas/plant in the building. A copy of the specification clause confirming either: • Type(s) of refrigerant to be used. **AND** Manufacturer's information confirming: • GWP of each refrigerant.	A letter from the design team/developer confirming: • The refrigerant type specified remained unchanged. **OR** Where a change occurred, written confirmation from the design team confirming: • Type of refrigerant(s) used. **AND** Manufacturer's information confirming: • GWP of each refrigerant.

Additional information

Relevant definitions
Please refer to BREEAM credit Pol 1.

References

1. Please refer to BREEAM credit Pol 1.

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Pollution
Pol 4 – NO_x emissions from heating source

Minimum BREEAM Standards					
Rating Level	**P**	**G**	**VG**	**E**	**O**
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To encourage the supply of heat from a system that minimises NO_x emissions, and therefore reduces pollution of the local environment.

Credit criteria

Credits	
1	Where evidence provided demonstrates that the dry NO_x emissions from delivered space heating energy are ≤100 mg/kWh (at 0% excess O_2).
2	Where evidence provided demonstrates that the dry NO_x emissions from delivered space heating energy are ≤70 mg/kWh (at 0% excess O_2).
3	Where evidence provided demonstrates that the dry NO_x emissions from delivered space heating energy are ≤40 mg/kWh (at 0% excess O_2) and emissions from delivered water heating energy are 100 mg/kWh or less (at 0% excess O_2).

Compliance requirements

The following demonstrates compliance:

1. Where manufacturer's details demonstrate that the plant installed to meet the building's space heating demand has dry NO_x emission levels as defined in the Credit Criteria (above). The emissions should be estimated under normal operating conditions (not standby).

2. To award the third credit, in addition to the above requirements, manufacturer's details are also required to demonstrate that the plant installed to meet the buildings water heating demand has dry NO_x emission levels as defined in the Credit Criteria.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new build projects.
Refurbishment	If the heating demand for the refurbished building is being met by an existing system, then the NO_x emission level for the existing system must be assessed against the requirements of this credit.
Extensions to existing buildings	The rule above for refurbishment projects also applies to new build extensions to existing buildings.

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Pollution
Pol 4 – NO_x emissions from heating source

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Highly insulated building	Where the heating load for a highly insulated/exemplar environmental building is less than or equal to 7% of the heat load for a Building Regulations-compliant building of the same size and type, 1 credit can be awarded regardless of the primary fuel used. Figures used for calculations of the percentage of total heat demand must be based on the output from an *approved energy modelling software*.
NO_x data provided in different units	Where data is provided in different units, or at a level of excess oxygen greater than zero, the manufacturer/supplier should be asked to convert this to comply with the BREEAM requirements. Alternatively, the assessor may correct these using the correction factors provided in the Additional information section.
Grid electricity	Where some of the building's space heating is fuelled by electricity from the National Grid, however small the incidence is on the overall consumption, the credits will not be achievable as power stations emit NO_x at an average rate of approximately 1200 mg/kWh. This figure is a UK average and therefore also applies to areas with a higher proportion of renewable sources like Scotland.
Electricity from a renewable source	Where electricity used by the heating system is sourced from a zero emission renewable source such as PVs, wind etc, there are no resulting emissions. This source of heating can therefore be counted as having zero NO_x emissions.
Heat pumps	Heat pumps powered by grid electricity indirectly produce emission rates higher than those required by BREEAM and are therefore typically unable to achieve any credits under Pol 4. However, the energy saved by using certain types of heat pumps is recognised in BREEAM credit Ene 1 and the reduced emissions are recognised under BREEAM credit Ene 5.
District heating	District heating systems that incinerate waste usually have NO_x emission rates higher than the levels set to achieve any BREEAM credits.
Heat recovery	Heat recovery can be considered as having zero NO_x emissions for the purpose of this credit.
Combined Heat & Power	Refer to the additional guidance section for guidance on calculating NO_x emission levels from CHP.
Biomass	Whilst Biomass systems are recognised as low carbon systems, they can produce a significant amount of NO_x and so may not achieve this credit; however they can score highly in the Energy section of BREEAM. Biomass systems are also recognised as reducing the impact of fossil fuel depletion by employing a renewable combustion fuel source.
More than one heating system	Refer to the additional guidance section for guidance on calculating NO_x emission levels where heat is provided by more than one system.

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Pollution
Pol 4 – NO_x emissions from heating source

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Green Tariff	Commitments to use a Green tariff to supply electricity to heat the building or power heat pumps are not recognised in this credit due to the uncertainty that this electricity will be zero emission.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1	A copy of the specification clause confirming: • Type of heating system(s) installed. For each system specified, a letter, email or literature from the manufacturer(s) confirming: • Dry NOx emissions rate in mg/kWh. If more than one system is providing heat, design team calculations confirming: • The average NOx emission rate.	Assessor's building/site inspection and photographic evidence confirming: • Heating system(s) installed. **OR** A letter from the design team or main contractor confirming: • No changes to the specification.
2	Information as outlined above, but for the water heating plant.	Information as outlined above, but for the water heating plant.

Additional information

Relevant definitions

Approved energy modelling software: Refer to BREEAM credit Ene 1 for a definition.

NO_x emissions: are pollutant gases produced by the combustion of fossil fuels. NO_x reacts with heat and sunlight to produce ozone that can cause serious respiratory problems. It also reacts with water to produce acid rain which has a detrimental effect on ecosystems.

Dry NO_x Levels: the NOx emissions (mg/kWh) resulting from the combustion of a fuel at 0% excess oxygen levels.

Calculating NO_x emission levels from Combined Heat & Power (CHP) systems
Where CHP systems are present or specified, only the heat-related emissions are considered for this credit. The NO_x emissions are allocated to heat and electricity in line with the respective power outputs. This is done using a NO_x emission rate for the electrical output equivalent to the current rate for grid electricity, and allocating the remaining NO_x to the heat output. Only the heat-related component is then compared with the credit scale. The following formula should be used to determine this:

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Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

X = (A - B) / C

Where:

X = NO_x emissions per unit of heat supplied (mg/kWh heat)
A = NO_x emissions per unit of electricity generated (mg/kWhelec) i.e. the NO_x emitted by the CHP system per unit of electricity generated. This figure should be obtained from the installer/supplier of the system.
B = NO_x emissions per unit of electricity supplied from the grid (mg/kWh elec) this should be assumed to be 1200mg/kWh elec
C = Heat to Electricity Ratio of the CHP scheme.

The above methodology determines the net NO_x emissions from CHP-generated electricity compared with central generation of electricity and allocates this amount to the heat production. Where X is calculated to be negative, it should be assumed to be zero.

Where heat is provided by more than one system, an average NO_x emission rate should be used based on the ratio of power outputs from each source, i.e. multiply the emissions of each boiler by the percentage of heat demand it supplies and total these values. This is likely to be the case where a CHP system has been sized on the base power demand rather than the heat demand and therefore a secondary heating system is required. The following formula can be used:

Average NO_x Emission Rate = $(N_1 \times (H_1/H_T)) + (N_2 \times (H_2/H_T)) \ldots\ldots + (N_n \times (H_n/H_T))$

Where:
N_1 = NO_x emissions rate for source 1
N_2 = NO_x emissions rate for source 2
N_n = NO_x emissions rate for source n
H_T = Total heat output from all sources
H_1 = Heat output from source 1
H_2 = Heat output from source 2
H_n = Heat output from source n

Conversion factors
Manufacturers should be asked to supply dry NO_x emissions data in mg/kWh. Where this is not possible the assessor may use the following conversion factors to convert figures in ppm, mg/MJ, mg/m^3 or wet NO_x. It should be noted that these conversion factors assume worst case efficiencies and are likely to give conservative answers. This could have the effect of lowering the number of credits achieved.

- Figures in mg/m^3 should be multiplied by 0.857 in order to gain emissions in mg/kWh. A conversion may also be necessary for data not calculated at 0% excess oxygen (see below).

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Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

- Figures in parts per million (ppm) should be multiplied by 1.76 in order to obtain mg/kWh. A conversion may also be necessary for data not calculated at 0% excess oxygen. (see below)

- Figures in mg/MJ should be divided by 3.6 in order to show emissions in mg/kWh (1 kWh = 3.6 MJ). A conversion may also be necessary for data not calculated at 0% excess oxygen (below).

- This Issue's criteria are based on *dry NOx* values – almost all manufacturers will quote emissions in *dry NOx*. However if wet NOx figures are supplied, these should be converted to *dry NOx*. This can be done by multiplying the wet NOx figure by 1.75.

Excess Oxygen Correction: If a NO_x emission rate is quoted by the manufacturer in mg/m^3 or ppm, then it should be established at what % excess oxygen this emission was measured. The greater the amount of excess oxygen in the flue gases at the time of measurement, the more "diluted" the NO_x. It is therefore important to convert any emission rate back to 0% excess oxygen. For the purpose of BREEAM, the following conversion factors can be used for the most frequently used rates supplied by manufacturers:

% Excess O_2	Conversion (c)
3 %	x 1.17
6%	x 1.40
15%	x 3.54

Conversion factor c = 20.9/(20.9 – x)

Where x = % excess O_2 (NOT excess air) and 20.9 is the percentage of O_2 in the air.

References

1. British Standards EN 297:1994. A1:1995, A2:1996, A3:1996, A5:1998 and A6:2003 "*Gas-fired central heating boilers*", page 42, table 14, section 3.6.2

2. "*The United Kingdom's Programme and National Plan for Reducing Emissions of Sulphur Dioxide (SO2) and Oxides of Nitrogen (NOx) from Existing Large Combustion Plants*", Department of the Environment, Scottish Development Department, Welsh Office, Department of the Environment for Northern Ireland, (1990).

3. "Nitrogen Dioxide in the United Kingdom", Defra, 2004..
Summary report also available on the National Atmospheric Emissions Inventory website at www.naei.org.uk

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Pollution
Pol 5 – Flood risk

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To encourage development in low flood risk areas, or to take measures to reduce the impact of flooding on buildings in areas with a medium or high risk of flooding.

Credit criteria

Credits	
2	Where evidence provided demonstrates that the assessed development is located in a zone defined as having a **low** annual probability of flooding.
1	Where evidence provided demonstrates that the assessed development is located in a zone defined as having a **medium** or **high** annual probability of flooding **AND** the ground level of the building, car parking and access is above the design flood level for the site's location.

One further credit is awarded as follows;

1	Where evidence provided demonstrates that surface water run-off attenuation measures are specified to minimise the risk of localised flooding, resulting from a loss of flood storage on site due to development.

Compliance requirements

The following demonstrates compliance:

Two credits

1. Where the assessed development is situated in a flood zone that is defined as having a low annual probability of flooding.

2. A site specific Flood Risk Assessment (FRA) confirms that there is a low risk of flooding from all sources.

One credit

1. Where the assessed development is situated in a flood zone that is defined as having a medium or high annual probability of flooding **AND**

2. A site specific Flood Risk Assessment (FRA) confirms to the satisfaction of the local authority and statutory body that the development is appropriately flood resilient and resistant from all sources of flooding **AND**

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Pollution
Pol 5 – Flood risk

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

3. The ground level of the building, and access to it and the site, are designed (or zoned) so they are at least 600mm above the design flood level of the flood zone in which the assessed development is located (see note 6 & 7).

One additional credit;

1. Where attenuation measures are specified to ensure that the peak rate of run-off from the site to the watercourses (natural or municipal) is no greater for the developed site than it was for the pre-development site. This should comply with the Interim Code of Practice for Sustainable Drainage systems (SUDS) (CIRIA, 2004), or for at least a 1 year and 100 year return period event with a 6 hour duration.

2. The capacity of the attenuation measures must include an allowance for climate change; this should be made in accordance with current best practice [refer to reference 1]

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new build projects.
Refurbishment	Refurbishment projects, where no new building or hard landscaping areas are developed, are likely to achieve the credit for attenuation of surface water run-off. In such instances, as a minimum, a Flood Risk Assessment must have been carried out and any identified opportunities to reduce surface water run-off as a result of the refurbishment works must be implemented.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.
Definition of flood zones	Please refer to the Additional Information section.
Sources of flooding	If the development is in Zone 1, the FRA must demonstrate that there is low risk of flooding from the following sources: • Fluvial (rivers) • Tidal • Surface water: sheet run-off from adjacent land (urban or rural) • Groundwater: most common in low-lying areas underlain by permeable rock (aquifers) • Sewers: combined, foul or surface water sewers.
Functional Floodplain	The BREEAM credit for locating in a flood zone of 'medium or high annual probability' cannot be awarded where the building is located in the functional flood plain. PPS25[9] defines the functional flood plain as a 'zone [that] comprises land where water has to flow or be stored in times of flood'. If the building assessed is or has been defined as 'water-compatible development', please refer to the BREEAM office for guidance on assessing this BREEAM issue.

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Min. credits to achieve rating	-	-	-	-	-

Environment Agency flood maps	The Environment Agency flood map and associated information is intended for guidance, and cannot provide details for individual properties. In addition the EA map only covers the likelihood of flooding from the rivers or sea and not all sources of flooding (listed above). EA flood maps cannot therefore be used as evidence to demonstrate compliance with the requirements of this credit.
Pre-existing flood defences	In an area protected by existing flood defences (designed to withstand a certain magnitude of flooding) the appropriate number of credits can be awarded where the defences reduce the risk to 'low' or 'medium' **and** the following conditions are met: 1. The development **is not located** in an area where new flood defences have to be, or have been, constructed to minimise the risk of flooding to the site and its locality purely for the purpose of the development and/or its wider master plan 2. The development **is located** on a previously developed land (as defined by the criteria in BREEAM credit LE1 Re-use of land) and the appropriate statutory body confirm that, as a result of the existing defences, the risk of a flood event occurring is reduced to low or medium (as appropriate to the credit levels set in BREEAM). If firm confirmation is not provided then the credit cannot be awarded 3. The relevant agency confirms that, as a result of such defences, the risk of a flood event occurring is reduced to low or medium risk. A statutory body's local/regional office may be able to provide more information on existing defences in the area in which the assessed development is located.
600mm threshold	It is accepted that, for buildings located in a medium flood zone, areas of the car park and site access may be allowed to flood and therefore fall below the 600mm threshold. In such cases the credit is still achievable provided safe access to the site and the ground floor of the building can be maintained (i.e. they are 600mm above the design flood level) to ensure the building/site does not become an 'island' in the event of a flood. Where the development has been permitted and the ground levels of the topography/infrastructure immediately adjacent to the site fall below the 600mm threshold, the credit can still be awarded, provided there are no other practical solutions for access to the site above this level and the assessed building, and access to it, meets the credit requirements. As much of the external site area as possible (or as required by an appropriate statutory body) should be designed at or above the threshold.

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Min. credits to achieve rating	-	-	-	-	-

Third-party defences	There are many defences, owned by third parties, which due to their location act as a flood defence by default e.g. motorway, railway embankments, walls etc. It can be assumed that embankments will remain in place for the lifetime of the development, unless the assessor or project team have reason to believe otherwise. For walls, assurance must be sought that the wall is likely to remain for the design life of the building.
Effectiveness of the water run-off attenuation measures	To ensure effective operation of the water run-off attenuation measures, the facilities must discharge half their volume within 24-48 hours (unless advised otherwise by a statutory body) of the storm event in readiness for any subsequent storm inflow.
Calculating peak rate of run-off	References [14] and [15] contain guidance on calculating the peak flow rate and determining the design flooding frequency. The assessor is not required to perform any calculation as this should be provided by the design team to demonstrate that they have sized the attenuation facilities to store the relevant volume of storm water necessary to achieve the credit.
Discharge to the sea or estuaries	If all run-off is discharged directly from the site to either the sea, the foreshore, estuaries covered by a shoreline management plan or designated wildlife/SSSI areas (as part of habitat management) then the credit can be awarded without the need to specify additional attenuation measures.
More stringent requirements	Where the local authority (or other statutory body) requires a greater attenuation than the percentages above, and/or a more onerous design flooding frequency than that recommended in BS EN752-4, then the higher requirements must be met in order to achieve the credit.
Recommendati-ons from an appropriate statutory body	None of the credits can be awarded where the assessed development has proceeded against the recommendation of the statutory body on the basis that the flooding implications are too great.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
First & Second Credit		

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Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

1	A copy of a flood map or flood risk assessment confirming: • Flood zone or annual probability of flooding in the site location. Where appropriate, correspondence from the appropriate statutory body confirming: • Reduced annual probability of flooding due to existing flood defences.	As design stage, no further evidence is needed.
2	A copy of the Flood Risk Assessment.	Formal written correspondence from the design team confirming: • The FRA has not changed or required updating in the intervening period.
3	Site plans/sections confirming: • The design flood level for the site • The design ground level(s) for all developed areas of the site. • Safe access and escape routes	'As built' site plans/sections.
Additional SUDS Credit		
1&2	Site plans and a copy of the specification or consultants report confirming: • Type and storage volume (l) of the water run-off attenuation measures • Total area of hard surfaces (m^2) • Peak flow rate (l/s) for the design storm event • Additional allowance for climate change designed in to the system.	Assessor's building/site inspection and photographic evidence confirming: • Installation of water run-off attenuation measures • No changes to the evidence provided at the interim 'design' assessment stage. A letter from the design team or main contractor confirming: • No changes to the specification. Where changes have occurred, copies of as-built designs and calculations must be provided.

Additional information

Relevant definitions

Appropriate Consultant: a consultant with qualifications and experience relevant to the calculation of surface water run-off and design SUDS and flood prevention measures. Where

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complex flooding calculations and prevention measures are required, this must be a specialist hydrological engineer.

Appropriate statutory body: this refers to either the Environment Agency in England and Wales, the Rivers Agency in Northern Ireland, the Scottish Environment Protection Agency in Scotland or the local authorities and internal drainage boards.

Catchment: the area contributing surface water flow to a point on a drainage or water course. It can be divided into sub-catchments.

Design flood level: the maximum estimated water level during the design storm event. The design flood level for a site can be determined through either known historical data or modelled for the specific site.

Design flood event: an historic or notional flood event of a given annual flood probability, against which the suitability of a proposed development is assessed and mitigation measures, if any, are designed.

Design storm event: historic or notional weather conditions of a given annual probability, against which the suitability of a proposed development is assessed and mitigation measures, if any, are designed.

Flood event: A flooding incident characterised by its peak level or flow, or by its level or flow hydrograph.

Flood probability: The estimated probability of a flood of given magnitude occurring or being exceeded in any specified time period. For example, a 100-year flood has a 1% chance of occurring in any given year.

Flood risk: the combination of the flood probability and the magnitude of the potential consequences of the flood event.

Flood risk assessment: a study to assess the risk of a site flooding, and to assess the impact that any changes or development on the site will have on *flood risk* on the site and elsewhere. A Flood Risk Assessment should be prepared according to good practice guidance as outlined in Development and Flood Risk: A practice guide companion to PPS 25, available from www.communities.gov.uk.

Flood storage: The temporary storage of excess run-off or river flow in ponds, basins, reservoirs or on the flood plain during a flood event.

Flood zone: see table below for definition of flood zones.

Greenfield: a site which has either never been built on, or one which has remained undisturbed for five years or more.

Greenfield run-off rate: the rate of run-off that would occur from the site in its undeveloped and therefore undisturbed state.

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Hard surfaces: these include roofs, car parks, access roads, pavements, delivery/service yards and external hard landscaping. Footpaths less than 1.5m wide which have free drainage to soft landscaped areas on both sides may be excluded.

ICoP (SUDS): the Interim Code of Practice for Sustainable Drainage Systems (SUDS) aims to facilitate the implementation of sustainable drainage in developments in England and Wales by providing model maintenance agreements and advice on their use. It provides a set of agreements between those public organisations with statutory or regulatory responsibilities relating to SUDS. Available to download from www.ciria.org.uk/suds/icop.htm

Infiltration: the passage of water into a permeable surface, such as soil, permeable paving, soakaways and so on.

Natural watercourses: any natural channel that conveys surface water.

Peak run-off rate (referred to as Q_p [m^3/sec]): this is the highest rate of flow from a defined catchment area assuming that rainfall is uniformly distributed over the drainage area, considering the entire drainage area as a single unit and estimation of flow at the most downstream point only.

Pre-development: the state of the site under assessment immediately prior to purchase of the site by the client/developer (or, where the client has owned/occupied the site for a number of years, its current state).

Run-off: this is usually rainwater, but can also be groundwater or overspill from sewers and other sources.

Run-off rate: the rate of discharge of water from a surface.

Run-off attenuation measures: this covers the range of construction and equipment which can be employed to attenuate run-off from hard surfaces and roofs. Measures include: underground storage, oversized pipes, holding ponds, swales, reed beds, permeable paving, green roofs, local or centralised soakaways etc.

Peak flow rate: the peak rate of discharge of water from hard surfaces. For the purpose of calculating the peak flow rate volume, a 60 min duration of the design storm event should be used (unless a different duration is required by a statutory body).

Sewerage undertaker: this is a water company with statutory responsibility for sewerage and sewerage disposal and also surface water from roofs and yards of premises.

Shoreline Management Plan: SMPs provide a large-scale assessment of the risks associated with coastal processes and present a policy framework to reduce these risks to people and the developed, historic and natural environment in a sustainable manner.

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SUDS - sustainable drainage systems or sustainable (urban) drainage systems: a sequence of management practices and control structures designed to drain surface water in a more sustainable fashion than some conventional techniques. SUDS devices include:

- Holding ponds
- Swales
- Reed beds
- Permeable paving - in areas where local geological and hydrological conditions allow this to function, e.g. block paved surface on permeable sub-base over gravel bed to store the water and allow it to seep into the soil. For less permeable soils, the gravel layer might be deeper and the water taken to a soakaway although this is not an option in some areas.
- Local or centralised soakaways either as full systems or as 'overflow' or 'holding' systems, in areas where local geological and hydrological conditions allow them to function.
- Run-off from roofs collected as a part of a rainwater harvesting system.
- Run-off from roofs directed to a local soakaway or other holding facility such as tanks, ponds, swales etc.
- Green roofs.

Surface Water Run-off: water flow over the ground surface to a drainage system. This occurs if the ground is impermeable, is saturated or if the rainfall is particularly intense.

Flood zones

Flood zones are defined in the relevant planning, policy and technical guidance documents for each country in the UK: PPS25 (England), TAN15 (Wales), SPP7 (Scotland), PPS15 (N. Ireland). Please refer to references [18] and [19] to find indicative flood maps in England, Wales and Scotland. However, PPS15 does not categorise flood risk zones and there are no similar publicly available flood maps covering Northern Ireland. Assessments in NI will therefore need to rely on site-specific flood risk assessments, or other relevant date/surveys, to determine the extent of flood risk for a specific development, and use the same definitions as those outlined for England (table below). The Northern Ireland Department of Environment or Rivers Agency may offer further advice or recommendations in this respect (references [20] and [21]).

Whilst the definitions of flood zones and probabilities of flooding are generally the same throughout the UK, there are some differences. The definitions are outlined in the table below.

Definition	England	Wales	Scotland
Low annual probability of flooding	**Zone 1** Less than 1 in 1000 chance of river and sea flooding (<0.1%)	**Zone A** Considered to be at little or no risk **Zone B** If site levels are greater than the flood levels used to define adjacent extreme flood outline.	**Little or no risk area** As defined for England
Medium annual probability of flooding	**Zone 2** Between 1 in 100 and 1 in 1000 chance of river	**Zone B** If site levels are not greater than the flood	**Low to medium risk area** Watercourse, tidal or

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Definition	England	Wales	Scotland
	flooding (1% – 0.1%) and between a 1 in 200 and 1 in 1000 chance of sea flooding (0.5% – 0.1%).	levels used to define adjacent extreme flood outline. **Zone C** Equal to or greater* than 0.1% (river, tidal or coastal flooding). * For the purposes of BREEAM assume upper probability of flooding no greater than that specified for England.	coastal flooding in the range 0.1% – 0.5% (1:1000 – 1:200).
High annual probability of flooding	**Zone 3a High Probability** 1 in 100 or greater chance of river flooding(>1%) and a 1 in 200 or greater chance of flooding from the sea (>0.5%). **Zone 3b The Functional Floodplain** Land where water has to flow or be stored in times of flood.	**Zone C1 & C2** * For the purposes of BREEAM assume the same lower and upper probability of flooding as that specified for England.	**Medium to high risk areas** Annual probability of watercourse, tidal or coastal flooding: greater than 0.5% (1:200)

Flood defences

Flood defences do not completely remove the risk of flooding, but they do reduce it. Building in areas where flood defences are present (and appropriately designed to withstand a certain magnitude of flooding) is therefore preferable to those built in medium/high risk areas without defences. However, for the purpose of this issue, it is still preferable to build in areas of low risk than encourage development of new flood defences in areas with a higher risk of flooding purely for the sake of new development.

References

1. C624 "*Development and flood risk, guidance for the construction industry*", Lancaster et. al, CIRIA, 2004.

2. C623 "*Standards for the repair of buildings following flooding*", CIRIA, 2005.

3. C523 "*Sustainable urban drainage systems – best practice manual for England, Scotland, Wales and Northern Ireland*", CIRIA, 2001.

4. "*Interim Code of Practice for Sustainable Drainage Systems (SUDS)"*, CIRIA, 2004.

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Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

5. C697 "*The SUDS Manual",* CIRIA, 2007.
6. "*Flood estimation handbook, Centre for ecology and hydrology*", National Environmental Research Council, 1999.
7. "*Flood estimation for small catchments*", Marshall DCW and Bayliss AC. IOH Report No.124. Institute of hydrology, Wallingford, 1994.
8. BRE Good Repair Guide 11, "*Repairing Flood Damage*" Part 1-4, BRE Press, 1997.
9. Planning Policy Statement 25: "*Development and Flood Risk*", CLG , 2006.
10. Development and Flood Risk: "*A Practice Guide Companion to PPS25* " - A Consultation Paper, CLG, 2007.
11. Planning Policy Wales Technical Advice Note 15: "*Development and flood risk*", Welsh Assembly Government, 2004.
12. Scottish Planning Policy 7: "*Planning and flooding*", Scottish Executive, 2004.
13. Planning Policy Statement 15: "*Planning and flood risk*", DOE, 2006.
14. BS EN 752: 2008, "*Drain and sewer systems outside buildings",* British Standard Institute, 2008.
15. BS EN 12056-3: 2000, "*Gravity drainage inside buildings – Part 3: Roof drainage, layout and calculation*", British Standard Institute, 2000.
16. BRE Digest 365, "*Soakaway design*", BRE, 1991.
17. BRESOAK: Soakaway design software (2007)
18. The Environment Agency Flood Information: http://www.environment-agency.gov.uk/subjects/flood/
19. Scottish Environment Protection Agency: www.sepa.org.uk/flooding/mapping
20. Rivers Agency: www.riversagencyni.gov.uk/
21. Department of the Environment, Northern Ireland: www.doeni.gov.uk/
22. The Met Office (incl. figures for UK rainfall): www.met-office.gov.uk

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Pollution
Pol 6 – Minimising watercourse pollution

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Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To reduce the potential for silt, heavy metals, chemicals or oil pollution to natural watercourses from surface water run-off from buildings and hard surfaces.

Credit criteria

Credits	
1	Where evidence provided demonstrates that effective on site treatment such as Sustainable Drainage Systems (SUDs) or oil separators have been specified in areas that are or could be a source of watercourse pollution.

Compliance requirements

The following demonstrates compliance:

1. Specification of Sustainable Drainage Systems (SUDs) or source control systems such as permeable surfaces or infiltration trenches where run-off drains are in areas with a relatively low risk source of watercourse pollution.

2. Specification of oil/petrol separators (or equivalent system) in surface water drainage systems, where there is a high risk of contamination or spillage of substances such as petrol and oil (see compliance notes for a list of areas).

3. All water pollution prevention systems have been designed and detailed in accordance with the recommendations of Pollution Prevention Guideline 3 and where applicable the SUDS manual.

4. A comprehensive and up-to-date drainage plan of the site will be made available for the building/site occupiers.

In addition, where the building has chemical/liquid gas storage areas the following must also be achieved:

5. Shut-off valves fitted to the site drainage system to prevent the escape of chemicals to natural watercourses (in the event of a spillage or bunding failure).

6. All external storage and delivery areas designed and detailed in accordance with the recommendations of the UK Environment Agency's *Pollution Prevention Pays Guidance*[3] and PPG25 *Hospitals and Healthcare establishments* [10].

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Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	Please refer to the compliance note below regarding '*infill building on an existing site*'.
Areas that are a source of pollution	For the purpose of this credit an area that presents a risk of watercourse pollution includes vehicle manoeuvring areas, car parks, waste disposal facilities, delivery and storage facilities or plant areas.
Areas where oil separators are required	The following site areas (where present) require oil separators in surface water drainage systems: • Car parks larger than 800m^2 or with 50 or more parking spaces • Smaller car parks discharging to a sensitive environment • Areas where goods vehicles are parked or manoeuvred • Vehicle maintenance areas • Roads • Industrial sites where oil is stored or used • Refuelling facilities
SUDS and oil interception	In some instances, where the risk of contamination is infrequent and potential spills will be small, oil interceptors may not be required if appropriately designed Sustainable Urban Drainage systems are specified. Refer to PPG3 for additional guidance [3].
Infill building on existing site	Where the assessment is of an individual building on an existing site, i.e. infill development, the requirements apply to areas within the construction zone that present a risk of pollution, as well as any areas external to the construction zone that are affected by the new works i.e. drainage onto or from the proposed development.
Suitable level of treatment	In all cases the assessor should determine the operational use of the site in order to determine if the proposed surface water run-off strategy is suitable.
Rainwater run-off	This credit is not intended to cover the treatment of rainwater run-off except where there is a risk of significant pollution arising.
Underground/ covered areas	Where it can be demonstrated that there will be no drainage or wash down facilities that may lead water from inside the underground or covered area to natural watercourses, then such areas comply with the requirements by default.
Roof plant	Roof top plant space must be considered where there is a risk from substances such as petrol or oil. Refrigerants are not assessed under this credit, as the only risk of pollution is to air and not the watercourse.

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No areas at risk from pollution	Where it can be demonstrated that there are no external areas that present a pollution risk, e.g. parking, delivery, manoeuvring or servicing facilities (including individual parking spaces), external waste storage space or other hard standing areas AND there is no plant supported on the roof, then this credit can be awarded by default.
Permeable paving system	Where it can be demonstrated that a permeable paving system designed to retain silts and degrade oils has been used, then this will meet the requirements of this credit for car parks and access roads.
Drainage plan	A comprehensive and up-to-date drainage plan of the site, which accurately identifies all drains, must be produced and handed over to the new occupier. If there is no in-house expertise to do this, a reputable drainage company should be used.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1&2	Marked-up proposed site plan highlighting: • Low and high risk areas of the site. A copy of the specification or design plan confirming: • Type of pollution control systems specified.	Assessor's building/site inspection and photographic evidence confirming: • Installation of pollution control system(s).
3&4	A letter from the design team confirming: • All water pollution prevention systems designed in accordance with PPG3 and the SUDS manual (where appropriate) • Outlining indicative examples of compliance with PPG3 and the SUDS manual • A copy of the drainage plan will be produced and handed over to the building occupier.	A letter from the design team or main contractor confirming: • Installation of systems in accordance with compliant design. • No changes to the evidence provided at the interim 'design' stage assessment. Assessor's building/site inspection and photographic evidence confirming: • Existence of the drainage plan in the building's O&M manual/file.
5	A copy of the specification or site plan confirming: • Installation of shut-off valves and system type.	Assessor's building/site inspection and photographic evidence confirming: • Installation of shut-off valves.

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6	A letter from the design team confirming: • Design of all external storage and delivery areas is in compliance with relevant Pollution Prevention Guidance • Outlining indicative examples of compliance with the PPG.	A letter from the design team or main contractor confirming: • Installation of systems in accordance with compliant design. • No changes to the evidence provided at the interim 'design' stage assessment.

Additional information

Relevant definitions

Appropriate statutory body: This refers to either the Environment Agency in England & Wales, the Environment and Heritage Service (EHS) in Northern Ireland or the Scottish Environment Protection Agency in Scotland.

Low risk areas: Low risk areas can be defined as areas where the risk of contamination or spillage of substances such as petrol and oil is reduced. For the purpose of this credit, roofs and small car parks may be considered as low risk areas.

Soakaways: A sub-surface structure designed to promote the infiltration of surface water in to the ground. As a general point, soakaways may be shallow and broad – as in a blanket under permeable paving, or deeper structures. Deeper, point source soakaways should be avoided for road and car-park drainage, but shallow structures providing infiltration in an extensive way (infiltration trenches and permeable paving) do not need oil separators. See reference[4] for further guidance.

Types of Oil Separator

- **Class 1 Separators:** These are designed to achieve a concentration of less than 5mg/l oil under standard test conditions. They should be used when the separator is required to remove very small oil droplets, such as those arising from car park run-off.

- **Class 2 Separators:** These are designed to achieve a concentration of less than 100mg/l oil under standard test conditions. They are suitable for dealing with discharges where a lower quality requirement applies and/or for trapping large spillages.

  Both classes can be produced as 'full retention' or 'by pass' separators:

- **Full retention separators** treat the flow that can be delivered by the drainage system, which is normally equivalent to the flow generated by a rainfall intensity of 50mm/hr.

- **Bypass separators** fully treat all flows generated by rainfall rates of up to 5mm/hr. Flows above this rate are allowed to bypass the separator. These separators are used when it is an acceptable risk not to provide full treatment for high flows.

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Reference [1] contains more detailed guidance on the selection and sizing of an appropriate type of separator.

References

1. Pollution Prevention Guideline (PPG) 3 "*Use and design of oil separators in surface water drainage systems*", Environment Agency/SEPA/Environment & Heritage Service, 2006.

2. Pollution Prevention Guideline (PPG) 1 "*General guide to the prevention of pollution*", Environment Agency/SEPA/Environment & Heritage Service.

3. "*Pollution Prevention Pays*", Environment Agency/SEPA/Environment & Heritage Service, 2004.

4. "*Groundwater Protection Policy*", Environment Agency, 2007.

5. BS EN 752-4 "*Drain and sewer systems outside buildings – Hydraulic design and environmental considerations*"; British Standards Institute,1998.

6. BS EN 12056-3 "*Gravity drainage inside buildings – Roof drainage, layout and calculation*"; British Standards Institute, 2000.

7. Figures for UK rainfall are available from the Met Office www.met-office.gov.uk

8. BRE Digest 365: "*Soakaway design*", BRE 2003.

9. C697 "*The SUDS Manual*", CIRIA 2007.

10. Pollution Prevention Guidelines (PPG) 25: "*Hospitals and Healthcare establishments*", Environment Agency, 2008.*

    *At the time of writing this document is pending publication.

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Pollution
Pol 7 – Reduction of night time light pollution

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Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Credit aim

To ensure that external lighting is concentrated in the appropriate areas and that upward lighting is minimised, reducing unnecessary light pollution, energy consumption and nuisance to neighbouring properties.

Credit criteria

Credits	
1	Where evidence provided demonstrates that the external lighting design is in compliance with the guidance in the Institution of Lighting Engineers (ILE) Guidance notes for the reduction of obtrusive light, 2005.

Compliance requirements

The following demonstrates compliance:

1. The external lighting strategy has been designed in compliance with Table 1 (and its accompanying notes) of the ILE Guidance notes for the reduction of obtrusive light, 2005, (see additional information below - Buildings located in Scotland must also refer to the Compliance Notes below for additional requirements).

2. All external lighting (except for safety and security lighting) can be automatically switched off between 2300hrs and 0700hrs. This can be achieved by providing a timer for all external lighting set to the appropriate hours.

3. If safety or security lighting is provided and will be used between 2300hrs and 0700hrs, this part of the lighting system complies with the lower levels of lighting recommended during these hours in Table 1 of the ILE's Guidance notes, for example by using an automatic switch to reduce the lighting levels at 2300 or earlier.

4. Illuminated advertisements, where specified, must be designed in compliance with ILE Technical Report 5 – *The Brightness of Illuminated Advertisements*.

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new build projects.
Refurbishment	For refurbishment projects, in addition to any new external lighting specified, any existing lighting that will remain post development must be assessed against the requirements of this credit.

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Min. credits to achieve rating	-	-	-	-	-

Extensions to existing buildings	If the scope of the assessment covers the new extension only, then it is only new lighting specified as part of that extended works that must be assessed against the requirements of this credit. If the new and existing building is being assessed as one, then the rule for refurbishments (above) applies to the existing building.
Entire new development	Where the assessment is of an entire new development, the criteria apply site-wide.
Individual building on existing site	Where the assessment is of an individual building on an existing site then only those areas affected by the works i.e. within the construction zone, must be assessed.
No external lighting	If there is no external lighting on or around the assessed development the credit can be awarded by default.
Buildings located in Scotland	In addition to the requirements above, building's located in Scotland must comply with the light pollution requirements in the guidance note "*Controlling Light Pollution and Reducing Lighting Energy Consumption*"[5]. This can be demonstrated via completion of the checklists in Annexes B and C of this document by a relevant member of the design team.
Safety lights	Flush stud lights used for safety purposes in vehicle manoeuvring areas may be excluded from the assessment.
Floodlighting, signage lighting	The guidance notes recommend the setting of a curfew, during which all non-essential external lighting is switched off. This will normally include floodlighting, signage and all lighting that is not required for safety or security.
Essential lighting between 2300 and 0700	Where essential lighting is provided between 2300 and 0700, i.e. for 24-hour operating buildings, the system is able to automatically switch to the lower levels of lighting recommended in the ILE Guidance notes for lighting during these hours (or provide these lower levels at all times).
Specific security requirements	Any light fittings in the areas outlined above that are specified to comply with specific security requirements/standards, and where those requirements and the BREEAM requirements are not complementary, can be excluded from the assessment of this credit. In these circumstances the assessor must obtain evidence confirming that such requirements are applicable to the assessed development.

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Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1-3	A marked-up copy of the site plan showing: • Areas of the building and site that will be externally lit • Any nearby properties. A copy of the specification clause requiring, or external lighting design confirming: • The external lighting design in compliance with Table 1 of the ILE Guidance notes • Controls for all external lighting. • Illuminated advertisements designed in compliance with ILE Technical Report 5 (if relevant). In the case of the external lighting design, the M&E engineer or lighting designer must provided indicative examples of where and how the strategy complies with the requirements.	Assessor's building/site inspection and photographic evidence confirming: • Cut-off luminaires, if provided, have been angled to limit spill light to potentially obtrusive directions. • External lighting controls A letter from the design team or main contractor confirming: • Installation of systems in accordance with compliant design. • No changes to the evidence provided at the interim 'design' stage assessment.

Additional information

Relevant definitions

Construction zone: For the purpose of this credit the construction zone is defined as the site which is being developed for the BREEAM assessed building and its external site areas i.e. the scope of the new works.

The ILE Guidance notes for the Reduction of Obtrusive Light, 2005 are available free of charge from the ILE website www.ile.org.uk.

Table 1 of ILE guidance

Table 1 of the ILE guidance and its accompanying notes outlines four sets of recommendations:

1. Limits to the average upward light ratio of the luminaires, to restrict sky glow.
2. Limiting illuminance at the windows of nearby properties for which light trespass might be an issue.

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3. Limiting the intensity of each light source in potentially obtrusive directions beyond the site boundaries.
4. Limiting the average luminance of the building, if it is floodlit.

In each case the limiting values depend on the location of the site of the building (for example rural, urban or city centre). A calculation of illuminance (b) or intensity (c) is not required if all luminaires are cut-off types and angled so that light in potentially obtrusive directions is blocked.

References

1. GN01 "*Guidance notes for the reduction of obtrusive light*", Institution of Lighting Engineers (ILE), 2005 (www.ile.org.uk)

2. "*Guide on the Limitation of the effects of obtrusive light from outdoor lighting installation*", International Commission on Illumination (CIE), 2003.

3. "*Night blight!",* Campaign to Protect Rural England (CPRE), (www.cpre.org.uk/campaigns/landscape/light-pollution)

4. Technical Report No. 5: "*The Brightness of Illuminated Advertisements*", Institution of Lighting Engineers (ILE), Third Ed, 2001.

5. Guidance Note "*Controlling Light Pollution and Reducing Lighting Energy Consumption",* Scottish Executive, 2007.

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Pollution
Pol 8 – Noise attenuation

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Min. credits to achieve rating	-	-	-	-	-

Credit aim

To reduce the likelihood of noise from the new development affecting nearby noise-sensitive buildings.

Credit criteria

Credits	
1	Where evidence provided demonstrates that new sources of noise from the development do not give rise to the likelihood of complaints from existing noise-sensitive premises and amenity or wildlife areas that are within the locality of the site.

Compliance requirements

The following demonstrates compliance:

1. There are, or will be, existing *noise-sensitive areas or buildings* within 800m radius of the assessed development. Where there are or will be no *noise-sensitive areas or buildings* in the locality of the assessed development, the credit can be awarded by default.

2. A noise impact assessment in compliance with BS 4142:1997 has been carried out and the following noise levels measured/determined:

    a. Existing background noise levels at the nearest or most exposed noise-sensitive development to the proposed development; or at a location where background conditions can be argued to be similar.
    b. The rating noise level resulting from the proposed noise-source. This can be based upon reference to similar installations or sites, or determined by calculation.

    The noise impact assessment must be carried out by a suitably qualified acoustic consultant holding a recognised acoustic qualification and membership of an appropriate professional body. The primary professional body for acoustics in the UK is the Institute of Acoustics.

3. Where the rating level of the noise source(s) from the site/building is equivalent to or less than the background noise level, the credit can be awarded.

4. Where the rating level of the noise source(s) from the site/building is greater than the background noise level, measures have been installed to attenuate the noise at its source to a level where it will comply with requirement 3.

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Pollution
Pol 8 – Noise attenuation

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Compliance notes	
New Build	There are no additional or different requirements to those outlined above specific to new build projects.
Refurbishment	There are no additional or different requirements to those outlined above specific to refurbishment projects.
Extensions to existing buildings	There are no additional or different requirements to those outlined above specific to the assessment of extensions to existing buildings.
Part of a larger mixed-use development	If the development forms part of a larger mixed-use development, where noise sensitive buildings exist or will be developed, then the noise assessment must be carried out to ensure noise from the assessed building will not create a future problem.
Assessed building is defined as *noise sensitive*	If the assessed building is itself defined as a *noise sensitive building* then a noise impact assessment must be carried out regardless of the assessed buildings locality to other *noise sensitive areas or buildings*.
Scope of the noise impact assessment	For the purposes of BREEAM the noise impact assessment relates only to building services plant; additional process-related noise does not have to be considered. Stand-by generating plant should also not be included.
Standard not appropriate / not applicable	Where a suitably qualified acoustician confirms that BS4142:1997 is not an appropriate standard of assessment for the proposed building/site, their assessment of the likelihood of complaint from noise impact can be accepted for the purpose of assessing this credit.

Schedule of evidence required

Req.	Design Stage	Post Construction Stage
1	Site plan highlighting: • All existing and proposed noise-sensitive buildings local to, and within, the site boundary • Proposed sources of noise from the new development • Distance (m) from these buildings to the assessed development.	Assessor's building/site inspection report and photographic evidence confirming: • All noise-sensitive buildings local to, and within, the site boundary • Proposed noise sources within the development • Distances (m) from these buildings to the assessed development.
2&3	A copy of the acoustician's report. The acoustician's qualifications and professional status. **OR**	A copy of the acoustician's report with measurements based on installed and operating plant.

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Min. credits to achieve rating	-	-	-	-	-

	A copy of the specification clause requiring: • A noise assessment in compliance with BS 4142:1997 by a suitably qualified acoustician. **OR** A formal letter from the client or design team confirming that they will appoint an acoustician to carry out a noise assessment in compliance with BS 4142:1997	
4	Acoustician's report with recommendations for noise attenuation measures. **AND** A marked-up design plan highlighting the specification of the acoustician's attenuation measures **OR** A formal letter from the client or design team confirming that: • If relevant, attenuation measures recommended by an appointed suitably qualified acoustician will be installed.	Assessor's building/site inspection report and photographic evidence confirming: • The existence of the specified noise attenuation measures. **OR** A formal letter from the acoustician confirming that all specified attenuation measures have been installed to the required standard.

Additional information

Relevant definitions

Noise sensitive area: landscapes or buildings where the occupiers are likely to be sensitive to noise created by the new plant installed in the assessed building, including:

- Residential areas
- Hospitals, health centres, care homes, doctor's surgeries etc.
- Schools, colleges and other teaching establishments.
- Libraries
- Places of worship
- Wildlife areas, historic landscapes, parks and gardens.
- Located in an area of Outstanding natural beauty or near a Site of Special Scientific Interest (SSSI).

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Min. credits to achieve rating	-	-	-	-	-

- Any other development that can be considered noise sensitive.

References

1. BS4142 "*Method for Rating industrial noise affecting mixed residential and industrial areas*", British Standards Institute, 1997.

2. Health Technical Memorandum 08-01, "*Acoustics*". Department of Health, 2008.

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Technical Checklists

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Checklist A1 – Considerate Constructors

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	1	2

For each of the eight sections (below) the *Considerate Constructors Scheme* awards a score on a scale of 0 to 5 (with half points). The score achieved or required must be entered into boxes 1-8 below i.e. EITHER 0; 0.5; 1; 1.5; 2.0; 2.5; 3.0; 3.5; 4.0; 4.5; OR 5.0.

- When a firm commitment is made to achieve certification under the Considerate Constructors Scheme without reference to particular scores, a score of 3 should be entered in each of the boxes 1-8 below. This gives a total score of 24 in box 9 below and subsequently one credit can be awarded.
- When a firm commitment is made to require the constructor to achieve certification AND a score greater than 3 is required in one or more sections, the scores required should be added in boxes 1 to 8 below and totalled accordingly.

Considerate Section	Score achieved		1
Environmentally Aware Section	Score achieved		2
Site Cleanliness Section	Score achieved		3
Good Neighbour Section	Score achieved		4
Respectful Section	Score achieved		5
Safe Section	Score achieved		6
Responsible Section	Score achieved		7
Accountable Section	Score achieved		8
TOTAL Considerate Constructors Score	(sum of 1-8)		**9**

Total CC score achieved is less than 24	0 credits
Total CC score is between 24 to 31.5 incl.	1 credit
Total CC score is between 32 and 35.5 incl.	2 credits
Total CC score is greater than ≥36	2 + Innovation credit

Assessor to award credits based on committed CCS Score and above table 10

Signed: ..... Date: .....

Name [PRINT]: ..... Organisation: .....

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Checklist A2 – Considerate Constructors

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	1	2

Checklist A2 Considerate Constructors

Compliance with an alternative to the Considerate Constructors Scheme

- 1 credit can be awarded where the assessment stakeholder confirms in writing that the alternative scheme is to be independently assessed and the assessor confirms that the alternative scheme addresses all the mandatory items plus 50% of the optional items in Checklist A2 (complete box 1).
- 2 credits can be awarded where the assessment stakeholder confirms in writing that the alternative scheme is to be independently assessed and the assessor confirms that the alternative scheme addresses all the mandatory items plus 80% of the optional items in Checklist A2 (complete box 2).
- An additional innovation credit can be awarded where post construction, the site has complied in full with the alternative, independently assessed scheme, and the alternative scheme addresses all the mandatory and optional items in Checklist A2 (complete box 3).

POST CONSTRUCTION REVIEW
When certification can be demonstrated the actual items achieved in each section should be quoted.

Where the mandatory criteria + 50% of optional criteria are complied with/committed to

Score achieved: 1 credit

☐ 1

OR

Where the mandatory criteria + 80% of optional criteria are complied with/committed to

Score achieved: 2 credits

☐ 2

OR

Where post-construction ALL the mandatory and optional items are complied with.

Score achieved: Innovation credit (in addition to the two credits achieved for complying with the standard BREEAM requirements.

☐ 3

The assessor must ensure that the commitment is to specific to the BREEAM requirements and not a general commitment to satisfy the above statements.

Total Credits for Alternative Independently Assessed Scheme ☐

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Checklist A2 – Considerate Constructors

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	1	2

1) Considerate

Mandatory

Ref	Compliance	Guidance	P
a	Where introductory letters have been sent / are to be sent to all the neighbours.	See copies of letters to be sent or sent with a list of the addresses	
b	Where there is provision for parking on site OR Buses are provided from local transport nodes OR The nearest transport links are within 500m and run every 30 minutes OR An area offsite has been designated for site parking.	See copies of parking plan, check local vicinity for transport links.	
c	Where there are ramps and signs, indicating footpaths AND Where pathways are wide enough for wheelchair access AND Where pedestrians who are mobility impaired or who have sight/hearing difficulties can still gain access around the site boundary.	View on site.	
d	Where there are barriers and signposts indicating footpaths around the site. Where footpaths are clean Where the passageways are safe and protected.	View on site.	
e	Where all the road signs / names can be seen OR Where a road sign /name is obstructed a replacement has been erected.	Is there a temporary works plan highlighting these items. View on site.	

Optional

Ref	Compliance	Guidance	P
e	Does the site have a traffic plan?	Request a copy of the plan.	
f	Where site entrances / exits clearly marked AND These are clear for lorry/delivery drivers and other visitors to see.	View on site.	
g	Where there is a clearly signed site reception AND. Where appropriate, visitors are inducted into the site AND Where visitors are escorted to the member of staff they are visiting.	Check on arrival for the signs. See copy of the induction procedure.	
h	Where there are areas of high minority communities and English is not the first language, notices are printed in the common local language.	Check the area, local shops and members of the public, community centres for a minority culture community. Where this is present check for signs in the communities language.	
i	Where the site is near a school, community centre / or other building and delivery times are outside peak times.	School peak times considered to be 8-9.30am and 3-5pm Residential peak times 7-9am and 4-6pm. Other shops / industries may have regular deliveries, this should also be considered by the Contractor.	
j	Where the site manager is authorised to reimburse minor financial complaints.	Ask the site manager what authorisation he needs to reimburse financial complaints.	
k	Where the parish registry has been checked to establish the names of neighbours to personalise your letters.	List of names and addresses to be viewed on site.	
l	Where a map has been sent to suppliers indicating where they should access the site by a particular route.	Check a copy of the map sent to all suppliers with accompanying letter.	
m	Where the post box has been placed on the pavement to avoid the postman from entering the site.	View on site.	

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Checklist A2 – Considerate Constructors

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	1	2

2) Environmentally Aware

Mandatory

Ref	Compliance	Guidance	P
a	Where site hours and noisy work restrictions are appropriate to the area.	Consider particularly areas near; -Houses -Schools - Hospitals -Industrial Units -Public Transport Nodes -City centres -Shopping facilities Copy of statement of intent, policy, agreement etc to be provided.	
b	Where the Contractor has made provisions to reduce the noise.	Are reasonable sound restrictions in force e.g. whispering generators, straw bales, sound barriers etc Has the Contractor demonstrated that noise/plant have been considered and measures implemented to reduce the disturbance?	
c	Where there is a written commitment from the Contractor to protect any sensitive ecological features such as plants and trees. AND This is demonstrated onsite. NOTE: Plants cannot be removed and replanted as part of this work.	Written commitment to be provided, along with a copy of "before and after" drawings. The commitment should include how the features will be protected and how the protection measures were determined. Temporary works procedures to include the appropriate protective measures. View on site.	
d	Where the site boundary is clearly and safely marked and appropriate to the environment. AND Where the colour of the hoarding has been considered in terms of the surrounding environment.	Ask site manager if any thought was given to the hoarding and the location of the site. Is the hoarding clearly /safely marked, clean, neat and well maintained?	
e	Where protected wild life issues in the local area have been addressed by the company.	Speak to the site manager about the local wildlife issues and how the site are addressing them and how they are monitored See evidence of drawings or specification clauses that back up the claims.	
f	Where the site has an environmental policy AND The site manager can relate the environmental policy to the procedures on his site AND The site staff are aware of the environmental policy and how it relates to their work	Request a copy of the policy. Ask the site manager what the policy includes and how this relates to the site. Ask members of staff at different levels how the policy relates to work at their level.	
g	Where there is a procedure and adequate equipment for protecting watercourses from site pollution (i.e. oils, paints and chemicals).	Bunds, absorbent material to soak up any spillages, must be present at risk areas on site. If there is a site specific environmental policy which commits to preventing water pollution and describes how this is to be on the site this point can be awarded.	
h	Where fuel oil spillage equipment is available.	View on site. Ensure the spillage equipment is located where spillages may occur to ensure a rapid response time.	
i	Have local suppliers and materials, and also recycled materials been considered?	If a list of recycled/local suppliers and materials has been produced the point can be awarded..	
j	Where there are restrictions on the effects of light pollution and all lights are directional and non-polluting	View on site. If there is a site specific environmental policy which sets restrictions on lighting, this point can be awarded.	
k	Where the site is segregating, recycling or re-using waste (including canteen and office waste).	This can be viewed on site. A company wide policy promising to segregate, recycle and re-use waste will NOT satisfy this credit. If there is a site specific environmental policy which commits to segregating, recycling and re-using waste then the inspector can award this point.	
l	Where the site has a system to monitor the amount of	This can either be viewed on site.	

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Checklist A2 – Considerate Constructors

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	1	2

Ref	Compliance	Guidance	P
	material waste produced, and provides feedback as to how much is recycled.	If there is a site specific environmental policy which commits to monitoring site waste and providing feedback on recycling, indicating how this is to be carried out, then this point can be awarded.	
m	Where energy saving measures implemented on site.	Examples of this include: • low energy lighting • switching off equipment when not in use, • Installing thermostats • Installing timers, • choosing energy efficient equipment	
n	Are the carbon emissions from the site activities monitored?	Where a site specific environmental policy monitors the carbon emissions of site activities the point can be awarded.	
o	Where areas with dust problems are enclosed, or alternative methods of mitigating dust have been provided.	Check how dust mitigation has been considered with the Site Manager; check that this will be effective.	
p	Where sumps are provided in cases of heavy water run off.	View on site. If there is a site specific environmental policy which indicates how heavy water run off will be minimised and dealt with on site, this point can be awarded.	
q	Where a site with severe congestion has a delivery point remote from a site. Deliveries from the remote site can then be made in smaller vehicles at times to cause the least inconvenience.	View procedures on site. Where a site specific environmental policy addresses the problem of deliveries to a severely congested site, then the point can be awarded.	
r	Where permission has been obtained to use a fire hydrant or fire brigade to damp down.	Written permission to be provided.	
s	Where an impact minimisation strategy review is in place for the site.	The review should consider the impact of the site in environmental terms and how any adverse effects are being minimised.	
t	Where there is adequate space for new materials to be stored in secured covered areas to avoid damage, theft and to protect from weather.	View on site. Ensure that where space has been provided, it is being used correctly.	
u	Where visible stacked materials are sheeted out.	View on site.	

3) Clean

Mandatory

Ref	Compliance	Guidance	P
a	Where all accesses to the site are clean, mud free and safe.	View on site. Where a site specific policy indicates measure that will be implemented to maintain clean, mud free, safe accesses, then this point can be awarded.	
b	Where the roads adjacent to the site that are used by site vehicles are swept.	Evidence in the form of a contract with a road sweeping company. View on site.	
c	Where there is an area specified within the site boundary for the storage of materials and plant.	The area must be clean and dry where necessary, and the space should be sufficient for the materials / plant stored. For the material storage part, this could be replaced on congested sites by a "just in time" delivery policy View on site.	

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Checklist A2 – Considerate Constructors

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	1	2

Ref	Compliance	Guidance	P
d	Where there are dust prevention measures present.	Where there is a regular damping down of the roads during the hot weather AND Where dust sheets are provided where areas are being demolished. OR Where any other measures can be demonstrated to meet this point.	
e	Where materials and equipment are tidily stacked and protected / covered where necessary.	View on site.	
f	Where areas around the canteen, offices and skips are tidy and clean AND Areas are screened where necessary.	View on site. Check all the areas ensure screening is in place where necessary.	
g	Where covered rubbish bins are available.	View on site. The inspector should ensure that where bins are provided they are spaced at intervals which will facilitate staff using them	
h	Where a free car cleaning service is offered, where dirt or dust is a problem.	View on site. Check procedures, notice boards, with staff to see if this is in operation.	
i	Where the wind direction is checked and the work pattern is varied to suit, if dust is a problem.	View whether dust is a problem on site, this should be checked in the driest season. If dust is a problem then ask the site manager how work is varied depending on the wind direction.	
j	Where a hard road is provided into the site to reduce mud problems.	View on site.	
k	Where site welfare facilities well maintained and clean?	View on site.	
l	Where areas around the site cleaned, including the collection of rubbish not related to site?	View on site.	
m	Where measures in place to deal with graffiti?	View on site.	

4) Good Neighbour

Mandatory

Ref	Compliance	Guidance	P
a	Where there is a single line entry complaints book.	Copy of the book to be provided or seen AND the book should be kept in an easily accessible place.	
b	Are complaints responded to immediately and dealt with correctly.	Look through the complaints book and check the responses. Ensure all complaints were dealt with and responded to in a polite, considerate and timely manner.	
c	Where there is light shielded from the neighbours.	Copy of the temporary works including lighting to be provided. These must either indicate light shielding or the site manager must demonstrate how the light shielding works or is not applicable.	

Optional

Ref	Compliance	Guidance	P
d	Where there are viewing boards in the hoardings AND They give a good impression.	Ask the site manger to explain why the views in the hoardings were chosen and how they best represent the site. Check that the areas that can be seen are tidy and	

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Checklist A2 – Considerate Constructors

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Min. credits to achieve rating	-	-	-	1	2

		clean.	
e	Where an arrangement is in place for a neighbour to act as a representative for a group.	Request to see a letter of confirmation that one local will act as a representative of the community or group.	
f	Where reasonable steps have been taken to ensure a minimum of false alarms.	For example • 24 hour security. Speak to the security guard. Ensure that the security guard know how to deal with alarms procedures both real and false. Check that this information is transferred to new staff. • Alarms are linked to a central office open 24hours which responds immediately. • Other measures to minimise false alarms can be considered on their merits and how appropriate they are to site requirements.	
g	Where the site and its surroundings are seen by the public as tidy AND Where the site and its surroundings are seen by the public as clean.	Ensure that there are no complaints about the site being untidy or dirty or that if there were this was quickly rectified and not repeated. Check on site that the views in the hoardings show a clean and tidy site.	
h	Where there is a congested site, and there is a compound away from the site used for plant/ material storage.	Only applicable if the site is congested. Speak to the site manager about this extra storage and visit extra compound.	
i	Where local people are informed of site progress by the use of a notice board.	View on site.	
j	Where there are rewards for a neighbour's help.	View procedures or examples of what Is being done on site	
k	Where there is a model of the project to better show neighbours the exact implications of the project.	Where a model has been built and had been shown at local residents meetings OR Where there is a commitment to build a model for this purpose.	
l	Where there is a procedure for a member of staff to check the view in the viewing apertures at regular intervals.	Where there is a written procedure or commitment to regularly check the viewing apertures, or where the viewing apertures are to be changed at different stages of the project to ensure the best view is provided. During site visits, check the viewing apertures and ensure the view is safe, tidy, clean and inoffensive.	
m	Where there is a commitment to write and thank neighbours at the end of the contract for their forbearance.	A copy of this commitment should be provided or a copy of a standard letter that is always sent at the end of a project.	
n	Where, on completion of the project, the neighbours who have been affected by the work are given a feedback form, to indicate their concerns and mark the Contractors performance These results should then be used to improve your performance next time.	Where a copy of feedback form for neighbours can be provided. AND; Where there is a commitment to send these forms to affected neighbours. AND; Where there are procedures in place to monitor the results and implement changes for future work.	
o	Where extra sets of posters are prominently displayed illustrating how the site is being a good neighbour.	View on site.	
p	Where appropriate get involved with local community charities and initiatives.	Where there is evidence of such events having already occurred or where there are future arrangements or a commitment to do so.	
q	Where measures are in place to reduce negative displacement (e.g. pigeons).	View on site.	

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Checklist A2 – Considerate Constructors

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Min. credits to achieve rating	-	-	-	1	2

5) Respectful

Mandatory

Ref	Compliance	Guidance	P
a	Where there is a dress code specified in the induction.	Check the induction content for items related to dress code. N.B. This does not relate to PPE, this is to prevent "builders bum" syndrome	
b	Where there is an enforcement procedure i.e. someone does check that operatives are dressed considerately,	Check the induction content for these details. Ask how operatives who are not dressed "appropriately" are dealt with? Is the procedure rigorous Check the complaints book for any items on this issue and see how quickly they were dealt with.	
c	Where inappropriate behaviour is dealt with in site policy. AND; Where this is highlighted in the site induction.	Copy of the policy to be provided. Check the induction content for these details. Ask the site manager what the enforcement procedures are and how they are carried out. Check the complaints book for any items on this issue and see how quickly they were dealt with.	
d	Where there is a no offensive calendar policy.	Check how this policy is implemented.	

Optional

Ref	Compliance	Guidance	P
d	Does the site have female toilets. Does the site have disabled toilets.	View on site.	
e	Where operatives are prevented from having their breaks in view of the public.	Examples of how this might be achieved include: • A site canteen • A common room available for operatives to eat in. View on site.	
f	Where toilets are screened from public view.	View on site	
g	Where lockers are provided in the drying room.	View on site	
h	Are working usable showers available and suitable changing areas are available.	View on site.	
i	Where site personnel are discouraged from using local facilities in their site clothes.	Examples of how this might be achieved include : A canteen. Staggered breaks for different gangs. Provision of showers / wash rooms. Provision of lockers. A request to leave PPE on site. View on site. Check procedures with the Site Manager.	
j	Where there is a volume restriction on radio use or there is a radio ban.	Check if restrictions/ban is in place and how it is enforced.	
k	Where operatives are provided with suitable clothing with the companies logo.	Check company policy to do this and check with operatives on site that they have clothing with the companies logo.	
l	Provide operatives with a clip on ID card with photo.	Check company policy and procedures for issuing clip on ID cards. Check if there is a mandatory requirement for operatives to wear these when on site. Check operatives in site are wearing them.	
m	Where the site encourages only 1 person to visit the local shop at any one time.	Examples of how this can be achieved include : • Where there are facilities on site to buy newspapers, confectionary and snacks	

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Min. credits to achieve rating	-	-	-	1	2

		• Where breaks are staggered to prevent large groups of operatives visiting local shops together. • One person is nominated to go to the local shop for the team.	
n	Is there sufficient action taken regarding operatives' exposure to the sun?	Check company policy and procedure and if it is being implemented on site.	

6) Safe

Mandatory

Ref	Compliance	Guidance	P
a	Where there are well lit warning signs for the benefit of the pedestrian and road user.	Check if the signs are indicated on the temporary works / other plans OR if they are being implemented on site.	
b	Where the temporary works are safe and are erected only after they have been checked by an experienced engineer.	See copy of the temporary works checking procedure, check the responsible engineer has the relevant qualifications. Check that the temporary works are checked by a visual or physical inspection on a regular basis. Carry out a site inspection.	
c	Are the temporary works near adjacent buildings likely to produce a security risk.	Ask if a risk assessment was carried out when designing the works and check if this was identified. View on site.	
d	Pedestrians have a suitable, safe and protected passage around the site boundary.	View on site.	

Optional

Ref	Compliance	Guidance	P
e	Is safe access to the site office provided by; good lighting AND Adequate barriers AND Uniform surfaces i.e. no trip hazards AND Being a minimum of 1m wide.	View on site.	
f	Where work has interrupted the pavement ensure ramps are provided.	View on site.	
g	Where the scaffolding is boxed in or taped where likely to obstruct pedestrians.	View on site.	
h	Where the hoarding or scaffold is properly lit externally at night?	View on site.	
i	Where scaffold netting is in place and well maintained.	View on site.	
j	Where emergency escape routes are well identified?	View on site.	
k	Are even the most minor accidents recorded.	Check first aid book for minor accidents. Minor considered to be e.g. small cuts (plaster only necessary), dust in eyes.	
l	Where others use the site and there is a regular fire drill.	Check times of drill and visit a day the drill should be carried out.	
m	Where there is a procedure to report serious incidents and near misses.	Copy of procedure to be provided. Procedure to cover internal QA reporting format, and notifying HSE.	
n	Where there is satisfactory out of hours security.	Examples of satisfactory out of hours security include: • Locked gates. • Night lighting. • 24 hour on site security. • An alarm linked directly to a police station or 24 hour (local) off site security. • The security guard has an emergency number and knows who to call in an emergency.	

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Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
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Ref	Compliance	Guidance	P
o	Where non English speaking operatives are tested during their induction, to ensure that their levels of reading, writing and speaking do not pose a safety risk to those that they work with.	This needs to be robust enough to ensure that in a health and safety risk environment, the operative would be capable of warning others or contacting help.	
p	Where temporary road crossings are in a suitable safe place.	Check: Road crossings away from corners. The design has been checked by a traffic expert. There is a risk assessment for these areas, are the remaining risks acceptable?	
q	Where the site office is well sign posted and easily accessible.	View on site.	
r	Where safety helmets are positioned close to the entrance to the site office.	View on site.	
s	Where the visitors book is to be filled in on all occasions.	View on site.	
y	Where safety and other requirements in connection with deliveries are given to suppliers.	Check this information is given to suppliers; AND Check that this is enforced at every delivery, not just a one off letter to the company at the beginning of the project.	
u	Where there is a procedure for recording operative concerns and near misses.	Check if this is in place and how it operates.	
v	Where all site hazards are advertised at the site entrance (s).	View on site. Check that the list of site hazards is complete.	
w	Where there is an initiative to provide incentives to promote and improve safety on site.	Check this document and how it is disseminated.	
x	There are clear fire points, an assembly station and fire drills take place.	View on site and ask for written proof of a fire drill procedure.	

7 Responsible

Mandatory

Ref	Compliance	Guidance	P
a	Where the Environmental Officer has been informed of your presence on site.	See a copy of the letter, informing the Environmental Officer of the project, including start and finish construction dates.	
b	Where there is well posted material indicating nearest Police Station and Hospital (with A&E facilities)	Are there posters indicating the nearest Police Office, Hospital with A&E facilities in key areas e.g. site reception, site canteen, main site office. Spot check managers, operatives, reception staff to check they know this information or at least where they would find it. Check Induction talk.	

Optional

Ref	Compliance	Guidance	P
c	Where a record of your immediate neighbours names and telephone numbers are known.	A copy of this list should be provided.	
d	Where all subcontractors first aiders are recorded in a formal document and a copy of this record provided.	Check for the formal document which has all sub-contractors first aiders registered.	
e	Where an in-house newsletter is distributed to the neighbours.	Where a copy of this letter can be provided and evidence that this has been distributed, e.g. accompanying letters, recorded minutes etc.	
f	Where a local person provides out of hours cover.	If there is 24 hour security this is automatically awarded. Where there is no 24 hour security, but someone is identified as living local to the site and can act quickly in the event of an emergency on site.	
g	Where the workforce hold CSCS (Construction	Where the company has procedures in place to ensure that	

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BREEAM Healthcare 2008
Management
Checklist A2 – Considerate Constructors

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	1	2

	Skills Certification Scheme) cards.	the majority of their workers hold CSCS cards.	
h	Where your company is recognised as having either ISO 9001, 14001 or IIP status.	Evidence that this has been achieved must be provided.	
i	Where operatives skills and medical conditions are recorded.	Check records and /or procedures to demonstrate this.	
j	Where there are the appropriate number of first aiders and first aid equipment for the site.	The HSE produce guidance on the number of required first aiders for a site. A copy of the trained first aider list should be provided and their qualifications, ensure that the qualifications are all still valid (i.e. in the last 3 years). Check that each first aider have a box with basic equipment in. Check that each first aider has access to more equipment is necessary and that they know where this is.	
k	Where local schools have been contacted and asked to participate in visits, talks or competitions.	Evidence should be provided that this has or will be occurring e.g. copies of press cuttings, letters etc. If there are no schools within a 3km radius this is not applicable.	
l	Where the site has a static gate man, he is trained in first aid.	Check with the static gate man that he is trained, see his certificates and ensure they are current.	
m	Where up to date information on site performance is posted in public view.	View on site. Check this is up to date and ask how regularly this is changed.	
n	Where you have a web page link to demonstrate your commitment to being a considerate neighbour throughout the construction project.	The link must highlight what the scheme includes and it aim.	
o	Where procedures are in place to enable the employment of disabled operatives.	A copy of the procedure should be provided in order to award the point.	

8) Accountable

Mandatory

Ref	Compliance	Guidance	P
a	Where there are posters in a public space displaying your local scheme for considerate construction and the main bodies involved.	Posters must identify the client, consultant, architect, and contractor. Posters must be well distributed over the site, as well as in the public eye.	
b	The scheme is mentioned in the site induction.	Check documentation.	
c	There has been a safety inspection and report, and any points raised have been dealt with.	Check report and view on site.	

Optional

Ref	Compliance	Guidance	P
d	Where an inspection has been carried out by HSE.	Only applicable if HSE have carried out an inspection, Where there are recommendations, there is a commitment to implement them.	
e	Where the company sign board is prominently displayed with telephone number / Web Site / Email address.	View on site.	
f	Where the site personnel and sub-contractors are familiarised with the local / national scheme at induction or other.	Check if induction procedures cover this item and if not how operatives are aware that they are involved in the scheme.	
g	Where the Client is aware of the Scheme.	This can be demonstrated by a letter or endorsement etc.	
h	Where frames and Perspex covers for posters advertising this Scheme are provided.	View on site.	
i	Where a suggestion box is provided for the	View on site.	

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BREEAM Healthcare 2008
Management
Checklist A2 – Considerate Constructors

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	1	2

Ref	Compliance	Guidance	P
	general public.	This must be in a place accessible to the general public AND well advertised.	
i	Where all site signage and posters are illuminated at night.	View on site.	
j	Where a 24 hour hotline is provided and this is displayed to the public.	View on site. Check how this is manned and how phone calls, queries, complaints are dealt with.	
k	Where your operatives/subcontractors are given points for infringement of your safety and considerate standards. Record these on a card held by the operative. X points and you're out.	Check if this system is operating. 'X' must be decided by the company, however the aim is to encourage operatives to work safely and considerately. This point can also be awarded where there is an incentive scheme for exemplar behaviour.	
l	Training/toolbox talks are provided for site operatives.	Ask for copies of a schedule of talks.	
m	The site has a record of social/community activities.	See documentation to check compliance.	

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Management
Checklist A3 – Construction Site Impacts

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

a. Monitor, report and set targets for CO_2 production of energy use arising from site activities		
Compliance requirement	**Tick**	**Evidence/Reference**
Monthly measurements of energy use will be/has been recorded and displayed on site.		
Appropriate target levels* of energy consumption will be/were set and displayed (targets could be annual, monthly, or project targets).		
As a minimum, monitoring will/did include checking the meters and displaying some form of graphical analysis in the site office to show consumption over the project duration and how actual consumption compares to the targets set.		
The design/site management team will/did nominate an individual who will be responsible for the monitoring and collection of data.		
Notes: • Targets for energy consumption during the construction process should be set using DTI's Environmental KPI benchmarks. These documents do not specify targets but facilitate projects in setting appropriate targets (see references section of main credit for further details). • BREEAM does not require targets to be met but is encouraging the process of setting, monitoring and reporting against targets.		
b. Monitor and report CO_2 or energy arising from commercial transport to and from the site		
Compliance requirement	**Tick**	**Evidence/Reference**
A site monitoring system will be/was in place to monitor and record deliveries*. This system will/did record: • The number of deliveries • The mode of transport • The km/miles travelled for all deliveries		
If the design team or contractor confirms that the project is aiming to achieve the "Construction Site Transport" 'measures for traffic movements and distances' (published April 2003, see references) then this aspect has been achieved automatically. The information obtained for this item can also be used to satisfy the DTI's Environmental KPI on transport.		

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Checklist A3 – Construction Site Impacts

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

The design/site management team will/did nominate an individual responsible for the monitoring and collection of data.		

Notes:

- Where the delivery is specifically for the site, a figure of total distance travelled should be used, i.e. a round trip (from the point of origin, to the site and back to the point of origin).
- Where the delivery to the site is part of a multiple delivery route, the recorded figure for distance travelled should be the distance travelled to the site (from the previous delivery), plus the distance to the next delivery or return.
- This information can then be used to estimate a total figure for kg of CO_2 for the project. BREEAM does not require this information to be converted to CO_2 but the information must be made available to the senior project and site management staff/suppliers to establish benchmarks and aid future decision-making towards improving site and transport efficiency. If the project team wishes to convert this information into CO_2 emissions there are tables provided at the end of this checklist which can be used to do this.

c. Monitor, report and set targets for water consumption arising from site activities

Compliance requirement	Tick	Evidence/Reference
Monthly measurements of water consumption will be/were recorded and displayed on site.		
Appropriate target* levels of water consumption will be/were set and displayed (targets could be annual, monthly or project targets).		
As a minimum, monitoring will/did include checking the meters and displaying some form of graphical analysis in the site office to show consumption over the project duration and how actual consumption compares to targets set.		
The design/site management team will/did nominate an individual responsible for the monitoring and collection of data.		

Notes:

- Targets for water consumption during the construction process should be set using DTI's Environmental KPI benchmarks. These documents do not specify targets but facilitate projects in setting appropriate targets (see References and Further Information for details).
- BREEAM does not require targets to be met but is encouraging the process of setting, monitoring and reporting targets.

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Management
Checklist A3 – Construction Site Impacts

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

d. Adopt best practice policies in respect of air (dust) pollution arising from site activities		
Compliance requirement	**Tick**	**Evidence/Reference**
The site will/did adopt best practice procedures in relation to minimising air/dust pollution. This should include: • 'dust sheets' • regular proposals to damp down the site in dry weather • covers to skips etc.		
This information will be/was disseminated to site operatives.		
Notes: • Further information can be obtained from DTI/BRE publications 'Control of Dust from Construction and Demolition Activities' and Pollution Control Guide Parts 1-5 provide good practice guidelines on construction related pollution (see References and Further Information for details).		

e. Adopt best practice policies in respect of water (ground and surface) pollution occurring on the site		
Compliance requirement	**Tick**	**Evidence/Reference**
The site will/did adopt best practice procedures in relation to minimising, as outlined in the following documents. PPG 1 - General guide to the prevention of pollution. Environment Agency PPG 5 - Works in, near or liable to affect watercourses. Environment Agency PPG 6 - Working at demolition and construction sites. Environment Agency		
This information will be/was disseminated to site operatives.		

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Management
Checklist A3 – Construction Site Impacts

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

f. A main contractor with an environmental materials policy		
Compliance requirement	**Tick**	**Evidence/Reference**
The main contractor operates an environmental materials policy, used for sourcing of construction materials to be utilised on site. The policy should cover/promote the following: • Use of local materials (where possible) • Use of responsibly sourced materials • Re use of materials • Use of materials with a high recycled content • Waste minimisation and recycling • Use of non-toxic materials & refrigerants with a high global warming potential • Use of materials with a low embodied impact • Use of durable materials		
Post construction: indicative examples have been provided to demonstrate the policy in action.		

g. A main contractor that operates an Environmental Management System*		
Compliance requirement	**Tick**	**Evidence/Reference**
The main contractor operates an Environmental Management System covering their main operations. The EMS must be either: • Third party certified, to ISO14001/EMAS or equivalent standard. OR • The structure of the EMS is in compliance with British Standard 8555 2003 and has reached phase four of the implementation stage, 'implementation and operation of the environmental management system', and completed phase audits one to four, as defined in BS8555.		

* Please note: it is a requirement of BREEAM Healthcare that this measure is achieved as a condition of awarding any of the available credits for this BREEAM issue.

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Checklist A3 – Construction Site Impacts

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

h. 80% of site timber is reclaimed, re-used or responsibly sourced		
Compliance requirement	**Tick**	**Evidence/Reference**
80% of timber used during construction, including formwork, site hoardings and other temporary site timber used for the purpose of facilitating construction, will be/was procured from sustainably managed sources, independently certified by one of the top two levels as set out in the Responsible Sourcing of Materials Issues (BREEAM credit Mat 5) in the Materials section of this document.		
Additionally 100% of all site timber will be/was legally sourced.		
Notes: • Re-used timber from off site can be counted as equivalent but re-usable formwork only complies if it meets the above criteria. • This credit can be awarded where all the timber used is reclaimed timber.		

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Management
Checklist A3 – Construction Site Impacts

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Fit Out assessment only items (Offices/Retail/Industrial/Bespoke versions)

Adopt best practice policies in respect of air (dust) pollution arising from site activities		
Compliance requirement	**Tick**	**Evidence/Reference**
The site will/did adopt best practice procedures in relation to minimising air/dust pollution. This should include: • 'dust sheets' • regular proposals to damp down the site in dry weather • covers to skips etc.		
This information will be/was disseminated to site operatives.		
Notes: • Further information can be obtained from DTI/BRE publications 'Control of Dust from Construction and Demolition Activities' and Pollution Control Guide Parts 1-5 provide good practice guidelines on construction related pollution (see References and Further Information for details).		

Appointment of a fit out contractor who has an environmental materials policy		
Compliance requirement	**Tick**	**Evidence/Reference**
The fit out contractor operates an environmental materials policy, used for sourcing of construction materials to be utilised on site. The policy should cover/promote the following: • Use of local materials (where possible) • Use of responsibly sourced materials • Re use of materials • Use of materials with a high recycled content • Waste minimisation and recycling • Use of non-toxic materials & refrigerants with a high global warming potential • Use of materials with a low embodied impact • Use of durable materials		
Post construction: indicative examples have been provided to demonstrate the policy in action.		

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Checklist A3 – Construction Site Impacts

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Appointment of a fit contractor who operates an Environmental Management System		
Compliance requirement	**Tick**	**Evidence/Reference**
The fit out contractor operates an Environmental Management System covering their main operations. The EMS must be either: • Third party certified, to ISO14001/EMAS or equivalent standard. OR • The structure of the EMS is in compliance with British Standard 8555 2003 and has reached phase four of the implementation stage, 'implementation and operation of the environmental management system', and completed phase audits one to four, as defined in BS8555.		

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Checklist A3 – Construction Site Impacts

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Assessor Information

Monitoring Site Transport CO_2

The following tables are taken from the DEFRA 'Guidelines for Company Reporting on Greenhouse Gas Emissions' and COPERT II emission factors, and can be used to convert the information gathered from monitoring deliveries into total kg CO_2.

Table 1 : Standard road transport fuel conversion factors

Fuel used	Total units used	Units	x	kg CO_2 per unit	Total kg CO_2
Petrol		litres	x	2.30	
Diesel (inc. Low Sulphur)		litres	x	2.63	
Compressed Natural Gas		kg	x	2.65	
Liquid Petroleum Gas		litres	x	1.49	

Source: National Atmospheric Emissions Inventory for 2003 developed by Netcen (2005). UK Greenhouse Gas Inventory for 2003 developed by Netcen (2005), Digest of UK Energy Statistics DTI 2004 and carbon factors for fuels from UKPIA (2004)

Table 2 : Standard road transport fuel conversion factors

Size of car and distance units	Total units travelled	Units	x	kg CO_2 per unit	Total kg CO_2
Small petrol car max. 1.4 litre engine		miles	x	0.26	
		km	x	0.16	
Medium petrol car max. 1.4-2.1 litre engine		miles	x	0.30	
		km	x	0.19	
Large petrol car above 2.1 litres		miles	x	0.35	
		km	x	0.22	
Average petrol car		miles	x	0.29	
		km	x	0.18	

Source: NAEI (Netcen, 2005) based on data from DfT combined with factors from TRL as functions of average speed of vehicle derived from test data under real world testing cycles

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Checklist A3 – Construction Site Impacts

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Table 3 : Standard Road Transport Fuel Conversion Factors

Size of car and distance units	Total units travelled	Units	x	kg CO_2 per unit	Total kg CO_2
Small Diesel car 2.0 litres engine and under		miles	x	0.26	
		km	x	0.16	
Large Diesel car over 2.0 litres - 2.1 litre engine		miles	x	0.31	
		km	x	0.19	
Average Diesel car		miles	x	0.27	
		km	x	0.17	

Source: NAEI (Netcen, 2005) based on data from DfT combined with factors from TRL as functions of average speed of vehicle derived from test data under real world testing cycles.

Table 4: Freight road mileage conversion factors

Type of lorry	Total km travelled	x	Litre Fuel per km	x	Fuel Type	Fuel Conversion Factor	Total kg CO_2
Articulated		x	0.35	x	Petrol	2.30	
					Diesel	2.63	
					LPG	1.49	
Rigid		x	0.40	x	Petrol	2.30	
					Diesel	2.63	
					LPG	1.49	

Source: Guidelines for Company Reporting on Greenhouse Gas Emissions, DEFRA. Continuing Survey of Road Goods Transport 2001.

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BREEAM Healthcare 2008
Land Use & Ecology
Checklist A4 – Land of Low Ecological value

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Section 1: Ecological features of the site

Instruction: criteria 1.1-1.5 can be used to determine the presence of existing ecological features across the total site. However, if YES is recorded against **any** question in Section 1 for the *construction zone,* then it cannot be defined as *land of low ecological value* and the credit cannot be awarded. If the *construction zone* records a NO against **all** the questions in Section 1 then proceed to Section 2.

1.1	Does the site contain any trees or hedges above 1m high or with a trunk diameter greater than 100mm?	YES ☐ NO ☐
1.2	Are there any ponds, streams or rivers on, or running through the site?	YES ☐ NO ☐
1.3	Is there any marsh or other wetland present on the site?	YES ☐ NO ☐
1.4	Are there any meadows or species-rich grassland present on the site?	YES ☐ NO ☐
1.5	Is there any heath land such as heather present on site?	YES ☐ NO ☐

Section 2: Type of land to be used for the new building

Instruction: in addition to answering NO to all the questions in Section 1, if YES is recorded against one or more of the questions in Section 2 then the *construction zone* can be defined as *land of low ecological value*. This credit can then be awarded, as long as all features of ecological value (as defined in Section 1) in the surrounding site and boundary area are adequately protected from damage.

2.1	Does the *construction zone* consist of land which is entirely within the footprint of existing building(s) or building(s) demolished within the past 2 years?	YES ☐ NO ☐
2.2	Does the *construction zone* consist of land which is entirely covered by other construction such as hard surfaces, car parking or such constructions which have been demolished within the past two years?	YES ☐ NO ☐
2.3	Does the *construction zone* consist of land which is contaminated by industrial or other waste to the extent that it would need decontamination to facilitate development?	YES ☐ NO ☐
2.4	Does the *construction zone* consist of land which is a mixture of either existing building(s), hard surfaces and/or contaminated land?	YES ☐ NO ☐
2.5	Does 80% of the land within the *construction zone* comply with statements 2.1, 2.2 or 2.3 and the remaining 20% of the footprint of the *construction zone* extend into land which has been either: a. Used for single-crop arable farming for at least 5 years, OR b. Consists of regularly cut lawns and sports fields	YES ☐ NO ☐

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BREEAM Healthcare 2008
Materials
Checklist A5 – Responsible Sourcing

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Table 1 - Checklist of requirements for Tiers 1-4

Tier	Requirements	Examples of compliant schemes	Checklist of documentation required
1	Third party certification scheme with CoC and rigorous stakeholder consultation (at both standard setting and during implementation) Scheme must have developed standards which meet the requirements outlined in Table 3 below.	FSC CSA SFI with CoC PEFC Reused materials	**Design** One of the following indicating that the material will comply with the relevant certification scheme. • Letter of intent from supplier OR • Purchase order from the supplier including CoC number (if the material has been ordered) OR • Chain of Custody (CoC) certificate (if timber has already been supplied)
			Post Construction • CoC certificate for all appropriate elements AND • Delivery notes for all appropriate elements
2	Third party certification scheme with CoC and stakeholder consultation. Scheme must have developed standards which meet the requirements outlined in Table 3 below.	Currently no schemes in this tier	As above.

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Materials
Checklist A5 – Responsible Sourcing

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Tier	Requirements	Examples of compliant schemes	Checklist of documentation required
3	Certification Scheme for timber Environmental Management System at **extraction & process stages** - see Table 2 below for description of stages.	ISO 14001 EMAS Evidence of BS8555 (for SME's) MTCC Verified* SGS TFT	**Design** <u>Timber</u> One of the following indicating that the material will comply with the relevant certification scheme. • Letter of intent from supplier OR • Purchase order from the supplier including CoC number (if the material has been ordered) OR • Chain of Custody (CoC) certificate (if timber has already been supplied) <u>Non timber materials</u> One of the following indicating that the material will comply with the relevant EMS standards (see credit for further information). • EMS (or equivalent) certificate from the manufacturers at the process and extraction stages OR • Signed letter from the manufacturers at the process and extraction stages confirming EMS (or equivalent) certification details OR • Letter of intent from the developer to use a manufacturer at the process and extraction stages, who has an EMS (or equivalent), if supplier is not yet appointed.

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Checklist A5 – Responsible Sourcing

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Tier	Requirements	Examples of compliant schemes	Checklist of documentation required
3			**Post Construction** • Delivery notes for all appropriate elements <u>Timber</u> • CoC certificate for all appropriate elements <u>Non timber materials</u> One of the following indicating that the material will comply with the relevant EMS standards (see credit for further information). • EMS certificate (or equivalent) from the manufacturers at the process and extraction stages OR • Signed letter from the manufacturers at the process and extraction stages confirming EMS (or equivalent) certification details In addition: • Delivery notes for all appropriate elements
4	Environmental Management System at **process stages** for other materials - see Table 2 below for description of stages.	EMAS ISO 14001	**Design** One of the following indicating that the material will comply with the relevant EMS standards (see credit for further information). • EMS (or equivalent) certificate from the manufacturers at the process stage OR • Signed letter from the manufacturers at the process stage confirming EMS (or equivalent) certification details OR • Letter of intent from the developer to use a manufacturer at the process stage, who has an EMS (or equivalent), if supplier is not yet appointed. **Post Construction** One of the following indicating that the material will comply with the relevant EMS standards (see credit for further information). • EMS certificate (or equivalent) from the manufacturers at the process stage OR • Signed letter from the manufacturers at the process stage confirming EMS (or equivalent) certification details.

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Materials
Checklist A5 – Responsible Sourcing

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

* 'Verified' is the name of a scheme

Where ANY non certified timber is used (even if only a small quantity) the following must also be provided in ALL cases:

- Written confirmation from the timber supplier(s) (or at the design stage of assessment, the developer where a supplier is not yet appointed) confirming that all timber species and sources used in the development are not listed on any of the CITES appendices for endangered and threatened species (see credit for further information).
- Written confirmation from the timber supplier(s) (or at the design stage of assessment the developer where a supplier is not yet appointed) confirming that all timber is to be legally sourced (see credit for further information).

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Materials
Checklist A5 – Responsible Sourcing

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

Table 2 - Diagrammatic explanation of how the required EMS relates to the process and extraction phases

Stage of production process	Extraction	Process	Manufacture
Materials	Stone Aggregate (sand, limestone etc.) Hematite Bauxite Clay Raw materials - other	Bricks Cement or alternative Glass Metals Other materials (plastic etc) Pre-cast concrete	Concrete / blocks Composites
Points available	1 point 1.5 points		

Note: As this credit is looking at responsible sourcing, currently the manufacture stage is not considered.

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Materials
Checklist A5 – Responsible Sourcing

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

NOTE TO ASSESSORS

This list is included for information, you are not expected to evaluate whether a scheme complies with this criteria. All new schemes claiming to meet the criteria listed below will be evaluated by BRE, and will be included in the list of compliant schemes where appropriate.

Table 3 - Features of a top tier (1) comparable certification scheme

Standard setting
When setting standards for a materials certification scheme the following should be addressed in order to be considered comparable to Tier 1/2 of this credit. • The scheme must include a third party chain of custody certification scheme covering all stages of the product throughout the supply chain • The scheme must verify that all local and national legislative requirements are met. • The process for policy and standards development is transparent, clear and accessible. • The scheme is independent and standards are developed in a way which balances the interests of all stakeholders. This should be done through a rigorous consultation process which makes best use of the stakeholder knowledge, methodically and comprehensively considering all feedback and after such consideration, aims to implement all feasible stakeholder suggestions • The scheme is inclusive, striving to involve all interested people and groups in the development of the scheme's policies and standards. • Monitoring and assessment must be integral to the scheme and conducted appropriate to the scale and intensity of the industry/ materials assessed by the scheme. This requirement is likely to be fulfilled by the incorporation of an EMS such as ISO14001 or BS8555 for SME's. • The scheme should contain principles by which the scheme should be governed. These should be specific to industry/materials but should also be composed of the fundamental issues related to the environment. These issues should focus on specific practices associated with sourcing virgin and other materials. • The scheme should assess that initiatives are in place to ensure continuous performance and environmental improvement. • The scheme should provide for small to medium sized business as well as larger

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Materials
Checklist A5 – Responsible Sourcing

Minimum BREEAM Standards					
Rating Level	P	G	VG	E	O
Min. credits to achieve rating	-	-	-	-	-

businesses. SME's grouping together to achieve group certification should be an option. This could, for example, take place on a regional or other relevant basis.

- The scheme should include a mechanism to revise the standard within a defined, suitable time frame to ensure that the current knowledge or upcoming robust scientific or other professional evidence can be incorporated (in good time) into the standard as an update. It should ensure that all updates are well adapted to the local/regional and/or global conditions.

- The scheme should also aim to consider social and economic aspects widening the scope to sustainability under the umbrella of a Corporate Social Responsibility (CSR). This is in line with the future aims of BREEAM and could be assessed within the credit in the future.

NOTE: The scheme may be generic for the materials industries or specific for individual materials sectors.

Differences between Tier 1&2

Tiers 1 and 2 follow the standard setting process outline above, however there are differences in the rigour of the two schemes which is why they fall into two different categories. These are outlined below:

1. The top tier category schemes comprehensively address a consultation process with local community. This is done at source via a management company, as the focus is on sustainable project management at source.

2. The top tier category must have no reservations/uncertainty/pending charge or indictment identified by any professional bodies in the relevant materials sectors.

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BREEAM Healthcare 2008
Land Use & Ecology
Checklist A6 – Guidance for Relating Ecology Reports to BREEAM

Guidance to relate ecology reports to BREEAM

Before completing this form please read the following:

1. **This guidance document is to be used for BREEAM 2008 assessments, where an ecologist has been appointed and produced an ecology report as part of a proposed development.**
2. **As an ecologist may have been appointed to carry out ecological site surveys and produced an ecology report without being aware that a BREEAM assessment has been, or is to be conducted, the purpose of this document is to help assist assessors relate the contents of such a report to the land use and ecology requirements of BREEAM.**
3. **The assessor is to request that the appointed ecologist complete all sections of this guidance and return it to the BREEAM assessor along with all relevant documentation required to demonstrate compliance with the BREEAM requirements.**
4. **The assessor is to use this completed document in conjunction with the latest version of the relevant BREEAM technical guidance manual and information provided by the developer / client to carry out the assessment of the land use and ecology BREEAM credits.**

- There are 6 sections (sections A - F) in this document.
- Section A requires contact details for the ecologist and developer / client.
- Section B1 determines whether the appointed ecologist is '*suitably qualified*' (under BREEAM); and if not, section B2 determines whether the report has been verified by an ecologist who is '*suitably qualified*'.
- Section C determines whether the findings of the report have been based on data collected from site surveys conducted at appropriate times of the year to determine whether different species are evident.
- **If 'no' is recorded for either Section B or C then the contents of the ecology report cannot be used to determine compliance with the BREEAM requirements.**
- Section D provides the BREEAM assessor with the necessary information to complete the assessment of the ecology credits in BREEAM.
- Section E provides details of the documentation / information required by BREEAM as evidence of compliance.
- Section F requires the signature of the appointed ecologist who has completed this document.

Please note: it is only the appointed qualified and licensed BREEAM assessor who can award or withhold a credit for all BREEAM assessments.

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Section A: Contact Details

Ecologist's Details

Company name:

Company address:

Contact name:

Contact telephone number:

Ecology report reference:

Developer / Client Details

Company name:

Company address:

Contact name:

Contact telephone number:

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Section B1: Ecologist's Qualifications

1. Do you hold a degree (or equivalent qualification, e.g. N/SVQ level 5) in ecology or related subject?

Yes ☐ No ☐

If yes, please provide details……
……
……

2. Are you a practising ecologist with a minimum of 3 years relevant experience within the last 5 years? *Relevant experience must clearly demonstrate a practical understanding of factors affecting ecology in relation to construction and the built environment and will include acting in an advisory capacity to provide recommendations for ecological protection, enhancement and mitigation measures, e.g. ecological impact assessments.*

Yes ☐ No ☐

If yes, please provide details……
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3. Are you bound by a professional code of conduct and subject to peer review*?

   *i.e. a **full member** of one of the following organisations will be deemed suitable: Chartered Institution of Water and Environmental Management (CIWEM); Institute of Ecology and Environmental Management (IEEM); Institute of Environmental Management and Assessment (IEMA); Landscape Institute (LI).*

   Yes ☐ No ☐

   If yes, please provide details……
   ……..

   ** Peer review is defined as the process employed by a professional body to demonstrate that potential or current **full members** maintain a standard of knowledge and experience required to ensure compliance with a code of conduct and professional ethics.*

If 'no' has been answered for any question in Section B1 then the BREEAM requirement for a '*suitably qualified ecologist*' has not been met. The ecology report CANNOT be used to assess the BREEAM Ecology credits unless it is verified by an individual who is '*suitably qualified*' (see section B2 below).

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Section B2: Report Verification

Details on verifying an ecology report for a BREEAM assessment:

1. The individual verifying the report must provide written confirmation that they comply with the definition of a '*suitably qualified ecologist*' (as detailed in Section B1 above).

2. The verifier of the report must confirm in writing they have read and reviewed the report and found it to:

    - represent sound industry practice
    - report and recommend correctly, truthfully, and objectively
    - be appropriate given the local site conditions and scope of works proposed
    - avoid invalid, biased, and exaggerated statements.

Written confirmation from the third party verifier on all the points detailed under 1 and 2 above (for section B2) must be included in an appendix to this guidance (see section E).

If the appointed ecologist does not meet the requirements of a '*suitably qualified ecologist*' and the report has not been verified by an individual who does meet these requirements, then the report CANNOT be used as evidence of compliance with the ecology credits in the BREEAM.

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Section C: Site Survey

1. Have the findings of the ecology report been based on data collected from a site survey(s)? *The site visit(s) and survey(s) must be conducted at appropriate times of the year when it is possible to determine the presence, or evidence of the presence, of different plant and animal species.*

Yes ☐ No ☐

If yes, please provide details to justify this (e.g. date(s) and scope of site survey(s))
……
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……
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If 'no' has been answered to question 1 of Section C then the ecology report CANNOT be used to determine compliance with the requirements of the relevant BREEAM credits.

Note to suitably qualified ecologist and BREEAM assessor: the contents of the ecology report must be representative of the site's existing ecology prior to the commencement of initial site preparation works, i.e. before RIBA stage K, Operations On Site, and after RIBA stage B, Feasibility.

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Section D: Site Survey Details

LE3 Ecological value of land and protection of ecological features

1. Is the land within the '*construction zone*' deemed by the *suitably qualified ecologist* to be of low ecological value?

   The construction zone is defined as any land on the site which is being developed (and therefore disturbed) for buildings, hard standing, landscaping, site access, plus a 3m boundary in either direction around these areas. It also includes any areas used for temporary site storage and buildings.

   Yes ☐ No ☐

   If yes, please provide a brief statement explaining how it has been deemed to be of low ecological value……
   ……
   ……
   ……
   ……

2. Are there any features / areas of ecological value that fall within the site, but outside the *construction zone*?

   If you have deemed this area to be of low ecological value then there will be no features of ecological value to protect. However, if there is a feature(s) or area(s) of low ecological value you wish to advise be retained and enhanced, e.g. a species-poor hedgerow to a species-rich hedgerow, then full details of the protection and enhancement advice should be entered under LE5 Enhancing site ecology.

   Yes ☐ No ☐

If yes, please provide a brief statement outlining the advice / recommendations given for protecting **all** existing features and areas of ecological value.....
……
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LE4 Mitigating ecological impact

3. Are you able to provide the following information for before and after construction:

   - habitat types
   - An estimate of the number of floral species present per habitat type (based on appropriate censusing techniques and confirmed planting regimes)?

   Yes ☐ No ☐

   a. If yes a brief description of the landscapes and habitats surrounding the development site
   ……
   ……
   ……
   ……

   b. The total site area (in m^2). *This will be the same before and after development.*

   ……

   c. Please fill in the table below with site details before development[1]:

Habitat Type*	Area of type (m_2)	No. of plant species per habitat type

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d. Please fill in the table below with site details after development[1]:

Habitat Type*	Area of type (m_2)	No. of plant species per habitat type

* Habitat types will include natural areas, e.g. various grasslands and woodlands; as well as areas of the built environment, e.g. buildings, hard landscaping. The area of each habitat type when added together must always equal the total area of the development site.

[1] *Note to assessor (and ecologist where requested to carry our calculations); the information contained in tables c. and d. above can be used to calculate both LE4 Mitigating ecological impact and LE5 Enhancing site ecology credits.*

4. Has the client / developer requested you to carry out the calculation for LE4 Mitigating ecological impact and /or LE5 Enhancing site ecology (where relevant)?

The calculations must be carried out in line with the methodology provided in the current version of the relevant BREEAM scheme's technical guidance manual.

Yes ☐ No ☐

If yes, please provide all stages of calculations and state what the total change in ecological value is:

a. Calculation of *ecological value* before development:

……

……

……

……

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b. Calculation of *ecological value* after development:

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……

c. Change in *ecological value* (c = b – a):

……

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……

……

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LE5 Enhancing site ecology

5. Has the client / developer required you to provide advice and make recommendations for enhancing site ecology?

   Note: these are to include, and go beyond, compliance requirements for all current EU and UK legislation relating to protected species and habitats.

   Yes ☐ No ☐

   If yes, please provide a brief statement outlining the advice / recommendations given on enhancing and protecting the ecological value of the site:

   ……

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LE6 Long term impact on biodiversity

6. Were you appointed prior to commencement of development work activities on site?

Yes ☐ No ☐ Don't know ☐

7. Has the client / developer given you the responsibility to confirm whether all current EU and UK legislation relating to protection and enhancement of ecology has been (or will be) complied with during the design and construction process?

Yes ☐ No ☐

If yes, please provide details on all current EU and UK legislation that relates to the site:

……

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8. Has the developer / client appointed you to produce an appropriate landscape/site ecology management plan covering at least the first 5 years after project completion?

Yes ☐ No ☐

EITHER:

a. If yes, and the management plan has already been produced does it include the following:
   - management of any protected features on site
   - management of any new, existing, or enhanced habitats
   - a reference to the current or future site level Biodiversity Action Plan?

Yes ☐ No ☐

OR

b. If yes, but the management plan is still to be produced (due to it being too early in the design/construction phase), have you provided the following information to the developer / client:
   - scope of management plan
   - key responsibilities, and with whom these responsibilities lie, e.g. owner, landlord, occupier?

Yes ☐ No ☐

If you have answered 'yes' to either question 8a or 8b please provide a brief explanation outlining the details

……

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9. Has the client / developer required you, as part of your responsibilities, to provide recommendations and advice to minimise detrimental impacts on site biodiversity?

Yes ☐ No ☐ N/A ☐

If yes, or not applicable, please briefly explain your reasoning:

……

……

……

……

……

10. Do your responsibilities to the client / developer include providing advice and recommendations for the protection of ecological features?

Yes ☐ No ☐ N/A ☐

If yes, or not applicable, please briefly explain your reasoning:

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11. Do your responsibilities to the client / developer include providing advice on the creation of a new ecologically valuable habitat, which is appropriate to the local area and is either nationally, regionally, or locally important, or supports nationally, regionally, or locally important biodiversity?

Yes ☐ No ☐ N/A ☐

If yes, or not applicable, please briefly explain your reasoning:

……

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12. Do your responsibilities to the client / developer include providing advice and recommendations on when site works are to be avoided so as to minimise the disturbance to wildlife?

Yes ☐ No ☐ N/A ☐

If yes, or not applicable, please briefly explain your reasoning

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Section E: Schedule of Evidence

Copies of the following documentation are required to support the above statements and act as evidence of compliance with the BREEAM ecology requirements:

- The *suitably qualified ecologists* site/project specific report
- Written confirmation from the verifier of the ecology report (where necessary)
- Any supplementary documentation e.g. maps, plans, drawings, letters / emails of correspondence, etc.

Please include these details along with the appropriate reference to each document in the table below:

Document	Reference

Section F: Statement of Verification

I confirm the information provided on this document is truthful and accurate at the time of completion.

Name of ecologist: ……

Signature of ecologist: ……

Date: ……

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NHS
Greater Glasgow and Clyde

Acute Services Division

Memorandum

To: Mr T A Divers
Ms H Byrne
Mr D Griffin
Mr P Gallagher

Copy to: Mr A Seabourne

From: Mr R Calderwood

Ext: 61207

Ref: RC/JM

Date: 24 July 2008

PARTNERSHIPS UK

As I have intimated to you, I have kept in touch with Partnerships UK and had a follow up meeting with them on 1 July concerning the next steps in the procurement of the new South Glasgow Acute Hospital project, discussing the challenges that lie ahead and the role, if any, PUK might play as an additional support to the Board.

Attached is a copy of a letter from James Stewart, dated 15 July, which sets out how he thinks PUK could best add value to this project and complement our existing advisers and support the Project Director, as well as ourselves, in taking this project through to a successful conclusion.

If time permits I propose that we find an opportunity to discuss this following on from our meeting next Tuesday, 29 July, to discuss the capital plan etc.

[redacted]
Robert Calderwood
CHIEF OPERATING OFFICER

Enc

Direct tel: [redacted]
Email: [redacted]

PartnershipsUK

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Robert Calderwood
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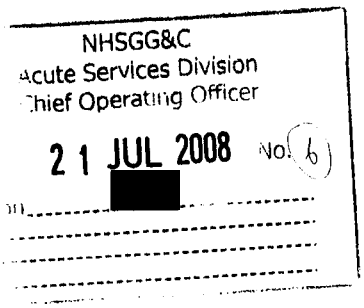

15 July 2008

Dear Robert

South Glasgow Acute Hospital

Thank you for taking the time to meet with Ben and me on Tuesday 1st July, and for setting out clearly for us the current status of the South Glasgow Acute Hospital Project (SGAH), as well as the challenges you and your colleagues face in taking it forward.

We have reflected on the discussion and would like to make the following proposal for support from Partnerships UK to assist you deliver this nationally important and high profile project.

As Annex A to this letter, we have included a snapshot of some of the challenges that the project faces; challenges which we feel we can help you address through our support proposal detailed below.

How Would PUK work with GGHB?

From our experience of engagement across a range of large and complex projects, we have found that we are most effective if we adopt a two tier engagement approach; so typically, we provide resource to support the Project Director, working with the project team and its advisers, and we also take a non-executive role on the Project Board to offer strategic input and advice to the SRO and other senior officials. It is this two tiered approach we would like to propose to support GGHB deliver the SGAH project.

The degree of input to support the Project Director and Project Team can be calibrated to suit the project, or the particular stage it is at. For the SGAH project, there appears to be an immediate need to support you to conclude a procurement strategy options review and thereafter we would like to offer broader commercial delivery support.

To provide this support we would:

- Draw on the wider PUK experience of large and complex public procurement, ensuring experience of a broad spectrum of delivery structures is considered within the structuring of the SGAH project,
- Assist GGHB select a preferred solution suitable for the bidding market,

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- Assist the PD direct the advisers on work-streams and help the PD in interpreting their advice,
- Attend key commercial meetings,
- Co-ordinate, or assist in the co-ordination of, cross discipline workshops,
- Support the client side at bidder negotiation meetings, and
- Support evaluation and interpretation of evaluation outcomes.

The degree of input at Board level will be largely driven by the frequency of Board meetings and any additional input required in addition to the cycle of meetings, but as a guide we would expect to:

- Bring to the Board a wide perspective of major project delivery at a strategic level,
- Enhance governance and focus through friendly external challenge,
- Support the SRO outwith formal Board meetings, and, if required,
- Support the SRO report to Board meetings, and
- Provide support for senior level bidder engagement.

PUK SGAH Proposal

In light of the above, we have formulated the following bespoke input packages assuming that that our support would run from August 2008 to January 2010 (18 months). We have a Framework Agreement with Scottish Ministers that enables us to work with Public Bodies without the need for further competition and so we would be able to mobilise quickly.

A more detailed breakdown of our proposal is attached as Annex B.

1. Non Executive Role / Member of the Project Board

This ongoing role would be filled by James Stewart CEO (Claire Phillips, Project Director Scotland would act as his alternate). We propose that an annual fixed cost of £25,000 per year would cover our participation, assuming 10 meetings per year (including meeting preparation, travel and attendance). Further, our proposal is that James would make himself available for the whole day, so if Board meetings were only half a day then he could provide input to other meetings, review documentation, or provide support for senior staff.

If work of a senior nature, additional to the 10 days of planned board meetings, is required then discounted rates would apply (please see Appendix B). James would lead this work and be supported in the first instance by Stephen Dance, a member of the PUK management board who currently is involved in supporting delivery of the Olympics and Crossrail.

2. Project Director and Project Team level Support

For these inputs, we would like to offer an initial fixed element of work prior to the OJEU of the project and we have also set out a longer term flexible basis of engagement working with the Project Director and the Project Team as requested in the manner described above.

2.1 Procurement Structuring Review – we see this area as the pivotal commercial element of the project. We suggest the following work streams would be undertaken by us:

- Review current anticipated delivery structure and discuss with Project Director, Project Team and advisers;
- Post review co-ordinate 4 – 6 structured workshops attended by Project Team / relevant advisers testing and refining existing delivery structure to result in a clear articulated and tested procurement strategy, contractual structure, payment structure and risk profile that will be suitable to take the project forward;

- As part of this process, impart our detailed understanding of structures from similar procurements;
- Where appropriate soft market test the structure developed;
- Attend relevant Project Team meetings;
- Co-ordinate and liaise with your advisers to produce a procurement structure and delivery report to be presented to the Project board for sign off.

We estimate that this work would be completed over a 2 – 3 month. Our fee for this would be capped at £35,000. We propose that Claire Phillips (Project Director Scotland) is the lead for this work for PUK and co-ordinates other relevant expert input from across the company. James Stewart would provide senior support.

2.2 Project Director and Project Team support

In the procurement phase, post the OJEU of the project, we would like to support you across a range of areas as described above. To retain flexibility for you we propose that we would charge GGHB on a discounted hourly basis.

Our initial fee rates for our support would be those set out in our framework with Scottish Ministers less a discount of 10%. If an agreed volume of hours per month was exceeded in any period, we would further discount the rate on the hours over an above the set level by a further 10%. These discounts would apply for all input other than the capped fee elements detailed above.

If there were any other identified work streams prior to OJEU where GGHB required our input, these discounts would apply.

This work would be co-ordinated by Claire Phillips, with senior support provided by James Stewart. To ensure that we align our resources to best support your needs we would welcome the opportunity to discuss with you where you feel the focus for support should be targeted. Further to this we would scope and agree our detailed resource plan with you.

Conclusion

In summary, we would like to agree the following with you:

1. Non Executive Project Board engagement and fixed fee
2.1 Procurement Review Report engagement and fixed fee
2.2 Wider Project Director and Project Team Support engagement and remuneration package

I hope this proposal meets your expectations. Please feel free to ring me should you wish to discuss any aspect of it.

Yours sincerely

[redacted]

James Stewart
CEO Partnerships UK

PartnershipsUK

ANNEX A

Successful Delivery of SGAH

1. Identifying the Key Challenges

We understand from our discussions with you on the 1st July and also from last year, successful delivery of this project can be defined as the delivery of a high quality acute hospital as part of a wider Greater Glasgow Health facility strategy, delivered to the scale and scope required, to time and within budget, without unacceptable disruption to patients, staff or the wider community involved in the ongoing provision of health services at the Glasgow Southern.

Given the sheer scale and location of this project there are many significant challenges in delivering it successfully. Some of these you have already tackled, and whilst the technical challenges are perhaps self-evident, many of the key commercial issues will be driven by the same, or similar, factors.

The key commercial challenges appear to us to be:

i. **The need to consider prioritisation**, or staging of hospital development, either for technical, financial or clinical reasons, possibly leading to sequential discrete "chunks" and separate contracts. It is these technical, financial and clinical constraints which will largely shape the overall procurement strategy and delivery structure adopted by GGHB;
ii. **The need to manage complex interfaces**, having scoped the optimal staged approach to delivery we would anticipate a myriad of related commercial, contractual and operational interfaces issues emerging, all of which will be manageable if anticipated and planned for;
iii. **The need to manage and control affordability**, optimising the use and timing of public capital and the related financial structuring over the construction phase ;
iv. **The need to generate market interest** from experienced contractors of a suitable calibre, through focused use of senior client resources for project promotion demonstrating a well thought through and efficient procurement process, and;
v. **The need to capitalise on market interest** through a well structured and tightly managed competition.

2. Addressing the Key Challenges

PUK would work with you, your team and your advisers to help address these key challenges. We bring wider UK infrastructure delivery understanding from the UK's largest publicly funded infrastructure projects where we are currently working with public sector client bodies wrestling with similar challenges:

- The Olympics (ODA);
- Crossrail (CTRL);
- MODEL (MOD);
- Metronet (DfT);
- Waverly Rail Project (TS)
- Forth Replacement Crossing (TS)

Although in different sectors to SGAH, there are similarities with these projects:

- They are of significant value and complexity, and, for any contractor or funder involved, represent a project that is on the radar at plc board level. To put it simply, the scale of these projects can impact share price and as a result the private sector response and engagement in the procurement will be subject to influences apart from the more normal technical delivery considerations;

- Projects of such a scale and complexity therefore require a dedicated (senior) market interface embedded in the governance arrangements;
- The high profile of these projects in the media, has a resultant impact on the wide range of stakeholder interests, public and private;
- The scale and complexity of these projects makes control of costs, achieving and maintaining a affordability significant challenge.

The challenges in delivering SGAH, as in the projects mentioned above, will be best met through ensuring the project is founded on sound and appropriate governance and delivery structures.

We discussed governance last year and again on the 1st July, and we believe the key components are:

- The need to establish clarity between client and delivery functions, to ensure sufficient challenge and assurance is embedded in the governance structure.

- The need to have effective decision making; with such a large and complex project, ensuring decisions are taken timeously and in a co-ordinated fashion is essential.

There are various delivery structures that could be used for the project and these sub-options, which sit below the public capital investment route, will be worthy of detailed option appraisal to determine the optimal VfM delivery strategy, taking into account the risk apportionment outcomes you wish to achieve.

PartnershipsUK

ANNEX B

Partnerships UK Proposal to Support GGHB Deliver South Glasgow Acute Hospital

Project Support

PUK proposes to provide support to the SGAH Project Board and to the SGAH Project Director as set out in the body of the letter, based on our Scottish Framework Rates (which are discounted by 10% from our London rates). I am happy to provide a copy of the Framework Agreement should you wish.

As time commitment required is likely to be unknown at the outset we are proposing a sliding scale for discounting of our rates, so the greater the involvement PUK has in the delivery of the project, the greater the discount on our rates.

Framework Rates 2008-9 (per day)
Senior support - £3143
Project Director - £2663
Assistant Director - £2168
Manager - £1538

(Rates increase on the 1 March, historically this has been an increase 2.5-3%)

Engagement (1)	**Lead Resource**	**Supplementary Resource**		**Fixed Fee (per annum)**
Support to Project Board (PUK senior support)	James Stewart	Claire Phillips (PD)	Based on 10 days for PB meetings per annum (20% discount)	£25,000
			No of days per quarter	**Discounted rates (£)**
Other Senior Strategic Level Support (if required)	James Stewart	Stephen Dance (SS)	1-5 (10% discount)	2829
			6-10 (10% discount)	2546
Engagement (2.1)	**Lead Resource**	**Supplementary Resource**		**Capped Fee**
Procurement Structuring review	Claire Phillips	James Papps (PD) Owain Ellis (PD)		£35,000
Engagement (2.2)	**Lead Resource**	**Supplementary Resource**	**No of days per quarter**	**Discounted rates (£)**
Support to SGAH Project Director	Claire Phillips	Specialist input as required (PD level)	1-15 (10% discount)	2397
			+ 15 (20% discount)	2157

Market Testing in Relation to the New Southern General

NHS Greater Glasgow & Clyde

2 September 2008

Ernst & Young LLP
50 George Square
Glasgow G2 1RR

Tel: 0141 626 5000
Fax: 0141 626 5001
www.ey.com/uk

Private and confidential

Mr A Seabourne
NHS Greater Glasgow & Clyde
Jubilee Court
Hillington

[Date]

Dear Sir

Market Sounding in Relation to New Southern General Hospital Project

In accordance with your instructions and our appointment as financial advisor to the Acute Service Review, we have prepared our report in relation to the market sounding and procurement options available for the above project.

Purpose of our report and restrictions on its use

This report was prepared on your instructions solely for the purpose of NHS Greater Glasgow & Clyde NHS Board (NHSGGC) and should not be relied upon for any other purpose. Because others may seek to use it for different purposes, this report should not be quoted, referred to or shown to any other parties unless so required by court order or a regulatory authority, without our prior consent in writing. In carrying out our work and preparing our report, we have worked solely on the instructions of NHSGGC and for NHSGGC's purposes.

Our report may not have considered issues relevant to any third parties. Any use such third parties may choose to make of our report is entirely at their own risk and we shall have no responsibility whatsoever in relation to any such use. This report should not be provided to any third parties without our prior approval and without them recognising in writing that we assume no responsibility or liability whatsoever to them in respect of the contents of our deliverables.

Scope of our work

Our work in connection with this assignment is of a different nature to that of an audit. Our report to you is based on inquiries of, and discussions with, management and representative of consultees. We have not sought to verify the accuracy of the data or the information and explanations provided by management or consultee representatives.

Our report highlights a number of areas where further development of the procurement process will require the input of technical and legal advisors. This input may alter the detail of the processes set out in this report.

If you would like to clarify any aspect of this review or discuss other related matters then please do not hesitate to contact us.

Yours faithfully
Michael McVeigh
Assistant Director

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1. Executive Summary

1.1 Developing a Proposed Procurement Strategy

The key objectives of the Board are to identify a procurement process which :

- allows for a significant degree of design development discussions to occur prior to the appointment of a single contractor.
- offers the possibility of market innovation in the design development process.
- provides for competition up to the point where the Guaranteed Maximum Price is largely established.
- meets the delivery timescales.

On the basis of these objectives a proposed procurement methodology was developed as a result of a procurement workshop which took place with a number of key stakeholders including Scottish Government, Technical Advisers, Legal and financial representation in May 2008.

A market sounding exercise was then carried out to test the proposed procurement method. This is described below.

1.2 Aim of the Market Sounding Exercise

The aim of the market sounding exercise was to establish the markets view on how the New Southern General project ("the project") should be procured, and what their bidding intentions may be. Where factors of the project or process were identified as reducing the attractiveness of the project, the market's view was sought of how these issues should be addressed .

This report sets out the findings of the market consultation process and outlines a revised procurement process reflecting market concerns.

1.3 Procurement Process Taken Forward to Market Sounding

The main characteristics of the proposed procurement process on which market views were sought are shown below.

1. The process was in essence a two stage design and build process.
2. A short list of three bidders would be selected from respondents, and invited to prepare outline designs and costings.
3. On the basis of those submissions, two bidders would be taken forward the next stage of the procurement. At this stage, more detailed designs would be prepared such that a guaranteed maximum price could be established with a high degree of certainty (80%).

4. The final contract award would be based upon the pricing and quality of design of the bidder.

The main benefits of this procurement path for the Board were that it allowed for a high degree of discussion and design development during the procurement and that pricing is subject to competitive tension.

Appendix C details the stages in this proposed procurement process.

1.4 Consultees

The market sounding exercise was aimed at larger construction companies who were considered as being capable of delivering the project on a stand alone basis i.e. that would not rely upon joint venture arrangements to make a bid. The companies selected for consultation were:

Company	Contact	Title
Skanska	David Tydeman	Executive Vice President Construction
Balfour Beatty	Mike Peasland	MD Balfour Beatty Construction
Laing O'Rourke	Anna Stewart	Group Commercial Director
John Laing plc	Adrian Ewer	Chief Executive
Carillion Government Services	Shaun Carter	Managing Director
Bovis	Bob Johnston	Chief Executive Construction
Sir Robert McAlpine	Boyd McFee	Regional Director Scotland
Billfinger Berger	Kenneth Reid	Director
Bouygues	Ian Gunter	Head of Business Development

Of these companies three, Carillion PLC, Laing O'Rourke and Balfour Beatty Limited indicated that they were sufficiently interested in the Project to take part in the consultation process.

The following table summarises the responses of those firms indicating non-participation.:

Reason for Non Participation	Companies Expressing this View
Project Too Large for them to consider a bid	► Bouyges ► Sir Robert McAlipne ► Bilfinger Berger
Project Does not Fit with Strategy	► John Laing plc ► Skanska ► Bovis

1.5 Findings of the Market Exercise

The market exercise produced a high degree of commonality in the messages coming back from the market. In summary these were:

1. Each of the companies indicated that they were very interested in the project and had been tracking its development for some time.
2. Each company was even at this early stage considering the bidding teams and resources that may be required to make a bid.
3. The use of capital funding was not a disincentive to these bidders and in fact may enhance their view of the project.
4. No company indicated support for the procurement process set out. The main concerns highlighted were:
    a. The value of bid costs that may be incurred while in competition were substantial. Two bidders indicated that the value of these sums at risk may indeed prevent participation.
    b. The degree of design development and duration of the process may limit the attractiveness of the project to the best design teams and therefore adversely impact on project quality.
5. In order to enhance the marketability of the process the companies each identified a range of options. These included:
    a. The underwriting of bid costs so that the unselected company at the end of stage 2 would be reimbursed.
    b. The rapid selection of a single preferred bidder who would then work through design development and single pricing.
6. Without enhancing the marketability of the project a significant risk was that a bidders may not either respond or enter into consortia arrangements. There actions would significantly reduce the competitive tension available to drive innovation and control pricing.

1.6 Proposed Procurement Process in Light of Market Response

The outcome of the procurement analysis identified that, the most appropriate procurement method to achieve the Boards objectives supports the Board's original two stage design and build process but with a rapid selection from 3 bidders to 1 using the competitive dialogue procedure

The proposed procurement process was revised to reflect this and is, illustrated in appendix D,

In developing the revised procurement process the risks and opportunities of applying different procurement paths were analysed. The key factors are:

a) Making sure there is sufficient market interest at the outset thereby achieving value for money through competition. The level of bidder input and therefore risk of significant abortive costs being incurred by the bidder is critical in attracting competition with a Target Price Contract and process which reduces three bidders to one at the stage of high level design requiring significantly lower input than producing a fully priced design.

b) Another key factor is the nature of the procurement selected. The pros and cons of both the restricted and competitive dialogue process were analysed. The competitive dialogue route was considered to provide the degree of dialogue necessary to achieve design innovation, final contract form and financial arrangements to meet the Boards affordability profile.

The Board as a public body is bound by the Procurement Contracts Regulations 2006. As described the only process which allows for material discursive development of bidders' proposals is Competitive Dialogue. The use of this procedure can be justified by complex nature of the technical solution, and the need to develop with bidders the final form of the contractual and financial relationships.

1.6.1 Competitive Dialogue will be used to move from three bidders to one contractor

Bidders will be assessed on criteria that will be worked up in detail by the Board and its financial, legal and technical advisers. It is likely however that the following broad areas will be assessed:

- The bidders design solution and innovation demonstrated
- The bidders proposed pricing. In particular margins, fees prelims, overheads
- Overall pricing in relation to the Target not to exceed price
- Their ability to work effectively with the Board Team
- Their acceptance of future contract development proposals made by the Board

1.6.2 The contract awarded may be based upon NEC3 contract though this should be discussed with bidders (NB the discussion with bidders aspect needs to be discussed and agreed with the Technical Advisers)

The winning bidder will be appointed on the basis of using a Target Price contract with an agreed activity schedule. Designs and pricing will be developed by the Board and the contractor working in partnership.

1.6.3 Risk Mitigation in Contract Delivery

It may be appropriate to put in place a series of "progress points" that allow the Board the opportunity to take stock of progress to date and agree to move through to the next stage of development. In other words it is envisaged that the Board will agree with bidders the progress points which will have to be satisfied as the final design develops and more certain cost information becomes available. This will allow the translation of the target price into a guaranteed maximum price to take place in such a way that, should the pricing become unaffordable, the Board retains the option to withdraw thereby ensuring that some competitive tension can be maintained. This would particularly be the case if bidders had costs at risk until the final progress point. This would in effect represent a degree of bidder's equity in the procurement process and maintain the incentive to engage constructively with the Board

Progress points may for example be appropriate at:

- Agreement of final design
- Agreement of Guaranteed Maximum Price
- Prior to application for planning permission
- Prior to completion of FBC.

1.6.4 Key Benefits of the Revised Procurement Process and Risks

Benefits

The following benefits arise from developing a procurement process that through competitive dialogue allows for the award of an amended NEC 3 based contract with a target price and activity schedule.

1. It allows for the Board to access market innovation in design.
2. It should limit the amount of detailed design work until after the contract is awarded. (Contract to develop design).
3. It sets an early cap on costs that should be reduced as the design process develops under contract.
4. It limits the exposure to abortive costs that may have to be underwritten in alternative processes.
5. It allows for a meaningful assessment of the partnership potential of the bidder.
6. It may allow for the early delivery of works post the contract award (site preparation etc).

7. The phased development of the contract process from award to FBC preparation is similar to the Scottish Framework and so familiar to bidders.

8. The duration of the dialogue process may allow for a shortened procurement period.

Risks

The risks of the revised procurement process which must be managed as described above are as follows:

First, that setting a Target not to be exceeded price sets an upper limit on costs but may not act as an incentive to the contractor to minimise pricing. It is important therefore to include some competitive price elements in the dialogue process.

Secondly the contract development process should contain decision points at which the procurement could be terminated. Costs should not be underwritten post contract award.

1.7 Conclusions

The market sounding exercise has highlighted the sensitivity of the market to the risk of abortive costs on a project of this scale. They would be a major barrier to effective competition as the abortive costs.

The revised procurement process outlined in this report should enable effective competition to be carried out while at the same time limiting the risk to significant abortive costs being incurred by bidders. This should enhance the probability of receiving competent bids and may in fact increase the number of bids received.

The revised procurement approach allows for the use of the Competitive Dialogue process, as set out in the Procurement Regulations. In this process it is proposed that a preferred bidder be selected from a pool of at most three bidders. If more than three bidders express an interest in the project then an initial qualification process should be prepared.

The use of NEC 3 is encouraged by OGC and other procurement bodies in the public sector. The process allows for significant discussion with bidders particularly in design terms while limiting the risk of significant unrecoverable costs being incurred by the private sector.

The use of target pricing contracts can reduce the degree of price certainty achievable in the procurement process. The requirement for bidders to consider a Target not to exceed price may enhance the ability of the Board to maintain pricing pressure.

The detailed specification of the areas for dialogue, and the development of the information appropriate to progress post contract award will require to be developed in conjunction with the Boards technical, financial and legal advisors.

The timetable for the process should be developed to allow for the issues to be addressed as far as possible in the competitive stage while recognising that the development of a fully costed design is likely to be a significant process. The introduction of open book pricing in the detailed design and costing stage may further lengthen the duration of that stage but is essential if pricing pressure is to be maintained.

1.8 Next Steps

The areas which are of particular importance to the Board should be detailed out and form the basis of the competitive dialogue process. Examples of these areas include amongst others

- Areas for further design development
- The value of the Target not to exceed price, and its basis of calculation
- Specifications of design life expectations
- Areas where revenue costs will be considered and which may impact upon design assessment
- The mechanisms for carrying out an open book assessment
- The thresholds to be met at each progress point
- The degree of payment and retention of payment at each progress point
- Ownership of designs and
- implications of the contractor not meeting progress point requirements
- Acceptable approached to design development through the contract period.

2. Background to the Market Testing Exercise

2.1 Current State of Development

The Outline Business Case (OBC) for the construction of the new children, adult acute and laboratory facilities at the Southern General was approved by the Scottish Government in April 2008.

The approval was based upon the use of capital funds to procure the building. This is departure from the recent approach for delivering significant public sector assets which has relied upon PPP/PFI as the preferred procurement solution.

2.2 Defining the Procurement Path

2.2.1 Procurement Options Workshop

In February 2008, the Board convened a workshop to consider the procurement routes that may be suitable for this project. The workshop was attended by senior project team members, representatives from four technical consultancy practices, legal and financial advisors. SGHD were also present as observers.

Options Considered

Each of the technical consultants presented their preferred option for undertaking the procurement and construction of the facilities. The options presented fell into the following categories

Prime Contracting

The Board would initially appoint a technical adviser and design team to develop the Board's requirements. It would then invite tenders for a prime contractor. The contractor would be appointed for stages (which would dovetail with the Scottish Government's approvals processes) and only once one stage was completed successfully would the contractor proceed to the next stage. During the pre-construction phases (initial approval, OBC and Full Business Case) ("FBC") the contractor would work up the design and price. Construction would start once a guaranteed maximum price was agreed. The contract would contain a mechanism for arriving at a final price and incentives for coming in below the guaranteed maximum price. The Board could use the competitive dialogue procedure for the appointment of the prime contractor to allow the Board to maintain competitive tension for longer. Currie & Brown suggested that hard facilities management services for a period of time could be included in this contract structure.

2 Stage Design and Build

The Board would appoint a technical adviser/designer to develop designs to a certain point. Stage 1 would involve the Board going out to tender and appointing a contractor on the basis of initial costs, overheads, profit margins etc. During stage 2, the contractor would develop the designs and tender the sub-contracts on an open book basis. A guaranteed maximum price could be arrived at during stage 2 if required.

Partnership Approach

This may be based on a management contracting model such as Option F of NEC3. This route is similar to the Prime contracting route, but rather than carry out initial design work itself, the Board would almost immediately go out to tender to appoint a partner who would be tasked with procuring the package contractors. The partner would be selected on the basis of ability, resources, experience, management fee etc. By involving the partner at this very early stage – before any further design development by the Board – the Board will avoid issues such as duplication of design effort, contractor buy-in to design, complications with novation etc. The bid costs of those bidding to be the Board's partner would also be lower, as their bids would not be based on any initial design work. The Board would lead the design up to a certain point and then hand-over management of the design process to the partner. A guaranteed maximum price could be arrived (if required) at once the design had been further developed.

Were Option F of NEC 3 used however the procurement competition would have to assess the value of the contractor's fees and works that it would complete itself.

Procurement Option for Discussion with the Market

One of the conclusions of the procurement workshop was that the views of the market should be sought on the method of procurement. In defining the procurement process for consultation the following elements were identified as desirable for the Board.

- Greater levels of competition in arriving at the overall price of the project
- A desirable level of design development to be carried out with bidders and the preferred bidder
- A high degree of price certainty prior to the contract being finally awarded
- Greater assurance on risk transfer as design and costs were developed in competition

The procurement process developed as a result of the workshop and which would form the basis of the market consultation was as follows.

- The Board would commission a design to be completed to a predetermined level of accuracy, detailed by the Board's technical advisors using exemplar designs.
- Bidders would be invited to tender for the overall delivery of the project. The procurement would be carried out in three stages:
  - A shortlist of three bidders would be selected from all interested parties.

- Those three bidders would prepare proposals to build the facility as designed. The Board technical advisors will detail the work stages in this process.
- Following a relatively short period of analysis two bidders would be invited to work up more fully their designs so that a Guaranteed maximum price may be established and assessed.
- A preferred bidder would be selected on the basis of their design solution, costs, overheads margins etc.

- The preferred bidder would adopt and then further develop the designs up to a stage where a guaranteed maximum price would be established and agreed between the parties.
- The bidder would agree to work on an open book basis throughout the costing and delivery phases.
- At the end of the procurement process, the successful bidder would be awarded the contract to build the new facilities. The contract form envisaged would be NEC 3 with some form of target price option selected.

Appendix C details the stages of the procurement that was discussed with bidders.

Procurement Regulation s and Procurement Path

The Board is obliged as a public body to follow the procedures set out in the Public Contract Regulations 2006. This identifies four possible procedures for undertaking a procurement exercise. These are:

- Open Procedures
- Restricted Procedures
- Competitive Dialogue
- Negotiated Procedure.

The impact of these procedures will be discussed in the later section, but for the purposes of the market testing exercise it has been assumed that competitive dialogue will be the procurement regulations followed.

It remains to be agreed what form of contract will be awarded at the end of the procurement process and this may be material is selecting the final procurement strategy.

3. Our Approach

3.1 Overview of the Approach

Aim of the Market Sounding Exercise

The aim of the market sounding exercise was to establish potential bidder's views of the scale, scope and method of procurement of the Project.

Stages Undertaken

The following stages were undertaken in order to achieve the aims of the market sounding exercise

Stage 1 – Identification of Potential Bidders

Stage 2 – Invitation to Participate in the exercise

Stage 3 – Consultation

Stage 4 – Follow on Comments from Bidders

Stage 5 – Reporting.

3.2 Stage 1 – Identification of Potential Bidders

Rather than carry out a blanket canvassing of construction companies it was decided to prepare a short list of potential bidders. The basis of this decision was:

1. Targeted consultation with potential bidders was a better use of the Board resources.

2. It allowed for a more controlled process of managing expectations in the market.

3.2.1 Basis of Short Listing

The size of the proposed facility is such as to prevent all but the larger construction companies to take a lead role in bidding the contract. In particular the bidder is likely to have to be able to fund several million pounds of bid costs while the procurement progresses.

It is possible that smaller companies, particularly those with a strong presence in the west of Scotland, will be interested in taking a role in the project as a sub contractor is unlikely that they would be able to fund the possible costs of procurement, or obtain the necessary working capital funding through the build period. Such companies were therefore excluded from the consultation list.

Consultees were asked as part of the process for their views on the likely availability of a sufficiently resourced subcontractor network that would be necessary to enable the project to proceed.

3.2.2 The Short List of Consultees

The following list of possible consultees was agreed:

Company	Contact	Title
Skanska	David Tydeman	Executive Vice President Construction
Balfour Beatty	Mike Peasland	MD Balfour Beatty Construction
Laing O'Rourke	Anna Stewart	Group Commercial Director
John Laing plc	Adrian Ewer	Chief Executive
Carillion Government Services	Shaun Carter	Managing Director
Bovis	Bob Johnston	Chief Executive Construction
Sir Robert McAlpine	Boyd McFee	Regional Director Scotland
Billfinger Berger	Kenneth Reid	Director
Bouygues	Ian Gunter	Head of Business Development

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3.3 Stage 2 - Invitation to Participate

All of the above were contacted personally either by phone and where asked for by follow up e-mail. The invitation made clear the reason for the contact, the aims of the market sounding exercise, the process that was proposed and the basis upon which the company had been selected.

3.4 Stage 3 – Consultation

3.4.1 Market Sounding Questionnaire

A questionnaire was developed in order to ensure that each potential bidder was asked similar questions, and that their responses could be recorded accurately during the consultation.

The questionnaire consisted of the following sections.

Questions relating to the Project in General

These questions are designed to assess the company's views towards the general characteristics of the project. In particular their views on the size, phased delivery of the project and the timescales outlined

Questions relating to the procurement path

These questions are designed to establish how the company viewed the procurement approach outlined by the Board. In particular the three to two to one approach, the level of designs and outputs sought during each stage, and the timescales allowed for each procurement stage.

Potential bidders were also asked at this stage to provide their views on the suitability of providing a guaranteed maximum price whilst in competition.

Questions Relating to Project Structure

These questions were designed to test the views of potential bidders in relation to the desire to include an element of lifecycle risk within the project structure.

The Board has been charged with ensuring that whole life costs are not excluded form the procurement decision and so bidders views on how performance in this area could be incentivised are of interest. This is particularly the case as a PPP structure is not being used in this procurement.

Other Questions

The final section of the questionnaire provided an opportunity for consultees to make any additional comments that they believed to be relevant or helpful at this stage of the process.

Programme for Consultation on the day

In order to ensure that the companies being consulted had a full appreciation of the project and the physical site of the new building, the following programme was set out.

Presentation by the Board Project team

Senior members of the project team gave a presentation to the potential bidder. This presentation set out in Appendix A provided background information on:

1. The Acute Service Review to date and as planned for the future.

2. The design as it currently stands together with an indication of the processes used in creating that design.

3. The procurement process set out in Section 2.

4. An outline of project timescales and financial characteristics.

5. Site visit and tour of inspection.

3.4.2 Answer Formats

In order to categorise the consultee responses, the following structure was used.

Prevent participation	Reduce the likelihood of bidding	Neutral to the decision	Increase the likelihood of bidding	Ensure that a bid was made

This allows for responses to be placed on a spectrum that ranged from being a strong disincentive to participation, through to the factor being a strong incentive to the bidder.

Consultees were also given the opportunity to expand upon their answers and suggest enhancements to areas they perceived as negative to the generation of market interest.

3.5 Follow Up Comments

Each of the consultees requested that they be able to consult more widely within their organisations and return with more considered comments relating to the procurement process. These comments have been incorporated into the market consultation findings set out in the next section.

4. Market Responses

4.1 Companies Choosing not to Participate in the Consultation

Each of the companies on selected for inclusion in the consultation exercise were contacted. A significant number of those contacted indicated that the project was not of interest to them and consequently they did not wish to take part in the consultation process.

The table below indicates the companies that choose not to participate and the reasons for their decision

Reason for Non Participation	Companies Expressing this View
Project Too Large for them to consider a bid	► Bouyges ► Sir Robert McAlipne ► Bilfinger Berger
Project Does not Fit with Strategy	► John Laing plc ► Skanska ► Bovis

4.2 Companies Engaged In the Consultation

The decision not to participate made by the companies above, resulted in three companies who expressed an interest in the project and in participating in the market consultation exercise. These were:

- Balfour Beatty Limited
- Laing O'Rourke
- Carillion plc.

While this is arguably a relatively limited pool of respondents, it accords with existing understanding of potential interest. Each of these companies responses are summarised in the remainder of this section.

4.2.1 Balfour Beatty Limited

A summary of their responses to each section are as follows:

General Questions Relating to the Project

In general Balfour Beatty were very positive about the Project. They indicated that they had been tracking its development for some time, and that their involvement in the construction of the New Victoria and New Stobhill hospitals was helpful in their understanding of the objectives of the Acute Service Review ("ASR").

The size of the project was not a barrier to their participation and indeed they were currently working in Birmingham on a similarly sized project.

The use of capital funds did not present any barriers to their business being engaged.

They did however wish to consider further the implications of the project being phased in delivery terms, and this will be discussed in their follow on responses.

Questions relating to Procurement Path

In relation to the procurement path set out, Balfour Beatty's response was considerably less positive. In particular the costs that may be incurred in following a 3:2:1 process where significant work would be required whilst not preferred bidder or the indeed selected contractor would reduce the likelihood of their participation

Balfour Beatty also expressed the view that the timescales set out in the procurement path of approximately 5 months for stage 1 was sufficient only to allow for basic costing and design information to be prepared. Any alternative design options identified during that phase would necessitate an extension to the phase but could probably be incorporated within the overall timescale of the procurement.

In addition to the cost element, Balfour Beatty indicated that they believed that the procurement path would act as a disincentive to bidder teams from being involved in the project. In clarification questions, they stated that team assembly was critical as the skills necessary to deliver a project of this scale are not common. Professional team members were unlikely to want to make a full commitment to a design process that may ultimately be unsuccessful and limit their career progression.

It was suggested by Balfour Beatty that if the procurement process were progressed as specified then full engagement from bidders may be more forthcoming were the bid costs of bidders be met in the event that they were not selected.

Balfour Beatty also raised the point that the market may respond to the perceived high risk of abortive costs by forming consortiums. This may significantly reduce competition. The market response to the M74 project where all bides formed a single bidding vehicle was identified by Balfour Beatty.

Questions relating to Project Structure

In general Balfour Beatty were supportive if the inclusion of some form of lifecycle responsibility within the project and felt they had sufficient in-house expertise to respond to any specification of this nature.

Further Feedback

In further feedback received from Balfour Beatty following the consultation meeting, they indicated that they are supportive of the project, and that while they had reservations in relation to the procurement process they were likely to participate.

4.2.2 Laing O'Rourke Construction Limited

A summary of their responses to each section are as follows

General Questions Relating to the Project

LO'R was very positive about the project and, like BB had, stated that they had been tracking its progress for some time.

The use of capital funding was not an issue that would influence their decision to participate. The phased delivery of the project was equally neutral to their participation. However they did highlight the need for the specification to remain largely unchanged during procurement and construction, and assurances may be sought before they would finally participate.

LO'R were more circumspect in relation to the size of the project than BB. They indicated for example that they had, and may, at some point in the future consider the project too large to pursue on a solo basis and therefore seek a joint venture partner with which to share costs and risks.

Questions relating to Procurement Path

LO'R stated that they did not believe that a 3:2:1 Procurement process would be attractive to them or the market. In particular they indicated that they believed the costs that may be incurred and which may be at risk could total £10m-£15m.

Following on from the consultation meeting LO'R further considered their position and stated that bid costs may in fact total £15m-£20m and that without significant change to the procurement process, or the underwriting of bid costs by Scottish Government, they would be unable to participate.

Questions relating to Project Structure

LO'R indicated that they would be happy to engage in a process where some form of lifecycle responsibility was to be included as a responsibility of the contractor. In particular the Management model where they may provide operational management alongside the existing workforce had been successful for them in the past.

Further Feedback

Laing O'Rourke's further consideration of the project highlighted their concerns of significant resources being committed at risk, to the extent that such a process may prevent their participation.

They did however suggest alternative models of procurement that align closely to some of the options set out in the following section.

In particular a procurement process that allowed for the relatively rapid selection of a contractor, using target pricing and which then allowed for more collaborative design within the context of target prices and ultimately a guaranteed maximum would be more attractive to them.

4.2.3 Carillion plc

A summary of their responses to each section are as follows

General Questions Relating to the Project

Carillion were positive about the project and like the previous consultees had been tracking its development. The stated that with their existing building provision on the Southern site and their recent purchase of Scottish businesses also meant that the project fitted with their corporate strategy.

They did however note that the scale of the building was at the upper end of their preferred spectrum, however they did have experience of delivering projects of a similar scale.

Questions relating to Procurement Path

Carillion indicated that they did not believe the procurement path was attractive and presented a significant risk to bidders in relation to costs. The made the point that in their view it would be better to hold a competition focused on the design ideas and delivery capacity of organisations. In this way, the Board would benefit from market innovation while limiting the exposure to bidders to irrecoverable costs.

They also indicated that the underwriting of bid costs may assuage market concerns, but that this was a less attractive option on the basis that companies and teams would be quickly de-motivated if they believed themselves to be in second place. The benefits of competition would in effect then be lost but significant costs could still be incurred.

Questions relating to Project Structure

The inclusion of lifecycle responsibility, particularly if it involved the management of the existing workforce for a short time, was very attractive, and had worked well for Carillion in the past.

Further Feedback

Carillion provided additional comments on their views of the project and the procurement process discussed with them. Their preferred procurement approach involves the selection of a preferred bidder at the end of Stage 1 with whom the Board can then further develop designs and costs on an open book basis.

5. Conclusions and Next Steps

5.1 Overall Conclusions

Overall the level of interest demonstrated by the market was disappointing, with 66% of the selected companies expressing insufficient interest in the project to participate in the consultation process.

The companies that did participate were on the whole positive about the project and where they had reservations were willing to consider alternative approaches to overcome their concerns.

The key findings of the exercise can be considered as follows

5.1.1 The Project is Not Too Large to Prevent Bids being Considered

Each of the three consultees has indicated their interest in the project.

It is possible that in a future competition, some degree of consortium building may take place and this may limit the number of participants. Equally however it is possible that consortiums may include companies not approached in this consultation exercise on the basis that they are unlikely to be able to lead a bid. This may counteract any contraction in the number of potential bidders.

In the current economic climate there is a significant risk that companies may not be able to access sufficient working capital to allow for them to participate. While this was not raised a specific issue in the market consultation exercise, we are aware of projects where funders have been unwilling to advice the sums or guarantees necessary for large projects such as the Southern General to proceed.

5.1.2 The Procurement Process Described May be a Significant Disincentive to Bidders

All bidders highlighted their concerns relating the procurement process and the in particular the value of monies at risk while competing to provide a guaranteed maximum price. The estimated value of the sums at risk varied from £7m-£20m.

The degree of risk at this level would in the case of LO'R prevent their participation in the process, and significantly reduce the quality of the competition.

The most common solution to this disincentive to participation was that bid costs be underwritten in some way. This could only be considered if it were to be apparent that competition would offer a reasonably certain chance of producing savings, or at least limiting costs overruns to an equivalent amount. This is however difficult to quantify.

It should be noted however that in addition to the disincentive to bidders relating to cost, the procurement process may act as a barrier to attracting the highest quality of professional to bid teams. This was further explained in the context of design teams in the current process may be required to invest a significant element of the career development time into the project which ultimately may be wasted if they were unsuccessful. Attracting the best people to the project is seen as key to its ultimate success.

Bid cost underwriting would not remove this disincentive that may have a material impact on the final quality and deliverability of the project.

The following section will consider how the procurement process may go some way to addressing these concerns of the market.

5.1.3 Inclusion of Lifecycle Elements is Acceptable to the Market

All of the consultees indicated that the inclusion of lifecycle responsibilities would be welcomed by them. In particular the shared management model was identified by two bidders as being successful for them in the past.

5.2 Implications of the Market Sounding Exercise for Procurement

5.2.1 The Board Procurement Aims

The procurement process as currently set out, aims to allow the Board to meet the following requirements that it has identified as being desirable or essential for the procurement process

- It allows for a significant degree of design development discussions to occur prior to the appointment of a single contractor.
- It offers the possibility of market innovation in the design development process.
- It provides for competition up to the point where the Guaranteed Maximum Price is largely established.
- It meets the delivery timescales.

5.2.2 Market Views

The market recognised the aims of the Board in the procurement process, in particular the desire to stimulate innovation in design. However the consultation process highlighted a number of issues that would to contradict the Board aims but which are essential to making the project attractive to the market. The main elements for development are:

- The market is opposed to significant resources being spent at risk, particularly in working up designs necessary to achieve Guaranteed price certainty.

► The market would prefer to enter into more detailed design development whilst in a preferred bidder or post contract award.

5.2.3 The Need to Balance Risks and Opportunities in the Procurement Process

The aim of any public procurement process is to ensure that a fair competition, as set out in the procurement legislation, produces a value for money solution.

The first factor in achieving value for money is competition, and as a result the first and most pressing risk to manage is that of ensuring appropriate market interest is obtained.

A second factor in defining the procurement strategy is that the form of contract awarded to the successful bidder is clearly understood at the outset. For example it became apparent in the discussion with the market that the level of input required in tendering a target price contract is significantly lower than that required to produce a fully priced design.

The third and final factor essential in defining the procurement process is the nature of the procurement selected ie open, restricted, competitive dialogue or negotiated.

These factors can be considered in the following matrix. This provides a helpful way of considering the relative pros and cons of applying particular procurement paths to alternative project form. Given the general prohibition of the use of the negotiated procedure in all but the most exceptional circumstances, and the similarity of the open process to the restricted procedures we have included only the restricted procedure and the competitive dialogue process

	Priced Contract with Activity Schedule	Priced Contract with Bills of Quantities	Target Price with Activity Schedule	Target Price with Bills of Quantities
Restricted Procedure	Pros ► Achieves high price certainty ► Enable a short listing of bidders Cons ► Will require major investment by bidders ► May be barrier to competitive engagement ► Very limited opportunity for design development through discussion ► Requires a high level of client specification	Pros ► Achieves high price certainty ► Enable a short listing of bidders ► May require less client specification Cons ► Will require major investment by bidders ► May be barrier to competitive engagement ► Very limited opportunity for design development through discussion	Pros ► Contract allows for design to be developed post award ► Specification of design at appointment may be less Cons ► Restricted procedure will limit the degree of discussion prior to appointment ► Design and final contract form are too complex to be prescriptive about at present	Pros ► Contract allows for design to be developed post award ► Specification of design at appointment may be less Cons ► Restricted procedure will limit the degree of discussion prior to appointment ► Design and final contract form are too complex to be prescriptive about at present ► Requires an exceptionally high degree of development by the client
Competitive Dialogue	Pros ► Achieves high price certainty	Pros ► Achieves high price certainty	Pros ► Contract form allows for	Pros ► Contract form allows for

Priced Contract with Activity Schedule	Priced Contract with Bills of Quantities	Target Price with Activity Schedule	Target Price with Bills of Quantities
► Allows for dialogue to be carried out in a meaningful way Cons ► Will require major investment by bidders ► May be barrier to competitive engagement ► Limited scope for development post appointment of preferred bidder ► Requires a high level of client specification	► Allows for dialogue to be carried out in a meaningful way Cons ► Will require major investment by bidders ► May be barrier to competitive engagement ► Limited scope for development post appointment of preferred bidder ► Requires a high level of client specification	continued development post contract award ► Allows for dialogue to be carried out in a meaningful way ► May restrict the degree of costs incurred by bidders and enhance attractiveness Cons ► Less capable of providing price certainty as looks only at targets	continued development post contract award ► Allows for dialogue to be carried out in a meaningful way ► May restrict the degree of costs incurred by bidders and enhance attractiveness Cons ► Less capable of providing price certainty as looks only at targets ► Bill of quantities will have to be specified by the Board

5.2.4 Pros and Cons of Procurement Procedures

Appendix B sets out the individual steps involved in each of the restricted and CD procedures. The pros and cons of these procedures as they may relate to this project are set out below.

Restricted Procedure

The restricted procedure is in effect assumed to be the default procedure to be applied in public sector procurement. Guidance suggests that it should be applied to all but the most complex projects, and where it is not applied then the Competitive Dialogue process should be considered.

Pros of Restricted Procedures	Cons of Restricted Procedure
► Allows for the issue of precise client requirements. ► The process is perceived by the market as less labour intensive. ► The timescales of the process can be relatively short but must be proportionate to the complexity and risk of the project. ► It requires less client resources to engage in the process.	► Opportunities for detailed development discussions with bidders is very limited. ► It does not fit well with the notion of detailed development with a preferred bidder prior to contract award. ► The output specification requirements can be prescriptive and must be detailed if price variation is to be limited as a result of change.

The exceptionally limited scope for development dialogue to take place through the procurement process should the restricted procedure be applied is a significant shortcoming in the case of this process. Market innovation and co development of solutions is a key objective of the Board.

Competitive Dialogue

It is intended that Competitive Dialogue only be applied in particularly complex projects where one of the following conditions can be satisfied:

1. Where the client cannot possibly anticipate the technical solutions that may be proposed by the market or

2. Where the financial or legal form of the final arrangement cannot be anticipated?

It can be argued that the degree of dialogue felt necessary by the Board to achieve the design innovation, the need for development of the final contract form, and the financial arrangements necessary to meet the Board's affordability profile enable the conditions above to be met, and therefore allow the use of competitive dialogue.

Pros of Competitive of Dialogue	Cons of Competitive Dialogue
► It is designed to address procurements where the specifications will evolve through discussion ► Discussion and development of solutions with bidders independently is at the core of the process and will take place during competition ► Greater user engagement is possible and so practicable and attractive solutions can result	► It is perceived by the market as time consuming and labour intensive but this is dependent on the scope of the dialogue procedures ► There is very limited opportunity to engage in discussion between Preferred Bidder and Contract award ► It requires strict separation in client teams and significant client resources to be allocated to the process ► The process can take longer than traditional procurement

Given the pros and cons and the circumstances relating to the procurement, the Board may be justified in the selection of the competitive dialogue procedure on the grounds that the normal conditions are met, and that the restricted procedure would not allow the award of the contract envisaged.

5.3 Revised Procurement Process that Balances Objectives and Market Concerns

The procurement process discussed with potential bidders was largely rejected by them as a basis for procuring the Project. The use of the process as specified would therefore present a major risk to the final delivery of the Project. The following section sets out a process we believe addresses the concerns of the market, is consistent with current procurement regulations, and allows the award of a recognised and acceptable contract form.

The procurement is in effect a competitive dialogue process that results in the award of contract to develop and deliver a particular design of solution.

The process has taken into consideration the recently issued review of best practice in procurement carried out by Audit Scotland.

We have discussed this approach with the Board's legal advisors. A final opinion on the legal form of the procurement should be sought by the Board from the legal advisors.

5.3.1 Final Contract Form

The first stage in establishing the revised procurement approach is to consider the final contract form. This then can form the basis of the assessment procedures necessary to ensure that the best candidate has been appointed to deliver the obligations of the contract.

The final contract form should be based upon the NEC 3 option C ie:

- A target Price Contract
- It will be based upon payments linked to an activity schedule.

The Board however will agree with bidders that following contract award, a number of decision points, or progress points, will have to be satisfied as the final design develops and more certain costing information becomes available. This will allow the translation of the target price into a guaranteed maximum price to take place in such a way that should the pricing become unaffordable, the Board retains the option to withdraw.

The use of a progress point approach will allow the Board to retain the option to withdraw from the procurement process, thereby ensuring that some competitive tension can be maintained. This would particularly be the case if bidders had costs at risk until the final progress point. This would in effect represent a degree of bidder's equity in the procurement process and maintain the incentive to engage constructively with the Board.

The Board's technical advisors, when appointed, will have a significant role to play in developing the activity schedules and pricing steps that will underpin the contract.

Establishing the Target Price and Developing a Guaranteed Maximum Price

Under the standard form of NEC 3 the target price is used to establish the risk sharing mechanisms, in particular expenditure above the target threshold must be paid for by the client.

In the circumstances of the Board therefore it should be established as part of the project development procedures, that the target price is in effect a price not to be exceeded, and that bidders will be assessed on their ability to bid and maintain prices below this level. This allows for some degree of competition to be applied to pricing at the first stage of procurement.

In particular after contract award, if the Target Not to exceed price is breeched, the Board would be able to terminate the procurement with no financial penalty. A guaranteed maximum price should be established as the design stages are progressed with the contractor.

5.3.2 Procurement Process

The Competitive Dialogue process allows the Board the best opportunity to enter into meaningful discussion with bidders. It can be justified on the basis that the NEC 3 process envisaged at contract award will involve significant discussions on the final technical build and financial arrangements that will ultimately be put in place.

In order to be appointed as the contractor, the Board should focus upon the bidders:

1. Design innovations and their ability to enhance the project and programme.
2. The bidders approach to designing to below the target price.
3. Proposed fees, prelims, overheads and margins.
4. Their ability to form a productive relationship with the Board team creating a true partnership.

The evolving stages of the awarded contract makes the degree of precision at this stage relatively small, this is particularly the case when compared to the work necessary to complete a fully priced design. This should address the market concerns relating to putting costs at risk to a large degree.

The further structured development of solutions under the auspice of the amended NEC 3 contract should allow for sufficient detailed development with the contractor to take place, limiting the call upon the Boards medical resources and allowing for incentives for the contractor to continue to meet board requirements of costs and programme.

5.4 Key Benefits of the Defined Procurement Process

The following benefits arise from developing a procurement process that through competitive dialogue allows for the award of an amended NEC 3 based contract with a target price and activity schedule.

1. It allows for the Board to access market innovation in design.
2. It should limit the amount of detailed design work until after the contract is awarded. (Contract to develop design).
3. It sets an early cap on costs that should be reduced as the design process develops under contract.
4. It limits the exposure to abortive costs that may have to be underwritten in alternative processes.
5. It allows for a meaningful assessment of the partnership potential of the bidder.
6. It may allow for the early delivery of works post the contract award (site preparation etc).
7. The phased development of the contract process from award to FBC preparation is similar to the Scottish Framework and so familiar to bidders.
8. The duration of the dialog process may allow for a shortened procurement period.

Risks to be Managed

Setting a Target not to be exceeded price sets an upper limit on costs but may not act as an incentive to the contractor to minimise pricing. It is important therefore to include some competitive price elements in the dialogue process.

The contract development process should contain decision points at which the procurement could be terminated. Costs should not be underwritten post contract award.

5.5 Next Steps

The procurement process set out above requires that the following next steps be carried out.

5.5.1 Development of Competitive Dialogue Process

The areas which are of particular importance to the Board should be detailed out and form the basis of the competitive dialogue process. Examples of these areas include amongst others

- Areas for further design development
- The value of the Target not to exceed price, and its basis of calculation
- Specifications of design life expectations
- Areas where revenue costs will be considered and which may impact upon design assessment
- Acceptable approached to design development through the contract period.

5.5.2 Contract Period Development

The introduction of progress points following contract design is a key element of the procurement process described. It should allow for pricing and design pressure from the board to be maintained. As the design develops it will be important to ensure that the bidders target price, and especially the target not to exceed price are not breached.

Key parts of the contract development process to be scoped include

- The mechanisms for carrying out an open book assessment
- The thresholds to be met at each progress point

- The degree of payment and retention of payment at each progress point
- Ownership of designs and
- implications of the contractor not meeting progress point requirements

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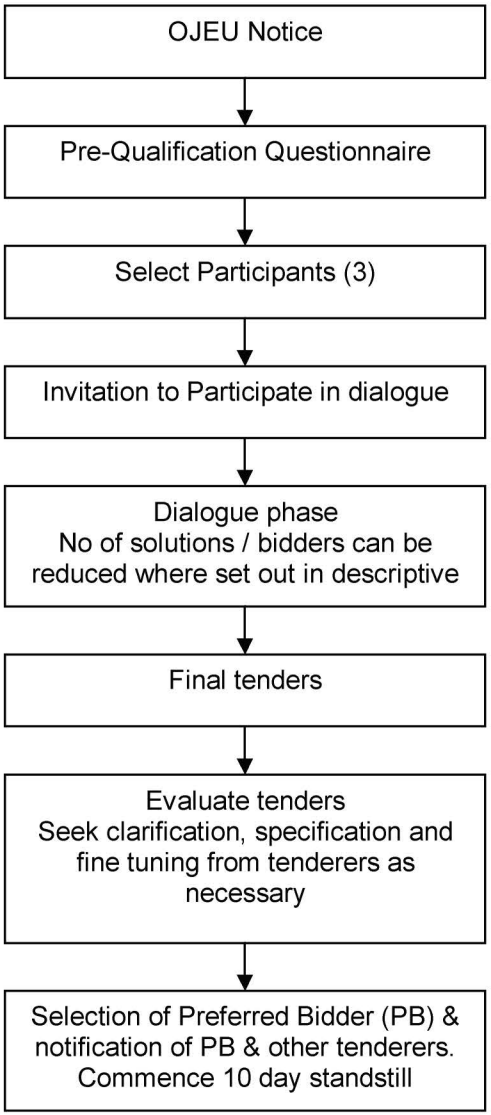
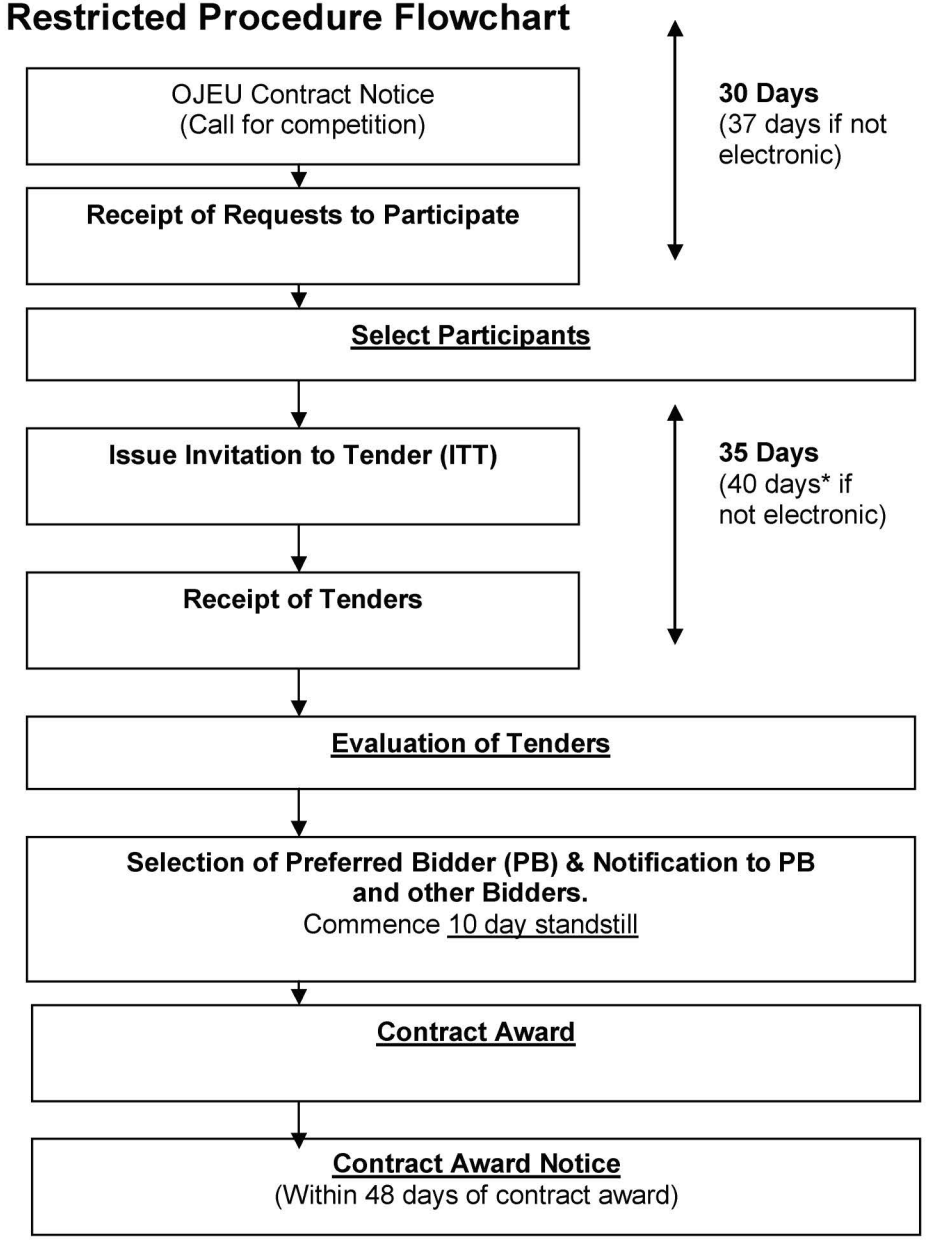
Appendix A Presentation to Consultees prepared by NHS Greater Glasgow & Clyde NHS Board

Appendix B Procurement Processes

Competitive dialogue flowchart

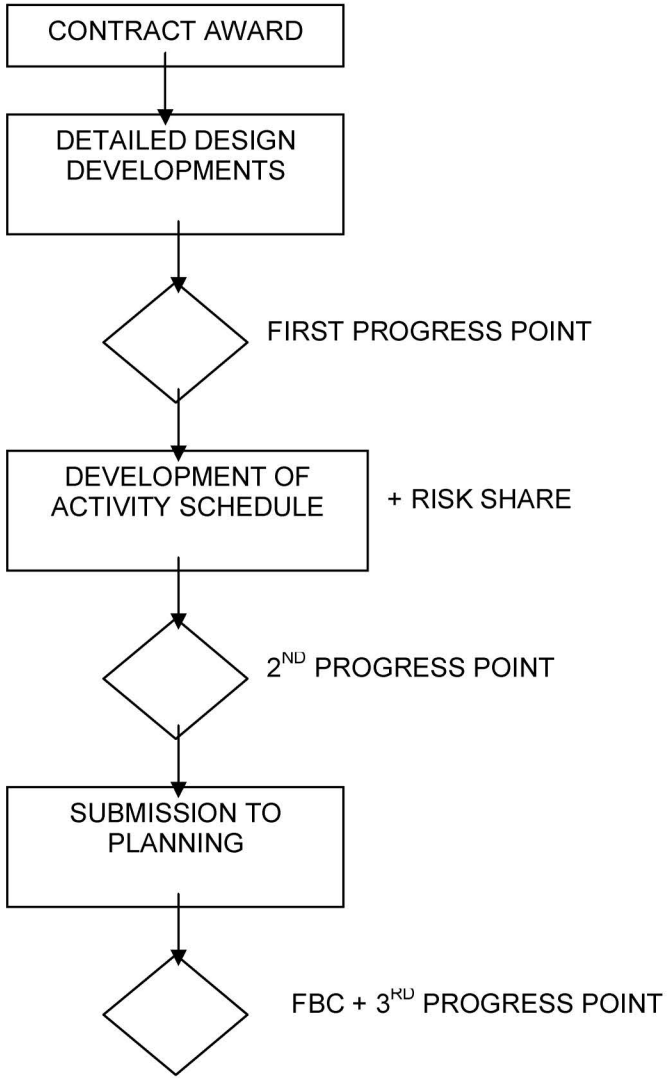


Restricted Procedure Flowchart



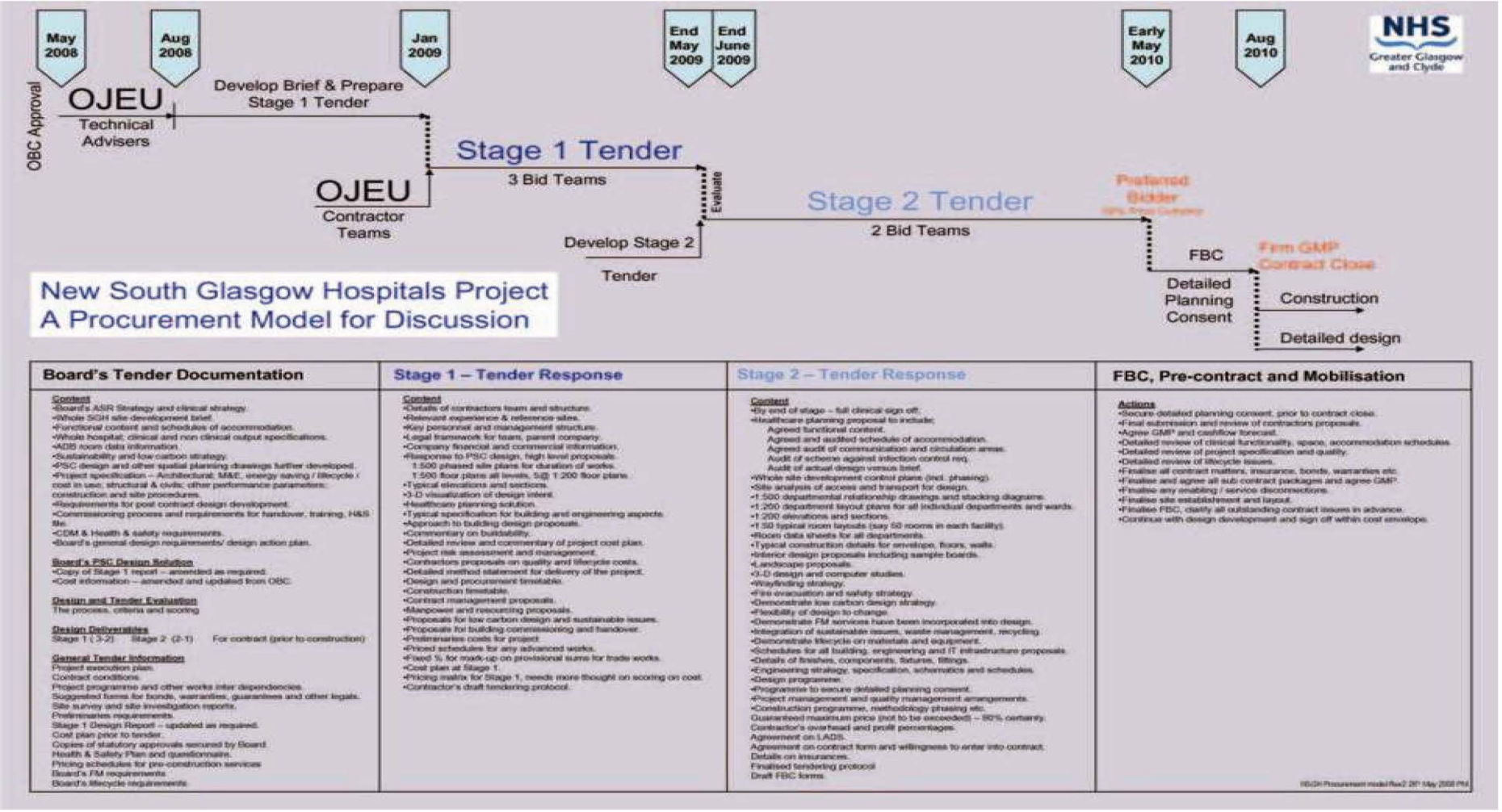
*May be reduced to 36 days if a Prior Information Notice (PIN) has been issued.
All stated timescales are minimum periods and the time allowed must be reasonable and proportionate to the procurement in question.

Post Contract Award process



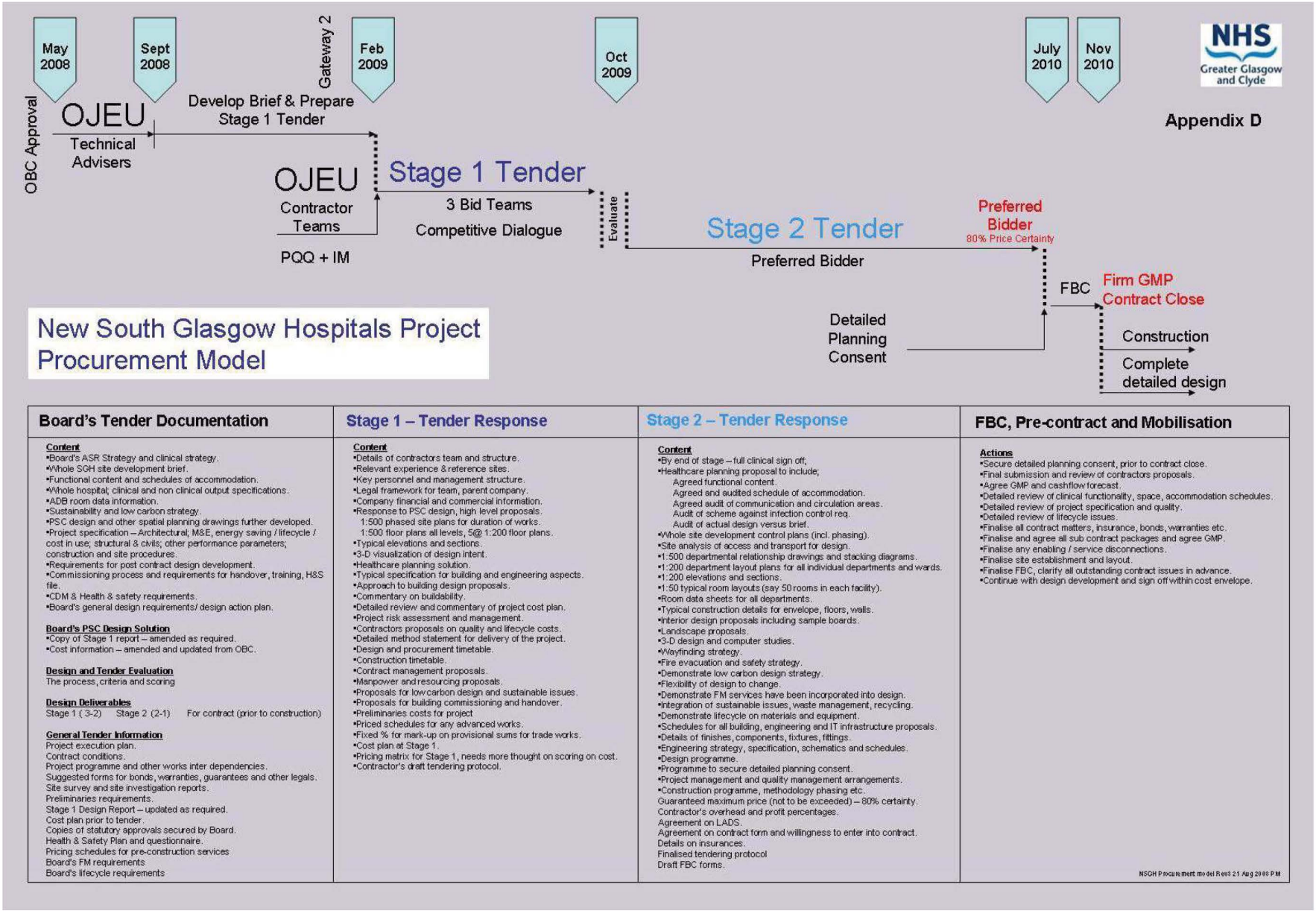
NHS Greater Glasgow & Clyde

Appendix C Procurement Process Discussed with Consultees



NHS Greater Glasgow & Clyde

Appendix D Revised Procurement Process



Board's Tender Documentation	Stage 1 – Tender Response	Stage 2 – Tender Response	FBC, Pre-contract and Mobilisation
Content •Board's ASR Strategy and clinical strategy. •Whole SGH site development brief. •Functional content and schedules of accommodation. •Whole hospital; clinical and non clinical output specifications. •ADB room data information. •Sustainability and low carbon strategy. •PSC design and other spatial planning drawings further developed. •Project specification – Architectural; M&E, energy saving / lifecycle / cost in use; structural & civils; other performance parameters; construction and site procedures. •Requirements for post contract design development. •Commissioning process and requirements for handover, training, H&S file. •CDM & Health & safety requirements. •Board's general design requirements/ design action plan. **Board's PSC Design Solution** •Copy of Stage 1 report – amended as required. •Cost information – amended and updated from OBC. **Design and Tender Evaluation** The process, criteria and scoring **Design Deliverables** Stage 1 (3-2) Stage 2 (2-1) For contract (prior to construction) **General Tender Information** Project execution plan. Contract conditions. Project programme and other works inter dependencies. Suggested forms for bonds, warranties, guarantees and other legals. Site survey and site investigation reports. Preliminaries requirements. Stage 1 Design Report – updated as required. Cost plan prior to tender. Copies of statutory approvals secured by Board. Health & Safety Plan and questionnaire. Pricing schedules for pre-construction services Board's FM requirements Board's lifecycle requirements	**Content** •Details of contractors team and structure. •Relevant experience & reference sites. •Key personnel and management structure. •Legal framework for team, parent company. •Company financial and commercial information. •Response to PSC design, high level proposals. 1:500 phased site plans for duration of works. 1:500 floor plans all levels, 5@ 1:200 floor plans. •Typical elevations and sections. •3-D visualization of design intent. •Healthcare planning solution. •Typical specification for building and engineering aspects. •Approach to building design proposals. •Commentary on buildability. •Detailed review and commentary of project cost plan. •Project risk assessment and management. •Contractors proposals on quality and lifecycle costs. •Detailed method statement for delivery of the project. •Design and procurement timetable. •Construction timetable. •Contract management proposals. •Manpower and resourcing proposals. •Proposals for low carbon design and sustainable issues. •Proposals for building commissioning and handover. •Preliminaries costs for project •Priced schedules for any advanced works. •Fixed % for mark-up on provisional sums for trade works. •Cost plan at Stage 1. •Pricing matrix for Stage 1, needs more thought on scoring on cost. •Contractor's draft tendering protocol.	**Content** •By end of stage – full clinical sign off; •Healthcare planning proposal to include; Agreed functional content. Agreed and audited schedule of accommodation. Agreed audit of communication and circulation areas. Audit of scheme against infection control req. Audit of actual design versus brief. •Whole site development control plans (incl. phasing). •Site analysis of access and transport for design. •1:500 departmental relationship drawings and stacking diagrams. •1:200 department layout plans for all individual departments and wards. •1:200 elevations and sections. •1:50 typical room layouts (say 50 rooms in each facility). •Room data sheets for all departments. •Typical construction details for envelope, floors, walls. •Interior design proposals including sample boards. •Landscape proposals. •3-D design and computer studies. •Wayfinding strategy. •Fire evacuation and safety strategy. •Demonstrate low carbon design strategy. •Flexibility of design to change. •Demonstrate FM services have been incorporated into design. •Integration of sustainable issues, waste management, recycling. •Demonstrate lifecycle on materials and equipment. •Schedules for all building, engineering and IT infrastructure proposals. •Details of finishes, components, fixtures, fittings. •Engineering strategy, specification, schematics and schedules. •Design programme. •Programme to secure detailed planning consent. •Project management and quality management arrangements. •Construction programme, methodology phasing etc. Guaranteed maximum price (not to be exceeded) – 80% certainty. Contractor's overhead and profit percentages. Agreement on LADS. Agreement on contract form and willingness to enter into contract. Details on insurances. Finalised tendering protocol Draft FBC forms.	**Actions** •Secure detailed planning consent, prior to contract close. •Final submission and review of contractors proposals. •Agree GMP and cashflow forecast. •Detailed review of clinical functionality, space, accommodation schedules. •Detailed review of project specification and quality. •Detailed review of lifecycle issues. •Finalise all contract matters, insurance, bonds, warranties etc. •Finalise and agree all sub contract packages and agree GMP. •Finalise any enabling / service disconnections. •Finalise site establishment and layout. •Finalise FBC, clarify all outstanding contract issues in advance. •Continue with design development and sign off within cost envelope. NSGH Procurement model Rev3 21 Aug 2008 PM

Customer Advice Line 0800 085 2005
www.carbontrust.co.uk/energy

ACTION PLAN REPORT

Date of Meeting: 24/9/08

CNC / ENQ / P- No; P-0126563 Order No; SRV / PO PO012970

Consultant; Susan Logan Ecoteric Ltd 28 Summer Hill Halesowen B63 3BU

Client Details

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Project Office
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Hillington
Glasgow G52 4LB

Tel: [redacted]
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Email: [redacted]

Client Representatives (with position) who attended;
Peter Moir : NHS Greater Glasgow & Clyde Major Projects / PPP Projects Manager
David Hall : Currie and Brown Project Management
Allan McGill: Wallace Whittle Project Director Mechanical and Electrical Engineers
Alan Seabourne: NHS Greater Glasgow & Clyde, Project Director for the New South Glasgow Hospital
Richard Forbes: HLM Architects, Environmental Engineer
Robert Menzies: BMJ, Shadow Architect, Children's Hospital

Summary of Discussions / Action Plan;

1. Structure of decision making process confirmed as the New South Glasgow Hospital Executive Board. This comprises, amongst others, Alan Seabourne along with the directors of Finance, Planning and the CEO. After discussion, it appears that an overarching policy statement with respect to targets for design and operational energy needs to be formulated for endorsement by this group.
2. This needs to be accompanied by a reporting and feedback mechanism such that the Executive Board receive regular updates on progress through the design, procurement and early operational phases and are able to take corrective action if there is a risk that targets will not be met. Alan Seabourne agreed to be responsible for implementing this process.

3. An investment strategy needs to be set and endorsed at board level regarding funding of measures which reduce carbon emissions. Ideally, this is based on whole life carbon emissions or whole life cost, building in future cost risk. However a simple payback approach where measures which return a 5 year or less payback are automatically funded, and protected from rounds of cost cutting, should as a bare minimum be set as a policy and ER mandate.
4. It was noted that this scheme will not be PFI funded, but will be publicly funded and operated by the NHS. There is still a desire to set some form of performance mechanism to incentivise/penalise energy performance of the design. It was generally agreed that this was vital.
5. The current phase of work comprises redesign of the 1:500 floor plans, to accommodate 100% single rooms in the adult acute hospital. The PSC design will then be formulated into Employer's Requirements (ERs) for the first stage of tendering. Outline planning application is in progress, but there is still scope for facade design development.
6. It was agreed that the ER's need to encapsulate the energy targets, the PSC design needs to be compatible with the energy targets i.e. intrinsically low energy and embedded in such a way that whole life value is achieved. The PowerPoint presentation gives more detail on paths to low energy design and how low carbon design can be embedded in such as way that it is not vulnerable to rounds of cost cutting.
7. The importance of setting environmental conditions was discussed. This is one of the key ways in which low carbon design can be implemented. It was suggested that work is undertaken to formulate a master set of generic ADB sheets which are used to set internal temperatures and humidities, and acceptable ranges. In particular, the relationship of external summertime to internal temperatures and an acceptable temperature range relative to exceptionally high external ambient temperatures needs to be considered. If this is not clear within a design/build contract, there will be an overprovision of mechanically cooled spaces.
8. The energy target for the project needs to be set and accompanied by explanations and methodology to make it clear:
    a. What the target is based on
    b. How it is to be calculated
    c. How it will be monitored and reported through the design and procurement
    d. What the implications for defaulting on reporting are.
    e. How it will ultimately be measured in operational phase
    f. How corrections for changes to assumed modes of operation will be calculated (e.g. changes to operating hours, degree days or density of occupation)
    g. Provisions for remedial action and penalties should the scheme fail to meet the operational targets. (refer to DoH payment mechanism for further information on possible methodology – attached)
9. The energy targets should be both design based and operational. There needs to be a piece of work done to decide on methodology for calculation, for the parameters and to relate the actual measurements at the meter to the design energy calculation.
10. The actual targets operationally must be based on the NHS targets which are, for all NHS trusts:
    a. reduce levels of primary energy consumption by 15% or 0.15 million tones carbon emissions from a base year of March 2000 to March 2010;
    b. achieve 35-55 Gj/100 cu.m energy efficiency performance in all new capital developments, major redevelopments or refurbishments and existing facilities.
11. The design energy target will depend on whether NEAT or BREEAM excellent is to be adopted as an overall sustainability measure. If BREEAM, then the minimum score for the "excellent" rating is a CO_2 index of 40, which will represent a significant betterment of the minimum standards required to meet building regulations. It is likely to require air tightness testing and the requirement for this should be clear in the ER's. If NEAT is set as the standard then the requirement will be to meet the NHS targets and will not be as stringent. If NEAT is used, it is essential that mandatory requirements for calculation methodology are included in the ER's as there is no guidance in NEAT. A decision is needed soon on the sustainability measure.
12. There needs to be a whole site energy strategy which considers options for the energy centre and includes optimisation of the transport medium (steam/MTHW etc.) and also considers options for cooling such as absorption (possibly as part of the CHP strategy) and /or ground or water source cooling. This must be client led as the time and cost of feasibility cannot be

reasonably born by tendering contractors. This is critical to achieving any form of energy or carbon target.

13. The decision to seal the building completely needs to be reviewed for the following reasons:
    a. The inclusion of 100% single rooms means that issues of cross infection are much reduced and that natural ventilation is feasible.
    b. There is a perceived improvement in the odour from the adjacent sewage works and the possibility that improvements will eradicate the problem.
    c. Once the building is sealed, there is no possibility of being able to revert to natural ventilation for many years and without major changes. However, if the decision is made to provide openable windows, even if backed up by mechanical ventilation, there is at least the possibility of reverting to natural ventilation or using it to offset high summertime temperatures.
    d. Openable windows allow for change of use and have a psychological advantage, giving occupants a sense of control over their environment. This promotes healing and staff satisfaction.

Next Steps

1. Alan Seaborne to champion carbon issues
2. Decide on sustainability measure.
3. Commission a feasibility study for the energy centre as described in 12 above – this is urgent.
4. Negotiate the next phase of work with the Carbon Trust. This could potentially include input to items 1,4,6,7,8,9 above.
5. Use HTM07-02 appendix 4, table 09 as a basis for forward planning.

Type of Report given to Client/AE; presentation slides, input to technical adviser selection (previously issued)
(Slides, Handbook, Manual etc)

Documentation /Slides Attached? Slides and payment mechanism as all other documentation was issued some time ago.

Signed; . Name (please print); Susan Logan

On behalf of; Ecoteric Ltd date 14/10/08

Perceived Client Commitment to Energy Savings; Medium

Barriers to implementation

- Complexity of managing a project of this magnitude and balancing energy along with all other performance requirements
-

Further Assistance Required;
Look at appropriate products – possibly carbon management and design advice to develop project related technical advice to fit out clients.

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Meeting Notes/Next Steps: NSGH

Currie & Brown

Meeting: Joint Master plan Group **Location**: HLM Offices, Glasgow
Date: 13th October 2008 **Time**: 10:00

Attendees:

Alan Seabourne	AS	NHS Greater Glasgow & Clyde
Peter Moir	PM	NHS Greater Glasgow & Clyde
David Hall	DH	Currie & Brown
Harry Smith	HS	HLM Architects
Andy Anderson	AA	HLM Architects
Bob Menzies	RM	BMJ Architects
Steve Harris	SH	URS Corporation
John Bushfield	JB	Wallace Whittle
Alan Devenny	AD	JMP Consultants

Objective: To advance the development of the Master plan

Notes:

Master plan needs to be agreed with Planners in advance of Detailed Planning Application for any further elements.

Laboratories

NHS GG&C **(AS)** to confirm changes in accommodation requirements.
- Inclusion of Genetics and Pathology including schedules of areas
- Exclusion of city mortuary (subject to decision on capital contribution)

Biochemistry & Haematology are likely to be located on ground floor. Genetics & Pathology on upper floors.

NHS GG&C **(AS)** to confirm patient access requirement to lab areas.

Procurement route and programme for the laboratory (and adjacent facilities) to be agreed. Requirement is to be on site by October 2009.

Access Road

URS are to review area available between existing A&E and site boundary to ascertain whether two-way access road can be accommodated.

Confirmation required as to whether TPO exists for the trees in this location **(PM)**

Consideration is to be given to “through road” as alternative to two-way access/egress.

Site wide distribution arteries from loading bay area are to be considered.

Facilities Management

NHS GG&C **(AS)** to determine FM requirements with regards to delivery/uplift, waste management areas, vehicular movements on, off and within site, workshops, offices etc.

Access to/from main hospital(s) from FM/delivery area to be reviewed.

North West Corner

Consideration to be given to relocation of energy centre out with the labs/deliveries corner of the site **(HLM/WW)**

Two options to be considered for sizing of Energy Centre **(WW):**

- To service new build only, including proposed Clinical Research/Education/Academic Centre
- To service option 1 solution (no retained estate)

Programme and procurement options to be reviewed for this area, noting the requirement for early commencement. Consideration to be given to including delivery area and FM Facilities concurrent with laboratories

2 storey option for energy centre to be considered **(WW)**.

Sick Children's' Staff Accommodation

NHS GG&C **(AS)** to confirm proposed accommodation availability within retained estate for 309 staff. Requirements for transition accommodation to be confirmed.

Energy Strategies

BREEAM Excellent rating is an absolute requirement

Consider centralised versus de-centralised **(WW)**

Biomass option to be fully reviewed including negative issue of fuel transportation

Any biomass solution would be dual fuel

NHS GG&C **(PM)** to arrange appointment of Carbon Trust as advisor and consultant as Assessor.

Car Parking

2000 new spaces provided by others, making 3500 total on site.

NHS GG&C **(PM)** to provide contact with car park/neo-natal design team

University Building

NHS GG&C **(AS)** to confirm inclusion of additional facility to east of Adult Acute Hospital to accommodate:

- Clinical Research
- Education & Clinical Skills
- Academic Centre (University)

Ronald McDonald House

NHS GG&C **(AS)** to provide outline plan to TA Team to consider impact on bed numbers in Children's Hospital.

Adult Acute Psychiatry

NHS GG&C **(AS)** to provide details of site and size of proposed new 20 bedded acute ward and an 8 bedded Perinatal Ward

Child Psychiatric Intensive Care Unit

TA Team to consider two options for 6 bedded unit **(RM)**

- Incorporate into New Children's Hospital with fully protected break-out area
- Separate facility on site of existing nursery

Clinical Output Specifications

Provision of these for both Adult Acute and Children's Hospitals is critical to the development of the building footprint and in turn the Master Plan.

Children's:

- To be provided week commencing 20th October 2008
- Bed Planning meeting @ Beardmore Hotel on 30th October 2008
- 8 key challenges in specialist areas

Adult Acute:

- Only 7 drafts received to date
- On going meetings to develop remainder by early January 2009
- Ward Stacking meeting to be arranged

Update report on progress to be issued to AS/PM

Programme Issues

Consideration to be given to early completion of surgical beds and support functions to permit early demolition of exiting accommodation.

Information Request

PM to provide the following:

- Drawings for car park(s)
- Maternity Extension
- Site Wide OS Plan
- Avanti AutoCAD scheme drawings
- Avanti Planning assumptions

Customer Advice Line 0800 085 2005
www.carbontrust.co.uk/energy

ACTION PLAN REPORT

Date of Meetings: 8/12/08, 13/1/09, 9/2/09

Reference: PO013996
CT Product ID: P-0127500

Consultant; Susan Logan Ecoteric Ltd 28 Summer Hill Halesowen B63 3BU

Client Details

Peter Moir assisted by Hugh McDerment

Major Projects / PPP Projects Manager
NHS Greater Glasgow & Clyde
Project Office
1 Jubilee Court
Hillington
Glasgow G52 4LB

Tel: [redacted]
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Client Representatives (with position) who attended;
Peter Moir : NHS Greater Glasgow & Clyde Major Projects / PPP Projects Manager
David Hall : Currie and Brown Project Management
Richard Forbes: HLM Architects, Environmental Engineer
Robert Menzies: BMJ, Shadow Architect, Children's Hospital

Hugh McDerment	HM	NHS Greater Glasgow & Clyde
Renate Powell	RP	The Carbon Trust
Susan Logan	SL	The Carbon Trust (Ecoteric)
Stuart McKechnie	SM	Wallace Whittle

Summary of Discussions / Action Plan

1. This work follows on from a piece of work undertaken in September 08 to set a framework at Board level for managing a low carbon outcome for the major development at the Southern General in Glasgow. The first action plan is appended for background.
2. The work consisted of three meetings – the first to introduce a low carbon tracker, the second to monitor progress against it and the third to audit the plans being produced by the architects.
3. The agreed output from the meetings is contained in the attached tracker and on the meeting notes produced by Currie and Brown, the project managers.

4. This indicates that some useful work is occurring namely that a target has been set, that ground investigation has been extended to consider ground water for cooling/heating and that audits of 1:500 layouts has started to discuss low carbon design aspects.
5. At this stage, concern is however expressed that some agreed outputs are not occurring – in particular

- renewable and LZC energy studies,
- consideration of the energy use of the site as a whole,
- space studies that would allow passive ventilation , heat recovery and integration of building level renewable
- modelling and calculation to establish that the exemplar design is capable of achieving the targets set
- modelling to single room ward level for a range of issues including daylighting, overheat etc.

6. There appears to be significant resistance from the Building Services Engineers, Wallace Whittle to the suggested measures leading to low carbon design. As it is not possible for the Carbon Trust to be represented at client and design team meetings, this is having an adverse effect on the progress to the desired outcome.
7. Although it is possible to require some of these issues to be evaluated by the bidder, the economics of the bid process, risk to bidders and the affordability constraints mean that if these issues have not been tested, proved to be realistic and viable and firmly embedded in the exemplar design, they will not occur in the bid design. There is a very significant body of evidence to justify this – many poorly performing design build projects in energy terms.
8. The priorities for this site and development are assessed to be as highlighted on the attached tracker.
9.
10. An investment strategy needs to be set and endorsed at board level regarding funding of measures which reduce carbon emissions. Ideally, this is based on whole life carbon emissions or whole life cost, building in future cost risk. However a simple payback approach where measures which return a 5 year or less payback are automatically funded, and protected from rounds of cost cutting, should as a bare minimum be set as a policy and ER mandate.
11. It was noted that this scheme will not be PFI funded, but will be publicly funded and operated by the NHS. There is still a desire to set some form of performance mechanism to incentivise/penalise energy performance of the design. It was generally agreed that this was vital.
12. The current phase of work comprises redesign of the 1:500 floor plans, to accommodate 100% single rooms in the adult acute hospital. The PSC design will then be formulated into Employer's Requirements (ERs) for the first stage of tendering. Outline planning application is in progress, but there is still scope for facade design development.
13. It was agreed that the ER's need to encapsulate the energy targets, the PSC design needs to be compatible with the energy targets i.e. intrinsically low energy and embedded in such a way that whole life value is achieved. The PowerPoint presentation gives more detail on paths to low energy design and how low carbon design can be embedded in such as way that it is not vulnerable to rounds of cost cutting.
14. The importance of setting environmental conditions was discussed. This is one of the key ways in which low carbon design can be implemented. It was suggested that work is undertaken to formulate a master set of generic ADB sheets which are used to set internal temperatures and humidities, and acceptable ranges. In particular, the relationship of external summertime to internal temperatures and an acceptable temperature range relative to exceptionally high external ambient temperatures needs to be considered. If this is not clear within a design/build contract, there will be an overprovision of mechanically cooled spaces.
15. The energy target for the project needs to be set and accompanied by explanations and methodology to make it clear:
    a. What the target is based on
    b. How it is to be calculated
    c. How it will be monitored and reported through the design and procurement
    d. What the implications for defaulting on reporting are.
    e. How it will ultimately be measured in operational phase
    f. How corrections for changes to assumed modes of operation will be calculated (e.g. changes to operating hours, degree days or density of occupation)

   g. Provisions for remedial action and penalties should the scheme fail to meet the operational targets. (refer to DoH payment mechanism for further information on possible methodology – attached)
16. The energy targets should be both design based and operational. There needs to be a piece of work done to decide on methodology for calculation, for the parameters and to relate the actual measurements at the meter to the design energy calculation.
17. The actual targets operationally must be based on the NHS targets which are, for all NHS trusts:
    a. reduce levels of primary energy consumption by 15% or 0.15 million tones carbon emissions from a base year of March 2000 to March 2010;
    b. achieve 35-55 Gj/100 cu.m energy efficiency performance in all new capital developments, major redevelopments or refurbishments and existing facilities.
18. The design energy target will depend on whether NEAT or BREEAM excellent is to be adopted as an overall sustainability measure. If BREEAM, then the minimum score for the "excellent" rating is a CO_2 index of 40, which will represent a significant betterment of the minimum standards required to meet building regulations. It is likely to require air tightness testing and the requirement for this should be clear in the ER's. If NEAT is set as the standard then the requirement will be to meet the NHS targets and will not be as stringent. If NEAT is used, it is essential that mandatory requirements for calculation methodology are included in the ER's as there is no guidance in NEAT. A decision is needed soon on the sustainability measure.
19. There needs to be a whole site energy strategy which considers options for the energy centre and includes optimisation of the transport medium (steam/MTHW etc.) and also considers options for cooling such as absorption (possibly as part of the CHP strategy) and /or ground or water source cooling. This must be client led as the time and cost of feasibility cannot be reasonably born by tendering contractors. This is critical to achieving any form of energy or carbon target.
20. The decision to seal the building completely needs to be reviewed for the following reasons:
    a. The inclusion of 100% single rooms means that issues of cross infection are much reduced and that natural ventilation is feasible.
    b. There is a perceived improvement in the odour from the adjacent sewage works and the possibility that improvements will eradicate the problem.
    c. Once the building is sealed, there is no possibility of being able to revert to natural ventilation for many years and without major changes. However, if the decision is made to provide openable windows, even if backed up by mechanical ventilation, there is at least the possibility of reverting to natural ventilation or using it to offset high summertime temperatures.
    d. Openable windows allow for change of use and have a psychological advantage, giving occupants a sense of control over their environment. This promotes healing and staff satisfaction.

Next Steps

1. Alan Seaborne to champion carbon issues
2. Decide on sustainability measure.
3. Commission a feasibility study for the energy centre as described in 12 above – this is urgent.
4. Negotiate the next phase of work with the Carbon Trust. This could potentially include input to items 1,4,6,7,8,9 above.
5. Use HTM07-02 appendix 4, table 09 as a basis for forward planning.

Type of Report given to Client/AE; presentation slides, input to technical adviser selection (previously issued)
(Slides, Handbook, Manual etc)

Documentation /Slides Attached? Slides and payment mechanism as all other documentation was issued some time ago.

[redacted]

Signed; . Name (please print); Susan Logan

On behalf of; Ecoteric Ltd date 14/10/08

Perceived Client Commitment to Energy Savings; Medium

Barriers to implementation

- Complexity of managing a project of this magnitude and balancing energy along with all other performance requirements
- Procurement method with design devolved to bidder
- Support from Services Engineer

Further Assistance Required;
As identified above, support on development of employers requirements

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EMBARGOED UNTIL DATE OF MEETING.

Greater Glasgow & Clyde NHS Board

Performance Review Group

Tuesday, 20th January 2009 **PRG Paper No.**

Report of the Director of Acute Services Strategy, Implementation and Planning

Update on New South Glasgow Hospitals and Laboratory Development Project

RECOMMENDATIONS

The Performance Review Group is asked to note progress on the New South Glasgow Hospitals and Laboratory Project.

1.0 GATEWAY REVIEW

All arrangements are now in place to carry out the Gateway 2 Review of Project Delivery. The focus of Gateway 2 is on the procurement strategy and is normally conducted just before projects go to the market. The initial planning meeting will be held on 14th January 2009 and the formal review carried out on 27th to 29th January 2009.

After the Gateway Review, the intention is to post an OJEU notice in February to invite bids for the construction of the New Hospitals.

The last Gateway Review made a number of recommendations which have been addressed as follows:

a) ***It was to be made clearer to the Scottish Government that delay would result in additional cost:*** in so doing, project colleagues have worked very closely with the Capital Officers of the Scottish Government Health Department which was helpful in obtaining OBC approval.

b) ***The need to firm up a procurement method:*** working with the Technical Advisers and others, the project team have developed a procurement method suitable for a development of this complexity and scale. The NHS Board approved the procurement method in October 2008.

c) ***Provide better understanding to staff of the complexities of the project:*** the project team continue to work with all stakeholders including the staff side and will continue to ensure there is adequate understanding of all aspects of the project.

d) ***Develop one Consolidated Risk Register***: the project team now operate a single risk register for managing the project. This is submitted to the New South Glasgow Hospitals Executive Board on a regular basis.

e) ***Governance arrangements to change for next stage***: new governance arrangements have been put in place. These were approved by PRG in May 2008.

f) ***Provide clarity on the wider benefits of the Project:*** the project team are building the benefits into the evaluation process to assess the tender bids.

EMBARGOED UNTIL DATE OF MEETING.

g) ***Include appropriate commercial experience on the Project Board***: this has been achieved by commissioning Partnerships UK (PUK) to work with the Project Team. The Partnerships UK Chief Executive is a member of the New South Glasgow Hospitals Executive Board.

2.0 OVERALL PROGRAMME

The overall programme for the project is divided into 5 stages which are:

Stage 1A – Employer's Requirements (Pre-procurement)
Stage 1B – Stage 1 bid (Procurement)
Stage 2 – Stage 2 bid (Procurement)
Stage 3 – Construction
Stage 4 – Commission
Stage 5 – Post Project Evaluation

The Project Team and Advisers are currently working to complete Phase 1A of the project i.e. Employers Requirement and the Exemplar Design (Tender Packages) to be ready to go to the Market in early April 2009.

Those two documents will contain all the necessary information requirements to enable bidders to complete a stage one bid response to construct the hospitals.

The Stage 1A programme is currently on schedule to complete the tasks required within the timescale. Key areas of work include:

- Clinical Outcome Specifications (COS) to enable the development of the exemplar design. The Project Team are currently working with Clinical Staff and the Medical Planners from the Technical Advisory Team, to develop the COSs for inclusion in the Employer's Requirements documentation. This is the information that is issued to interested construction companies who then base their tenders on the information provided. The information also includes site planning assumptions, building requirements, architectural design brief, etc. The information contained within the COSs will inform the construction teams of services to be provided from the builds, the schedules of accommodation, the projected activity, any special requirements needed by individual specialties and the required adjacencies. It is anticipated that the Employer's Requirement document will be complete by mid-March 2009 for issue to interested construction firms in April 2009.

  There are 36 COSs for the New Adult Hospital and 49 COSs for the New Children's Hospital and are a further 7 COSs which will cover both facilities.

  There has been at least one meeting held with all 92 Specialties, and in most cases a series of meetings to discuss the patient pathways, adjacencies and special requirements. The schedules of accommodation completed in stage 1 of the project have also been reviewed, and redesign opportunities have been explored, although the redesign of services will continue until both hospitals open, and beyond.

- Developing the site Masterplan to ensure all aspects of the development are located in the most advantageous way to enhance service delivery. The Masterplan also includes other projects not included in the main contract eg. the Multi-Story Car Parks, Ronald MacDonald House and the University Development.

The completion of the Masterplan is also a condition of the Outline Planning Approval and hence will require to be signed off by Glasgow City Council.

- Utilities: Currently the project team and technical advisers are developing the detail of the power, water, gas and drainage requirements to support all new developments planned for the SGH site.

- Equipment: detail is being developed on all equipment requirements to be included in the tender documentation

- Sustainability and Low Carbon Requirements: The Board is being supported by the Carbon Trust to develop the specification for ensuring the new developments are in line with government requirements

- Related mechanical, electrical, building and IT specifications being worked on as part of the Employers Requirement

- The Contract Form for the construction contract which will be NEC3 form of contract. This has been approved by the Procurement & Finance Group.

- The Competitive Dialogue procedure will be used for the procurement process. This has been approved by the Procurement & Finance Group.

- Documentation for Pre-Qualification Questionnaire (PQQ) and Memorandum of Information (MOI) are currently being completed.

3.0 OUTLINE PLANNING APPROVAL – SECTION 75 AGREEMENT

The Section 75 Agreement is required by the Council to ensure that the impact of the development takes account of all access and egress issues to ensure that transport mechanisms are appropriate and adequate. The Section 75 agreement also contains a Heads of Terms agreement for the lease of land to facilitate a new mass transport system (Fastlink) if given approval to proceed. These two documents, in their final draft, have submitted to the Council and a final meeting to secure agreement is scheduled for early January 2009.

4.0 LABORATORY STRATEGY

The new South Glasgow Laboratory Facility to be built on the Southern General site will contain Biochemistry, Haematology, Mortuary, Medical Genetics and Pathology. The estimated cost of the new laboratory facility is £58.3m and is contained within the overall project budget of £842m. This facility will be constructed as part of the new hospitals contract although a different design and procurement approach is being taken which has been signed off by the New South Glasgow Hospitals Executive Board and Acute Services Review Programme Board.

The new approach will involve a detailed design being completed by September 2009, which will enable an early construction start of the new laboratory if the overall tender for the new hospitals and the laboratory are contained within the allocated budget.

RECOMMENDATION

The Performance Review Group is asked to note progress on the New South Glasgow Hospitals and Laboratory Project.

Zisman Bowyer & Partners LLP
Consulting Engineers

NEW SOUTH GLASGOW HOSPITALS
POTENTIAL VALUE ENGINEERING ITEMS

	Item	Description	Reference	Impact
1	Hospital Estates Heating	Energy centre boiler plant is sized to cater for retained estate and future developments.	ERs	The linking of this boiler capacity to the rest of the hospital site will require extensive heating mains and heat exchange stations to be provided at all load points. Omit boiler capacity serving Retained Estate and Future Developments including gas supply and oil storage capacity
2	Reserve Capacity	A requirement for 25% reserve capacity is in excess of industry standard of 10%	ERs	There is a likelihood that over-sizing the plant will reduce efficiency and increase energy consumption. Selected areas subject to probable change could still be included
3	Oil storage	Current allowance for oil storage results in 1.5M litres of oil. This includes 30% for retained estate systems and boiler capacity as noted in (1) above		Oil has a limited 'shelf' life and will need to be either used or recycled which will impact on revenue cost and carbon footprint
4	Pressurisation Units	Pressurisation units are duplicated on primary heating and chilled water systems.	ERs	No impact. Plants are divided into A & B and pumps and vessels provided as N+1 for resilience
5	Treatment area ventilation	Define better 'Treatment areas' as this can affect air change rates	-	Current areas interpreted as treatment spaces, e.g Renal Dialysis, are provided with 10 air changes per hour in line with SHTM 03-01
6	Ward Air Change Rate	Reduce primary fresh air rate from 4 to 2½ air changes (revert to bid proposal)	RFI Log	Neither 4 or 2½ complies with SHTM

	Item	Description	Reference	Impact
7	Temperature	Increase maximum space temperature from 26°C to 28°C to match SHTM requirements		Reduction in plant capacity and energy usage
8	Fire strategy	Review requirement to provided smoke operated dampers in all sub-compartment walls	SHTM 05-01	Consider if requirement can be relaxed for certain areas. Revert back to HTM 81 requirements
9	Water Storage	Reduce level of water storage from 24 hour to 12 hour	SHTM?	Duplicate external mains from separate networks serve tanks. Reduced risk of legionella. Reduced size of basement tank room
10	Visible renewables	Omit requirement for visible on-site renewables	ERs	Technology available inefficient (small wind turbines) and unlikely to deliver carbon savings. Transfer cost into substantial off-site wind power
11	Chillers	Omit N+1 requirement for chillers	ERs	Unusual to provide N+1 on hospitals. In the event of chiller failure shed cooling load via BMS on non-essential plant. Only likely to be an issue for limited periods of summer
12	Electrical Distribution	Reduce extent of dual distribution	ERs	ERs require dual distribution throughout regardless of department. There is scope to reduce this in less critical areas
13	UPS	Reduce battery autonomy to Theatres	ERs/SHTM 06-01	2 hour autonomy battery to Theatres can be reduced to 1 hour in line with SHTM 06-01
14	Switchgear	Change form of switchgear for sub boards	ERs	Currently Form 4 Type 6 for all switchgear. Reduce to Form 4 Type 2 for sub switchboards

Brookfield

Project Execution Plan

Submission Reference:

10.1 Project Execution Plan

Submission Response:

Introduction

The procurement of the New South Glasgow Hospitals (NSGH) Project (the “Project”) comprises a new Adult Hospital, new Children’s Hospital, new Laboratory facilities, associated support areas and other site facilities and infrastructure on the existing hospital site at the Southern General in Govan, Glasgow.

The Adult and Children’s Hospital buildings are situated at the south end of the existing campus adjacent to and east of Maternity Buildings. They will include state of the art facilities including 1109 and 240 beds respectively and the biggest critical care complex in Scotland.

The Adult Hospital consists of a 12 storey ward tower over an entrance area and an adjacent 3 storey podium containing clinical and administrative areas including accident and emergency and main operating theatres. The 4/5 storey Children’s Hospital is located to the West of the podium with its own dedicated entrance area.

The Laboratories Building is a 4/5 storey structure located to the North West of the hospital and contains technologically advanced science facilities, glazed feature office areas, ground floor and basement level FM services and site mortuary.

The existing hospital will be fully operational during construction of the new buildings, with the new Laboratories being scheduled for completion and handover in January 2012. This allows partial decanting of the existing buildings, releasing areas to finalise construction of the road and drainage infrastructure to the new Adult and Children’s Hospitals.

The Project Execution Plan has been drawn up after several months of reviewing ITPD documents and drawings, familiarisation of the existing campus and surrounding area, and observing the daily activities in these locations.

Any construction project creates challenges to its management team and this site presents the specific challenge of working within the restricted area of the existing operational hospital. Added to this are the complex logistical requirements of existing service diversions and road works during the initial phase of the Stage 3 works.

Meetings and discussions with the Board’s representatives through the competitive dialogue process have given us a thorough knowledge and understanding of the Southern General Hospital facility identifying issues that could cause concern if not properly managed. This is reflected in our management control documents (referred to throughout this Plan) and addresses the requirement for minimal impact on service delivery which, whilst not mentioned in the bid deliverables, is identified as part of the qualitative scoring schedule in the ITPD Volume 3 Appendix B.

This Project execution plan describes our approach to the Management of the works in the following sections:

10.1.1 Management Structure and Approach
10.1.1.1 Project Team Structure
10.1.1.2 Brookfield Project Board
10.1.1.3 Preconstruction Team Structure
10.1.1.4 Laboratories Team Structure
10.1.1.5 Adult and Children’s Team Structure
10.1.1.6 Demolition and External Works Structure
10.1.1.7 Specialist Contractors
10.1.1.8 Design Team
10.1.2 Temporary accommodation & Welfare
10.1.3 Logistics
10.1.3.1 Logistics Phasing Plans
10.1.3.2 Logistics Management
10.1.3.3 Nuisance Control
10.1.4 Traffic Management Plan
10.1.5 Car parking
10.1.6 Staff Movements
10.1.7 Site Security
10.1.8 Construction Phase Health & Safety Plan
10.1.9 Site Interfaces
10.1.10 Waste Management
10.1.11 Design Management
10.1.12 Community Engagement and Benefits
10.1.13 Initiation of NEC Working Practices and cascade of this through the Supply Chain
10.1.14 Handover Process

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Brookfield

Management Structure and Approach

Submission Reference:

10.1.1. Management Structure and Approach

Submission Response:

Introduction

Brookfield has given considerable thought to the composition of the Project Team and how best to structure the Project to get the best from, and for, all parties. Our team has grown significantly through the Dialogue process and is now fully geared for making an effective start in November.

Of critical importance is the fact that the key Brookfield, Specialist Contractor and Design Team staff who have worked so effectively with the Board's team through the dialogue period are all fully committed to, and available for, the delivery of the design and construction phases of this exciting scheme.

Our team has been selected not only for their expertise in the delivery of state of the art healthcare facilities but also for their proven track record of working within fully integrated and collaborative teams.

It is imperative that the open and honest culture adopted by the Board and Brookfield teams through the bid process continues through the delivery phases of the project. The effective relationships already developed will continue to grow over the coming months and form the basis for a single team totally focussed on providing the best facility possible on time and within budget.

10.1.1.1 Project Team Structure

Clearly there has to be a contractual structure to the Project and the Project Management Structure Organogram below shows the formal contractual and reporting lines we envisage for the project.

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PROJECT MANAGEMENT STRUCTURE

PROJECT STEERING GROUP

- ALAN SEABOURNE
- ALEX MCINTYRE
- ROSS BALLINGALL
- NEIL MURPHY
- ED MCINTYRE
- CHRIS LOVEJOY
- STEVE PARDY
- DAVID HALL

NHS GREATER GLASGOW AND CLYDE

NEC3 MAIN CONTRACT

BOARD ADVISORS

NSGH PROJECT TEAM

- Medical Planning Groups
- Technical Design Groups
- Interior Design Group
- Art Group

- Equipment Selection Group
- Joint Commissioning Group
- Construction Group

BROOKFIELD EUROPE LP

MAIN CONTRACTOR BROOKFIELD CONSTRUCTION (UK) LIMITED

SUPPLY CHAIN

- MECHANICAL AND ELECTRICAL MERCURY
- CLADDING STRUCTAL
- PARTITIONS ASTINS
- VERTICAL TRANSPORTATION SCHINDLER
- STRUCTURAL FRAME DUNNE CIVIL ENG
- GROUNDWORKS DUNNE CIVIL ENG
- **SUBCONTRACTORS**

LEAD CONSULTANT

ARCHITECT NIGHTINGALE ASSOCIATES

DESIGN TEAM

- COST CONSULTANT DOIG AND SMITH
- HEALTH CARE PLANNERS TRIBAL CONSULTING
- ACOUSTICS ACOUSTIC LOGIC
- LANDSCAPE GILLESPIES
- M & E ZISMAN BOWYER & PARTNERS
- STRUCTURAL WSP
- FIRE WSP

PROJECT PEER REVIEW TEAM

- HELEN BYRNE NHS GG&C
- ASHLEY MULDOON BCL
- FRANK MATTHEWS MERCURY
- DAVID SAFFIN ZBP
- PAUL STANLEY WSP
- PAUL WHITTLESTONE TRIBAL
- CHRIS SHERWOOD NIGHTINGALE

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Brookfield

Brookfield Construction (UK) Ltd will be the Contracting party entering into an NEC3 Contract with the Greater Glasgow Health Board. Brookfield Construction (UK) Ltd will be supported by its parent, Brookfield Europe LP, who will provide the relevant security support.

Sitting with Brookfield Construction will be our Specialist Subcontractors and Design Team. Through the bid period we have worked in partnership with four key trade contractors who have worked with the Board and the design team to fully understand the requirements of the Project and provide best value solutions. These Specialist Subontractors; Mercury, Astins, Structal and Dunne, will continue to work with the Project team through design development and delivery on site.

Our design team will continue to be led by Neil Murphy of Nightingale Associates our Architect and Lead Consultant. Neil plays a pivotal role in ensuring that the design team and the New South Glasgow Hospital Project team work as one, in developing the design to maximise the value provided.

We have deliberately shown a direct link between the design team and the New South Glasgow Hospitals Project team and their advisors. Brookfield feels that it is important that their specialist team be empowered to do what they do best – design. Effective design comes from a clear understanding of the Board's requirements and an ability to ensure that money is spent where it is needed and not wasted where it is not.

Past experience with our team allows us to have confidence in Nightingale working closely with the NSGH team without unnecessary interference from Brookfield.

It is important that stock is taken at regular stages of the Project to ensure that all the key requirements are being delivered. To facilitate this we propose that a Project Steering Group be formed comprising key members of the NSGH team and Brookfield and their design team. The Steering Group will meet every 2 months, or more frequently if required, and carry out a review of the project to ensure that all strategic matters are being met.

We have indicated the potential members of the Steering Group which needs to be agreed. It is important that those on the Steering Group are familiar with the detail of the Project and are empowered to make decision and assist in clearing any blockages or issues affecting the efficient running of the Project.

In addition to the Steering Group, which will have intimate knowledge of the Project, we believe that it is important that the scheme is reviewed periodically by Healthcare Specialists, not associated with the day to day detail. This provides a fresh look at the developing design looking for areas of possible improvement or risk mitigation. It is also an opportunity to ensure that new innovations and best practice are being incorporated where possible. We have suggested participants of the Peer Review team but this will change with time as the Project moves into different phases and disciplines.

The Steering Group and Peer Review teams are important parts of the Project Team and by taking a proactive approach, will add significant value to the Project.

Brookfield will create a truly integrated Project Team. Co-location to a Team office will assist significantly in this but it is critical that everyone brought to the project has the correct culture and track record of working successfully with others in an open, honest and trusting way.

The Project Management Structure – Collaboration Organogram below shows how Brookfield wants the Project Team to work. We do not want extended discussion or reporting lines but rather forums where each relevant party can meet and discuss matters directly with other relevant parties. Clearly this process needs to be managed and Brookfield will provide that overall management acting as a hub amongst others.

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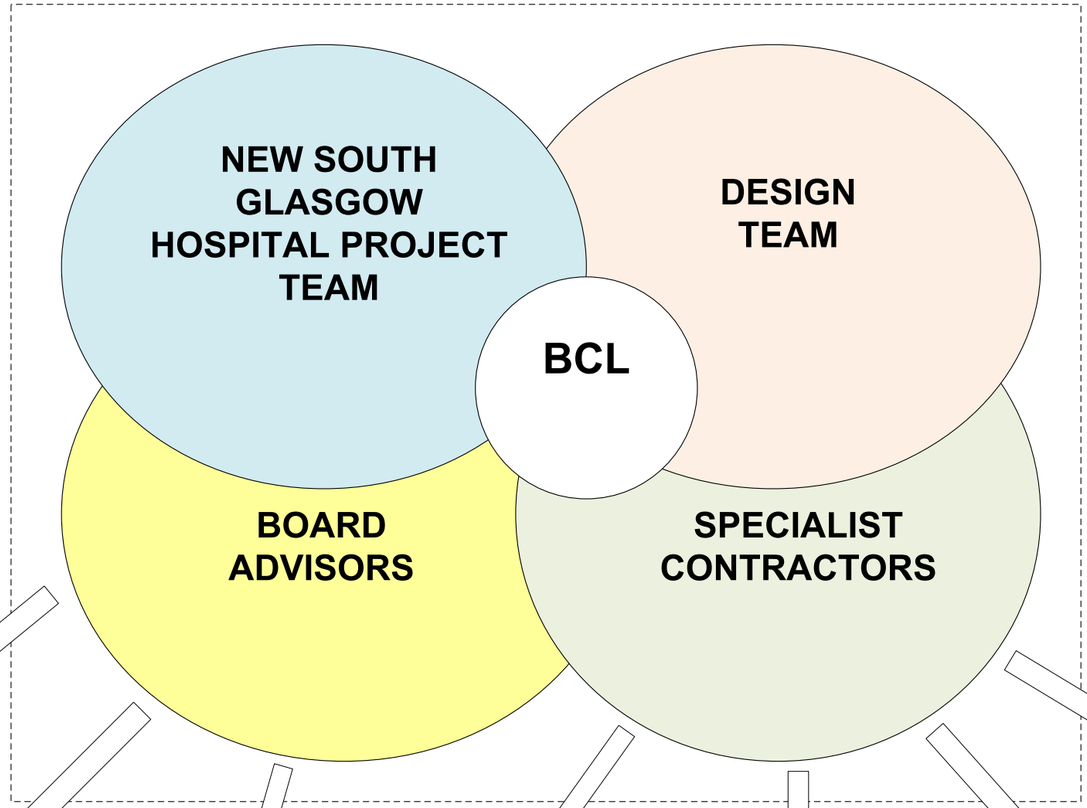
Brookfield

PROJECT MANAGEMENT STRUCTURE - COLLABORATION

PROJECT STEERING GROUP

- ALAN SEABOURNE
- ALEX MCINTYRE
- ROSS BALLINGALL
- NEIL MURPHY
- ED MCINTYRE
- CHRIS LOVEJOY
- STEVE PARDY
- DAVID HALL



PROJECT PEER REVIEW TEAM

- HELEN BYRNE NSGH
- ASHLEY MULDOON BCL
- FRANK MATTHEWS MERCURY
- DAVID SAFFIN ZBP
- PAUL STANLEY WSP
- PAUL WHITTLESTONE TRIBAL
- CHRIS SHERWOOD NIGHTINGALE

- CONSTRUCTION GROUP
- MEDICAL PLANNING GROUPS
- TECHNICAL DESIGN GROUP
- INTERIOR DESIGN GROUP
- ART GROUP
- EQUIPMENT SELECTION GROUP
- JOINT COMMISSIONING GROUP

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The successful delivery of the Project and the end users' satisfaction is greatly improved through continual structured involvement in the decision making process. There are many areas where it is imperative for the Board and their advisors to play an active part in the design and construction process and we will establish the following sub-groups to assist in the management of the design and construction.

Medical Planning Groups – departmental groups comprising Board representatives, Clinicians and advisors along with Brookfield's team. These groups are responsible for developing the 1:50 layouts and Room Data Sheets along with associated equipment lists and FF&E schedules. The management of the Medical Planning process is dealt with more fully later in this section.

Technical Design Group – a multi disciplinary group from the Board and their advisors working with Brookfield, our Specialist Contractors and Design Team to ensure that all planning, building regulations, SHTM/HTM requirements where appropriate are met. Clearly the responsibility for discharging and obtaining statutory authority approvals lies with Brookfield but there are numerous areas where Board involvement is required to achieve the optimum design. Areas such as fire strategy, access control and acoustics, as examples, all have to link to the operational performance of the facility and need to be considered and agreed by all as part of the detailed design process.

Interior Design Group – a multi disciplinary group from the Board, their advisors and Brookfield and our Design Team responsible for the selection of interior finishes ensuring that Brookfield and Board supplied elements are coordinated. The majority of submissions dealt with by this group would be in the form of samples and mock ups although it is likely that factory visits will be required to inspect off site fabrication.

Art Group – High level group of key stakeholders looking at how art strategy and implementation can best be incorporated into the scheme. This group will steer the design on opportunities for art and ensure that spatial and services requirements are allowed for.

Equipment Selection Group – a flexible group including the Board and relevant Clinical representatives along with Brookfield responsible for the final selection and approval of Contractor and Board supplied equipment. This group will be very active in the early part of the project agreeing specifications, initial services, loadings and spatial requirements tailored to allow the final selection decision to be left until later in the Project.

Joint Commissioning Group – a multi disciplinary group focussed on how we turn a construction project into a fully operational hospital. A number of parties need to contribute to this group including the Board and their FM team, Equipment Suppliers and commissioners, specialist agencies responsible for validation of parts of the facility, i.e. pharmacy, and Brookfield and their services commissioning team.

Construction Group – a team from the Board and Brookfield responsible for ensuring that the works are carried out with the minimum disruption to the running of the existing hospital. This group will meet weekly to review upcoming work and activities in and around the hospital site. It is equally important for Brookfield to understand what activities the Board have occurring on the site as it is for the Board to know what Brookfield are planning.

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10.1.1.2 Brookfield Project Board

Brookfield established a Project Board at the outset of the bidding period and they have led the Brookfield team through the dialogue and bidding process. This Project Board, led by Ross Ballingall, will retain full responsibility for all aspects of the delivery of the design and construction and will be involved full time on the project. They will play an active part in each of the Project Teams we have established to deliver each stage of the Project.

Ross, a main Board Director of Brookfield Construction (UK) Ltd is an experienced big Project Leader with an exceptional track record of creating collaborative teams and delivering complex projects on programme and budget but more importantly to the satisfaction of his client.

Ross knows that the culture he brings to the project will be reflected through his team and works hard to ensure that close relationships grow from a clear understanding of all parties' drivers.

Paul Serkis, our Bid Commercial Director, is an experienced front end Commercial Manager with extensive experience in large scale complex healthcare and laboratory projects. He has a deep understanding of the key issues that drive healthcare delivery and develops close relationships with Clients and Stakeholders to ensure that needs are understood and solutions to problems found.

Alan Keeley has been site based in the construction industry for 37 years and is one of the countries most experienced Construction Directors. He has extensive experience of delivering complex projects on live sites and brings with him an attention to detail second to none. Alan is an exceptional team builder who commands the utmost respect from those who work with him.

Chris Lovejoy is a highly motivated and technically very competent Building Services Director with over 29 years experience in the industry. Chris is our Business Lead on Sustainability and will work hard with the NSGH team to ensure that the ambitious targets set for the NSGH are realised.

David Bower is an experienced Planning Director with over 30 years experience. NSGH will be Dave's 3rd major hospital project and he brings with him a detailed knowledge of the construction processes and in particular the demands of planning a Hospital within the site of an existing facility.

John Ko is an accomplished Design Director with experience over a wide range of major projects. He brings with him his experience from the Peterborough Hospitals Project where he has overseen the design from Preferred Bidder through procurement to delivery on site.

Ed McIntyre, General Manager of Mercury Engineering and their Project Director for the NSGH Project has over 28 years experience in the services industry, 14 of which have been in senior positions with Mercury. The NSGH will be the 7th medical facility undertaken by him. Ed brings an open management style and is always seeking new and innovative ways to maximise value and increase quality on his projects.

Each member of the Project Board has worked together in the past and they are all looking forward to continuing as a team and fully committing to the New South Glasgow Hospitals Project.

The Project demands different skills and resource levels at different stages through the job. We have considered these differing needs and put together our team to ensure that we are capable of delivering the expectations of the Hospital Board at all times. The Project Board will oversee each team and ensure continuity across the Project.

10.1.1.3 Preconstruction Team Structure

For the stage 2 preconstruction work on the Adult and Children's Hospitals we have selected a small team of very experienced Commercial, Design and Planning Managers. This team will link with, and be supported by, our Specialist Contractors and Design Team and work with the NSGH Project team through the various work groups to ensure that the design, procurement and construction planning are developed at sufficient pace and in sufficient detail to allow the Board to achieve Full Business Case in November 2010.

It is imperative during the preconstruction phase to ensure that the emerging design reflects what will actually be built and our Design Team and Specialist Designers from the key trades will work closely with the NSGH Project team to get the best quality design possible for the budgets.

The team will also ensure that the design is progressed in a methodical manner and fully coordinated such that an effective start can be achieved on site immediately following Board Full Business Case sign off.

Our preconstruction team is:

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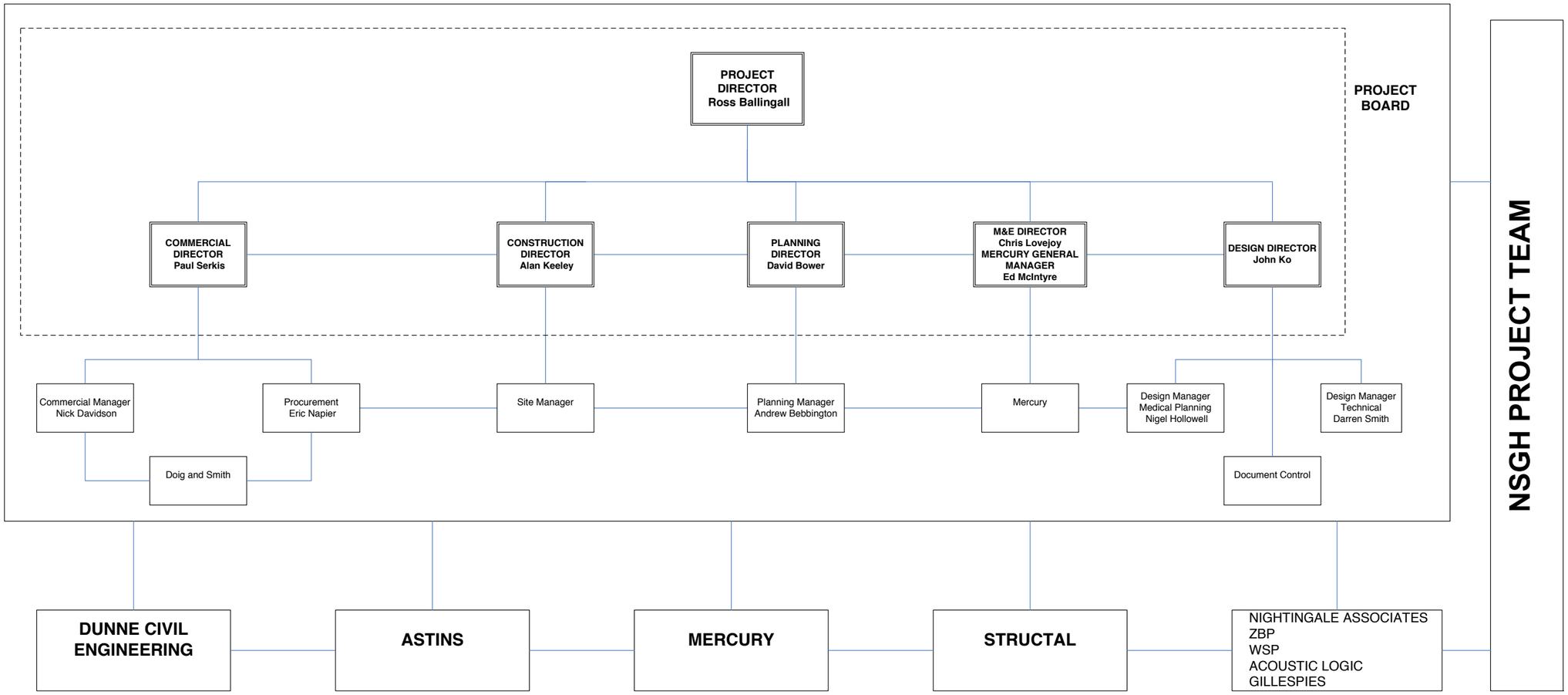
STAGE 2 TEAM – PRECONSTRUCTION



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10.1.1.4 Laboratories Team Structure

The Laboratories provide a significant challenge in terms of design and construction and it is important that there is a fully dedicated team focussing solely on the successful delivery of this facility.

Our team will be managed on a day to day basis by Dave Jordan, an experienced Project Manager with both Laboratory and Healthcare experience. Dave will be supported by the Project Board. Dave has been involved through the dialogue process and is fully aware of the key issues facing his team. He has a strong team below him, many of whom have worked on the bid and many of whom worked under Dave on the Peterborough Hospitals Project where he successfully delivered the Integrated Care Centre on time to a delighted Client.

Our team will be supported by input from our Specialist Contractors and the novated Design Team of BMJ, URS and Wallace Whittle.

There is a considerable amount of work to be done on the Laboratories design to ensure an effective start as early as possible. Our Labs Design Manager, Manny Ajuwon, has been actively involved through the dialogue process and is fully aware of the issues that need to be resolved early to facilitate this start. Manny is an experienced Design Manager who both understands the detail and the processes required to allow each party to deliver as part of the team.

Our Laboratories team is:

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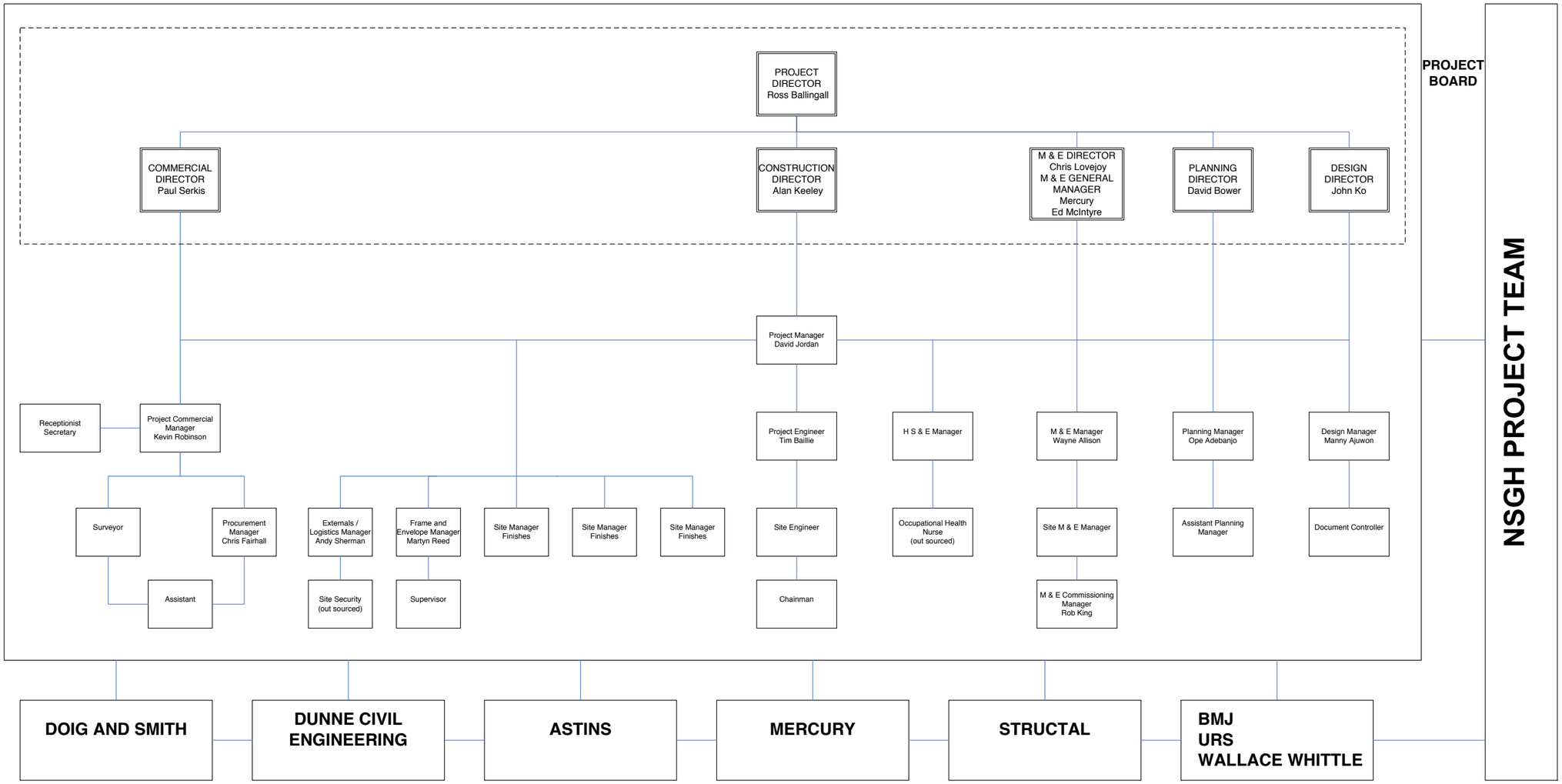
STAGE 1 TEAM - LABORATORIES



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10.1.1.5 Adult and Children's Team Structure

On completion of Stage 2 we will add to the Preconstruction Team to form the delivery team for the Adult and Children's Hospitals. Due to the size of the Project it is necessary to split it down into manageable sections. An obvious division is to split the Adult and Children's Hospitals. We have elected to do this and provide specific ownership within our team for the separate delivery of these two distinct buildings.

Our Children's delivery team will be led by Keith Dickson, an experienced leader with over 22 years experience operating at a senior management level. Keith has acquired a reputation for first class leadership, control and resourcefulness and has excellent client liaison skills.

Our Adult delivery team will be led by Andrew Richardson a dedicated Project Manager with over 20 years experience the last 5 of which has been on major projects. Andrew is comfortable dealing with all project stakeholders and integrates the design team and client team with his own team for the benefit of his projects. He runs well managed and motivated sites and takes great pride in the presentation and quality of the projects he delivers.

Keith and Andy will both be supported by dedicated Adult and Children's teams comprising Commercial Management, Site Management, M&E Management, Planning and Design Management. They will share some cross project resource such as specialist Procurement, Accounts, Logistics, Engineering and Health, Safety and Environment Management.

Mike Sharples will join our team for stage 3 as Commercial Director. Mike is currently running our Peterborough Hospitals Project and will bring with him extensive knowledge of procurement and trade package management on complex healthcare projects. Mike adopts a fair and non adversarial approach and has worked closely with our chosen key trade contractors on Peterborough Hospital.

Our external works team will be led by Rob Evans. Rob started his career as an Engineer and has progressed into section Management focussing mainly on Civils and External Works. Rob has considerable experience of working within live healthcare sites and understands fully the need to minimise the impact of his works on those around him.

Our Adult and Children's teams are:

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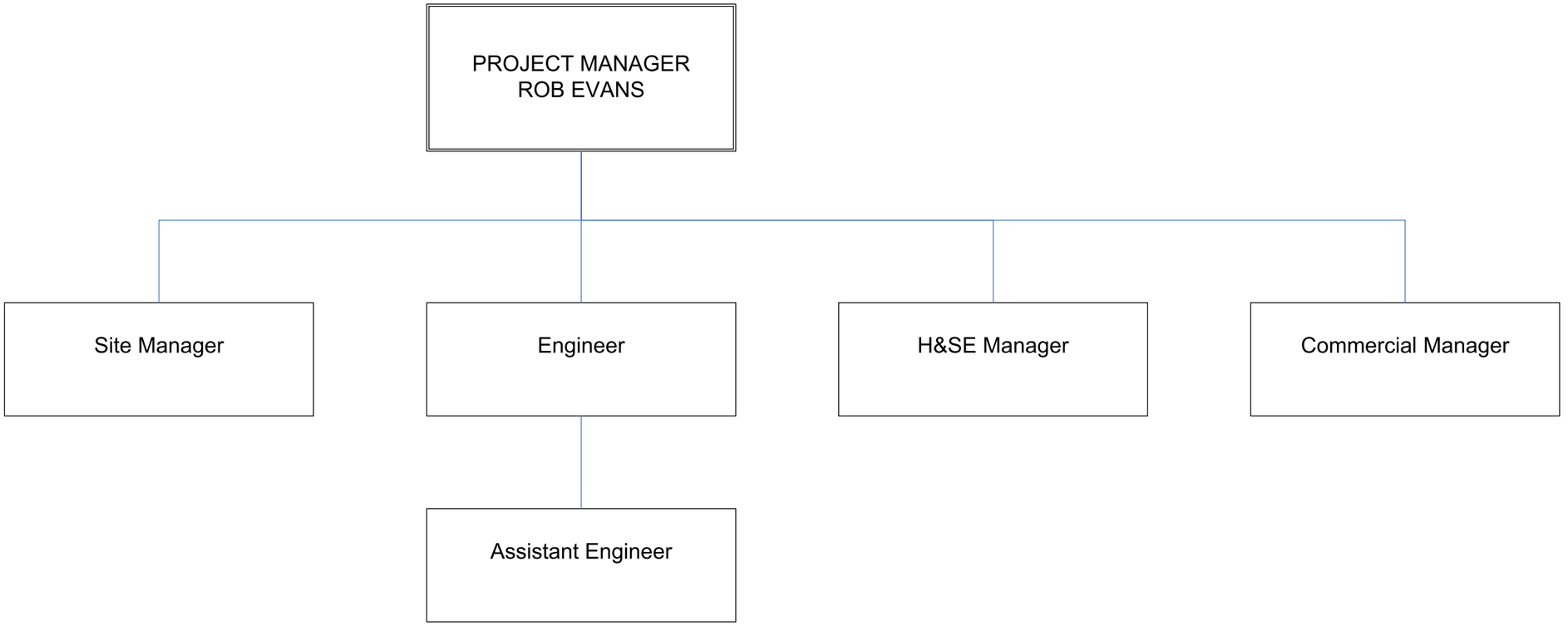
10.1.1.6 Demolition and External Works Structure

Following the 6 month gap for decant from existing buildings Rob Evans and his team will return to carry out the demolition works and complete the external landscaping and accesses.

Our demolition and externals team is:

STAGE 3A TEAM – DEMOLITION AND EXTERNALS



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Project Director

Ross Ballingall

Ross has led the Brookfield team through the dialogue meetings and bid submission and will retain full time responsibility for the successful delivery of the Project. Ross has over 25 years experience in the delivery of design and construction projects, with a significant part of the last 11 years spent in the healthcare and PFI markets. His background in Engineering and Design Management has provided him with an exceptional understanding of, and the ability to identify, the key issues required to successfully deliver complex design and build schemes. He is a strong leader and focuses on bringing together multi disciplinary teams, including the client, to deliver projects of the highest quality.

Career Overview

Upon Graduating Ross joined a Paisley based Consultant Engineer and gained experience in the design of a wide variety of new build and refurbishment projects. He spent time in Hong Kong concluding the design of a 5 star hotel in mainland China working closely with the Architect, Client and Contractor. This work confirmed early to Ross the benefits of an integrated project team.

Attracted by increasing Design & Build opportunity, Ross joined Laing Construction where his balance of design and construction skill was quickly recognised. He became their youngest Chief Engineer (Scotland and Ireland) with overall responsibility for all design, quality and technical matters.

When Norfolk & Norwich was awarded Ross was one of 4 hand picked to ensure the successful delivery of the Project. Responsible for the design and technical departments he played a key role in the early completion of the project and cut his teeth on the challenges of PFI. As the first major Healthcare PFI, Norfolk & Norwich was widely regarded as a huge success.

Following a period in a group position as Head of Design Services (Design Management and Integrated Engineering Solutions) Ross moved into the growing Laing O'Rourke Southern business where he looked after Engineering, Design and Building Services in a business that grew from £100m to £400m turnover in a year. Through this period his main focus was on the front end of projects focusing on 2 stage and design and build opportunities in all sectors.

Qualifications

BSc Hons Civil Engineering, Strathclyde University
Chartered Engineer
Member of the Institution of Civil Engineers

Project Experience

Peterborough Hospital PFI	£350m
Oxford Churchill	£130m
Stoke Mandeville Hospital	£56m
Addenbrookes Hospital	£80m
Middlesex Hospital BeCAD (bid)	£70m
Newham Hospital	£27m
Newcastle Hospitals	£300m
Norfolk & Norwich Hospital	£220m

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An approach from Alfred McAlpine to join as Director responsible for Addenbrookes Hospital PFI tempted Ross back onto site. He was soon promoted to UK Operations Director where, amongst other projects, he was involved advising the bid team on Oxford Churchill Hospital and had responsibility for the handover of Stoke Mandeville PFI.

Ross joined Brookfield in January 2006 as Director responsible for Peterborough Hospital. He successfully led the team through Preferred Bidder to Financial Close and retains responsibility for the overall delivery of the Project. To date all phased completions have been achieved and the Project is on track for early.

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Bid Commercial Director

Paul Serkis

Paul has led the Commercial and cost planning team through the dialogue sessions and will continue in this role through the preconstruction phase on the Adult and Children's Hospitals.

Paul has extensive experience in large scale complex projects in particular Healthcare and high specification Laboratories having held senior positions on a number of schemes. He was instrumental in driving the Peterborough Hospitals PFI team to successful conclusion at Financial Close in July 2007 and has remained involved on the Project Co Board to ensure relationships with the Trust remain strong.

His understanding of key issues that drive Healthcare delivery has developed his knowledge and ability to deal with the wider issues within this market sector. He is able to develop relationships with Clients, listens to their needs and offers solutions rather than problems.

Career Overview

Paul joined Brookfield in June 2005 as Commercial Manager having spent over three years at Wates and prior to that nearly fourteen years with John Laing Construction. His working career includes a mixture of small and large complex projects ranging from refurbishment to extensive new build including hospitals, laboratories, MOD facilities, schools and retail. He has gained a variety of experience in traditional, design and build and PFI contracts.

He progressed his early career at Laing through the various levels and also became a member of the RICS in 1996 and also completed a diploma in law in 1999. His roles and responsibilities have been commercially orientated and ranged from assistant QS to Commercial Director in addition to operating as SPV bid manager. Previously at Wates, Paul's responsibility extended across the PFI Business Unit dealing with a variety of Education schemes spread across the UK.

Qualifications

Bachelor of Science (Quantity Surveying), Liverpool John Moore's University
Diploma in Law, College of Law, London
Member, Royal Institute of Chartered Surveyors

Project Experience

Peterborough Hospital PFI	**£350m** (Capex)
Chelsea & Westminster Hospital London	**£200m**
Southend Hospital Southend	**£1.1m**
Merton Schools PFI London	**£54m** (Capex)
National Physical Laboratories PFI Teddington	**£87m** (Capex)
Northwood Command Centre Middlesex	**£26m**
USAF Base Middlesex	**£0.45m**
RAF High Wycombe Buckinghamshire	**£5.5m**
Tesco Southend	**£6m**

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His active involvement in projects ensures a good knowledge in construction and design processes together with wider appreciation of various party stakeholders. This also assists in dealing with a variety of issues throughout the pre and post construction phases. The range of projects has enabled an understanding of all parties needs and the requirement to meet deadlines.

Paul's current role for Brookfield is Commercial Director- Infrastructure responsible for the Infrastructure business unit in both strategic positioning and bidding for new opportunities.

Paul is very much a team player with drive, ambition and the ability to motivate others to see projects completed on time, within budget and to the Client's.

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Construction Director

Alan Keeley

Through the dialogue process Alan has gained significant knowledge of the project challenges and has put together our Project Execution Plan. Alan will lead the Construction team through the preconstruction and construction periods.

Alan has been site based in the Construction Industry for 37 years and has significant experience in the delivery of large and complex construction projects particularly on live sites. Alan has extensive healthcare experience having been a senior member of the Norfolk and Norwich team and Construction Director on the Peterborough Hospitals Project. His close attention to detail and user friendly hands on approach made Alan our first choice for the Glasgow team.

Career Overview

Commencing his career as an Articled Pupil with John Laing Construction in the Site Planning Department, he transferred to Management after 6 years rapidly progressing from General Foreman through Site Agent to Project Manager. Alan has successfully delivered many complex Projects, including the largest Section (Diagnosis & treatment) of the 1st major Hospital PFI, Norfolk & Norwich, and has gained significant experience on Design and Build Projects working through preconstruction to delivery and handover.

During his career Alan has demonstrated his ability to motivate Site Management Teams, liaise closely with clients during construction, successfully manage design teams and subcontractors and has a thorough knowledge of Health, Safety, Welfare and Environmental matters. At Tabard Square during the construction stage of the Structure and Envelope, Alan as Project Manager also headed up the successful 2nd stage tender of the fit out works for the 572 apartments.

Alan joined Brookfield in April 2006 as the Project Construction Director for the Peterborough PFI hospital. Since joining, Alan has developed the site logistics plans and enabling works drawings in addition to reviewing sequence of works, ensuring the most effective methods of construction are utilized with the least disruption to neighbours and no impact on the running of the existing hospital.

Qualifications

CIOB Part 1 and 2
ONC and HNC Building
CSCS Project Manager Accreditation
IOSH Safety Certificate

Project Experience

Peterborough Hospital PFI	**£350m**
Tabard Square London	**£65m**
Lewisham Metropolitan Police Station PFI	**£35m**
Norfolk and Norwich PFI Hospital Norwich	**£220m**
Queensgate Shopping Centre Peterborough	**£30m**
Queens College Cambridge	**£2m**
Grafton Shopping Centre Cambridge	**£30m**
Basic Science – Medical Training School South Africa	**£100m**
Headquarters for National Power Supplies South Africa	**£20m**
School for 1000 pupils South Africa	**£20m**

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Alan has recruited and leads the management teams for the Acute, Mental Health Unit, Multi Storey Carpark and City Care Centre sites, making up the Peterborough PFI hospital project. To date the MHU, MSCP and CCC have all been handed over on time. The main acute is on track to finish 3 months early in.

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Planning Director

David Bower

David has played an active part in the preparation of our programmes and methodology for the Project. He will lead the planning team through preconstruction and construction.

David has over 30 years experience working on a wide range of projects in the UK and abroad, and has gained an in-depth knowledge of building construction and its processes. He has both a strategic and 'hands on' approach to complex project planning and programming functions. He is task orientated and enjoys common shared objectives. David is financially and commercially astute and has a pragmatic approach to problem solving and continual business improvement. David recently completed a MBA in which he focused on PFI hospital procurement and evaluating. This included the evaluation of the complexities of working with the NHS and of the critical success factors the that ultimately lead to financial close.

Career Overview

Since joining Brookfield Construction in 2006 David has been the Planning Director for the £350m PFI 90,000m^2 Peterborough Acute Hospital, Mental Health Centre and a 9000m2 town centre hospital. The project successfully secured financial close and commenced the project in July 2007. Areas of responsibility included overseeing the strategic planning management function for the delivery of design to reach financial close and the planning of the complex construction around a live existing operating hospital through to completion - a total construction period of 53 months. David has recruited and heads up an extensive team of planners with a range of applicable skill bases. During the project David has worked at the interface with the Trust and design project teams throughout the reviewable design data stages to deliver the appropriate strategy of timely delivery. The project is currently on programme with a successful completion, on time, of three of the five phases.

David joined AMEC in 2004 as a regional planning manager, responsible for planning of £80million PFI Mental Health Hospital Middlesborough and £180 million Colchester Hospital PFI where AMEC was preferred bidder responsible for the design and construction planning and programme for delivery of this project. The project involved centralisation of acute services onto the existing Colchester General hospital site. The new facilities included the construction of some 40,000m^2 of new build three and four storeys concrete frame buildings in three

Qualifications

Member of Chartered Institute of Building MCIOB (1991)
MBA (2007)

Project Experience

Peterborough Hospital PFI	**£350m**
NHS Hospital Bid Essex	**£180m**
NHS Mental Health PFI Bid Middlesborough	**£80m**
High Rise Residential Ipswich	**£35m**
PFI School Bid Norfolk	**£150m**
Supermarkets and Office Complexes UK	**£5 - 30m**
Naval Base Facilities Bahrain	**£40m**

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blocks around the existing live hospital and remodeling of 14,000m^2 of existing facilities to provide new A&E, Oncology, Outpatients Imaging and Pathology

David joined May Gurney as a Bid/Planning Manager in 1999. During his time at May Gurney, David was a planner on a number of high spec commercial and educational projects including a £150m PFI school for Norfolk.

David started his career in 1980 as a planning engineer with Costain in Bahrain working on Naval Base facilities involving numerous large concrete and steel framed buildings launching ramp and complete infrastructure services. Latterly, in Oman as a planning engineer on a number of electric and water municipality projects. David returned to the UK where he joined Laing Construction as a planner working on large commercial and retail projects.

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M & E Director

Chris Lovejoy

Chris has worked closely with Mercury and the Board team through the dialogue sessions to understand and develop the Boards services and environmental requirements. Chris will lead our M&E team on the Project.

Chris is a highly motivated Engineering Director with 29 years experience in all types of Industrial & Commercial engineering projects. He has experience in international construction industry from countries such as the UK, Singapore, Malaysia and Australia this has enabled a high degree of skill in managing all types of relationships with various Clients and staff from different cultures and religions.

Career Overview

Chris started his career in 1980 with Building Engineering Services Ltd, a family owned general construction company. He worked on several laboratories during his time, including Glaxo Welcome Foundation pharmaceutical experiments in Beckenham facility London and the London cervical cancer unit in Harley Street London.

In 1992, Chris attained his first international post with LSK/O' Donnell-Griffin/ Kentz JV (S) Pte Ltd in Singapore as Engineering Manager, & Project Manager for package 3B & 4 on the Suntec City Development.

In 1994, Chris moved to TYCO Malaysia as a Project Manager for the KLCC Co-Generation District Cooling Centre, and was quickly promoted to Mechanical Operations Manager in two years. He was responsible for all management of various projects including; Hospitals, Petro-Chemical facilities, power stations, underground rail.

Chris joined WALTER Construction Group in Australia as a Branch Engineering Manager. His role included identifying and developing new marketing opportunities and corporate strategies to enable the company to positions itself with leading edge advantages over competitors. One of Chris' main projects was the Gosford Hospital lab which consisted of Anatomic Pathology, Haematology, Clinical Microbiology, and Clinical Biochemistry.

Qualifications

MSc Building Services Engineering Management
BSc (Honours)
HNC Building Services
Member Chartered Institute Of Building Services Engineers (MCIBSE)

Project Experience

Peterborough Hospital PFI	**£350m**
Pinnacle London	**£600m**
Fiona Stanley Hospital Australia	**AUD $1.8bn**
KLCC Co-Gen Plant Malaysia	**$200m**
Suntec City Development Singapore	**$2bn**
Wembley National Stadium London	**£500m**
Gosford & Wyong Hospitals Australia	**AUD $137m**
Zone at Sydney Olympic Park Australia	**AUD $255m**
Wellington Prison NSW	**AUD $120m**
Haymarket 330kV Substation Australia	**AUD $187m**

continued…

In 2005, Chris joined Brookfield as MEP Services Manager, working on the Wembley Stadium to assist in the completion of the project. Since the completion of Wembley Stadium project Chris has been involved in assisting the company successful award of new projects in the UK and Australia; Pinnacle and Fiona Stanley Hospital, both of these projects contain leading sustainable features.

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Design Director

John Ko

John has led the design team through the dialogue process and been instrumental in the development of our proposals to date. John will continue to lead the design team on the Project.

John has a wide range of major project experience, both in building type and in the various aspects of project delivery. As a Design Director, he is responsible for overseeing the management of the client's brief, design consultants and the relevant authorities from the development application stage to the final occupation certification. Relevant project experience includes his role as the Design Director for the Peterborough PFI Hospital project (£350m) and as the Construction Planner for the Cathay Pacific (Airlines) Data Centre in Sydney Australia which included clean rooms requiring sterilized/contamination controlled environment similar to that expected for the laboratories.

Career Overview

John entered the industry as an inaugural member of the Lend Lease Undergraduate Recruitment Program in 1988/89. Completing his Honours Degree, John joined Civil & Civic (firm that created Bovis Lend Lease) in 1990 working on a major regional shopping centre project.

His procurement and construction planning skills contributed to the successful bid for the Cathay Pacific Data Centre (A$40m) in 1993. This facility was the IT "nerve-centre" of the airline business requiring duplication (back-up) of key functions.

John was promoted to take on the overall responsibility for the Kelloggs food processing plant refurbishment. In 1996, he was sent by Lend Lease to their Asia business in Indonesia and India. He returned to Sydney in late 1997 to work on the Cockle Bay Wharf project (A$45m) as a Project Director.

After 10 years with Bovis Lend Lease, John joined the Sydney Organising Committee for the Olympic Games in 1998 as one of two Project Managers responsible for the day to day development of 3 new accommodation villages for the Sydney 2000 Olympic Games.

Qualifications

Master of Business Administration (MBA), University of NSW / University of Sydney (AGSM)
Postgraduate Diploma in Applied Finance and Investments, The Securities Institute of Australia
Bachelor of Engineering (Civil) (Honours), University of Sydney
Fellow, Financial Services Institute of Australasia

Project Experience

Peterborough Hospital PFI	**£350m**
The Pinnacle Office Tower City of London, UK	**£580m**
Peterborough Hospital PFI	**£350m**
Wembley National Stadium London, UK	**£500m**
Westfield Hornsby Shopping Centre Sydney, Australia	**AUD $200m**
Media and Technical Official Villages Sydney Organising Committee for the Olympic Games	**AUD $110m**
Coca-Cola Projects Sydney, Australia	**US $90m**
Kelloggs Factory Mumbai, India	**AUD $14m**
Cathay Pacific (Airlines) Data Centre Sydney, Australia	**AUD $40m**

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John was expatriated to Multiplex UK (now Brookfield Europe) in 2003 to take over the design management responsibilities for the Wembley National Stadium in London (£500m).

John joined the Peterborough Hospital PFI project (£350m) contributing to the successful financial close followed by delivering the client requirements together with managing the design consultants and the authorities.

Currently, John is also directing the design team in The Pinnacle Office Tower project (£580m) in City of London which will be the tallest building in Europe once completed.

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Brookfield

Commercial Manager

Nick Davidson

Nick has a broad and varied experience in senior commercial management during his 30 year career. His career has been predominantly with national contractors encompassing both the private and public sectors.

He is a skilled communicator experienced in leading and motivating large commercial teams to successfully achieve targets. Nick also has a successful track record in the restructuring of underperforming businesses.

Career Overview

Nick began his career with Davis Belfield & Everest in 1976 as a Trainee Quantity Surveyor working on a variety of UK projects in both the public and private sectors. During his employment he was also an integral part of the team delivering pre-construction services on a number of large projects in excess of £500m in both Libya and Saudi Arabia.

In 1982 his career moved into general contracting following his appointment as Project Surveyor for local contractor, Johnson & Bailey Limited. During this period of his career he was responsible for a number of prestigious University projects in Cambridge including the award winning £10m Mearsk McKinney building for Churchill College and the £12m Burrell's Field Redevelopment for Trinity College.

In 1994 Nick joined Amey plc as a Senior Surveyor managing initially managing a large retail scheme in Cambridge. During his 6 year employment he was promoted to the position of Regional Chief Quantity Surveyor with direct responsibility for the commercial management of their £30m regional contracting business based in Cambridge.

During 2000 Nick was appointed by Wates Construction Limited to manage the commercial team within their regional contracting businesses based in Cambridge and St Albans. He was subsequently promoted to the position of Commercial Director in 2002 with responsibility for their £40m Technology Business Unit which had a national portfolio throughout the UK, focusing on laboratory and clean room projects for a number of established key Clients including GlaxoSmithKline, Eli Lilley, Cardiff University Hospital, and Oxford University.

Qualifications

Ordinary National Diploma Construction
Higher National Diploma Construction
Royal Institution of Chartered Surveyors Examinations Parts I, II and Final

Project Experience

Peterborough Hospital PFI	**£350m**
Laboratory Development Eli Lilly – Two Stage Procurement	**£15m**
Production Facility GSK – Negotiated	**£10m**
Research Facility University of Oxford – Two Stage Procurement	**£8m**
Henry Welcome Building Cardiff University Hospital	**£12m**
Linear Accelerator Facility Addenbrooke's Hospital – Single Stage Procurement	**£2m**
Oxford Glycosciences Laboratory Refurbishment – Two Stage Procurement	**£12m**
Teaching Facilities University of Cambridge – Two Stage Procurement	**£20m**
Schools PFI Scheme Clacton-on-Sea	**£40m**
NAPP Pharmaceuticals Controlled Drug Facility, Cambridge	**£5m**

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Nick subsequently joined Brookfield as a Commercial Manager based on the Peterborough Hospitals PFI Scheme in July 2006, initially working on the development of the bid through to Financial Close. He has subsequently focused on the commercial management of the £22m Mental Health Unit and the £23m Integrated Care Centre.

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Brookfield

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Procurement Manager - Adult

Eric Napier

Eric has managed our tender procurement establishing close links with both National and Local contractors. Eric will lead our procurement team on the Project.

Eric has 35 years experience in Construction Procurement, during which he has developed a wide range of specialist skills in negotiating soundly based commercial, technical and contractual terms for Project Works Packages. With a prudent approach to risk management, he has drawn on a well founded team ethic to extract maximum value from the supply chain, for projects in all major industry sectors. For the last twelve years, Eric has worked primarily in the PFI Sector with an emphasis on Primary Healthcare work, Eric is able to draw on established procedures which enable integration with design development, cost management, and planning of trade package procurement.

Project Experience

Peterborough Hospital PFI	£350m
Sunderland General Hospital	£20m
Gateshead Queen Elizabeth Hospital	£12m
Borders District Hospital Melrose	£50m
Southend District Hospital	£22m
Norfolk and Norwich PFI Hospital	£200m
Freeman Hospital Newcastle	£25m

Brookfield

Career Overview

Eric joined the industry in 1974 with John Laing Construction in the Newcastle based Northern Region. An Indentured Pupilship in purchasing was completed in 1979, by which time Eric was working within the Procurement Teams on a number of major projects including the Newcastle RVI and Freeman Hospitals, Sunderland General Hospital, and the Queen Elizabeth Hospital in Gateshead.

From 1982 to 1985 Eric led the Procurement Team on the new £50m Borders District Hospital in Melrose, Scotland.

In 1985 Eric moved to East Anglia to take up a Senior Procurement role in the newly formed Eastern Region of John Laing managing the Procurement on some prestigious and varied projects. These included Southend Hospital, Epping Civic Centre, and numerous fast-track retail outlets.

In 1996 Eric was appointed Project Procurement Manager for the new Norfolk and Norwich Hospital, which was the first major PFI Healthcare scheme to be built in the UK. Eric was also managing the Procurement Department for the Luton based combined Laing Chiltern and Eastern businesses.

During this period Eric worked with a full range of Industry Contracts, specializing in implementing step down conditions and procedures, including the full JCT suite, bespoke PFI terms, and the New Engineering Contract on Projects for Cambridge University.

continued…

Eric joined Brookfield in April 2005, specifically to work on the Peterborough Hospitals Project, and has been responsible for establishing and implementing the Project Procurement Strategy and leading a team of Procurement Professionals in all aspects of package.

Qualifications

CIOB Final Pt2

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Brookfield

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Brookfield

Planning Manager - Adult and Children's

Andrew Bebbington

Andrew is a careful and meticulous Planning Manager with an expertise that spans across a range of projects including a Food research Laboratory, a Pharmaceutical clean room packaging facility and a number of major healthcare projects across England.

His healthcare knowledge and clear understanding of the sequences required ensure that all aspects of design, procurement, construction and commissioning will be properly agreed and understood by all.

Career Overview

Andrew started his career with Higgs & Hill in 1988. He worked his way up through the company, achieving various promotions, starting out as a Trainee Planner, graduating to Contract Planner and then Senior Planner. Throughout his time at Higgs & Hill, Andrew worked across varied projects such as a Food research Laboratory for MAFF, a 'green' chicken waste burning Power Station, a Pharmaceutical Laboratory clean room packaging facility to the New North Stand at Chelsea football clubs Stamford Bridge stadium.

In 1998, Andrew joined Laing Construction Ltd as a Senior Planner. Andrew worked on the Design & Build PFI contract for Norfolk & Norwich Hospital, a new general hospital on a green field site. Completion of the project was achieved 20 weeks early.

Andrew joined Laing O'Rourke in 2001 as a Project Planner and continued working on the Norfolk & Norwich Hospital: Phase 2 & 3 Additional Works, which included the extension and alterations of Phase 1 during and after occupation of the Hospital. Andrew also worked on the North Staffordshire Hospital (Fit for the Future) PFI and provided full planning and resources input during the Preliminary and FITN bid stages through to the Preferred bidder period of the Equion PFI tender procurement process.

In 2006, Andrew joined Brookfield as the Planning Manager on Peterborough Hospital Project and has played a key part in successfully delivering the project against tight.

Qualifications

GDBM Graduate Diploma Building Management
HND Building Management

Project Experience

Peterborough Hospital PFI	**£350m**
North Staffordshire Hospital Fit for the Future – PFI Stoke on Trent, Staffordshire	**£350m**
New Norfolk & Norwich Hospital Phase 2 & 3 Additional Works Norwich, Norfolk	**£20m**
New Norfolk & Norwich Hospital Phase 1 Norwich, Norfolk	**£165m**
Brook House (High Spec Apartments) Park Lane, London	**£20m**
Astra Pharmaceuticals Corby, Northants	**£6.5m**
Eye Power Station for Fibropower Suffolk	**£18m**
John Innes Institute New Research Building and Glass Houses	**£3m**
Food Research Laboratory for MAFF / PSA	**£6m**

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Brookfield

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Brookfield

Design Manager – Laboratories

Nigel Hollowell

Nigel is an experienced manager, with particular strengths in the management of design and planning on a wide range of large complex Projects. Nigel is a very level headed manager who generates great respect from the rest of the Project Team. He has experience of project management software packages (particularly ASTA Teamplan) and has produced database applications, used to control information and document flow.

Career Overview

Nigel started his career as a Site Engineer with J.P. Construction Ltd in 1977. Nigel progressed throughout several Site Engineer roles, before landing a job with Norwest Holst Construction Ltd in 1980. During his nine years Nigel was promoted several times: to Project Co-ordinator in 1983 and again to Planner Co-ordinator in 1988.

Nigel moved to John Brignall Aluminium Ltd to further his knowledge as a Contracts Manager. In this position, he was responsible to the Managing director for the drawing/design office and site works from contract award to completion.

In 1990, Nigel moved to the Arabian Gulf with A.K.C. Contracting (a Qatari owned company with a British management structure) as a Contracts Manager, reporting to the Construction Manager for all of the major works projects from award to handover.

Nigel returned to the UK in 1993 with Exterior Profiles Ltd, where as a Design Co-coordinator, he was responsible to the Contracts Director for the operation of the drawing office and outside designers, Nigel was instrumental in introducing computerized methods of controlling aspects of information control (documents, queries and technical library).

Nigel moved to Laing O'Rourke Ltd in 1999 and spent seven years as a Planning / Design Manager working on various projects including the award winning, Centre for Mathematical Sciences for Cambridge University, Medical research laboratories for Cancer research UK and Leicester Pathway PFI Hospitals.

Nigel joined Brookfield in 2006 as a Senior Design Manager/Planner, carrying out the design managers role on the City Care Centre site on Peterborough PFI.

Qualifications

Diploma in Management Studies, University of Leicester
HND in Civil Engineering, Oxford Polytechnic

Project Experience

Peterborough Hospital PFI	£350m
Leicester Pathway PFI Hospitals	$800m
Thomas Deacon Academy, Peterborough JCT	$35m
Medical Research Laboratories for Cancer Research UK, NEC	$40m
Centre for Mathematical Sciences for Cambridge University	$50m
Railtrack Project, London (East Anglia)	$250m

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Brookfield

Design Manager – Adult

Darren Smith

Darren is a highly qualified Chartered Building Surveyor with over 25 years experience in numerous complex multi-storey buildings and large scale conversions and refurbishments. He has gained an exceptional knowledge of design and construction solutions, working with multidisciplinary project teams to improve buildability and facilitate cost effective solutions and initiatives. His thoroughness and tenacity ensure that client expectations are delivered as defined in the contract brief.

Darren is very much a team player and his clear understanding of the controls and flexibility needed to successfully deliver quality healthcare will be invaluable on the NSGH project.

Brookfield

Career Overview

Andrew started his career with Higgs & Hill in 1988. He worked his way up through the company, achieving various promotions, starting out as a Trainee Planner, graduating to Contract Planner and then Senior Planner. Throughout his time at Higgs & Hill, Andrew worked across varied projects such as a Food research Laboratory for MAFF, a 'green' chicken waste burning Power Station, a Pharmaceutical Laboratory clean room packaging facility to the New North Stand at Chelsea football clubs Stamford Bridge stadium.

In 1998, Andrew joined Laing Construction Ltd as a Senior Planner. Andrew worked on the Design & Build PFI contract for Norfolk & Norwich Hospital, a new general hospital on a green field site. Completion of the project was achieved 20 weeks early.

In 2006, Andrew joined Brookfield as the Planning Manager on Peterborough Hospital Project and has played a key part in successfully delivering the project against tight.

Qualifications

Member Royal Institute of Chartered Surveyors
Member of the Association of Building Engineers
Institute of Leadership and Management
Evacuation Modelling and CFD University of Greenwich

Project Experience

Peterborough Hospital PFI	**£350m**
Strata, London SE1 London	**£80m**
Wembley National Stadium London	**£500m**
Discovery Dock Luxury Apartments London	**£42m**
HSBC Headquarters Canary Wharf London	**£130m**
41-43 Millharbour London	**£24m**
Jemstock House, South Quay London	**£65m**
West India Quay London	**£105m**
Canary South Fire Station London	**£20m**
Conversion of Bryant and May Match Factory Apartments London	**£105m**

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Brookfield

Project Manager - Laboratories

David Jordan

David has worked closely with Alan Keeley in developing our construction methodology with particular focus on the Laboratories Building where he will lead our design and construction team.

David's site engineering background has provided an ideal springboard to site and then project management across a diverse range of projects in both design and value. His 26 years experience, hands-on management skill and construction appreciation is invaluable in establishing a safe, well-organised and efficient site. Dave is within 4 weeks of handing over the Critical Care Centre in Peterborough, a technically difficult Project with a very tight programme. Dave's drive and ability to create a team culture on the project have been instrumental in its.

Brookfield

Career Overview

David began his career in 1982 as an articled pupil with John Laing Construction in the site engineering department, working across varied projects tasks.

In 1987 David was selected to take part in the 2 year Laing Management Training Scheme, which included Estimating, Purchasing, Planning and Resources, Safety, and Site Management, and was primarily focused around the construction of new Ward Blocks, Theatres, Intensive care and Outpatients unit at Hemel Hempstead Hospital. Following successfully completing a new school building, a number of refurbishment projects, and a GUM clinic at St Albans City Hospital, David took on the position of Construction Manager where he worked on projects involving complex interface between civil engineering and building operations including a Hardened shelter for the MOD, and the Millennium Stadium in Cardiff.

In the position of Project Manager David continued to complete projects to tight deadlines and demonstrate knowledge across the full range of site activity, including the hi-tech National Physical Laboratory project in Teddington where for the final 2 of 15 buildings he used feedback from previous activities to improve on all previous completions. In 2005 after more than 22 years with Laing O'Rourke David joined Brookfield (Previously Multiplex) when they approached him to assist in the completion of the Wembley National Stadium, and the management of the Peterborough Hospital CCC project.

Qualifications

HNC Building
CSCS - Project Manager Accredited
SMSTS Certified

Project Experience

Peterborough PFI Acute Hospital	**£350m**
Wembley National Stadium West London	**£450m**
High Spec Apartment Development Battersea, South-West London	**£13m**
DTI National Physical Laboratory Teddington	**£160m**
Retail Village Braintree Middlesex	**£16m**
Millennium Stadium Cardiff	**£130m**
CTF 345 HMS Warrior Northwood	**£25m**
Barclaycard Refurbishment Northampton	**£2m**
GUM Clinic St Albans Hospital	**£3m**
DSS Neasden Refurbishment	**£2m**
New Ward and Theatre Areas Hemel Hempstead Hospital	**£8m**

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David is the current City Care Centre Project Manager overseeing this largely independent £30m Primary Care element of the Peterborough Hospital PFI project that includes CAMH, Respite, OPD, Minor Injuries, and specialist rooms for Audiology and Imaging.

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Brookfield

Commercial Manager - Laboratories

Kevin Robinson

Kevin has 20 years experience on a variety of contracts such as JCT, NEC, GC/works and Design and Build PFI.

Kevin has broad experience in all areas of commercial management with particular focus on procurement of the supply chain, cost control, re-measurement, preparation of valuations, risk management, and agreement of Final Accounts. He is used to working with all sides of the construction and client team and is able to communicate well at all.

Career Overview

Upon graduating from Peterborough Regional College Kevin joined Coulson and Son of Cambridge as an Assistant Quantity Surveyor. Kevin left Coulson & Son to pursue an HND in Building Studies at De Montfort University, Leicester to carry out a 3 year full time Course. During the 2nd year of the course he was invited back to Coulson & Son for his years work experience.

On graduating from Leicester Kevin Joined Wates Construction Ltd. as an Assistant Quantity Surveyor. One of his first projects for Wates included a 400 bedroom accommodation block for the University of East Anglia. He was involved as part of a large commercial team being responsible for managing some of the Subcontract packages, and assessing change management.

Kevin was promoted to site surveyor where he undertook a number of projects including R & D facilities for the Association of Consumer Research and Glaxosmithkline, where an extensive M & E services package and laboratory fit out was required.

The Project Responsibilities increased on ACR and Glaxo to include preparation of client valuations, and procurement of the supply change which were all on a Bespoke forms of Contract. Kevin was promoted to Senior Quantity Surveyor where he was involved in the two-stage procurement of research facilities for the Animal Health Trust, and a new Learning Resource centre for the Royal Veterinary College, Moulton Paddocks Estates, and Corby Academy.

In September 2007 Kevin Joined Brookfield as a Senior Quantity Surveyor with responsibility for Major Subcontract Package management, and assisting in the Procurement of the Supply chain, on the Peterborough Hospital Project.

Qualifications

OND in Building Studies
HND in Building Studies

Project Experience

Peterborough PFI Acute Hospital	**£350m**
Association of the Consume Research Milton Keynes	**£1.5m**
Glaxo Ware, Herts	**£18m**
Animal Health Trust Newmarket	**£3m**
Royal Veterinary College Hatfield	**£7.5m**
University of Cambridge	**£23m**
Moulton Paddocks Estates Newmarket	**£22m**
Corby Academy	**£26m**
University of East Anglia	**£8m**

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Brookfield

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Brookfield

Section Engineer

Timothy Baillie

Tim has gained experience on both Civil Engineering and Building projects which has given him an in depth understanding of the construction industry.

He has developed his knowledge inline with the current codes and regulatory requirements of each project. Tim has developed his experience in healthcare during his current project and employs a methodical approach to problems encountered and he has developed his management skills to be an effective.

Career Overview

The first project Tim undertook was in 2005 with Edmund Nuttall as a Junior Engineer on the A428 Caxton Common Improvements scheme. He was primarily involved in ensuring the dimensional accuracy and specification conformity of the works during the construction of 3 bridges and 7Km of dual carriageway. This required the development of an attention to fine detail in ensuring the quality control of the works to ensure that the materials delivered and installed on site were compliant with the local authorities' requirements. Working on an ECI contract gave him a solid understanding of working with clients and designers to produce feasible, complex structures.

Tim joined Brookfield in September 2007 as a Site Engineer on the Peterborough Hospitals PFI project. He was soon promoted to the position of Section Engineer after taking on the responsibility of the steel frame construction, external facade and external roads. This involved managing other site engineers to ensure that they carried out their works inline with the drawings & specifications.

Throughout the project Tim has been an integral part of the site Engineering team in thoroughly checking through the site information to ensure its Engineering suitability and completeness. This design compliance involvement proved invaluable as Tim worked closely with the Brookfield Project Engineer & the Design Consultants in ensuring that his section of the works were methodically controlled to ensure their construction accuracy and overall product quality, met with the project specifications. Additional responsibilities have also been in control of the temporary works associated with the lifting operations on site.

Qualifications

MSc Civil Engineering, Heriot-Watt University (In Progress)
Student Member, Institute of Civil Engineers

Project Experience

Peterborough PFI Acute Hospital	£350m
A428 Caxton Common to Hardwick Improvements	£55m

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Tim is also responsible for the site based liaison with the local building control officer. This has involved gaining an intimate knowledge of the specialist healthcare specifications, HTMs and HBNs, associated with the construction of hospitals and the related Building regulations both for internal and external works to deliver a quality product inline with the client's construction.

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Brookfield

Services Manager - Children's

Wayne Allison

Wayne has extensive multi-disciplinary knowledge in the management of large design teams and major projects in both Australia and the UK. He has considerable experience in design, site installation and commissioning, together with the proven ability to work co-operatively with subcontractors, suppliers and authorities. He has been responsible for the management of many aspects of services design, installation and commissioning including quality control, negotiation with subcontractors and obtaining approvals as well as liaison with the client, consultants and construction team to minimise disruption during services upgrades and changeovers.

Career Overview

Commencing his career in the UK as a Refrigeration Servicing & Installation Engineer in 1985, Wayne supervised the installation and maintenance of industrial and commercial refrigeration plants for food processing factories, banks, offices and computer centres. He later joined an Edinburgh consulting engineering firm as a Mechanical Engineer, he worked on the design, testing and commissioning of services in several major refurbishments. These included the Marks & Spencer in Glasgow, where he programmed the services stripout/installation to enable the store to continue trading during construction.

Moving to Australia in 1995, Wayne took up a position as Senior Engineer with a Sydney engineering consulting practice. As the Mechanical Section Leader and Project Team Leader, his responsibilities included resource allocation, staffing, marketing and financial control. In the role of Project Team Leader he worked on large refurbishment sites managing the design, documentation and construction phases. During this time he was leading the design of all services for the Sydney Central Plaza project.

While assigned to this project Wayne worked closely alongside Brookfield's site management team. His responsibilities included contract negotiation, client and authority liaison, directing and supervising subcontractors, as well as staging/programming of services to meet staged handovers. He joined Brookfield in May 1998, playing a key role in ensuring completion on time of this $162m redevelopment. Wayne relocated to the UK in Febuary 2004 with Brookfield as the Project Manager for the retail services and services diversion's for the White City Retail Development. Currently Wayne is working as part of the services team on the Peterborough hospital as the main delivery interface for the mechanical.

Qualifications

Bachelor of Engineering Building Services (Hons), Newcastle Upon Tyne Polytechnic
Graduate Member, Chartered Institute of Building Services Engineers

Project Experience

Peterborough PFI Acute Hospital	**£350m**
White City Development UK	**£1bn**
Cambelltown Hospital	**$40m**
King Street Wharf Redevelopment	
Stage 1 – Precinct	**$107m**
Stage 3 – Portside	**$90m**
Stage 4 – KPMG Australia	**$120m**
Royal North Shore Hospital	**$43m**
Sydney Central Plaza Pitt Street, Sydney	**$162m**
Grace Bros Fitout – Sydney Central Plaza Pitt Street, Sydney	**$65m**
Bennelong Centre – East Circular Quay	**$245m**
Central Library Dundee	**£15m**
Marks & Spencer Glasgow	**£60m**
Marks & Spencer Warrington	**£65m**

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Brookfield

Planner - Laboratories

Ope Adebanjo

Ope is an ambitious assistant Architect/ Project Planner with 5 years work experience within the healthcare, commercial and residential sectors. He has excellent planning, design and technical skills with the ability to adapt to a continuously changing work environment.

Ope is highly motivated and seeking challenges where potential can be maximized. Ope will use the experience of the team around him to ensure that all programmes and monitoring are carried out to the highest standard.

Career Overview

Ope started his career in Abuja Nigeria in 2003 as an Assistant Architect/ Planner with CAD Expert Solutions. Ope was responsible for producing 2D plans, Sections and elevations with AutoCAD, producing 3D models, project and production planning and writing progress reports.

Ope moved to the UK in 2006 and spent a year with Fountain of Fortune as a Project Planner, where he monitored the overall project progress and was responsible for resource allocations.

Ope joined Brookfield in 2008 and is currently working on the City Care Centre in Peterborough where he is responsible for reporting, monitoring and analysing overall project performance. He is heavily involved in the production planning, resource allocating and procurement planning. Ope organizes the subcontractors meetings to ensure the project is on target.

Qualifications

B.Tech (Architecture), University of Technology Minna, Niger State, Nigeria
MSc (Construction Project Management)
University of Lincoln
Member, Nigerian Institute of Architects
Member, APM (Association for Project Managers)

Project Experience

Peterborough PFI Acute Hospital	£350m

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Brookfield

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Design Manager - Laboratories

Manny Ajuwon

Manny has been heavily involved during the bid process with the labs buildings and is committed to continuing in this role should we be successful.

Manny is an experienced construction professional with a good track record of senior involvement in varied projects for commercially effective national UK Construction Companies spanning 22 years. He is passionate about ensuring a 'right first time' mentality, runs through the entire corporate structure assisted by the introduction of innovative technology and methodology resulting in the identification of £23m potential savings within a £350m turn-over. He has hands-on involvement in the entire 'life cycle' of major projects from tender preparation to project delivery. Manny is a valued panelist on: Construction Excellence (Building & Estates Forums; RICS (Design Management Peer Group).

Project Experience

Peterborough PFI Acute Hospital	£350m
St Lukes Cheltenham P21	£18m
Cheltenham P21 Womenns & Children Unit	£20m
Lilian Baylis School	£30m
Lewisham BSF	£210m
Lilian Baylis School PFI London London	£30m
10 Gresham Street London	£53m
Juxon House London	£35m
Procession House City of London	£23m
PalaceXchange Shopping Centre	£43m

Brookfield

Career Overview

Selected by Higgs & Hill in 1985 during student placement and invited to join the company as an indentured graduate trainee. He was promoted to Section Engineer after training.

Manny progressed through to being appointed Project Engineer/Deputy Project Manager in 1993 on the Upper Grosvenor Project. In May 1998 he joined Kier Build as a Design Manager working on 2 complex D&B projects for Heron Properties. Manny was primary responsibility for managing the Design Teams and Processes.

In October 2000 he joined Bovis Lend Lease as Design Manager working on 3 projects ranging from £30-35m again managing the Design Teams on each project. In July 2003 he joined Costain Ltd, again working on key projects in Healthcare, Retail, Education & Commercial developers sectors. Later promoted to a national role of Design Coordination Team Leader, with responsibility for leading implementation of Design Coordination Policy deeper into the Costain Business and driving out waste, combined with strategic development and deployment of the company's Virtual Construction Strategy (3D-5D modeling coordination primarily in Health, Retail, Education & Commercial Sectors.

Qualifications

I.C.E., ACIOB
B.Eng. Civil Engineering Oxford Brooke University 1983 - 1987
HND Building Mid Kent College 1981 - 1983

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Manny was short listed for National Innovation award for successfully improving the profit margin on a project by 2.1%, whilst mitigating a potential 36 week critical weeks delay, by application of a 'right first-time approach' to design. Manny joined Brookfield in December 2008 as a Senior Design Manager working on the Peterborough Healthcare Project.

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Brookfield

Procurement Manager - Laboratories

Chris Fairhall

Chris is a competent procurement manager with experience of working on a variety of projects under PFI, D&B and CM contracts. Sub-Contract package procurement involving setting tender strategies, prequalification, tendering, evaluation, negotiation and placement of Sub-Contracts. Experienced in a number of sectors including healthcare, pharmaceutical, education, retail, airports, process engineering, commercial offices and fit-.

Career Overview

From an engineering and manufacturing background Chris moved into Construction in 1989 with Amec Design & Management as an Asst QS. Over the next 10 years Chris worked on a number of developments focusing on procurement of Sub-Contract packages. These schemes included major pharmaceutical laboratory developments for Glaxo, Boots and Pfizer, together commercial office and airport redevelopments for blue chip clients.

A period was spent at Kier Build in 1999 working on the new TAG McLaren HQ in Woking.

Chris moved to Carillion Building in late 1999 as Procurement Manager on the £100m Swindon PFI Hospital. His role was to lead the Procurement Team, developing strategies and carrying out procurement of Sub-Contract Works. This role continued on the University of Herts PFI scheme.

In 2002, Chris joined Kajima Construction Europe as a Senior Buyer and was involved in developing group procurement processes and procedures for implementation across the operating divisions.

Chris moved to Skanska Construction UK in 2003 as a Procurement Manager at the £350m Derby Hospital, undertaking Sub-Contract procurement and reporting and analysis of Sub-Contract packages, including performance assessments.

Chris joined Brookfield Construction in late 2005 as a Procurement Manager and from spring 2006 has been carrying our full Sub-Contract procurement on the £350m Peterborough Hospital project.

Qualifications

HNC Building Studies, Oaklands College, St Albans, Herts

Project Experience

Peterborough PFI Acute Hospital	**£350m**
St Barts & London Hospitals London	**£1.2bn**
Derby Hospital	**£330m**
Uni of Herts Hatfield	**£55m**
Great Western Hospital Swindon	**£100m**
TAG McLaren HQ Woking	**£120m**
Pfizer Ltd Sandwich	**£160m**
Rugby Cement Rugby	**£110m**
Glaxo R&D Laboratory Campus Stevenage	**£500m**
Boots – Numerous Refurb and New Build Laboratories, Offices and Warehouses Nottingham	
Astra Zenica / Smithkline Beecham Laboratory New Builds	

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Brookfield

Construction Manager - Laboratories

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Brookfield

Andy Sherman

Andy has 23 years of varied experience in construction, spread across many of the varied aspects of the industry. Andy is a well-rounded, good natured person with a hands-on approach, willing to be out in the field as well as in the management office steering a job. He is always looking for opportunities to progress the current project, and able to deal with professional bodies and subcontractors alike, in order to do so. Andy enjoys a challenge and the satisfaction of turning out a success.

Career Overview

Andy joined the industry as a management trainee with Miller Construction where he experienced various roles from Planning office assistant up to Site Manager. During this period Andy was involved in the successful completion of a mixed range of traditional and design/build office developments, mixed retail, schools, and refurbishment projects in and out of London, many of them occupied.

Moving to Hunting Gate Construction, Andy progressed to running larger projects on his own, such as an office/workshop unit development in Oxford and the completion of a mixed residential project in Silvertown, London.

Andy then joined Walter Lilly & co, where he was one of two site managers on the Oxford Centre for Gene Function (a laboratory new build), followed by the Weatherall Institute for Molecular Medicine (a refurb and extension of occupied laboratory buildings, in the grounds of the John Radcliffe Hospital, Oxford).

Andy then moved to Bluestone Ltd to manage another very successful school extension/refurb project.

Having experienced the high quality of the Oxford contracts Andy looked towards similar opportunities, which he found with Gleeson Building (latterly GB Building Solutions), as a senior site manager on the complex refurbishment of Cambridge University's System's Biology Institute (which was occupied throughout), and then the CCI Building within the grounds of Addenbrookes hospital. During his time at GB Building, Andy was also heavily involved in the project at Wellingborough Swimming Pool.

Andy is presently a Section Manager on the Peterborough Hospital Project.

Qualifications

ONC and HNC (Building Studies)

Project Experience

Peterborough PFI Acute Hospital	**£350m**
Sotheby's Refurbishment/Extension	**£8m**
Maltese Commissioner's Office/Airline/Bank Piccadilly, London	**£8m**
OCGF Oxford University	**£10m**
WIMM Oxford University	**£12m**
Helena Romanes School Gt Dunmow	**£2.5m**
SBI Cambridge University	**£14m**
Wellingborough Leisure Centre	**£8m**
CCI Cambridge University	**£14.5m**

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Brookfield

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Brookfield

Construction Manager - Laboratories

Martyn Reed

Martyn has been in the construction industry since leaving school to take up an apprenticeship. He has worked his way from bricklayer to Construction Manager through hard work and determination. Being a team player with good communication skills and an obvious passion for the job has contributed to this success. Martyn is currently completing the Critical Care Centre and takes great pride in the quality of work achieved against a very tight programme.

Career Overview

From 1979 to 1992 Martyn worked his way from bricklayer to bricklaying foreman working on various projects throughout East Anglia and the south east, ranging in size and value. In 1992 he joined Amey Building as a General Foreman working on projects in East Anglia for private clients and the universities, looking after all construction elements up to completion. In 1994 he joined Sindall's as a Site manager working on 2 conversion projects in central London overseeing the construction works and finishes to completion.

In 1996 Martyn took a Section Manager position with Laing working across London and East Anglia. Of particular note was the Norfolk and Norwich Hospital where Martyn having initially joined the team to manage the envelope construction, ended up moving inside to look after finishes in a number of key areas including CSSD, mortuary/post mortem, Histology and Pathology etc. This role meant that he had to work closely with some key members of NHS staff within the high sterile locations to achieve the finishes the departments required.

In 2005 Martyn was approached to join Alfred McAlpine as Section manager of the Elective Care centre at Addenbrookes hospital. This building had a combination of healthcare and laboratory areas. Martyn was responsible for the envelope of the NHS block and the internal finishes of the project; which included some specialist areas within both blocks including CSSD, operating theatres, X-Ray department and a number of laboratories, specializing in Diabetic research and genetics.

Martyn joined Brookfield in 2007 as Construction Manager for the City Care Centre in Peterborough. His role includes the day to day running of the site on all aspects, liaising between subcontractors, co-ordinating construction operations and making sure the operations are finished to a high standard.

Qualifications

City and Guilds Basic Craft and Advanced Craft Certificate for Bricklaying
SMSTS, IOSH, CSCS Site Manager's Card

Project Experience

Peterborough PFI Acute Hospital	**£350m**
Bluestone Wales – Holiday Park Narberth, South Wales	**£44m**
Addenbrookes Hospital Extension Cambridge	**£84m**
293 Apartments and Retail Units Ipswich	**£32m**
52 Luxury Apartments Norwich	**£9m**
Norfolk and Norwich Hospital Norwich	**£180m**
Spirrella Building Conversion Letchworth, Herts	**£6m**
Learning Resource Centre Hatfield, Herts	**£6m**
Marriot Hotel Heathrow Airport	**£20m**

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Brookfield

Commissioning Manager – Project Wide

Robert C King

Robert has been involved with the M&E services delivery for over 20 years. The recent appointment with Brookfield is directly attributable to the involvement within the Brookfield construction team since 2002. His knowledge and experience is specifically focused to Commissioning and project delivery. The personal attributes he possesses are a positive benefit to any project he is involved in. The methodical and rigorous approach to achieving tasks and objectives are particular effective in adapting to the fluid nature of the construction process. An ability to encourage a team ethic motivates others. This positive attitude is an example to others and leads the delivery of high standards from all.

Career Overview

As a Mechanical Commissioning engineer Robert spent his formative years on site working for the specialist company Commtech. He gained valuable experience as a hand on TAB technician on numerous contracts across London.

Opportunities to develop on from the project manager for the TAB activities took Robert into Commissioning Management in 1996. Working within a traditional CM team Robert gained valuable knowledge of other specialist system commissioning and the awareness the final client delivery requirements.

Following a period where Robert was employed by the MEP contractors Robert was seconded to work for various the CM teams at Bovis, Laing's and Wates as a Services Manager responsible for MEP commissioning. The projects he was involved with ranged from R&D development to city banking HQ's and recently to projects that not only provide business resilience for IT but also feature the latest renewable energy features – geothermal bore holes, grey water and artesian well technology.

Robert's relationship with Brookfield started in 2002 when he was seconded to Brookfield from Commtech. The specialist knowledge and attitude provided a valuable asset to the Brookfield construction teams at a number of Projects. Robert has provided Brookfield with a refreshing change of perspective with regards to the more holistic view of 'commissioning processes as a client delivery necessity. This was further endorsed by Brookfield when he was appointed directly as our Commissioning Lead Manager in the spring of 2008.

Qualifications

Commissioning Specialist Association Grade 6
BTEC ONC Mechanical & Production Engineering
CITB – SMTS Health & Safety Training Scheme

Project Experience

Peterborough PFI Acute Hospital	**£350m**
10 Eastbourne Terrace London	**£38m**
White City London	**£110m**
199 Knightsbridge London	**£170m**
Phase 6 – Moore London	**£200m+**
20 Moorgate – Cazenove Bank London	**£75m**
Gatwick North Terminal	**£45m**
British Museum – Great Court Project London	**£140m**
Hewlett Packard Museum Process R&D Facility Ireland	**£150m+**

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Brookfield

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Brookfield

Commercial Director

Mike Sharples

Mike has been involved in the commercial Dialogue meetings and will lead the commercial team on the Project.

Mike is a Commercial Director experienced in contract negotiation, risk management, process review, improvement and implementation. With 36 years in the industry he is an experienced operator at a strategic level, and an incisive problem solver, having a broad experience outside the normal commercial role. Mike likes to identify and develop potential high achievers, and is considered a good leader and motivator.

Career Overview

Starting as trainee Quantity Surveyor in 1973 Mike remained with Second City Construction working around the West Midlands for 10 years developing his commercial skills.

A period of self employment between 1988 and 1995 broadened Mike's range of experience as a project manager and cost consultant. Prior to AMEC Mike was invited to Mowlem Plc in 1995 as Commercial Director in the South Wales, promotions to Regional Director in Devon followed, by Regional Commercial Director for the South West Region followed. The last two years at Mowlem were as a Construction Divisional Director.

Joining AMEC in 2003 as a Divisional Commercial Director Mike held responsibility for standardization of processes methods and reporting for five business units, construction units in London and East Anglia, a Precast Concrete manufacturing company as well as Tunneling and Utility businesses. Mike also led the construction aspect of the PFI bids commercially on Colchester Hospital and Taunton Oncology unit.

Mike joined Brookfield in March 2006 as Project Commercial Director on the Peterborough Hospitals PFI Project during the preferred bidder stage and currently heads the commercial teams. Since joining, Mike has managed the Capital Cost programme having responsibility for procurement, supply chain management, design cost management, value engineering overview as well as all matters associated with the contract.

Qualifications

Associate Member the Chartered Institute of Builders

Project Experience

Peterborough Hospital PFI	**£350m**
Colchester Hospital PFI (Bid)	**£180m**
Taunton Hospital PFI Oncology Unit	**£25m**
Mercury Health Treatment Centres Portsmouth, High Wycombe and Haywards Heath	**£35m**
Laboratories Refurbishment University of Wales, Aberystwyth	**£12m**
Semi Conductor Training Facility Newport	**£6m**

continued…

Mike works closely with the Trust and SPV to consider and resolve any matters that may have an effect on progress or suggest a conflict between the building specification and operational needs. He has a clear understanding of matters that, if not addressed progressively through the construction period, can affect programme. A* equipment procurement programme has been a key responsibility involving liaison with and presentation of proposals to the Trust Investment Committee.

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Brookfield

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Commercial Manager - Adult

Alistair Sansum

Alistair has worked in the construction Industry for 27 years and has been gained a wealth of experience in a number of business sectors including multi million pound Hospital Projects, Regional Contracting, and fast track Interiors Fit Out. Alistair's last two projects, both major healthcare, have given him a deep understanding of the key issues in delivering quality healthcare facilities. He brings with him strong negotiating and communication skills focused on creating a team culture embracing all stakeholders in the decision making processes.

Career Overview

Alistair started his career in 1980 with Sindall Construction PLC as a Surveyor, involved in refurbishment, new construction contracts and the negotiation of local authority housing schemes.

He moved to Voland Asphalt Co. Ltd in 1987 as a Estimator/Surveyor, where he was responsible for both estimating and surveying function on contracts up to £3/4m. This role gave him experience in Contracts Management and planning on selected Projects. Alistair then joined Wates Construction Ltd, to take on the role of Managing Surveyor. He was accountable for the financial and contractual administration of a number of projects, both refurbishment and new construction on a variety of differing forms of contract.

In 2001, Alistair joined Dean & Bowes (Contracts) Ltd as a Commercial Manager, accountable for all commercial and contractual matters within this £50 Million turnover Fit Out and Construction Contracting business. Reporting directly to the Managing Director Alistair has accountability for preparation of Management Accounts, all financial reporting and resolution of contractual issues.

He moved to Alfred McAlpine Capitol Projects in 2004. Employed as Commercial Manager for a £72m PFI extension to Addenbrookes Hospital, Cambridge, Alistair's responsibilities included reporting the financial management of the Project including cash flow, financial reporting, determining the evaluation and impact of variations and resolution of contractual issues (as and when these arise).

Qualifications

MCIOB

Project Experience

Peterborough Hospital PFI	**£350m**
Addenbrookes Hospital Elective Care Centre and Diabetes and Endocrinology Research Facility Cambridge	**£74m**

continued…

Alistair joined Brookfield in 2007 to manage the £270m PFI Acute Hospital in Peterborough. Taking the lead role on the commercial management of the Project from procurement of subcontract packages, agreement of final accounts, preparation of monthly cost value reports including end of life reporting, value engineering, risk analysis and the valuation and agreement of variations with the SPV.

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Brookfield

Commercial Manager – Children's

Sean Haines

Sean has 18 years experience in quantity surveying and commercial management. His understanding of all financial and commercial aspects of construction projects and his logical, self disciplined approach make him a valuable member of the commercial team.

Sean has a well disciplined and non adversarial approach to procurement and commercial control and works well with all stakeholders.

Career Overview

Having joined Brookfield (then Multiplex) in 2003 to work on the new Wembley Stadium project Sean joined the Peterborough team shortly after Financial Close in 2007.

Sean's Key responsibilities within the Project Commercial team include;

- Commercial management of various works packages,
- Overall responsibility for internal project financial reporting,
- Project financial timetable management,
- Audit compliance management for both SOX (group) and internal process audits,
- Management of Project accounts staff
- Training of staff members of cost and forecasting reporting methods.

Sean has a general experience on various major projects both in the UK and South Africa.

Qualifications

B.Sc. Quantity Surveying - University of Durban, South Africa

Project Experience

Peterborough Hospital PFI	**£350m**
Wembley Stadium London	**£450m**
Safeway 100 Store Upgrade	**£40m**
Intercontinental Hotels 70 Hotel Rebrand/ Refurbishment	**£25m**
Dixons Spacemix 98,99, D22 – 300 Store Rebrand/ Refurbishment	**£25m**
Richards Bay Minerals – Industrial Civils	**£30m**

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Brookfield

Commercial Manager - Externals

Chris Clarkson

Chris's experience spans various sectors including healthcare, commercial, industrial, and custodial.

He is able to work individually and within a team environment to meet the needs of the project and the client.

Career Overview

Chris started his career as a Trainee Quantity Surveyor for Hodgkinson Builders Limited in 1998. He assisted in the preparation of tenders and the commercial valuation of projects providing masonry.

In 2001, Chris moved to Ballast Plc as an Assistant Quantity Surveyor where he assisted on a number of multi million pound projects including commercial and industrial units.

Chris moved to Interserve Plc in 2003 as a Project Quantity Surveyor where he was responsible for vetting tenders and placing sub-contract orders and surveying duties for packages including valuations and variations.

In 2005, Chris joined Bowmer & Kirkland Limited as a Project Quantity Surveyor where he was responsible for the commercial management of projects including package negotiation, pre-preparing tender packages, forecasting and value accounts.

Chris moved to Brookfield in 2008 as a Quantity Surveyor, and is currently working on a PFI hospital in Peterborough.

Qualifications

HNC Building Studies, University of Derby

Project Experience

Peterborough Hospital PFI	**£350m**
Broadland Business Park Commercial Development Wolverhampton	**£7m**
Wolseley National Distribution Centre Leamington Spa	**£20m**
JCB Heavy Products (Bid) Uttoxeter	**£25m**
HMP Nottingham	**£13m**

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Brookfield

Project Manager - Externals

Robert Evans

Robert has worked as Section Manager for approximately 3 years following a number of years as a Project Engineer. Robert works well as a member of a large site team or on a small site. From a civil engineering background Rob has extensive experience in new build construction, road works including 278 work, civils and demolition. He runs a tight ship and is very thorough and organized in the safe management of works within live environments.

Career Overview

Robert spent 18 years with Laing O'Rourke starting as an Engineer in 1989 working his way up to Section Engineer and Section Manager in 1999 on a purpose built facility for Military Staff training comprising 45,000m2 of mess, teaching and single living accommodation, together with 150 married couple's quarters.

In 2000, Robert was Seconded to Foundation Developments Ltd to act as their Construction Manager, Project Engineer & QA Manager on the Basingstoke Town Centre Redevelopment. The following year, Robert was promoted to Senior Section Engineer/Assistant Project Engineer for the Principle Contractor.

2003 saw Robert move onto Oxford University Research Building and a new role as Project Engineer and QA manager, where he instigated a systematic approach to quality control.

On the John Radcliffe Hospital Oxford Robert was Assistant Project Manager for an £18m subcontract building sub and superstructure, new car parks, phased rebuilding and realignment of approximately 500m of estate roads and Helipad. This involved the logistics of maintaining access to large existing live hospital, generating space for the construction site with phased handovers.

Robert then spent a year as Project Engineer on Birmingham International Airport working 'airside' extending the existing Terminal 1 to increase retail area and bring the Immigration Hall up to current Government standards.

Qualifications

BTEC Ordinary National Certificate in Building Studies
BTEC Higher National Certificate in Building Studies
Chartered Institute of Building – Year I
Chartered Institute of Building – Year II

Project Experience

Peterborough Hospital PFI	**£350m**
Thomas Deacon Academy Peterborough	**£40m**
Birmingham International Airport	**£14m**
John Radcliffe Hospital Oxford	**£120m**
Chemistry Laboratories Oxford	**£40m**
Festival Place Basingstoke	**£130m**
Joint Services Command and Staff College Watchfield	**£110m**

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Robert joined Brookfield in 2007 as a Section Manager on the new Peterborough PFI Hospital. Robert is responsible for all Enabling & External Works including modifications to Local Authority and Highway Agency road infrastructure under 278 agreements. Construction of circa 1600m of hospital estate roads. Construction of both multi-storey and ground level parking to provide 2000 spaces and demolition of the existing.

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Brookfield

Design - Externals

John Beryl

John is an experienced Engineer with a vast understanding of design and construction. John uses his own technical skills to drive economy and buildability into the design of civils and building works. John is happy both in the office and in the field and his hands on approach benefits any team he works .

Career Overview

John started his career in 1966 as a Carpenter and Joiner with C. E Cowen, before joining Harrogate District Council as an Assistant Building Control Officer in 1973. He was responsible to the building control officer and assisted him in carrying out his duties.

Over the next 10 years, John acted as Building Control Officer for various Council's including Hart District and East Yorkshire Borough. His role comprised of all building control matters in a designated geographical area within the authority including dealing with dangerous and dilapidated structures and the checking of structural design calculations.

In 1986, John became Director of Jade Design, Construction & Plant Hire Ltd, where he was responsible for the design of industrial and commercial premises and their ancillary works. Throughout the 1990's, John graduated from Civil Engineering Manager to Construction Manager, Senior Engineer to Site Manager/ Agent. Throughout his numerous roles, John was involved in the monitoring of all sub contractors work and setting out, reporting back to the client in respect of costs, safety, progress, quality and programme; and compilation of Construction Phase Site Health and Safety Plans.

In 2000, John moved to India to Consult for Nanu Enterprises, where he advised on, and managed contracts using UK techniques to increase productivity and make the company more efficient. In 2001, John returned to the UK and joined Jarvis, where he started as senior engineer and changed to site manager.

John joined Brookfield in 2007 as a Senior Engineer and has driven the design and construction of the external works associated with the Acute and Mental Health Unit site.

Qualifications

IAAS/IBCO final exams
I Mun Eng Higher Building Control
HNC (Building) and (Structures) with various endorsements
City & Guilds Advanced Craft (Carpentry & Joinery)

Project Experience

Peterborough Hospital PFI	**£350m**
Derby City Hospital	**£350m**
Centre Parks Ollerton	**£14m**
New Science Labs – Garibaldi School Mansfield	**£3m**
School Extension – Mount School Newark	**£3m**
Halls of Residence – Nottingham University	**£14m**
Halls of Residence – York University	**£7m**
Harrogate General Hospital	**£3m**
Distribution Depot for Somerfield Foods Scunthorpe	**£3m**

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Project Manager - Adult

Andrew Richardson

Andrew is a dedicated Project Manager, with 20 years of experience across many projects. His expertise ranges from liaising with clients and members of the design team to assisting in the preparation of tender submissions, procuring and interviewing prospective sub-contractors.

Andrew takes care in organising construction sites, runs well managed and motivated teams and takes great pride in the presentation and quality of the Projects he delivers.

Andrew will complete the Acute facility in Peterborough in September 2009.

Project Experience

Peterborough Hospital PFI	**£350m**
Wembley National Stadium London	**£450m**
Random House Victoria, London	**£13m**

Career Overview

Andrew started his career in August 1988, working for John Laing Construction as a Project Manager. Here he spent 10 years learning the trade before joining Broughton Installation Limited as an Operations Director. This position included all activities involved in running a modern interior fit out sub-contracting company. Broughton Installations Limited business was primarily involved in the manufacture and installation of doors, door frames and bespoke joinery, installation of plasterboard walls and the installation of suspended ceilings.

In 2000, Andrew joined Churchfield Associates, Central London as a Contracts Manager, working on projects such as Cisco systems head office within Tower 42.

Andrew spent two years with Ibex Interiors Limited as a Project Manager starting in 2001, during which time he worked on numerous commercial developments including trading floors and bank head offices.

In 2003, Andrew joined Wates Interiors Limited, Central London as a Project Manager, where he was responsible for handing over numerous successful projects to the client and professional team which resulted in several follow up contracts being negotiated.

Andrew joined Brookfield in July 2005 as a Senior Project Manager. Since then, Andrew has worked on the Wembley Stadium and held responsibility for all internal works – approx 1,000,000 ft^2. Andrew is currently working on the new Acute Hospital facility in Peterborough and is responsible for the main Acute site – approx 900,000 ft^2.

Qualifications

Bachelor of Science (Construction Management), Nottingham Trent University

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Brookfield

Construction Manager – Adult Podium

James Murray

James is an experienced and enthusiastic Project Manager who takes personal responsible for all on site activities. This involves managing all aspects including Health & Safety, Quality, Cost, Programme, and Design.

Since graduation he has gained valuable experience within the Healthcare, Laboratory, Commercial, Residential, Refurbishment and Retail sectors. He has a proven track record of managing Client expectations by delivering high quality projects from bid stage through to completion on-site within time, cost and quality parameters.

Career Overview

Upon graduating James joined a National Contractor through their graduate recruitment scheme, whereby he initially held the position of a Graduate Engineer providing setting-out, quality control and technical support on a number of projects. The training and experience that was gained within these 2 years provided the grounding that was necessary to allow him to progress through the organisation.

Within 2 years he had progressed through the ranks of Sub Agent, Site Agent and ultimately to the position of Project Manager in late 1999 – thus becoming the companies youngest Project Manager. He worked on many of the companies most technically challenging and fast track projects with key Clients within the Ministry of Defence and Retail sector.

James moved to Gleeson in late 2004 to establish a regional team to develop Client relations with Cambridge University. From the 2 Stage bid process he led the various Design Stages of the SBI project through to delivering the laboratory project on-site.

Following on from the successful completion of the SBI project a similar Home Office Licensed Laboratory was negotiated with Cambridge University. Again from initially acting as Bid Manager through to Senior Project Manager James undertook the task of ensuring that all external and internal designers/parties worked in unison to deliver the Clients objectives/budgets.

James joined Brookfield in early 2008 as Section Manager for the Tower blocks on the £350m Peterborough Acute Hospital. The project thus far is going extremely well and is on target for early completion.

Qualifications

BSc (Hons) Construction Management, Nottingham Trent University
BTEC National Diploma in Building Studies

Project Experience

Peterborough Hospital PFI	**£350m**
Cambridge Centre for Imaging Laboratory Addenbrookes, Cambridge	**£14.5m**
Systems Biology Institute Laboratory Cambridge	**£14m**
Waitrose Newmarket	**£9m**
Command Centre – RAF Mildenhall	**£13m**
Hangers 711, 715 and 599 – RAF Mildenhall	**£12m**
Tesco Store Holbeach	**£5m**
Tesco Extra – £6.2m fit-out Peterborough	**£80m** (Development)
Asda Superstore Hartlepool	**£13m**

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Brookfield

Construction Manager – Adult Towers

John Curry

Over thirty years in construction management covering a wide variety of work in UK and overseas. Working as project leader on design & build contracts up to £20M and as a senior member of teams on Major Projects such as Peterborough Hospital and Norfolk Hospital.

International experience in Libya, Iraq and several years in Australia.

Experience in high rise structures in steel and concrete, with both traditional and system cladding options.

Career Overview

With Brookfield John has worked as construction manager on the structural section of the £350M Peterborough Hospital project. This has involved the management of several multi-million pound subcontractors to erect a five storey clad envelope adjacent to an existing live city hospital.

In 98-02 John worked for Laing Construction at the New Norfolk & Norwich Hospital as manager on the Acute structure, and then completed the fit out on the A&E, Imaging, Cancer treatment, ITU & HDU and Pathology Laboratories.

In between these two hospital projects John worked as a Project manager for R.G.Carter on a range of design and build contracts in Norfolk.

Prior to Norwich hospital, having graduated in Civil Engineering in 1977, John worked in UK, Libya, Iraq and several years in Australia.

Experience ranges from building to civil engineering, high rise city centre structures to inshore marine works. His strength is in problem solving on technically interesting projects and team.

Qualifications

BSc Hons. in Civil Engineering at Nottingham University
Member of the Institution of Civil Engineers and Chartered Engineer

Project Experience

Peterborough Hospital PFI	**£350m**
NHS Norfolk and Norwich PFI Hospital	**£214m**
Baghdad University Iraq	**£200m**
High Rise Residential and Commercial Projects UK and Australia	**£20m**

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Brookfield

Logistics & Communications Manager – Externals

Peter John Beauchamp

James is an experienced and enthusiastic Project Manager who takes personal responsible for all on site activities. This involves managing all aspects including Health & Safety, Quality, Cost, Programme, and Design.

Since graduation he has gained valuable experience within the Healthcare, Laboratory, Commercial, Residential, Refurbishment and Retail sectors. He has a proven track record of managing Client expectations by delivering high quality projects from bid stage through to completion on-site within time, cost and quality parameters.

Career Overview

Peter started his career as a Contract Monitoring Manager, as part of a mixed military/civilian contract team had executive responsibility for monitoring the eleven service requirements for performance standards and facility availability of a Private Finance Initiative contract at the Army Foundation College in the UK where 1500 permanent staff and students were educated. Cost of the contract to the MoD, £1.4M per month.

He participated in tendering process and formulation of small contracts and was responsible for implementing a successful partnering relationship programme after a very turbulent construction phase.

In 2004, he became a Subject Matter Expert, where he formulated and implemented a 35 year £7Bn PFI Project to rebuild a fully serviced army estate in Aldershot and Salisbury Plain. Specifically to oversee the logistics and service delivery components of the project and the monitoring and management of the project. Cost of the contract to the MoD, £20M per month.

Involved in extensive contractual negotiations with the contracting consortium. Introduced informal meetings with the customer which has improved the partnering relationship between the MoD and the contractor in all locations.

Peter joined Brookfield in 2007 as a Logistics Manager and had responsibility for overseeing site welfare, security, access points, site deliveries, waste management and all movements on/off site during the enabling works and during the main construction of this PFI Hospital Project.

Responsible for the Public Relations interface between the construction site, NHS Trust, local community and residence as part of the Considerate Constructors Scheme.

Project Experience

Peterborough Hospital PFI	£350m
PFI - Army Foundation College	£34m
PFI - Allenby / Connaught, Aldershot / Tidworth / Warminster	£7bn

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Brookfield

Technical Manager – Project Wide

Andre Hodges

Over twelve years experience in engineering and technical management within the UK and overseas.

These predominately Design & Build / PFI projects range from stadium, courts and office construction, to technically challenging healthcare projects such as Addenbrookes Elective Care Centre and Peterborough Hospitals PFI.

Andre is technically very competent and strong on quality issues. He has good knowledge of healthcare projects and their technical requirements.

Career Overview

Andre started his career in 1997 as a Graduate Engineer with John Mowlem. After which he graduated through the ICE training scheme to become Site Engineer on sports stadium construction. His primary role being dimensional accuracy and construction compliance with drawings and specifications. He worked for 8 months as a manager in a challenging environment in Kosovo, constructing British Army bases, prior to returning to the UK to gain one years Engineering design office experience.

In 2001, Andre was promoted to Project Engineer following completion of the training scheme. He was responsible for managing Engineering team, quality control and liaison with the Structural Engineers, Architects, Independent Certifier and Building Control.

Andre moved to McAlpine in 2004 as a Project Engineer / Technical Manager to expand career into Healthcare. He was responsible for the management of all engineering design and construction, along with the technical aspects of Healthcare construction.

Andre joined Brookfield in 2007 as a Project Engineer / Technical Manager, and is currently working on the £350m Peterborough Hospital using the experience gained at Addenbrookes. He is responsible for all engineering, quality control and technical management on the project, working closely with the Independant.

Qualifications

Bachelor of Engineering (Civil Engineering and Building), Dundee University

Project Experience

Peterborough Hospital PFI	**£350m**
Addenbrookes Hospital Cambridge	**£76m**
Cambridge Crown Court	**£11m**
AIG Insurance European Headquarters London	**£33m**
Newmarket Racecourse	**£11m**
Charlton Athletic West Stand London	**£4m**
Tottenham Hotspur North Stand London	**£8m**
British Army Nato Bases Kosovo	**£4m**

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Environment, Health & Safety Manager – Project Wide

Jim Senior

Jim is currently responsible for developing company policies and procedures, overseeing their implementation and providing general support to project teams in all matters relating to Environment, Health & Safety.

Jim is keen to get back into a Project role following his time on Wembley and will be a valuable and experienced member of the team.

Excellent communication skills allow Jim to carry out effectively an ever increasing and demanding role.

Career Overview

Jim started his career in 1983 as an apprentice Carpenter, progressing to Site Management roles in 1987, working on a variety of construction projects from domestic new builds to large projects such a the CEGB Convertor Station near Folkestone, Kent.

He joined Shepherd Hill Construction as a General Foreman on road building / bridge construction in 1992, expanding his portfolio of projects to include the additional of a bridge/flyover at Junction 1 of the M1and the building of a new roads in Kent.

Jim moved into his first Health and Safety role in 1995 by joining Silverdale Developments as a Project Manager and Safety Co-ordinator, overseeing the delivery of a development of luxury houses in South West London.

In 1998 a move to ISG Interior / Exterior in a full time role within Health and Safety for 4 years, provided the opportunity to make a significant impact within the industry with internal progression to Health and Safety Manager for the Exterior division overseeing high profile projects such as the Lord Foster designed Albion Riverside development in Battersea and the Tanaka Business School at Imperial College in West London.

Jim joined Brookfield in 2003 to head up the project Environment, Health and Safety team for the construction of Wembley National Stadium where he managed a team of seven Safety Advisors, an Environmental Manager and two Site Medics.

Jim currently oversees the EH&S teams on our UK .

Qualifications

NVQ 4 Occupational Health and Safety

Project Experience

Wembley National Stadium London	**£450m**
City University Business School	**£35m**
Tanaka Business School West London	**£20m**

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Brookfield

Project Manager – Children's

Keith Dickson

Keith is a fully committed, enthusiastic and experienced Senior Manager who has operated at a senior level for over 22 years on major projects throughout the U.K. During this period he has acquired a reputation for first class leadership, control and resourcefulness and built up excellent managerial and client liaison skills. He has experience in a wide range of contractual matters and is well versed in all aspects of Health and Safety, CDM Regulations, the application of Total Quality Assurance and Environmental Controls.

Career Overview

Keith commenced his career in 1968 as an Articled Technician with John Laing working with their Civil Engineering Department on a variety of large projects where he gained considerable experience in large and complicated structures and progressed from Technician to Section Engineer.

Keith continued to work in Civil Engineering until joining Henry Boot Construction in 1985 where his skills as a manager were quickly recognized and he was promoted to Site Manager on a number of smaller projects, eventually succeeding to Project Manager for the refurbishment of Uxbridge Shopping Centre in 1987. Keith was made Senior Project Manager on the £28 million Aylesbury Shopping Centre. Keith's hard work, management and team leading skills were further rewarded in 1996 when he was promoted to Contracts Manager for Henry Boot's West Midlands area.

In 2001 Keith's continued ambition resulted in a move to M. J. Gleeson as Regional Construction Manager where he was responsible for overseeing a number of successful projects including the New Ward Extensions for Luton and Dunstable Hospital and New Pathology facility for Bedford NHS Trust.

In 2005 Keith joined Shepherd Construction once again as Regional Construction Manager and was appointed to oversee the final stages of the new Heart Facility at Nottingham Hospital which provided a significant challenge to his management skills.

Qualifications

Construction Technician's Certificate Parts I & II
Institute of Building Examinations in Construction Technology, Surveying, Services & Equipment, Estimating and Economics
Technical College (Coventry, Medway & Erith)

Project Experience

Peterborough Hospital PFI	**£350m**
Research Facility for MRC Cambridge	**£23m**
Nottingham Heart Hospital	**£15m**
Bedford Hospital Pathology Department	**£6m**
Luton and Dunstable Hospital Kosovo	**£8.5m**

continued…

Keith joined Brookfield in August 2008 as Section Manager for the Ground and 1st Floor Sections of the Acute Hospital at Peterborough where Keith leads a team of 10 managers. Keith's team recognizes the complexity of the highly technical Clinical Areas for which they are responsible and under his leadership have met all the challenges necessary to achieve a successful conclusion.

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Brookfield

Senior M + E Manager

Gordon Hill

Gordon has over 25 years experience in the building services industry, and has a varied successful and track record in the delivery of services installations on complex major projects, in the healthcare, power generation, transport, pharmaceutical, defence commercial, education and custodial sectors. Projects have been undertaken on a variety of contract models including Traditional, Design and Build, PFI and Framework.

His background and extensive experience, allied to a clear understanding of the design process and delivery of major projects and the importance of stakeholder relationships, has equipped Gordon well to meet the demands of today's high profile projects.

Career Overview

Upon graduating, Gordon joined the switchgear manufacturing division of Balfour Kilpatrick Ltd, gaining experience in the design and manufacture of L.V. equipment. He devised and implemented the company Quality System, leading to British Standards accreditation.

With his ability to manage major projects and clients duly recognised, subsequent project management roles followed on Sizewell B and Barking Reach stations, the latter being a landmark project as the first design and build PFI station in the UK , constructed in joint venture with Balfour Beatty Construction Ltd. This particular project underlined to Gordon the importance and benefits of collaborative working with all stakeholders.

This was followed by a transfer to Balfour Beatty International, where Gordon was responsible for the electrical design and build element of the Mass Transit Railway Corporation, Kowloon station project in Hong Kong. Upon his return to the UK, he took up the role as Contracts Manager for Balfour Kilpatrick projects division, with responsibility for the development and profitable operation of the division in the south. Amongst other projects, he took a leading role in a major design and build Pharmaceutical Research and Development facility for Pfizer, Kent.

Promotion to Projects Director with southern division followed, where Gordon had specific responsibility for major design and build projects in the City for Goldman Sachs and Nomura Bank.

Qualifications

HND Electrical and Electronic Engineering,Glasgow College of Technology

Project Experience

Peterborough Hospital PFI	**£350m**
Harefield Hospital (Services)	**£2.2m**
Hemel Hemstead Hospital (Services)	**£1.8m**
St Bartholomew's Hospital (Services) London	**£2m**
Enniskillen Hospital (Bid Services) Nothern Ireland	**£80m**
Midlothian Community Hospital (Bid Services) Edinburgh	**£1.8m**

continued…

An approach from Mitie Engineering Services (Eastern), to join as Operations Director, provided an opportunity for Gordon to be involved with Healthcare Projects, with contracts being undertaken at Harefield, Hemel Hempstead, and St Bartholomew's Hospitals.

Following relocation back to Scotland, Gordon joined Skanska as a member of the Executive Team Scotland, a joint venture between Skanska Integrated Projects and Skanska Rashleigh Weatherfoil, where he had specific responsibility from the bid stage for the services design and build element on PFI Education and Framework Custodial projects. He was also involved in the bidding process for Enniskillen Hospital in Nothern Ireland.

An approach from Haden Young Limited ,to join as Operations Manager, responsible for the operation of the Edinburgh branch, provided Gordon with the opportunity to oversee a number of design and build Education projects, and take the lead in the bid for a Community Hospital in Midlothian.

Gordon joined Brookfield in August 2009, as Senior M+E Manager, responsible for the completion of the services installation and commissioning on Peterborough Hospital.

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10.1.1.7 Specialist Contractors

It is of paramount importance on a Project of this size and complexity that the key Specialist Contractors used are experienced in this type of work, financially stable and have a proven track record of working with us as a team. Our team was brought together at prequalification stage and has worked together through the dialogue process with the NSGH Project team to understand the requirements and offer value solutions to the team.

We are partnering with 4 main Specialist Contractors to deliver the New South Glasgow Hospitals:

Mercury Engineering – Mechanical & Electrical design and installation

Astins – Plasterboard partitions and drylining

Dunne Building an Civil Engineering – Substructures and Superstructures

Structal UK – Unitised Curtain Walling

All have given consideration to the approach they need to take to the Project to deliver their works. Where practical the structure adopted by Brookfield has been adopted and the organisation charts and curriculum vitae below detail the resource each trade contractor will deploy on the Project.

Brookfield

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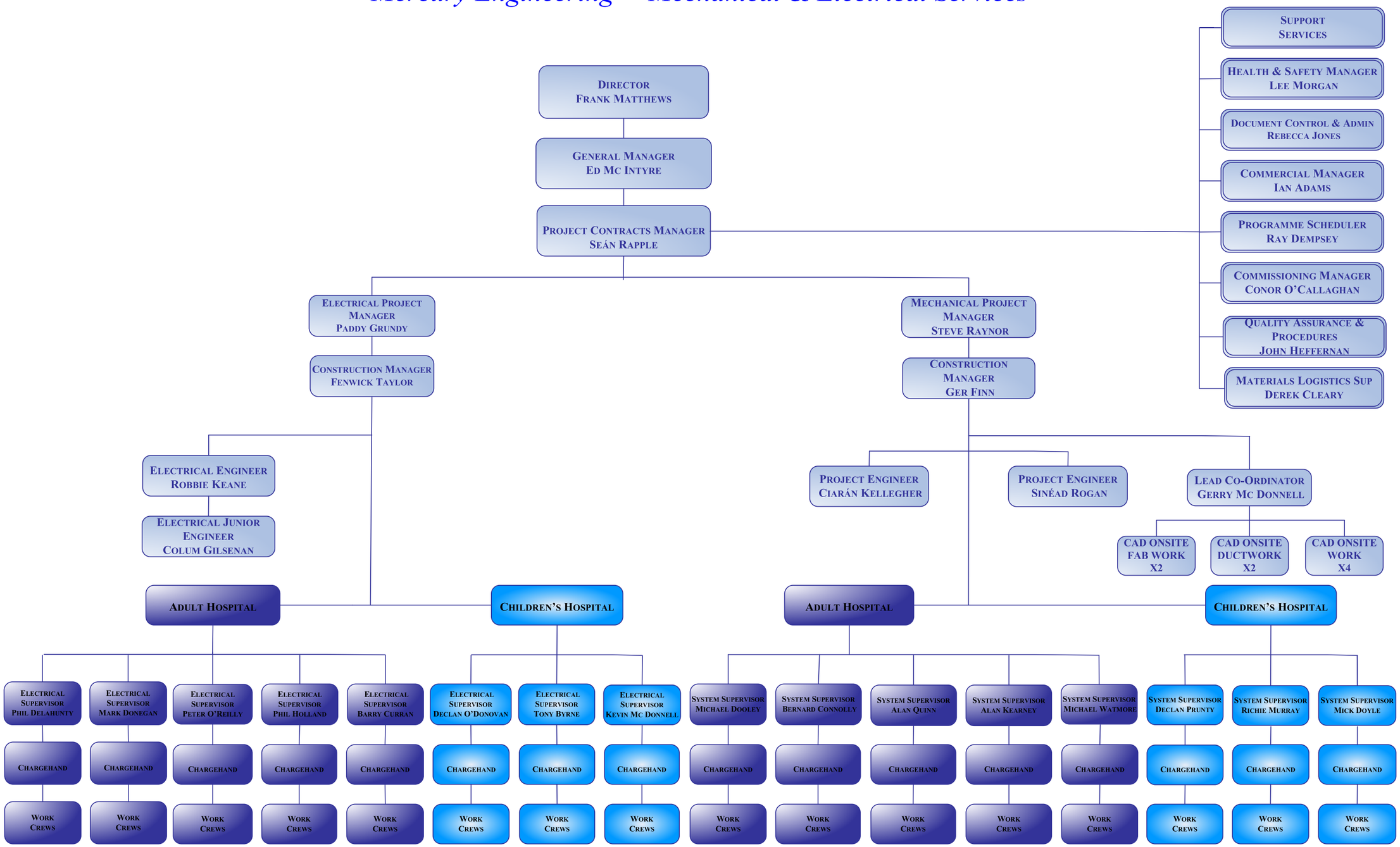
Brookfield

THE NEW SOUTH GLASGOW HOSPITAL (NSGH) PROJECT CONTRACTOR MANAGEMENT ORGANISATION CHART

Mercury Engineering – Mechanical & Electrical Services



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Brookfield

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Electrical Director

Frank Matthews

Responsible for complete operations of Mercury's Electrical & Instrumentation division with annual turnover in excess of over €150m and 1,100 direct headcount approximately. In recent years Mercury Electrical and Instrumentation, have joined with other disciplines within the company to have provide services on some of Ireland's most significant projects e.g. Dublin Port Tunnel, Spencer Dock Development, Shelbourne Hotel and Wyeth Pharmaceutical.

Career Overview

With over 26 years experience with Mercury Engineering, Frank has been involved with and delivered similar schemes to the South Glasgow Hospitals Project.

Since qualification, Frank has project managed and delivered a diverse range of projects in terms of complexity, specialism and value.

His current position in Mercury see him as having over all responsibility at board level for the successful delivery of the Edith Cavell Hospital, Peterborough on behalf of mercury.

Frank has previously project managed and delivered state of the art facilities for Intel as well as specialist environments for Backweston Laboratories, British Myers Squibb (Pharmaceutical Plan) and Cork University Hospital.

Qualifications

Apprenticeship Served – Pearl Electrical

Project Experience

Peterborough Hospital PFI	**£350m**
Sentrum Data Centre Watford	**£170m**
Sentrum Data Centre Croydon	**£86m**
Sentrum Data Centre Woking	**£300m**
Microsoft Grangecastle, Dublin, Ireland	**£38m**
Intel Ireland Leixlip, Co Kildare, Ireland	**£206m**
Wyeth Dublin, Ireland	**£150m**

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Brookfield

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General Manager

Edward McIntyre

General Manager within Mercury Engineering's Mechanical Division. His experience includes several high profile hospitals including most recently the 95,000m² acute Edith Cavell Hospital, Peterborough.

Career Overview

Ed began his career with Mercury Engineering in 1999 as a Mechanical Project Manager on Commercial, Industrial, and Institutional projects progressing to Contracts Manager and then General Manager.

His present role on the Edith Cavell Hospital Peterborough, sees him specialising in Hospital Mechanical installation including installations of medical gases, pneumative, tube systems, heating/cooling systems, ultra clean operating theatres and smoke control BMS.

He has previously project managed complete mechanical services installations on Whitfield Private Clinic, Cork Road, Waterford. Edward Project Managed the complete mechanical services to 40 bed hospital and radiotherapy unit that will have four operating theatres and comprehensive diagnostic equipment including computed tomography and magnetic resonance imaging scanning.

Edward also Project Managed St Vincent's University Hospital, Elm Park, Dublin, consisting of complete Mechanical and HVAC Services to new hospital buildings and 30,000 sq.m. car park; and James Connelly Memorial Hospital Blanchardstown, Dublin, again, consisting of complete Mechanical services including medical gases, pneumative tube system, heating system, cooling system, ultra clean operating theatre and smoke control BMS.

Qualifications

Diploma Environmental Engineering
Mechanical Engineering Technician
Diploma Management Systems
ACIBSE & MBA in Business Finance

Project Experience

Peterborough Hospital PFI	**£350m**
Santry Sports Clinic Dublin, Ireland	**£8m**
Whitfield Private Clinic Waterford, Ireland	**£9m**
St Vincent's University Hospital Dublin, Ireland	**£17m**
James Connelly Memorial Hospital Dublin, Ireland	**£8m**

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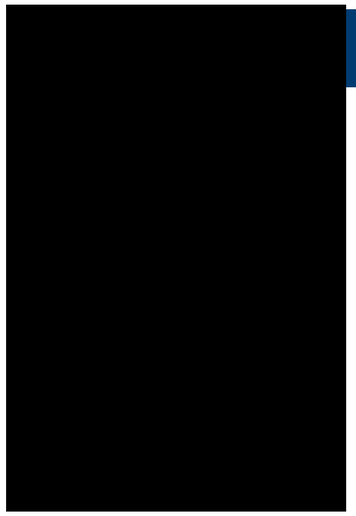
Brookfield



Project Contracts Manager

Seán Rapple

Seán's role as Contracts Manager sees him responsible for approximately 40-90 personnel (depending on the size of the project) comprising of foremen, chargehands etc. He is responsible for all aspects of the team including health, safety, wages, materials, planning meetings, work reports, material management, labour/material costs, invoicing both sending and clearing.

Career Overview

Since joining Mercury, Seán has quickly established himself as a capable manager, progressing from Project Engineer to his current position as Project Contracts Manager.

His experience of highly technical environments (e.g. Wyeth Medical Projects – bespoke development for a drug substance and drug product manufacturer) have given Seán a thorough understanding of the environments required by the New south Glasgow Hospitals Project.

Qualifications

IEI Project Management Training
City & Guilds Mechanical Engineering

Project Experience

Sentrum 2 Data Centre London	**£170m**
Sentrum 3 Data Centre London	**£300m**
Marks & Spencers Liffey Valley, Dublin	**£1m**
Shelbourne Hotel Dublin, Ireland	**£11m**
Global Voice Data Centre, Colo 3, 4, 5 & 5 Dublin, Ireland	**£28m**
Wyeth Medica Dublin, Ireland	**£150m**
Intel Ireland Ireland	**£206m**

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Brookfield

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Commercial Manager

Ian Adams

Ian has gained extensive experience in Quantity Surveying since beginning his career in Miller Homes in Edinburgh. His career has brought him through several different sectors in the construction industry making him a valuable addition to any project team.

Career Overview

Ian is currently the Commercial Manager on the Edith Cavell Hospital site, Peterborough, UK. The 90,000 m² acute hospital includes 762 in patient beds and 22 operating theatres. This hospital will serve the population of Greater Peterborough and South West Lincolnshire.

Duties involved all aspects of commercial and contractual liaison with the Client from negotiation of the contract to the agreement of the final account. Other on site duties involved, cost control, value engineering, cash flow management, procurement and appointment of subcontractors, labour allocation, work scheduling and liaising with the Clients Administrator to ensure the successful acquisition of all permissions and building operational licenses

2006 - 2007 BSR Metro, London, England (Senior Quantity Surveyor)

2004 - 2006 Grant Rail, Bedford, England (Senior Quantity Surveyor)

2004 - 2004 Franklin & Andrews, Birmingham, England (Senior Quantity Surveyor)

2001 - 2004 Carillion plc, Newport, South Wales (Quantity Surveyor)

1999 - 2001 Belfour Beatty, Edinburgh, Scotland (Assistant Quantity Surveyor)

1998 - 1999 Miller Homes, Edinburgh, Scotland (Assistant Quantity Surveyor)

Qualifications

BSC (Hons) Quantity Surveying
HND Quantity Surveying
HND Draughtsman
Nat. Certificate in Architecture, Construction Management and Quantity Surveying

Project Experience

Peterborough Hospital PFI	£350m

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Construction Manager

Fenwick Taylor

Fenwick's role as Construction Manager sees him responsible for a large number of personnel comprising of foremen, chargehands etc. and co-ordinating with senior management, other site services personnel and clients. His duties include day to day site management, health and safety, scheduling work and resources among others ensure delivery of projects to schedule while maintaining high standards.

Career Overview

Fenwick started his career with Freudenberg as an Assistant Maintenance Engineer in 1994; he moved to SPIE Matthew Hall as a Senior Site Electrical Engineer in 1999.

Fenwick is Construction Manager for the Edith Cavell Hospital, Peterborough, UK. The 90,000 m² acute hospital includes 762 in patient beds and 22 operating theatres. This hospital will serve the population of Greater Peterborough and South West Lincolnshire.

He is responsible for site set-up, Organisation/Planning of Labour, Site Safety, Co-ordination of Electrical Services & Client Liaison, Installation, commissioning and control of 110Kv and MV complete electrical distribution system, Day-to-Day running of the job, setting out work, liaise with the Consultants and design teams. Order of all materials for the job, Ordering of MDB's and all SDB's, Commissioning of all the engineering services within his charge.

Fenwick reports to Engineering Manager on the following:- Commissioning Plan, Commissioning Quality, Commissioning Schedule, Records & Preparation of O&M Manuals.

Fenwick ensures the team develops and prepares progress matrix's for the following deliverables:- Factory testing of plant and equipment, Off-site testing of software from BMS/FA, Production of suppler method statements, Mechanical, electrical, public health and life safety systems, Vertical transportation systems, Flushing and water treatment, Statutory authority tests and demonstrations, Handover documentation, O&M Manuals production, and Record drawing production.

Project Experience

Peterborough Hospital PFI	£350m

Qualifications

Charles Trevelyan Technical College
ONC Electrical Engineering
North Tyneside College of Further Education
First Year City & Guilds
First Year ONC Electrical Engineering

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Brookfield

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Project Engineer

Robert Keane

Robert joined Mercury Engineering in 2004 since then he has gained experience in infrastructure/retail/hospital/office block projects. Robert's vast experience has lead him to be a very experienced member of our team. His role is made up of the following duties: - Nomination of sub-contractors, preparation of project schedule, on-site co-ordination, liaising with consulting engineers and trouble shooting on-site.

Career Overview

Robert started his career in 1996 with McGrattan, Kenny & McCaffery and later moved to CJ Rider Lawlor.

He joined Mercury in 2004 as an Engineer, and worked throughout many major projects including Sutton Pumping Station and UCD Arts Building.

In 2001, Robert worked on the Giraffe Childcare Centre on the design and Fit Out of Electrical and Fire Alarm Systems and Installation and Interfacing of the Access Control Systems.

In 2003, Robert moved onto Crumlin Hospital and subsequently Dundrum Town Centre. As an Engineer on both projects, Robert was responsible for Variations, Extras, AutoCAD, Operation and Maintenance Manuals, Preparation and monitoring project quality plan, Planning labour, material and overall schedule. Robert co-ordinated with other trades, submittals and requisitions of materials and subcontract management.

Robert is currently the project Engineer on the Dublin Port Tunnel. As well as his previous responsibilities, he is in charge of the safety of the project and client and project team liaison. Robert is responsible for maintaining RFI Schedules, cost and variation control and estimating closeout documentation.

Project Experience

- **Cherrywood Friends First**
- **Sutton Pumping Station**
- **UCD Arts Building**
- **Giraffe Childcare Centre**
- **Crumlin Hospital**
- **Dundrum Town Centre**
- **Dublin Port Tunnel**

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Brookfield

Mechanical Project Manager

Stephen Raynor

As Project manager for Mechanical services of a project Stephen is charged with ensuring the satisfaction execution of the project, Stephen must liaise with safety, quality, estimating, commercial and site-management departments to make this possible.

Career Overview

Stephen started his career in 1974 as a Technician Apprentice for Lorne Stewart Ltd.

Throughout the 80's, Stephen graduated throughout various position, from Freelance Engineer with Balfour Engineering to reach Engineer/Project Manager/Contracts Manager with Rosser & Russell Limited.

Stephen spent much of the 90's as a Project Manager across various site and companies including John Mowlem PLC, Vaughan Engineering Limited and Darake & Scull Limited.

2001 through 2007 saw Stephen move from Freelance package Manager with Lorne Stewart Limited to Freelance Services Co-Ordinator on Asda Store with HBG Construction Limited and Branch Manager with Harry Carr Limited.

Prior to Mercury, Stephen worked at Kershaw Mechanical Services Limited as a Contracts Manager.

Stephen is the current Mechanical Project Manager on the Edith Cavell Hospital, Peterborough. He is responsible for teams/crews of approximately 40 – 130 personnel comprising of Foremen, Chargehands, Electricians and Apprentices. Responsible for all aspects of the project including Health and Safety, Payroll, Material Management, Planning, Progress/Work reports, Labour / Material costs, Invoice clearing.

Qualifications

City & Guilds 632 – H.V.A.C. HND Mechanical Engineering

Project Experience

Peterborough Hospital PFI	£350m

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Brookfield

Project Manager

Gerard Finn

Gerard is Construction Manager for the mechanical element of all the Santry Sports Clinic where he is responsible for the supervision of all mechanical installation staff and sub-contactors, sourcing suppliers and ensuring the project complies with design specifications and contractual requirements.

Career Overview

Since qualifying, Gerard has worked on a number of respected companies, both in the UK, Ireland and the USA.

Gerard initially, specialized in air conditioning and refrigeration and was responsible for programming, having worked with sub-contractors, suppliers as well as managing the overall installation and handover.

Gerard joined Mercury in 2005 as a Project Manager on the Whitfield Clinic, where he Managed the Mechanical Services on a large Cancer Care Hospital and supervised Mechanical staff and sub-contractors.

Gerard is the current Project Manager on the Santry Sports Clinic Project. Gerard is responsible for the management of budgets and ensuring that the project complies with design specifications and contractual requirements.

Qualifications

Diploma in Building Services Engineering
DIT Bolton St., Dublin 1
New York City Master Plumbers Licence
New York State Air Conditioning and Refrigeration Licence
Universal Refrigeration Technician Certificate
Certificate in AutoCAD 14
New York City Standpipe & Sprinkler Certificates

Project Experience

Santry Sports Clinic

Whitfield Clinic, Cancer Care Hospital

Charles Greenthal Building, New York

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Brookfield

Engineering Manager – Mechanical Services

Ciaran Kellegher

Ciaran is currently working on the Santry Sports Clinic; co-ordinating and managing the mechanical services installation. Along with extensive experience in other sectors of the construction industry Ciaran is an adaptable and valuable member of any project team.

Career Overview

Ciaran joined Mercury in 2001 as a Project Engineer working on the Institute of Technology. He was responsible for the installation of LPHW heating, u/f heating, water services, gas installation, Ventilation and Air conditioning and oxygen acetylene & propane gases.

In 2002 he moved on to the Tesco's project and was involved in the installations of water services, gas installation, ventilation systems, fume extract system and Air conditioning system. Later that same year, he was involved in the Installation of LPHW heating, water services, gas installation and Ventilation systems for Dunnes Stores Office Extension.

In 2006 Ciaran was promoted to Project Manager – Mechanical Services, and was responsible for preparing construction programmes, monitoring and reporting construction progress and co-ordinating with design team. Ciaran held responsibilities for health and safety, supervising the construction works and ensuring construction works are in accordance with contract documents.

Ciaran's current responsibilities at the Santry Sports Clinic include submittals and requisitions of materials, subcontract management, on Site Surveys Management, Client Liaison and Supervision of CAD Staff.

Qualifications

Certificate & Diploma in Civil Engineering (Water)
Certificate in 2D & 3D AutoCAD

Project Experience

Santry Sports Clinic

AIB Call Centre, Swords

Dunnes Stores Office Extension
Kilnamanagh

Tesco, CDC
Ballymun

Institute of Technology
Blanchardstown

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Brookfield

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QA Manager

Mark Gibbons

Mark is responsible for QA/QC on several projects including pharmaceutical/ oil & gas/manufacturing and infrastructural. His extensive experience makes him ideal candidate for any construction project. His duties include sign-off of plant and equipment, preparation of test packs and preparation of construction system dossiers plus carrying out audits internally and externally with clients and governing bodies.

Career Overview

Mark started his career in 1990 with Metlab International – Dublin & Cork as a NDE / Welding Inspector, where he provided Third party inspections/surveys, on site quality assurance for various projects, engineering inspections in several manufacturing sectors.

Mark moved to throughout various companies fulfilling the same role, from NDT Services Ltd – Dublin to PWA – Pratt & Whitney Aviation.

In 1999, Mark joined Weatherford Completion Systems as a Quality Manager and was responsible for the maintenance of the Weatherford Integrated Management System including the development and implementation of effective system to control and manage in the Irish plant. Mark provided Support Line Management through the development of relevant management systems legislative compliance and training schemes. He also developed and maintained an effective system for equipment maintenance, inspection and calibration.

Mark joined Mercury in 2005 as a QA Engineer and was responsible for the management and maintenance of ISO 9000 system and development and management of internal quality audit programmes. Mark conducted internal audits/inspections, site and office based. He works closely with site(s) personnel, senior contracts managers and customer engineers to develop quality programmes and advises head office personnel of quality & training.

Qualifications

Advanced Diploma in Project Management – Dublin Business School
Post Grad Higher Diploma in Quality Improvement - Trinity College
BSc Degree in Information Technology
Diploma in Information Technology

Project Experience

AIB Ballsbridge

Spencer Dock

Wyeth

Intel

Shell Corrib

Pfizer

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Brookfield

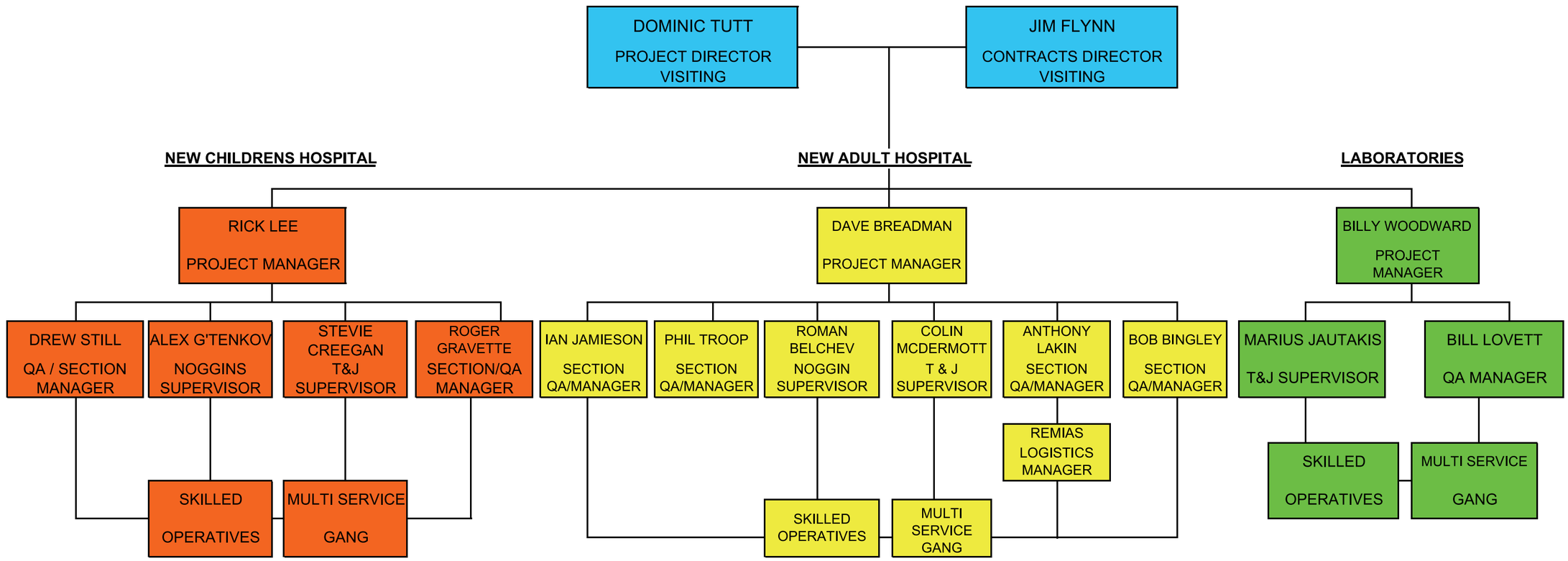
ASTINS LTD

Client: Brookfield Europe
Project: New South Glasgow Hospital & Laboratory Facility
Scope of Works: Dry Lining & Partitioning

MANAGEMENT CHART

SITE STAFF

OVERALL



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ASTINS

Managing Director

Dominic Tutt

Dominic co-founded Astins in 1996 and is the joint Managing Director of Astins Limited. Previously, Dominic worked in the field of internal finishings including experience in main contracting.

In his role as joint Managing Director, Dominic strives for operational excellence in all realms for business success, which includes all health, safety and environmental practices, leading innovation through continuous improvement and sound corporate social responsibility applications, whilst achieving commercial growth.

Dominic's role focuses specifically on identifying, developing and directing the implementation of Astins' strategy to achieve its vision to be the best and most innovative dry-lining contractor in the UK.

Career Overview

Dominic's strength in leadership provides clients with an uninterrupted flow of excellent service whilst directing Astins' activities to ensure the company achieves agreed targets and standards for financial and trading performance, quality, culture and legislative adherence.

Dominic's desire to drive leadership excellence resulted in the creation of the Astins Institute, launched on 3rd June 2009. The main objective of the Astins Institute is to grow the talent of our workforce and reinvest in the growth of our people. Diversity and innovation are key drivers of Astins and this was reflected in the recruitment of the UK's first women apprenticeship programme.

Dominic also has unrivalled experience in the healthcare sector. Under his guidance the company has undertaken over 45 separate hospital projects in the UK. He is currently responsible for overseeing three major, regional hospital construction projects that Astins is working on in Peterborough, Walsall and Pembury in Kent.

Project Experience

Peterborough Hospital PFI	**£18m**
Walsall Manor Hospital Walsall	**£3.5m**
Pembury Hospital Tonbridge Wells	**£8m**
Addenbrook Hospital Cambridge	**£2m**
Evelina Hospital	**£1.3m**
Farnborough Hospital Hants	**£4.6m**
Lewisham Hospital South East London	**£2m**
Newcastle RVI Hospital Newcastle	**£7m**
Romford Hospital Romford	**£7m**
University Hospital Lewisham	**£2m**
Whittington Hospital London	**£1.5m**

(* values quoted are for dry lining packages)

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ASTINS

Contracts Director

Jim Flynn

As Contracts Director, Jim's role is in ensuring complete performance of contracts once tender is secured. Jim's strength is his focus on client satisfaction, whilst adhering to strict environmental, health and safety factors.

In particular, Jim's role is accountable for the monitoring of all actions and quality of work undertaken, and for the overall coordination and management of the design, programme and procurement, liaising with the production team to ensure efficient build, delivery and the overall success of each project.

Career Overview

Jim started in construction as a craft apprentice plumber 1983 and worked in Algeria for a period before moving to England in 1985.

He quickly moved through the ranks in the M & E Services industry and had a period in the Middle East before being appointed in 1995 as Services Coordinator and then Construction Manager on major projects in London and the south.

Jim joined Astins as Contracts Manager in 2001 and in 2007 became Contracts Director. Jim is responsible for the end to end process operations for all Astins projects, from liaising with main contractors and Astins internal teams on matters of design, work force planning, logistics, plant, and supply chain management.

Project Experience

Peterborough Hospital PFI	**£18m**
Walsall Manor Hospital Walsall	**£3.5m**
Pembury Hospital Tonbridge Wells	**£8m**
Addenbrook Hospital Cambridge	**£2m**
Clementine Church Hospital	**£0.5m**
Evelina Hospital	**£1.3m**
Farnborough Hospital Hants	**£4.6m**
Lewisham Hospital South East London	**£2m**
Newcastle RVI Hospital Newcastle	**£7m**
Romford Hospital Romford	**£7m**
University Hospital Lewisham	**£2m**
Whittington Hospital London	**£1.5m**

(* values quoted are for dry lining packages)

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Brookfield

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ASTINS

Project Manager

Rick Lee

Rick is a reliable, helpful and team orientated individual who is able to adapt and work well under pressure in a fast paced environment. He has proven his ability to meet deadlines, with quality, health and safety and client satisfaction at the heart of everything he does.

Rick has gained broad knowledge and experience of suspended ceilings and partitions over twenty five years in the construction industry. He is extremely confident when making decisions and approaches his work in a logical and organised manner.

Career Overview

On leaving school in 1984 Rick started his career as a dry liner between various companies such as TCL and Lightweight Plastering. It was at these companies where Rick learned the dry lining trade.

Rick then joined Astins in 2005 as a Site Manager bringing with him a wealth of experience of the trade. Rick has been managing large scale projects over the years and leading teams of men to deliver on time to a high quality.

He is currently the Project Manager at Peterborough Hospital, continually pushing for a high level of client satisfaction, quality and delivery.

Qualifications

IPAF trained
PASMA trained
Abrasive Wheels trained
First Aid trained
Hilti trained
Computer Skills
IIF & MAD trained
Rick is currently in his second year of the CIOB level 4 – certificate & diploma in site management (Certificate gained in first year)

Project Experience

Peterborough Hospital PFI	**£18m**
Arora Hotel Heathrow	
Nido Kings Cross	
Terminal 5a Heathrow	
Whittington Hospital Highgate	
Ealing Hospital Southall	

(* values quoted are for dry lining packages)

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Brookfield

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ASTINS

Site Manager

Andrew Still

Andrew is a hard working, loyal and reliable employee who has proven experience working as a key member of a team.

Andrew has 23 years of experience in the construction industry, of which 21 of these has been in dry lining and is known for his leadership skills and ability to thrive under pressure.

Andrew is a confident person who can make decisions, with delivery, quality and health and safety always at the forefront of his mind.

Andrew Still is currently Site Manager at Pembury Hospital where he continuously strives for impeccable quality and delivery.

Career Overview

Andrew has worked for various drylining companies such as MPG, BDL, Decafix, SAS ceilings and Decafix over the years; however it was Baris, where he spent 12 years that he really learnt his trade as a dry liner and a fixer.

Andrew has worked on a variety of large scale projects including hospitals, hotels, office blocks, shopping centres, cinemas and flats with projects including Kings Cross North Tower and Canada Water.

Andrew joined Astins in 2006 as a fixer. He soon worked his way up to Site Supervisor and was given various different projects such as Kings Cross and Pembury to demonstrate his leadership skills and ability to deliver.

Andrew is currently a Site Manager at Pembury Hospital where he has continually set the bench mark for quality and delivery and continues to do so.

Qualifications

First Aid trained
IIF trained phase
Computer skills
N V Q dry liner level 2
Hilti trained
PASMA trained
IPAF trained
3 day health and safety

Project Experience

Pembury Hospital	**£8m**
Kings Cross North Tower	**£6.5m**
Canada Water Canary Wharf	**£2.75m**
Burford Wharf London	**£1.75m**
Embassy Court London	**£125k**

(* values quoted are for dry lining packages)

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ASTINS

Noggin Manager

Aleksandar Gushtenkov

Aleksandar is a reliable, punctual and highly self motivated individual, capable of working in a fast paced environment. He works well with others and is considered to have good leadership skills.

Aleksandar has gained 12 years experience in the construction industry in the UK and overseas, working on various hospital projects including Peterborough Acute and The Whittington in London. His leadership on the Peterborough PFI Acute Hospital contract has been instrumental in the success of the project.

Career Overview

Since leaving school, Aleksandar served two years National Service with the Bulgarian Army engineers.

On leaving the army he began his career in construction working as a Furniture Fixer then Dry Liner in Bulgaria. Aleks worked as a Dry Liner with a number of construction companies in Bulgaria, on contracts including hospitals, schools and commercial construction projects.

Joining Astins in 2007 as a Dry Liner, Aleksandar is currently works as a Noggin Manager at the Peterborough PFI Acute Hospital project.

Qualifications

Abrasive Wheels Trained
Dry lining NVQ Level 2
IIF Trained
M.A.D. Trained

Project Experience

Peterborough Hospital PFI	**£18m**
Terminal 5 Arora Hotel Heathrow	**£5m**
Whittington Hospital London	**£2m**

(* values quoted are for dry lining packages)

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Brookfield

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ASTINS

Section Manager

Roger Gravette

Roger is a highly self motivated, dedicated, and reliable person. He is consistently punctual and has an almost obsessive attention to detail.

He works well under pressure and helps to lead the high Health & Safety standards which Astins set throughout the company. He is an excellent asset to any project team, displaying good leadership skills which he is continuously improving.

Roger came late to construction, but has already been identified as future leader within the firm. He currently works at the Syon Park Hotel Project as Site Manager.

Career Overview

Andrew has worked for various drylining companies such as MPG, BDL, Decafix, SAS ceilings and Decafix over the years; however it was Baris, where he spent 12 years that he really learnt his trade as a dry liner and a fixer.

Andrew has worked on a variety of large scale projects including hospitals, hotels, office blocks, shopping centres, cinemas and flats with projects including Kings Cross North Tower and Canada Water.

Andrew joined Astins in 2006 as a fixer. He soon worked his way up to Site Supervisor and was given various different projects such as Kings Cross and Pembury to demonstrate his leadership skills and ability to deliver.

Andrew is currently a Site Manager at Pembury Hospital where he has continually set the bench mark for quality and delivery and continues to do so.

Qualifications

Abrasive Wheels Trained
PASMA Trained
Dry lining NVQ Level 2
IIF Trained
M.A.D. Trained

Project Experience

Syon Park Hotel London	**£1m**
Pembury Hospital Tonbridge Wells	**£8m**
Old Bailey London	**£0.5m**
Park Street, Retail Centre Camberley	**£2.2m**

(* values quoted are for dry lining packages)

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ASTINS

Project Manager

Dave Breadman

Dave is an experienced and reliable site manager, with over twenty years in the construction industry. He is known for his attention to detail and works extremely well in a team, whilst thriving in high pressure environments.

He is a leader in the field of continuous improvement with Astins, having spent two years running the Astins training and apprenticeship programme. Dave's passion is applying new methods of construction to the projects he manages, and is currently project manager on the Peterborough Acute and MHU Hospital projects. Dave insists on delivery of high quality work, without compromising on health, safety and environmental issues.

Career Overview

Dave began his career in construction moving into dry lining and ceiling fixing. He worked on both residential and commercial projects using internal non load bearing partition systems, Lay in Grid, Burgess and MF Ceiling for many years.

Dave joined Astins in 2000 and has became an integral part of the site management team as a Supervisor; previously working as a Fixer on various high specification hospital projects looking after dry lining packages.

In 2006, he then moved into another role for Astins as Training Manager looking after all aspects of training for the Company, from office based staff through to site operatives. As part of this new role, Dave was responsible for assessing Astins operatives to NVQ level 2.

Dave recently moved back on to the site management team as Project Manager for Peterborough Hospital Acute wing, the job is programmed to complete in 2010.

Qualifications

Dry Lining NVQ Level II
Supervisor (A1)
First Aid trained
NVQ Asser

Project Experience

Peterborough Hospital PFI	**£18m**
Queens Hospital Romford	**£3.5m**
Addenbrookes Hospital	**£2m**
Cumberland Hotel London	**£2m**
Farnborough Hospital Hants	**£4.6m**
Ipswich Crown Court Ipswich	**£1m**

(* values quoted are for dry lining packages)

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ASTINS

QA Manager

Ian Jamieson

Ian's experience is invaluable on site. He is extremely reliable, hard working and dedicated to finishing the job on time.

Ian has over ten years experience in the construction sector, specialising in Suspended Ceilings and external works, focusing on Met-Set framing.

He is capable of making good decisions whilst thinking logically. Ian has an amazing ability to thrive well under the most pressured situations.

Career Overview

Ian left school at the age of 16 in 1977 and begun an apprenticeship scheme in roofing in which he obtained his City and Guild qualification.

In 1985 Ian joined Arrows Night Fire Protection, in which he stayed for a further 6 years.

In 1991 Ian joined Barris Dry lining as a fixer, in which his previous trades as a roofer and plasterer benefited him well in learning the dry lining trade.

In 1999 with 8 yrs experience in dry lining gained, Ian joined Astins as a fixer and worked on some large scale projects such as Stafford residential flats, and Canada Water residential flats.

It was in 2005, that Ian took the next step into management. His continuous improvement on leadership and quality skills has seen him become Quality Assurance Manager for New Suffolk College.

Qualifications

NVQ III
CITY & GUILDS
Advanced Crafts
Roofer and Plasterer

Project Experience

New Suffolk College

Camberley Cinema and Shopping Complex

Canada Waters Multistory Residential Flats

Stafford Residential Flats

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Brookfield

Site Manager

Phil Troope

Phil is a reliable, self motivated and team oriented individual, able to adapt and work well under pressure in a fast paced environment. Phil prides himself in meeting targets, adhering to deadlines and delivering with the highest quality, all with an emphasis of health and safety and client satisfaction.

With ten years experience in the construction industry, Phil has gained a broad knowledge and expertise of suspended ceilings, fit out and partitions. Phil is particularly confident when making decisions and approaches his work in a logical and well organised manner.

Career Overview

Phil started his career as a dry liner and has previously worked in America on some big projects such as Seven Times Square Tower, Trump International Tower and Former US President Bill Clinton's office fit out.

Returning to the UK, Phil joined Astins in 2006. Phil's talents were quickly recognised and he soon became a site supervisor. He worked on various high profile projects such as Norwich Greyfriars and Heathrow Terminal 5.

In January 2007, Phil became a section manager at Newcastle RVI where his leadership and continuous push for client satisfaction of delivery was second to none.

Phil is currently working at Peterborough Hospital as the section manager. His leadership, experience and enthusiasm for delivery are continuously developing and are much sought after.

Qualifications

PASMA trained
First Aid trained
Computer Skills
IIF & MAD trained
Completed 2 years in Belfast Tech, HND IN Business Studies

Project Experience

Peterborough Hospital PFI	**£18m**
Newcastle RVI Hospital Newcastle	**£7m**
Heathrow T5 Heathrow	**£1.2m**
Norwich Greyfriars Norwich	**£1.3m**
Birmingham Masshouse Birmingham	**£2.3m**
Seven Times Square Tower New York	**£3m**
Trump International Tower New York	**£4m**

(* values quoted are for dry lining packages)

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ASTINS

Site Manager

Colin McDermott

Colin is an experienced and reliable Site Manager, with over twenty years in the construction industry. He is approachable and works extremely well in a team. He thrives in pressure situations.

He is known for his desire to ensure that all deadlines are met with quality and satisfaction while maintaining a safe environment. He is also a leader in the field of health and safety having gained a number of qualifications in this area.

Colin is currently Project Manager on the Peterborough Acute and MHU Hospital projects, where he pushes hard on all aspects of quality and delivery.

Career Overview

After leaving school, Colin started his construction career in industrial roofing, fitting asbestos sheeting and explosion vents.

In 1991, he joined Oakwoods Drylining. His first job as a dryliner was on the Dorchester Hotel in Mayfair. He also obtained his experience in thermocell drylining techniques while working at SnR London Drywall.

He worked for Thermofelt Ltd and BDL throughout the 1990s and early 2000s. Hospital projects included the Queens Hospital in Romford and Addenbrookes Hospital in Cambridge.

Colin joined Astins in 2006. His major responsibility has been the Peterborough Acute and MHU Hospitals. He has, over that time, become a leading influence in Astins on issues relating to delivery and quality management.

Qualifications

IPAF trained
PASMA trained
First Aid trained
Hilti trained
Computer Skills
IIF & MAD trained
Asbestos removal trained

Project Experience

Peterborough Hospital PFI	**£18m**
Queens Hospital Romford	**£8.5m**
Addenbrookes Hospital Cambridge	**£2m**
Canada Water Gardens Canary Wharf	**£1.5m**

(* values quoted are for dry lining packages)

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Brookfield

Site Manager

Anthony Lakin

Anthony is a reliable, punctual and a highly motivated individual, capable of working in a fast paced environment. Anthony possesses good leadership skills and has been identified as a future leader for Astins.

Anthony is a leader in the continuous improvement team and is always fanatical about health and safety whilst maintaining quality. Anthony takes pride in delivery and client satisfaction.

Career Overview

Anthony embarked on a dry lining apprenticeship scheme up on leaving school at 18 years of age. He has since gone on to gain 10 years experience in the dry lining industry for multiple companies such as TCL, MPG and OCL and has worked on various large scale projects such as Canary Wharf and Tooting Hospital.

Anthony joined Astins as a fixer in 2006, and soon worked his way up to Site Supervisor. He was given a high level of responsibility on pressured projects such as Heathrow Terminal 5 and Project Sapphire looking after various dry lining packages.

Anthony is now Project Manager at the Queen Mary's Innovation Centre.

Qualifications

IPAF trained
PASMA trained
Abrasive Wheels Trainer
First Aid Trained
Excellent Computer Skills
IIF Trained
M.A.D Trainer
I am currently in my second year of the CIOB Level 4 – Certificate in Site Management (Certificate gained in first year)

Project Experience

Whitechapel (Queen Mary Innovation Centre)

Terminal 5

Project Sapphire

Tooting Hopsital

Marriott Hotel

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ASTINS

Site Manager

Bob Bingley

Bob has over thirty years experience in the construction sector, specialising in dry lining and plastering. He has particular experience in hospital construction, working on major regional projects in UK and Ireland.

Bob's experience is invaluable on site. He takes pride in his ability to help with continuous improvement at both a project and personal level. His client facing skills are also excellent.

Bob is a leading member of Astins Peterborough Acute Hospital project team.

Career Overview

Bob has been in the construction trade since he left school in 1969. Since then he has worked on all types of projects within the plastering and drylining sector of construction.

From the early 1970s until 1995, Bob worked for Hall & Man, reaching the position of Contracts Director. He left Hall & Mann, when the company was dissolved following the retirement of the Managing Director.

Bob worked in a self employed capacity in Ireland from 1997 until 2007. In 2007 he returned to the UK to join Astins and take up the position of Site Manager at Peterborough Acute Hospital.

Qualifications

HNC
Building Construction
CITY & GUILDS
Elech/Mech Engineering & Pipe Fitting & Welding

Project Experience

Derby City Hospital	**£1.5m**
Leicester Royal Infirmary	**£2.3m**
Mater Private Hospital	**£3.5m**
Wyeth Pharmaceutical Dublin	**£20m**

(* values quoted are for dry lining packages)

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ASTINS

Project Manager

Billy Woodward

Billy has excellent leadership skills, with over 10 year's management experience in the construction industry.

He excels at building and maintaining good client working relationships. He also works well under pressure in fast paced environments and can easily adapt to fit in with all situations as and when they arise.

Billy is a leader in the area of health, safety and environmental initiatives. He is currently Project Manager at Walsall Manor Hospital, where the site has won an environmental award consistently over the last two month period.

Career Overview

Prior to joining Astins in 1999, Billy worked in the construction industry as a fitter and dry liner.

He began his Astins project management career at Barnet Hospital, one of seven major hospital construction projects in the UK for which he has been responsible in a supervisory or project management role.

In addition to his unrivalled experience in the hospital sector, Billy has also been involved in high profile residential and sports arena projects, including Twickenham Stadium and the Masshouse Apartments in Birmingham.

Billy is currently Project Manager at Walsall Manor Hospital site in the West Midlands, where he has overall project management responsibility for the £3.5m dry lining package.

Qualifications

Dry Lining NVQ Level II
CSCS Managers card
First Aid trained
IIF & MAD trained
IPAF trained

Project Experience

Walsall Hospital Walsall	**£3.5m**
Royal Victoria Hospital London	**£7m**
Twickenham Stadium London	**£1.1m**
Masshouse Apartments Birmingham	**£2.3m**
Romford Hospital Essex	**£8.6m**
Farnham Hospital Surrey	**£1.2m**
Farnborough Hospital Hants	**£4.6m**
Barnet Hospital London	**£1.5m**

(* values quoted are for dry lining packages)

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ASTINS

Site Manager

Marius Jautakis

Marius is an experienced construction professional. He takes on every task as a challenge, placing emphasis on efficiency, quality health and safety delivery.

Marius is a skilled linguist and communicator. He has excellent knowledge of two languages besides English (Russian, Lithuanian and some Polish). His communication skills give him authority and leadership advantages in working with people on multi-language and multi-cultural sites.

Marius is particularly interested in the application of modern methods of construction and prefabrication to hospital projects.

Career Overview

Marius has spent the last eight years in dry lining. Prior to working for Astins he worked for a number of companies in the UK, including Fastfix Ltd, Fastrack Goodwin and Barclay Plastering. His work and duties for these companies concentrated on both retail and residential projects.

Marius joined Astins in 2005. His first job was the New Romford Hospital project in East London, where he worked on partitions, taping and jointing for the dry lining package. Since then he has worked on a range of projects including the KX200 student accommodation project in central London and a new office project for British Airways in Heathrow.

Marius is currently the first floor Site Manager at the Peterborough Acute Hospital.

Qualifications

Dry Lining NVQ Level II
CSCS Manager Card
CIOB Diploma in Site Management
IPAF
IIF & M.A.D Trainer
First Aider
Abrasive Wheel Trainer
Manual Handling Trainer

Project Experience

Peterborough Hospital PFI	**£18m**
KX200, London Kings Cross	**£4m**
T5B, British Airways Heathrow	**£2m**
New Romford Hospital Romford	**£2m**

(* values quoted are for dry lining packages)

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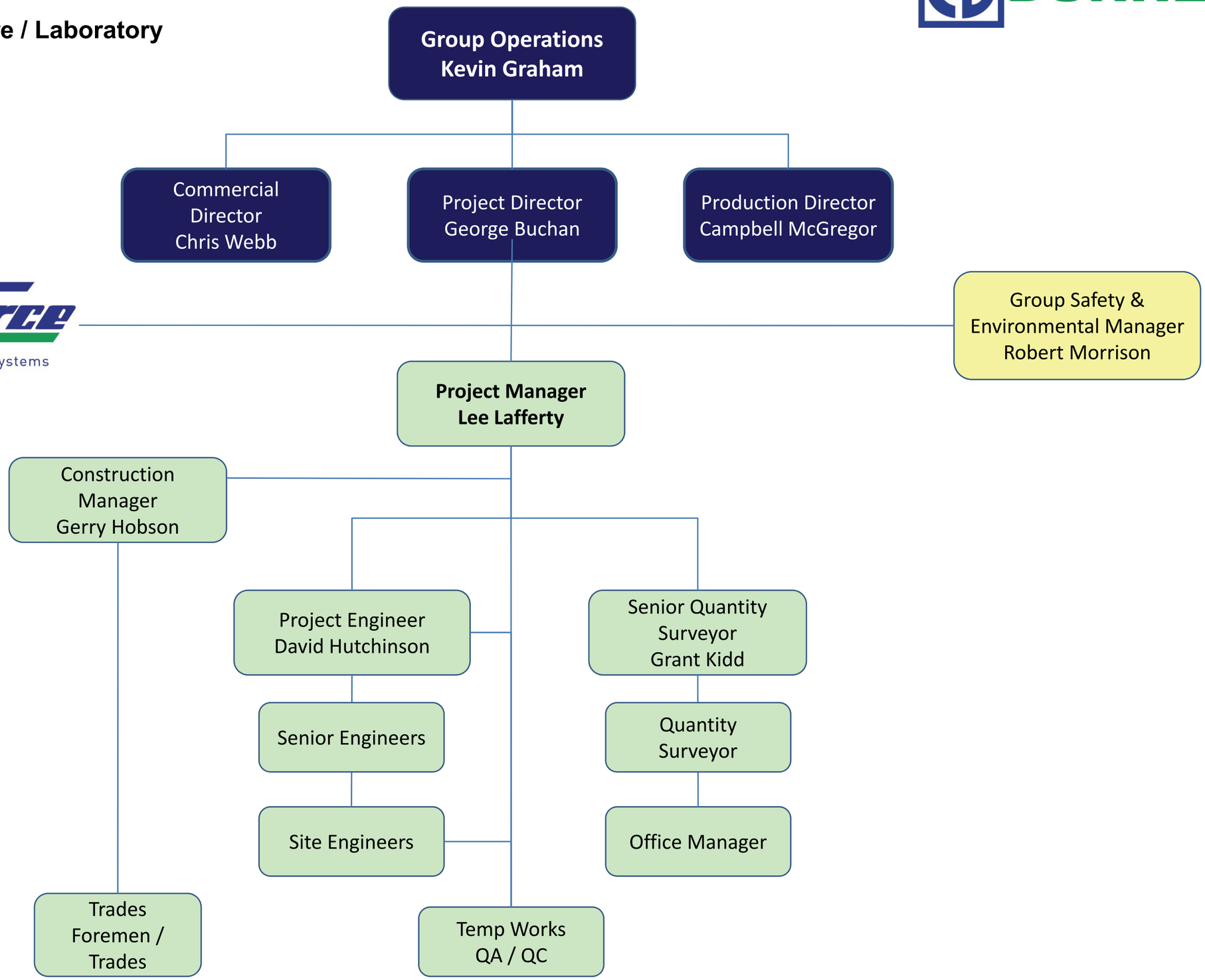
Proposed Structure Chart

Energy Centre / Laboratory

DUNNE



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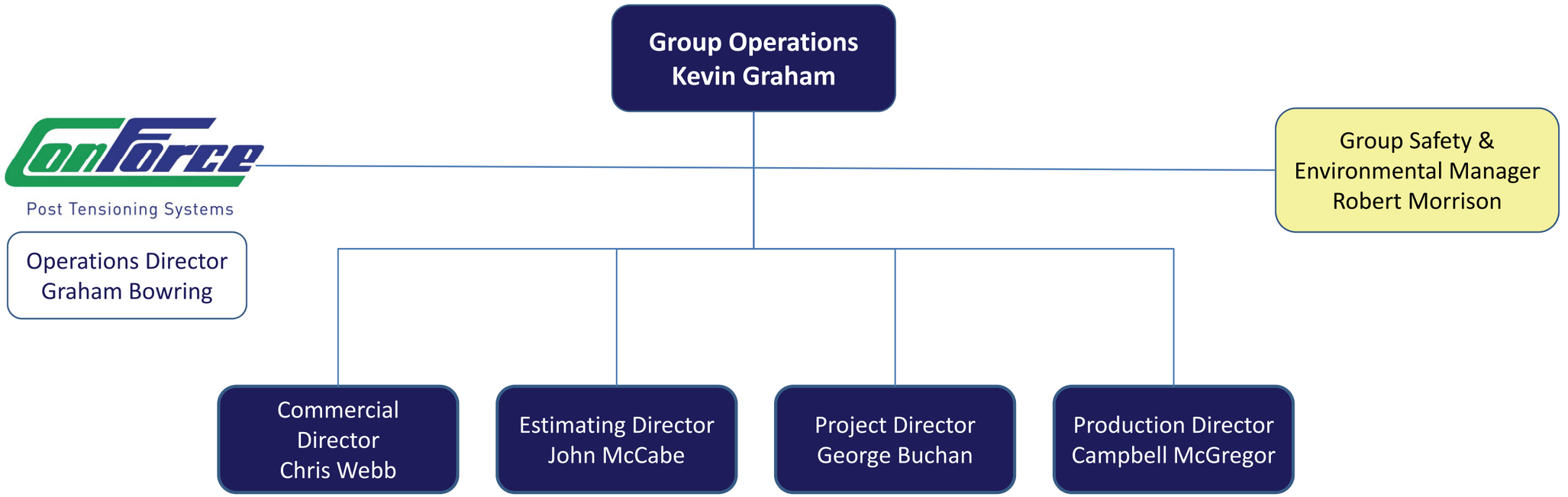
Pre Construction Structure Chart

Acute & Children's Hospital



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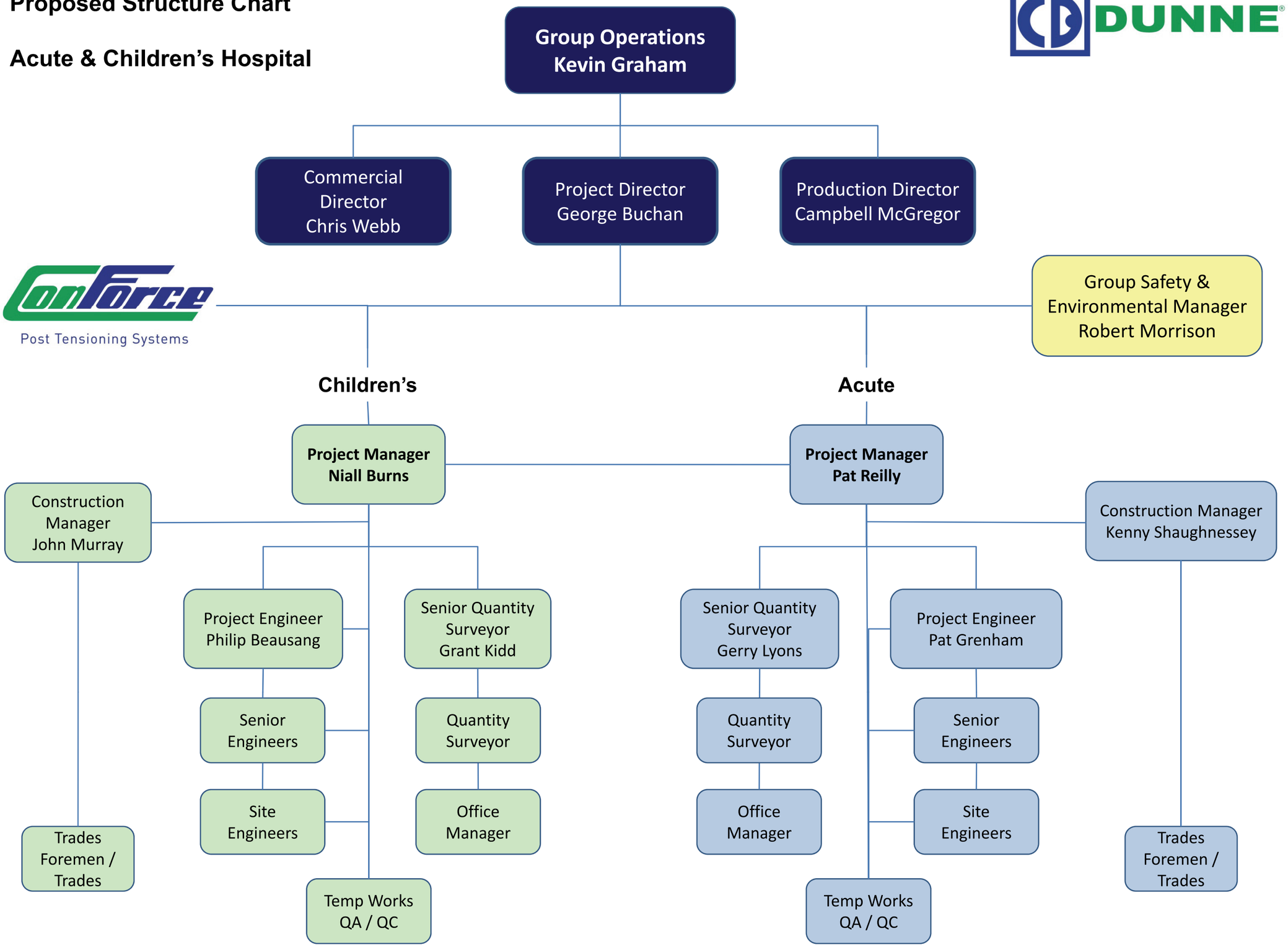
Proposed Structure Chart

Acute & Children's Hospital



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Operations Director

Graham Bowring

Graham's career started over 30 years ago as a Graduate Engineer learning about all aspects of the post tensioning business. He worked up through the company achieving Divisional Director in 1986 where he was responsible for tendering, negotiation and completion of all UK post tensioning contracts. He moved to a similar position at Balvac in 2000 and then to ConForce in 2007 as Operations Director at our office in Leeds.

He has considerable experience of post tensioning systems and their application in all types of civil and building structures with particular knowledge of the key systems used in the UK e.g. CCL, VSL, Freyssinet, MK4 etc.

Career Overview

Graham was a key player in developing the use of post tensioning in buildings in the UK. Particular achievements include Stafford District General Hospital; 4 major commercial buildings in the city in London; and the first use in the UK of a post tensioned ground slab constructed with the laser screed. Current projects include a section of the Athletes Village for the London Olympics and design of PT slabs for the Emergency Care Centre at Forester Hospital, Aberdeen.

He is the past Chairman of the Post Tensioning Association. He assisted in the development of the CARES QA Scheme for Post Tensioning Contractors and was on the working party of the design group of the Concrete Society for drafting their Technical Report.

We foresee Graham's role in the NSGH project to be:

The overseeing of all aspects of design development through to production of design calculations and working drawings.

Purchasing all key materials and plant.

The allocation of site staff including Project Manager and Supervisors.

Project Director throughout the site work, monitoring all technical aspects and controlling financing and programme.

Qualifications

Degree (Hons) Civil Engineering

Project Experience

Hotel, Gloucester Quays	**0.2m**
Westport House Edinburgh	**0.3m**
District General Hospital	**0.3m**
New St. Square London	**0.8m**
Dublin Northern Motorway Contract 5	**0.2m**
The Helicon, Finsbury Pavement London	**0.8m**

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Brookfield

Group Operations Director

Kevin Graham

Kevin has over 20 years experience within the Construction Industry and in this time has developed through the operational ranks to Senior Management and Director level.

Kevin has been in charge of the procurement and delivery of our largest contracts to date such as Telford College, Edinburgh, Silverburn Retail Development, Glasgow, Springside Development, Edinburgh and Paradise Street, Liverpool.

Career Overview

Kevin has been involved from the outset of the tender procurement stage for the New South Glasgow Hospitals project and has been assisting Brookfield and the Design Team with programme and design aspects. Kevin has attended a number of NHS Pre Tender workshops to gain a better understanding of the Client's requirements and to ascertain the best methodology and ultimately end product.

In addition to participating in Brookfield's Community Engagement Scheme Kevin has been involved in the up-front procurement and logistics matters, i.e. negotiations to accommodate designated batching plants and prefabrication area for the project at KGV

As well as being heavily involved throughout the Tender and Design Dialogue process on this project Kevin has had pre/post contract involvement on previous major healthcare projects, namely Hairmyres, Gartnavel, Health Care International, Glasgow, Forth Valley and Enniskillen.

Kevin will continue to head up Dunne's operations moving on from procurement through to the total delivery of the project and will be ultimately responsible for Dunne's involvement on this project.

Qualifications

HND Quantity Surveying
Member Royal Institution Chartered Surveyors (Part 1 & 2)
CSCS Management

Project Experience

Hairmyers Hospital
East Kilbride

Silverburn Retail Development
Glasgow

Health Care International
Glasgow

Gartnavel Hospital
Glasgow

Buchanan Galleries
Glasgow

Springside Development
Edinburgh

Paradise Street Development
Liverpool

Sizewell Power Station

Overgate Shopping Centre
Dundee

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Commercial Director

Chris Webb

Chris has been involved in the Construction Industry with a particular expertise in the Concrete Frame Business for over 16 years and has progressed through ranks of Assistant QS, Quantity Surveyor, Commercial Manager to his current role within the Dunne Group of Commercial Director.

He is fully aware of the commercial nature of the large projects both in terms of early and accurate change control and in the control and reporting of actual costs spent. Chris also has a broad understanding of the NEC target cost contract gained through several years of involvement on the BAA Framework agreement.

Career Overview

Chris has previously worked for companies such as Swift Structures and O'Rourke Civil Engineering Ltd, latterly Expanded Structures Ltd for 12 years prior to commencing his position with Dunne.

He has been involved in a wide range of concrete frame structures both in Scotland and the North of England both from a pre-contract and a post contract perspective and has successfully concluded the final accounts for these projects with a non adversarial approach. He works well within the team environment and understands all aspects of the construction team's roles which ensures all the principle construction drivers are considered.

Chris will be an integral member of the Senior Management team for this prestigious project and will be responsible for providing the team with cost advise for client or design changes and will work with the team to accurately record and project final cost on the project which will be vital given the value and type of contract to be undertaken.

Qualifications

BSc in Quantity Surveying

Project Experience

Dundee House	**20m**
Paradise Street Development Liverpool	**15m**
Silverburn Retail Development Glasgow	**30m**
Scottish Parliament Edinburgh	**60m**
RVI Hospital & Freeman Hospital Newcastle	**14m**
Edinburgh Airport	**4m**
Museum of Scotland Edinburgh	**7m**
High Court of Justiciary Glasgow	**7m**

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Project Director

George Buchan

With over 15 years experience in the construction industry George brings a sound general knowledge of construction methods and procedures to the company. He has a wide range of experience of both building and civil engineering projects.

George's career has seen him employed with previous companies such as Laing O'Rourke, Ardmore and Lilley.

He has a wide range of experience of both building and civil engineering projects and his ability to focus clearly on clients requirements has resulted in excellent working relationships.

Career Overview

George commenced work with Dunne as Project Manager and stayed in this position gaining experience in larger projects as the company grew, including the Silverburn Retail Development, Glasgow and Paradise Street Development, Liverpool. On completion of the successful Liverpool contract George returned to Scotland where he was promoted to Contracts Manager. After six months in this role, Dunne restructured its Senior Management and during this George was promoted to Construction Director and has operated in this position since.

George has been involved with the New South Glasgow Hospitals project during the tender procurement stage and has been assisting Kevin Graham and taking an overview on the tender workload as it has progressed including programme, overall lifting plan, logistics including designated batching and fabrication facilities and design aspects.

Qualifications

Bachelor of Engineering (Hons), University of Glasgow

Project Experience

Dundee House

Bolton Community College

Paradise Street Development
Liverpool

Silverburn Retail Development
Glasgow

Scottish Parliament
Edinburgh

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Production Director

Campbell McGregor

Campbell commenced his career as a Joiner with Balfour Beatty while studying for his City & Guilds qualification. He left Balfour Beatty to pursue a career with O'Rourke Construction, working on various projects including Buchanan Galleries and Loch Lomond Shores.

Campbell has developed his career path through the operational ranks from Tradesman to Senior Management.

Career Overview

Campbell started with Dunne in 2002 as a General Foreman and within his 1st year he was appointed to Construction Manager on the Central Exchange project in Glasgow.

During his time spent working in the construction industry, Campbell has gained vast knowledge and experience on matters concerning health, safety, environment and quality.

Campbell now commands his current position of Production Director where he is responsible for the training, development and efficient use of labour and other resources within the business.

Campbell has been an integral member of our internal team assisting Brookfield with BREAAM and Health & Well Being strategies.

Qualifications

City & Guilds Advanced Craft - Carpentry & Joinery

Project Experience

Buchanan Galleries Glasgow	**50.6m**
St Enoch Centre Glasgow	**40m**
Ayr Hospital Dalmellington	**30m**
Silverburn Retail Development Glasgow	**30m**
Loch Lomond Shores Dalmellington	**10.2m**
Paradise Street Development Liverpool	**15m**

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DUNNE

Project Manager (Energy Centre/Laboratory)

Lee Lafferty

Since graduating from Dundee's Abertay University in 1996 Lee has over 13 years experience working in the construction industry with some of the leading civil engineering companies on large prestigious contracts.

Career Overview

Lee joined the Dunne Group in 2003 and has successfully project managed numerous high profile contracts throughout Scotland using his wealth of experience to successfully deliver the contracts on time and within budget.

Many of the contracts Lee has successfully managed have included large bulk excavation works, together with sub and superstructure works combining a mix of tradition, post-tensioning and pre-cast methods of construction.

Lee is currently involved in the team working on the pre tender bid for the Southern General Hospital for Brookfield which will ensure he has intensive knowledge of the works prior to commencement of the contract. He has closely liaised with Patrick Reilly on programme and design issues as well as assisting Robert Morrison in the preparation of Brookfield's Community Engagement/Benefits Proposals.

Qualifications

HND Civil Engineering

Project Experience

Easterbush Research Centre Edinburgh	**23.7m**
Springside Development Edinburgh	**60m**
Overgate Shopping Centre Dundee	**60m**
Ocean Terminal Shopping Centre Edinburgh	**120m**

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Brookfield

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Project Engineer (Energy Centre/Laboratory)

David Hutchinson

After completing 5 years of University David's career started as a Setting Out Engineer with Dunne in June 2006 initially as Setting Out Engineer. After showing excellent credentials and consistent performance he was promoted in June 2009 to his current role as Project Engineer.

Career Overview

During this time he undertook the engineering works for the mass dig and subsequent construction of an underground car park / podium slab and the construction of four, five story RC frame, PT slab apartment blocks. David was also involved with all drainage works for the project. As Project Engineer he was responsible for all Site Engineers and Chainmen. He dealt directly with the Client regarding technical queries and information, pre pour inspections, and ensuring site personnel were aware of appropriate method statements and risk assessments for the specific works being carried out, giving him a wide and practical knowledge of the construction process.

In January 2009 David moved onto the Easterbush Research Centre project in Penicuik. His main roles included taking-off materials, preparing method statements and risk assessments, maintaining site QA, dealing with technical queries and liaising with the Client's Site Management.

David is due to commence work on the Ayr Campus Development early September 2009 with the works being completed prior to the projected start date for the NSGH Laboratory building.

Qualifications

BEng (Hons) Civil Eng with Construction Management, Edinburgh Uni 2007
BEng (Ord) Civil Engineering WIT2005
Nat Certificate Civil Engineering WIT 2003

Project Experience

Easter Bush Research Centre Edinburgh	**6m**
Springside Development - Fountain North Edinburgh	**12m**

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Brookfield

Senior Quantity Surveyor (Children's Hospital & Energy Centre/Laboratory)

Grant Kidd

Since graduating from Caledonian University Grant has been a Quantity Surveyor within the Construction Industry for over 10 years, predominately specialising in large civil and concrete structure projects.

During his time Grant has developed key skills such as commercial acumen and interpersonal skills. He is a confident communicator with clients; posses good organisational and time management skills and is computer literate on a variety of packages.

Career Overview

Experienced in both main contracting and in the private sector Grant has gained valuable experience of important aspects such as preparation, agreement and monitoring of the contract budget, identifying and negotiating for the recovery of monies associated with performing works outside of the scope of the contracted work and the commercial management of sites, including preparation and agreement of valuations, negotiating optimum outcomes to contractual disputes and agreeing the final account.

As Grant has past experience working on healthcare projects such as Gartnavel Hospital and other large scale civil jobs, he is fully aware of the high standards expected from the Board of the National Health Service.

Grant is currently working behind the scenes on the pre-tender bid for the Southern General Hospital for Brookfield in readiness of the project going live. Grant will be the Senior Surveyor for the project and oversee all day to day commercial activities with the assistance of a number of Quantity Surveyors. This will be the pinnacle of Grants career spanning over 10 years and which he trusts following the successful outcome of the project will be the launch pad for other major projects to come with the Dunne Group.

Qualifications

BSc (Hons) Quantity Surveying

Project Experience

Gartnavel Hospital Glasgow	**30m**
Katrine Water Project Glasgow	**148m**
Springside Development Edinburgh	**60m**
Scottish Widows - Semple Street Edinburgh	**100m**
Paradise Street Liverpool	**15m**

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Brookfield

[redacted]

Project Manager (Children's Hospital)

Niall Burns

Niall graduated from Paisley University with a Degree in Science in 1987 and has since been employed in the construction industry throughout the UK and Europe.

Niall started work with us in 2004 at the Porcelanosa Development in Braehead Glasgow as Project Engineer and has progressed through the ranks to Project Management.

Career Overview

During his time with Dunne, Niall has been involved on various projects, ranging from £1.0m to £30m. He has managed concrete frame construction, shaft and basement construction and is currently working on the prestigious New Tyne Crossing Tunnel works in Newcastle.

Prior to working with Dunne Niall was employed as a Site Agent on the £265m Quinn Glass Factory project in Cheshire and has worked throughout the UK and Europe gaining valuable experience in a wide range of construction projects from heavy civils and infrastructure works to building and residential development.

Qualifications

Degree in Science, Paisley University

Project Experience

New Tyne Crossing (North) Newcastle	**7.5m**
Bio Medical Research Facility Strathclyde University, Glasgow	**17.8m**
Quinn Glass Factory Cheshire	**265m**
Glasgow Science Centre	**175m**
Trinity Gardens Edinburgh	**35m**
Ferry Village Braehead	**11m**
Porcelanosa Glasgow	**30m**

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Brookfield

[redacted]

Project Manager (Acute Hospital)

Patrick Reilly

Pat graduated from Bristol University with a Degree in Civil Engineering in 1992 and has since been employed in the construction industry throughout Britain.

Pat commenced work with us back in 2004 on The Metro Development in Glasgow as Site Agent and has progressed to be one of our leading Project Manager's.

Career Overview

During his time with Dunne, Pat has been involved on various projects, ranging from £1.5m to £30.0m.

Prior to working with Dunne Pat was employed as Site Agent on the Bristol Royal Infirmary project, the scope of which included a 6 storey concrete frame, 6 stair cores, 3 treble lift shafts, perimeter retaining walls and underground car park. He was also involved on the new Glasgow Infirmary project with similar construction methodology.

Pat has been involved with the New South Glasgow Hospitals project during the tender procurement stage and has been assisting Brookfield and the Design Team with programme and design aspects. Pat has attended all the Pre Tender workshops in preparation of Brookfield's Tender to the NHS.

As well as assisting in the participation of Brookfield's Community Engagement Scheme Pat, along with Kevin Graham has been heavily involved in the up-front procurement and logistics matters, i.e. negotiations to accommodate designated batching plants and prefabrication area for the project.

Qualifications

Degree in Civil Engineering

Project Experience

Glasgow Royal Infirmary	**23m**
Westport House Edinburgh	**10.1m**
Bristol Royal Infirmary Bristol	**28m**
Scottish Widows - Semple Street Edinburgh	**100m**
Silverburn Retail Development Glasgow	**30m**
Metro Development Glasgow	**4.5m**
Braehead Shopping Centre Glasgow	**11m**
Wimbledon Tram Link London	**12.1m**
Terminal 4 Heathrow London	**16m**

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Brookfield

Senior Quantity Surveyor (Acute Hospital)

[redacted]

DUNNE

Gerard Lyons

Since graduation in 1999 from Caledonian University Gerard has been involved in a wide variety of both public sector and private sector projects located throughout the UK.

Gerard's role involves the commercial responsibility for projects from inception through to package completion and his enthusiastic and motivated method of working has successfully helped create and maintain good working relationships with client and site teams nationwide and enabled the successful completion of projects within budget and on programme.

Career Overview

Gerard has acted in various commercial roles throughout the years working initially as Graduate Quantity Surveyor then Assistant Quantity Surveyor with Raynesway Construction undertaking roles assisting the Senior Quantity Surveyor in the commercial responsibilities of various highway construction / maintenance projects and utility infrastructure works. Following this period Gerard was briefly employed as Quantity Surveyor with R. J. McLeod Ltd where his responsibilities again focused on highway construction and undertaking the quantity surveying requirements of the estimating department.

In 2003 Gerard joined Dunne Building & Civil Engineering Ltd as Quantity Surveyor and latterly Project Quantity Surveyor assuming the commercial responsibilities for a wide variety of both traditional and PT concrete frames.

In 2006 Gerard joined the ERDC Group as Commercial Manager / Senior Quantity Surveyor with the Sports Surfacing Division undertaking a wide variety of sports related projects and civil engineering projects throughout the UK, gaining valuable experience in project co ordination both in public and private sectors from design team to completion.

Gerard rejoined Dunne in 2008 taking the position of Senior Quantity Surveyor were he plays an integral role in the management of the site and the facilitation of successful completion.

Qualifications

Quantity Surveying Bsc (Hons)

Project Experience

Silverburn Retail Development Glasgow	**30m**
Bio Medical Research Facility Strathclyde University, Glasgow	**17.8m**
UNITE Student Accommodation Glasgow	**3.5m**
Westport House Edinburgh	**10.1m**
Marketgait Development East Henderson Wynd, Dundee	**12.2m**
New Tyne Crossing (North) Newcastle	**7.5m**

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Brookfield

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DUNNE

Safety & Environmental Manager

Robert Morrison

Prior to Robert joining Dunne in 2004 he worked for Lilley Construction where he gained considerable experience in a number of varying disciplines, such as Civil Engineering, Refurbishment, Newbuild, Industrial, Housing and Maintenance.

Within his position at Dunne Robert is responsible for overseeing all Health, Safety and Environmental related aspects of the Group's business.

Career Overview

Robert's wide knowledge of Health, Safety and Environmental practices have greatly enhanced the safety awareness of the group and have also aided in the formulation and implementation of the group Health and Safety Management System.

Robert has been involved from the outset of the New South Glasgow Hospitals tendering process. He has been actively participating in Brookfield's Community Engagement Scheme as well as liaising with the Design Team on BREAAM and Health & Well Being strategies.

Qualifications

NEBOSH Construction Certificate
Diploma Professional Studies in Occupational Safety & Health
MIOSH
IOSH Accredited Continual Professional Development - Various

Project Experience

Multi Storey Car Park
Pollok, Glasgow

Multi Storey Car Park - Paradise Street
Liverpool

Bolton Community College

New Council Headquarters
Dundee

Springside Development
Edinburgh

Eurocentral
Lanarkshire

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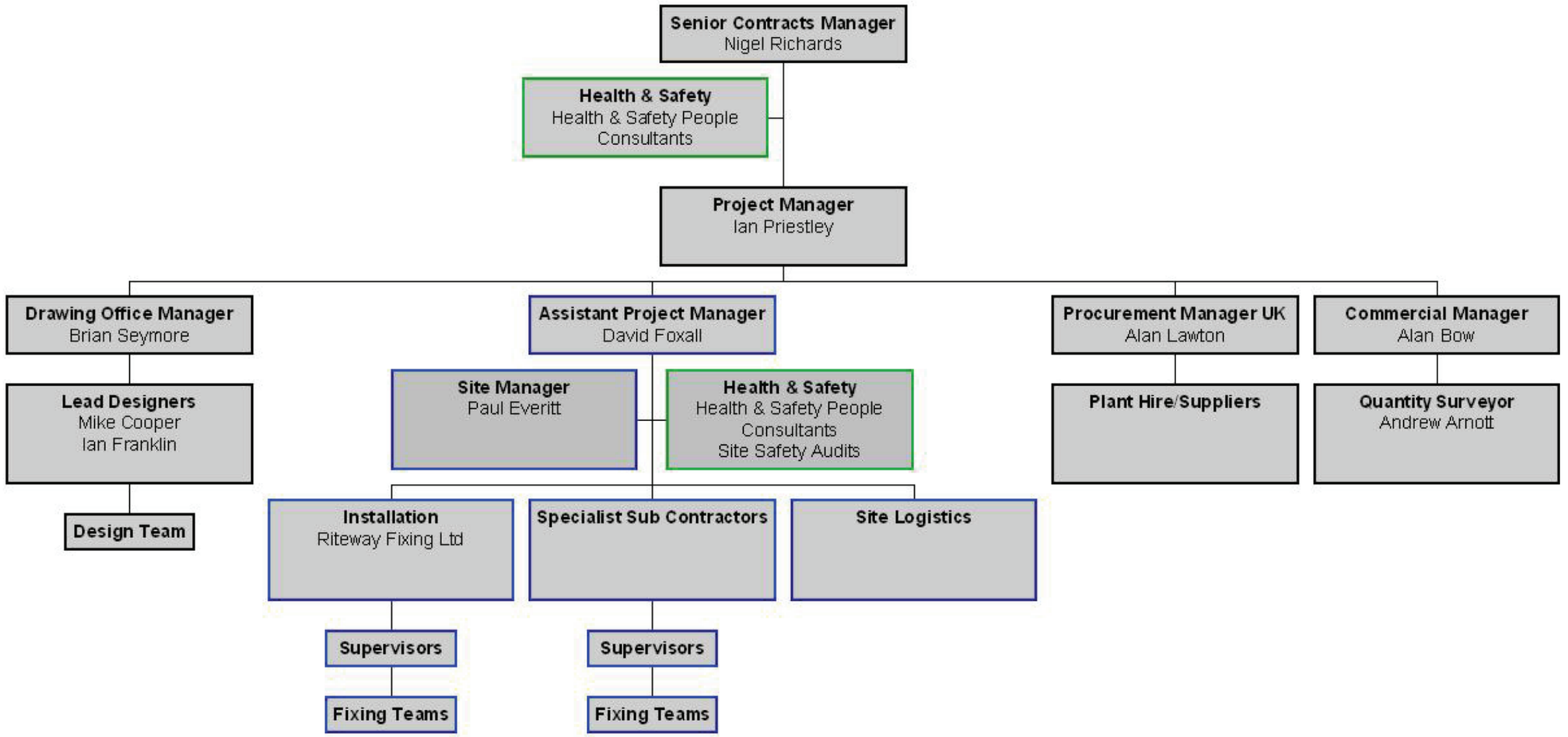
Brookfield

Structal UK

PROJECT RESOURCE
New South Glasgow Hospital



Site Based Team = **Blue Border**

Office Based Team = **Black Border**

Health & Safety Consultant = **Green Boarder**

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Brookfield

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Brookfield

Senior Contracts Manager

[redacted]

Structal UK

Nigel J Richards

Nigel has been working closely with the S (UK) bid team on NSGH, specifically on programming/planning and resourcing of the project, together with having a heavy involvement with the community engagement process; Nigel will be heavily involved with this project through the delivery phase to the successful completion of the project. With 33 years experience, Nigel has good organizational and leadership skills that enhance the company's profile, improving quality of service to the customer, through his expected high standards of operational tasks.

Career Overview

Nigel joined Structal from Schmidlin in January 2007 and is currently in charge of managing and co-coordinating the Structal UK contracting operations, health & safety management, façade design evaluation, development and co-ordination with clients, architects and structural engineers, design, procurement and production co-ordination, financial management and quality assurance management.

Whilst at Schmidlin UK part of the Schmidlin AG group his role was that of Project Manager within the British Airport Authority Group (BAA), where he was responsible for the refurbishment of Terminal 3 - Pier 5 at London's Heathrow Airport, a project value in the sum of £5m.

In 2004, Nigel became based at Gatwick Airport as Project Leader overseeing three projects; the first being the completion stage of the new North Terminal Pier 6 bridge, the Schmidlin project value was c£8m and was to be the first passenger air bridge of its kind at any airport in the UK, and the largest of its kind in the world.

On completion of works at Gatwick, Nigel moved on to manage a new ten-story office project, which was a fully glazed facade in Tooley Street London, for More London, Mace being the Management Contractors.

Qualifications

CITB Health & Safety Management
CITB Internal Site Managers Course
ACTA Airport Construction Training Alliance
CSCS Project Management

Project Experience

Brookfield Acute Hospital Peterborough	**£11m**
Robert Gordon University Aberdeen	**£5m**
Bank of Scotland Edinburgh	**£2.5m**
Forestry Commission Edinburgh	**£2.5m**
Mace Moore London	**£4.8m**
BAA Gatwick Pier 6 Link Bridge Gatwick Airport	**£8m**

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Brookfield

[redacted]

Project Manager

Ian Priestly

Ian has been working closely with the bid team on NSGH, specifically on programming/planning and resourcing of the project, Ian will be heavily involved with this project through the delivery phase to the successful completion of the project. Ian has 25 years experience in the Construction Industry working in structural steelwork and curtain walling; he has good motivational skills with his project team, which helps them to keep focused on the goals set out within any contract. Ian has good negotiation skills, which helps to build a team spirit between the client and Structal.

Career Overview

Ian joined Structal (UK) Ltd from William Hare Ltd in July 2006 as Project Manager. Ian worked as a Contracts Manager with Tubeworkers Limited from 1986 to 1991 who specialised in technical demanding steel Structures.

Director of Tubeworkers (Structures) Limited from 1991 to 2002 formed a management team to successfully negotiate the management buy out of Tubeworkers Limited from receivership. Ian's main roles were as Sales & Contracts Director.

Contracts Manager for William Hare Ltd from 2002 to 2006 and was responsible for overseeing 4No Project Managers on various steel structure projects throughout the UK.

Qualifications

ONC & HNC in Mechanical Engineering

Project Experience

Brookfield Acute Hospital Peterborough	**£11m**
Hall 9 National Exhibition Centre Birmingham	**£5m**
Stansted Terminal Building Stansted, London	**£7.5m**
UK Pavillion Expo 92 Seville, Spain	**£6.5m**
Scottish Widows Headquarters Edinburgh, Scotland	**£1.5m**
Stratford Station, Jubilee Line London	**£5.5m**
Greenwich Station, Jubilee Line London	**£4.7m**
Grantley Adams International Airport Barbados	**£3.5m**
Wembley Station London	**£4m**

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Brookfield

[redacted]

Drawing Office Manager

Brian Henry Seymore

Brian has been working closely with the bid team on NSGH, specifically on overseeing the conceptual design; Brian will be heavily involved with this project through the delivery phase to the successful completion of the project. Brian has good organisational and leadership qualities. Liaising with the customer to resolve problems in order to achieve the off-site design programmes. His experience and training within the curtain walling industry, together with his experiencing in overseeing contracts throughout the UK and Far East.

Career Overview

Brian joined Structal in 1997 as a Drawing Office Co-ordinator where he was responsible for the co-ordination of information into and out of the drawing office to ensure that the design work was completed on time. In addition, it was his responsibility to ensure that materials were scheduled by the drawing office in good time to ensure that they arrived on site in accordance with the site programme. In 1998, Brian was promoted to Drawing Office Manager, and is currently responsible to the organisation and management of the drawing office personnel.

Prior to Structal he was with Metal Casements Ltd who he joined 1976 as a Contracts Manager; he was responsible for the organisation and control of site works, including negotiations with sub-contract labour.

Brian has experienced as a Contracts/General Manager, his responsibilities ranged from recruiting suitable staff to overseeing contracts from sales handover to final account stage, with authority over the planning, drawing and purchasing offices to ensure the correct procurement periods for materials, Brian also liaised closely with the Quantity Surveying Department, Production Control and Works Department to ensure the satisfactory execution of projects for which he was responsible.

Qualifications

HNC Construction Technology
Member, Institute of Engineers Australia

Project Experience

Brookfield Acute Hospital Peterborough	**£11m**
ARUP Fitzrovia London	**£4.3m**
South Thames College London	**£4.7m**
Corby Cube Corby	**£3.3m**
BT Edinburgh Edinburgh	**£2.5m**
Aurora Glasgow	**£3.4m**
BP Sunbury	**£8.3m**
Empress State London	**£6.3m**

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Brookfield

[redacted]

Procurement Manager

Alan Lawton

Alan has been working closely with the S (UK) bid team on NSGH, specifically on overseeing the UK procurement tendering and development of access equipment needs; Alan will be heavily involved with this project through the delivery phase to the successful completion of the project. Alan has 46 years extensive experience of production planning/control and purchasing within a manufacturing environment, together with analytical and organizational skills. Alan is able to liaise and communicates well with staff, suppliers and customers at all levels.

Career Overview

Alan joined Structal in 1997 and is currently Procurement Manager responsible for procuring all Structals UK sourced materials, be it through a supply only or supply and install basis (sub-contract packages).

Alan liaises with suppliers to achieve and coordinate varying delivery dates.

He is also responsible for hired equipment, together with Structals own plant and equipment.

Prior to joining Structal, Alan was from 1976 –1997 Chief Production Planner, for Beans Engineering Ltd/Sandwell Power Products Ltd, where he was responsible for production planning, programming and scheduling.

From 1972 – 1976 Alan was a production supervisor for Quality Tools and Engineering in Stourbridge where he was responsible for the day to day running of the press shop, prioritized workloads and liaised with customers and suppliers.

From 1964 – 1972 Alan was a press shop Manager responsible for the daily running of a 50 man strong team.

Qualifications

NVQ Level 2 Administration
Internal Auditing ISO 9002
HND Production Engineering

Project Experience

Brookfield Acute Hospital Peterborough	**£11m**
ARUP Fitzrovia London	**£4.3m**
South Thames College London	**£4.7m**
Corby Cube Corby	**£3.3m**
BT Edinburgh Edinburgh	**£2.5m**
Aurora Glasgow	**£3.4m**
BP Sunbury	**£8.3m**
Empress State London	**£6.3m**

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Brookfield

Commercial Manager

Alan Bow

Alan has been working closely with the bid team on NSGH, specifically on overseeing and reviewing the tender package and documentation; Alan will be heavily involved with this project through the delivery phase to the successful completion of the project. Alan with 35 years experience in the Construction Industry has much to offer, his commercial, organizational and leadership skills enhance the company's profile, improving quality of service to the customer; Alan sets high standards through out all aspects of his role and expects this from his team.

Career Overview

Alan joined Structal in 2000 and is currently Commercial Manager supervising surveying resources within the company, he is also engaged on post contract commercial activities including monthly applications, final account preparation, internal reporting etc., on all projects.

Initially Alan was employed at Structal initially as Estimating Manager within the commercial department, responsible for the management and production of all tenders. Overseeing estimating resources.

From 1985 – 2000, Alan was a Contracts Director for private curtain walling company, Prince Cladding Ltd, where he was responsible for all aspects of project commercial and contractual activities on projects up to £3.5 million.

From 1974 – 1985 Alan was employed within the construction industry as PQS to quantity surveying companies (DBE, F.C. Graves & Partners, Bond Foster & Partners) to carry out all aspects of surveying duties on UK and overseas projects.

Qualifications

B.SC Degree Quantity Surveying

Project Experience

Brookfield Acute Hospital Peterborough	**£11m**
ARUP Fitzrovia London	**£4.3m**
South Thames College London	**£4.7m**
Corby Cube Corby	**£3.3m**
BT Edinburgh Edinburgh	**£2.5m**
Aurora Glasgow	**£3.4m**
BP Sunbury	**£8.3m**
Empress State London	**£6.3m**

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Brookfield

Site Manager

David Foxall

David has been working closely with the S (UK) bid team on NSGH, specifically on reviewing programming, resourcing and access; David will be heavily involved with this project through the delivery phase to the successful completion of the project. David with 25 years plus experience in the industry has good organizational and leadership skills; he expects and gets very high standards from his site teams. His experience, understanding and training within the curtain walling industry has allowed him to promote quality and knowledge, whilst building and working in a team environment.

Career Overview

David joined Structal in April 2007 as a Site Manager to complete works on various projects prior to undertaking the co-ordination of all on site works on the Brookfield Acute Hospital Peterborough project where he has overall responsibility, for the curtain walling installation and associated sub-contract packages.

Prior to joining Structal David was with Schmidlin as a Site Manager, where he was involved again with large curtain walling projects and sub-contract packages, again in his role as Site Manager, various projects as noted opposite.

Before this David moved from Briggs Amasco Curtain wall Ltd, West Midlands where he was a Project Manager rising responsible for all on site installation activities for curtain walling & elements on major contracts between £500k and £7m.

In 1999, David started his own company DF Ltd, to undertake the Millennium Point project in Birmingham Eastside, as Project Manager the task was to carry out design, development and procurement of 12000m^2 of Schuco curtain wall and Rhine zinc rain screen on this lottery funded project.

Qualifications

Mechanical Engineering, City & Guilds Grade 1
Technical Drawing, City & Guilds Grade 1
Production Engineering, City & Guilds 1 Grade 1 Distinction

Project Experience

Brookfield Acute Hospital Peterborough	**£11m**
Biochemistry Oxford University	**£2.5m**
Rotunda Birmingham	**£6m**
BAA Heathrow Pier 3 Heathrow Airport	**£5.5m**
Guild Hall London	**£5.8m**
GCHQ Cheltenham	**£3m**
Millennium Point Birmingham	**£4m**

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Brookfield

Site Manager

Paul Everitt

Paul has been working with the S (UK) bid team on NSGH, specifically on reviewing programming, resourcing and access; Paul will be heavily involved with this project through the delivery phase to the successful completion of the project. Paul has worked in the Construction Industry for all of his working life, his strengths are in man-management, co-ordination, and he also has excellent communicative skills; Paul can offer over 19 years experience of Site Management, dealing with various professionals at all levels.

Career Overview

Paul joined Structal in 1995 as a Site Manager and has worked in the Construction Industry for all of his working life, in the glass/glazing sector, progressing from office based Contracts Management in a window company, to a Site Manager for a Curtain walling company. He is currently co-coordinating works packages and the curtain walling installation on the Brookfield Acute Hospital Peterborough project, his role includes:

Overseeing site operations in specific projects, ensuring the works were carried out in accordance with contractual programmes and budgets.

Preparation of material/labour schedules and programmes.

Liaising with sub-contactors/suppliers for deliveries of materials, plant and equipment.

Monitoring and recording quality control.

Monitoring and advising on Health and Safety issues, in association with Consultants.

Recording weekly records for lifting equipment and other work equipment (LOLER regulations 1998 and PUWER regulations 1998).

Preparation of Method Statements/Risk and C.O.S.H.H assessments.

Qualifications

CITB Health & Safety Management
CITB Internal Site Managers Course
CSCS Site Management

Project Experience

Brookfield Acute Hospital Peterborough	**£11m**
Monsoon H.Q. London	**£4.1m**
University of Essex Southend-on-Sea	**£2.6m**
Whitehall Riverside Leeds	**£4m**
Channel Tunnel Rail Link Station Development Stratford, London	**£4m**
Home Office Westminster London	**£5.5m**

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Brookfield

[redacted]

Lead Designer

Ian Michael Franklin

Ian has been working closely with the S (UK) bid team on NSGH, specifically on reviewing and development of the conceptual design; Ian will be heavily involved with this project through the delivery phase to the successful completion of the project. Ian has over forty years experience within the window/curtain wall industry covering all types of facades, from inception through design, detail, manufacture and fix. This depth of knowledge and understanding together with his leadership skills is an invaluable asset to the company.

Career Overview

Ian joined Structal in 1986 and was employed initially at the Companies' inception as Project Designer/Manager to work on his first project – Bracknell Business Park. Since then he has worked as a Project Designer/ Senior Lead designer on the numerous projects.

Ian started his career as an Apprentice at Henry Hope & Sons/Crittall Tectonic, which included spells in all areas of the company before being seconded to the Architectural Drawing Office as a Junior draughtsman. Ian was given formal training in draughtsmanship, and was promoted internally to Senior Draughtsman, Supervisor and Project Designer followed before moving into Project Management across numerous projects.

Qualifications

Construction Technicians Certification, Parts 1 and 2
Higher National Certificate in Building
Certification of Supplementary Studies in Building Law
Economics of Industry
H3 Building Technology

Project Experience

Aurora House Glasgow	**£2.5m**
Portman Square	**£2.6m**
Oxford University Biochemistry Building	**£2.2m**
Chancery Place Manchester	**£3.3m**
Peterborough Hospital Development London	**£350m**
St. Mary's Hospital Manchester	

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Brookfield

Lead Designer

Mike Cooper

Mike has been working with the S (UK) bid team on NSGH, specifically on reviewing and development of the conceptual design; Mike will be heavily involved with this project through the delivery phase to the successful completion of the project. Mike Cooper has good organisational skills and is an excellent team leader. He has considerable experience within the curtain walling industry, which has provided him with a sound technical knowledge. He has good communication skills, particularly with the client in order to deliver a satisfactory solution to any problem, which may arise.

Career Overview

Mike rejoined Structal in 2004 as a Lead Designer, responsible for the design co-ordination of projects by overseeing the Structal Design Engineers allocated to a project from commercial to handover on contracts; his duties include liaising with the main Project Design Team, R.S. Development and Structal Structural Engineer to resolve all Design issues.

Mike left Structal in 2003 and joined R.S Associates as a Curtain Wall Design Engineer, responsible for design, detail the ordering of materials for various projects.

In 1996, Mike joined Structal as a Lead Designer, responsible for the design co-ordination of projects by overseeing the SUK Design Engineers allocated to a project from commercial to handover on contracts. His duties include liaising with the main Project Design Team, R.S. Development and SUK Structural Engineer to resolve all Design issues.

In 1980, Mike joined Ash & Lacy as Product Engineer, providing technical backup to sales office with regard to the companies various roofing and cladding products, working on various internal technical projects to develop / reinforce existing products.

Qualifications

Full Mechanical Engineering Certificate (MET6)
HNC Mechanical Engineering
AutoCad Certificate

Project Experience

Empress State Building London	**£6.2m**
B.P. Sunbury Phases 1 & 2 London	**£12m**
Site One Nottingham Southend-on-Sea	**£3.6m**
South East Essex College Southend –on-Sea	**£1.5m**
Freston Road London	**£4m**
South Thames College London	**£4.6m**

Brookfield

[redacted]

Structal UK

Project Quantity Surveyor

Andrew Arnott

Andrew has been working with the S (UK) bid team on NSGH, specifically on reviewing the tender package and documentation; Andrew will be heavily involved with this project through the delivery phase to the successful completion of the project. Andrew with 23 years experience in the construction industry brings much to the table, with his exceptional knowledge and experience commercially, together with his thorough organizational skills.

Career Overview

Andrew joined Structal in 2006 and is currently a Project Quantity Surveyor, his role includes the following:

- The production of any necessary project cash flows.
- The preparation of all interim valuations including assessing the certifications and monitoring payments.
- The assessment, valuation, and agreement of any variations to the contract works.
- The agreement of the final account.
- The procurement of sub contractors for the construction phase of the project.
- Monitoring the performance of the sub contractors and certifying any necessary payments.
- Preparation of monthly cost reports.

From 2004 to 2006 Andrew was a Quantity Surveyor for a main contractor on a £22m design and build hotel project and a £1.5m shopping centre.

Prior to 2004 Andrew was a Project Manager of construction sub contracts specializing in the glazing of retail units and garage showrooms along with hard wall and floor finishes for traditional commercial buildings, performing the tasks as detailed above.

Qualifications

B.SC Degree Quantity Surveying

Project Experience

Brookfield Acute Hospital Peterborough	**£11m**
ARUP Fitzrovia London	**£4.3m**
South Thames College London	**£4.7m**
Corby Cube Corby	**£3.3m**
Aurora Glasgow	**£3.4m**

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10.1.1.8 Design Team

The Design Team is key to the successful delivery of state of the art healthcare facilities. Brookfield have put together a team who we genuinely believe to be the best available in the market. The integration of the design and construction teams is all about people and the team we have selected, and worked extremely well with through the dialogue phase, is well known to us from numerous major healthcare projects in the past.

Above all we have selected them because we know we gel well as a team and collectively have the correct culture to fully integrate the NSGH Project Team into our work.

Our Design Team for the Adult and Children's Hospitals is:

Tribal – Healthcare Planner

Nightingale Associates – Architect and Lead Consultant

WSP – Civil & Structural engineers, Traffic, Fire and Sustainability

Zisman Bowye Partner – Mechanical & Electrical Engineers

Gillespies – Landscape Architects and Masterplanners

Acoustic Logic – Acoustic Engineers

The Design Team and Brookfield are supported by Doig & Smith our Cost Planners

As intimated earlier it is important that Brookfield empower our Design Team to go and do their job. While we will manage the process we are entirely comfortable that our Design Team will work with our Specialist Contractors and the NSGH Project team to provide a design that meets the aspirations and requirements of the Board. State of the art facilities cannot be created by cutting corners and it is important that our team spend money on the areas where greatest value can be gained and don't waste money unnecessarily. Brookfield trusts our team to do this.

Our design team organisation charts and Curriculum Vitae for key staff follow.

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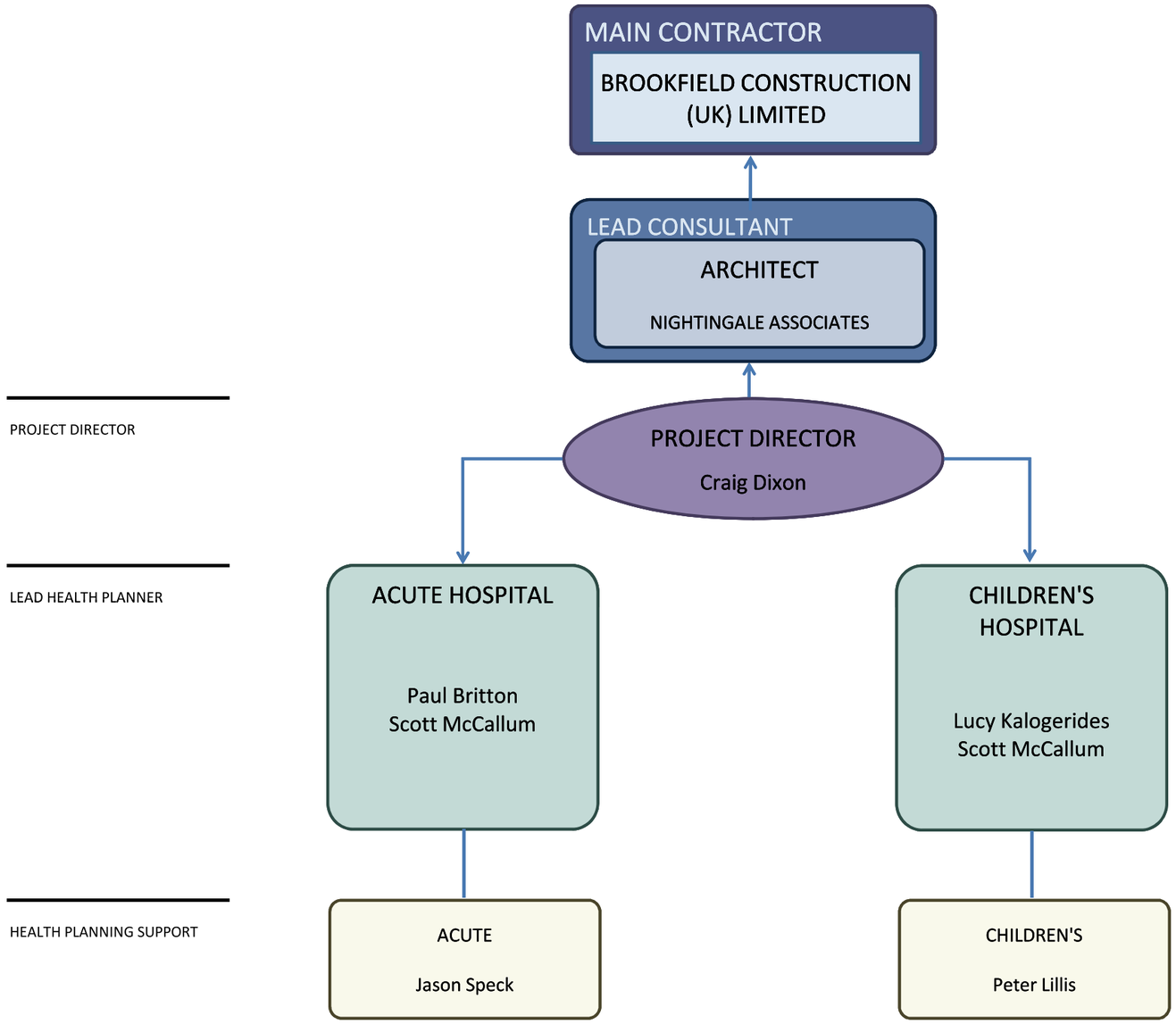
TRIBAL HEALTH PLANNING TEAM FOR NEW SOUTH GLASGOW HOSPITALS PROJECT



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TRIBAL

Director of Consulting

Craig Dixon

Craig has lead responsibility for Tribal health planning services in Scotland and Ireland Craig's skills range from facilitating clinical and stakeholder engagement to producing technical documents such as Output Based Specifications, Schedules of Accommodation, Evaluation Reports, Business Cases and Service Review Reports.

Craig has been overseeing the health planning support provided to the Brookfield South Glasgow Bid Team.

Career Overview

Craig began his NHS career in 1992 and worked in a range of strategic and operational management and commissioning roles within the NHS. His NHS experience includes roles with acute, community, mental health and primary care service providers. Of specific relevance to this project, Craig's NHS roles included managing operational services for an acute hospital in central London and managing Children's services provided from both hospital and community settings.

Craig joined Tribal in 2001, and as part of health planning team has provided both NHS organisations and private sector bidding consortia with advice on service and facility planning projects. These have ranged from major PFI capital development projects and whole systems premises reviews, to service specific projects and business cases for the development of primary care facilities. Recent examples include advising Peterborough Hospitals NHS Trust on their £380m PFI redevelopment, and advising NHS Forth Valley on their £300m new acute hospital and £18m new community hospital and health centre PFI developments. Craig also provided health-planning advice to the new Beatson Cancer Centre in Glasgow and to South Derbyshire NHS LIFT on the development of modern primary and community care facilities.

Craig is currently leading teams of health planning consultants providing advice to key capital development projects across Scotland and as such is familiar with all Scottish guidance and challenges facing capital developments in the current climate.

Qualifications

MSc Public Service Management
BA (Hons) Public Administration
Certificate in Public Services Practice

Project Experience

New Hospital for Forth Valley Larbert, Scotland	**£300m**
Peterborough Health Improvement Programme Peterborough, England	**£381m**
DGRI Redevelopment Dumfries, Scotland	**£140m**
Beatson West of Scotland Cancer Centre Glasgow, Scotland	**£100m**
National Plan for Radiation Oncology Ireland	**£500m**
Tayside Mental Health Perth / Stracathro	**£100m**
Ahmadi Hospital Redevelopment Kuwait	**£100m**

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TRIBAL

Managing Consultant

Paul Britton

Paul is a senior health planning consultant specialising in healthcare service strategy, planning and clinical operations. He has rigorous analytical ability, extensive service planning experience, project and team management skills, and excellent writing, communication and client liaison / relationship development skills.

Paul has provided lead health planning support to the Brookfield South Glasgow Bid Team.

Career Overview

Paul has been working in healthcare research and consultancy since 1994 applying his academic and practical experience to solving strategic, operational and service delivery issues.

Since 2003 Paul has provided both NHS organisations and private sector bidding consortia with advice on service and facility planning projects. These have ranged from major PFI capital development projects and whole systems premises reviews, to service specific projects and business cases for the development of primary care facilities. Recent examples include advising Brookfield on their successful bid to provide Peterborough Hospitals NHS Trust with their £380m PFI redevelopment of acute, mental health and city care healthcare facilities, and advising Guys and St Thomas' on their clinical and estates strategies. Paul also provided health-planning advice to St Orsola – Malpighi University Hospital in Bologna, Italy and on the Tunbridge Wells, Northern Batch and mid-Essex Health PFI schemes.

Qualifications

Doctor of Philosophy in Pharmacy
Bachelor of Science in Pharmacology

Project Experience

Peterborough Health Improvement Programme Peterborough, England	**£381m**
Clinical and Estates Strategy Guys and St Thomas' NHS Foundation Trust	
St. Orsola – Strategic Healthcare Planning Malpighi University Hospital, Bologna, Italy	
Tunbridge Wells PFI	**£300m**
Northern Batch PFI	**£300m**
Mid-Essex PFI	**£170m**

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TRIBAL

Director, Health Planning

Lucy Kalogerides

A nurse by background, Lucy is an experienced health planner having worked on a wide range of projects in the UK and overseas, including feasibility studies, business cases, design briefs, medical equipping and operational reviews. She has also advised Trusts, funders and bidding consortia on major PFI development schemes and LIFT schemes, especially regarding output specifications, service configurations and planning solutions.

Career Overview

Lucy provides specialist healthcare planning advice to capital schemes using PFI, PPP, LIFT, ProCure 21 and traditional procurement methods. She is responsible for setting the exacting standards required of Tribal's health planners in their core activities of briefing, design development and facilitation of clinical teams.

Prior to joining Tribal, Lucy gained a broad range of clinical experience in a London Teaching hospital and a Children's Hospital. She is able to use this clinical knowledge to inform her health planning work.

Lucy started her career in 1985 as a Student & Staff nurse at Kings College Hospital, London. She qualified as a Registered General Nurse. Clinical experience in all adult specialties including general medical and surgical care, paediatrics, maternity, mental health and A&E.

In 1989, Lucy moved to Queen Mary's Children's Hospital as a Student & staff nurse and qualified as a Sick Children's General Nurse. Clinical experience in all paediatric specialties including neonates and paediatric intensive care.

Lucy was promoted to Health Planner for Queen Mary's Children's Hospital in 1993, where she was responsible for a service improvement programme around Patient Focused Care in the children's hospital.

Lucy joined Tribal Consulting in 1994 as a Managing Consultant and then Director. Her full range of Health Planning jobs including briefing and service planning, both nationally and internationally for Trusts, private companies and PFI bidders.

Qualifications

BSC (Hons) Health Service Management
Registered General Nurse (RGN)
Registered Sick Children's Nurse (RSCN)

Project Experience

National Plan for Radiation Oncology Ireland	**£500m**
Gwent Clinical Futures Hospitals Wales	**£50m**
Queen Victoria Hospital NHS Foundation Trust Sussex Hospital	**£20m**
Pembury Hospital Surrey	**£200m**
Colchester Hospital Essex	**£150m**
Loures PFI Hospital Portugal	**£75m**
Queen Alexandra Hospital Portsmouth	**£120m**

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TRIBAL

Health Planning Consultant

Scott McCallum

Scott is a healthcare planner specialising in PFI, NHS LIFT and Procure 21 schemes. He has provided health planning advice and support on several major PFI schemes including NHS Forth Valley Scotland and Salford Royal Hospitals NHS Trust, part of the Northern Batch Procurement.

Scott provided Health Planning support as part of the NHS project team for the Central Manchester and Manchester Children's Hospital PFI project.

Career Overview

Scott has worked on several major PFI schemes advising NHS Trusts including Salford Royal Hospitals NHS Trust – part of the Northern batch procurement, and NHS Forth Valley a combined Acute and Primary Care/Community service scheme providing Healthcare Planning advice including taking part in Bidder Evaluation, and supporting the production of Clinical Output Specifications.

Scott has also worked on MaST LiFT and Bury, Tameside and Glossop LiFT schemes acting as the health planning lead as part of a consortium bid team. In addition to this with his clinical background, Scott as has provided clinical expertise and knowledge in support of Theatre Performance Reviews for Midcheshire Acute NHS Trust and Taunton and Somerset NHS Trust.

In 2006, Scott provided the clinical expertise and knowledge for the review of theatre efficiency and capacity for Taunton and Somerset NHS Trust.

Scott's achievements throughout 2007 include leading and providing project management support for the healthcare planning advice with Morgan Ashurst –Bury, Tameside and Glossop NHS LIFT and providing clinical expertise and health planning advice for an A&E Review and process mapping exercise across the Western Health and Social Care Trusts 3 Acute hospital sites in NI.

Throughout 2008, Scott was involved in providing the health planning advice and clinical expertise in support of the Business case development for a combined acute assessment and receiving unit at the Royal Bolton Hospital.

Qualifications

Registered General Nurse
MBA

Project Experience

New Hospital for Forth Valley Larbert, Scotland	**£300m**
St Barts and the Royal London Hospitals Trust England	**£1.2bn**
DGRI Redevelopment Dumfries, Scotland	**£140m**
University Hospitals of North Staffordshire, England	**£391m**
Salford Royal Hospitals England	**£305m**
Tayside Mental Health Perth / Stracathro	**£100m**

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TRIBAL

Consultant

Jason Speck

Jason is a consultant with a broad range of experience. He has advised Trusts and bidding consortia on major PFI development schemes, P21 schemes and LIFT schemes. His experience is centred on service configuration and health planning solutions. He has extremely strong analytical skills which he has applied to numerous projects.

Jason is also an expert user of ADB, Codebook and Active Plan and has produced room data sheets for numerous projects. Jason has supported Craig and Paul in undertaking Schedule of Accommodation review work in support of the Brookfield South Glasgow Bid Team.

Career Overview

Jason has advised bidding consortia on major PFI development schemes including £350m Pembury project, the £160m Walsall project and the £150m project for a major redevelopment of Kings Mill Hospital & Mansfield Community Hospitals that achieved preferred bidder status. In addition to major acute hospitals, Jason has considerable experience of Primary and Community Care, especially regarding service configurations and planning solutions. Jason has contributed to developing Strategic Service Development Plans for Adur, Arun & Worthing PCT and Luton PCT, and capacity planning models for Cheshire & Merseyside Strategic Health Authority and Central Manchester PCT. Jason's mental health experience includes completing projects for Sainsbury Centre for Mental Health and East London and the City Mental Health NHS Trust.

Jason started his career in 1994 as a Business Analyst at BSI, where he Jason provided analysis of British and International technical standards and legislation for the BSI product database. Monitoring and collating data to identify trends and anomalies in order to assess data quality. The manipulation of this database to provided management information. In 1997, Jason moved to RKW as an Analyst, where he provided data analysis and model building experience to assist strategic health service planning, estate development and financial/ economic appraisal for clients including NHS trusts, Health Authorities and the NHS Executive.

Qualifications

Diploma in Health Planning and Management
MSc in Information Technology
BSc (Hons) in Social Administration

Project Experience

Cromer District Hospital Norfolk	**£20m**
Sherwood Forest Trust Wales	**£300m**
Barts and the London London	**£1,000m**
Pembury Hospital Kent	**£160m**
Walsall Hospital West Midlands	**£150m**
Tayside Mental Health Perth / Stracathro	**£100m**
Papworth Hospital Cambridgeshire	**£150m**
UCLH Cancer Centre London	**£110m**

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Jason joined Tribal in 2001 as a Consultant and is currently involved in provided Health Planning advice to Sherwood Forest PFI scheme to develop the £300 million Central Nottinghamshire scheme, and is also providing innovative Mental Health capacity planning tools in conjunction with the Sainsbury Centre for Mental Health.

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TRIBAL

Technical Health Planning Consultant

Peter Lillis

Peter is a specialist clinical space planner who has a deep understanding of the ergonomic and spatial requirements of clinical and non-clinical spaces in hospitals. Peter has a detailed knowledge and experience of the NHS Estates Activity Database (ADB) room data sheet system. He has benefited from working both with bidders and as a Trust advisor in PFI schemes and with bidders on LIFT schemes.

Peter has advised NHS Trusts on detailed design development of major acute hospital PFI developments. Peter has previously worked in support of the NHS in Glasgow on the development of the New Beatson West of Scotland Cancer Centre.

Career Overview

Peter's career started in 1983 with Clarke Nicholls and Marcel Structural Engineers, Junior Engineering Technician. In 1985, he joined HLM Architects as an Architectural/ CAD Technician and was part of the health planning team on Whipps Cross Hospital in London providing room layouts and also providing elevational design drawings that explained to users how equipment was to be provided within the rooms.

In 1998, Peter joined Llewelyn Davies Architects as a Health Planner was an integral part of the health planning design team producing room data sheets and loaded floor plans for UCLH Hospital London.

Peter spent 3 years commencing 2003 on a multi-client PFI project - Cambridge University Hospitals NHS Foundation Trust – Addenbrookes Hospital – Elective Care, Genetics and Diabetes Centre. This £76m project provided inpatient and ambulatory elective facilities along with a genetics department and associated University research facility. Peter was part of a team of two who helped the users with detailed design reviews of both 1:200 and 1:50 scale design proposals. He worked very closely with the Trust and the Bidders to develop functional room data sheets and plans.

Peter joined Tribal in 2004 as a Health Planning Consultant and is currently supporting the Clinical Planning team for the Barts & The London PFI scheme, Peter has provided both training on reading 1:50 scale plans and room data sheets, and detailed review of the Bidders 1:50 design proposals. Within Tribal's Healthcare Practice, Peter is producing a set of medical planning standards within the company and currently Peter's cad design skills are being used to produce a set of standard 3-D room layouts to help clinical staff to better understand designs by illustration in three dimensions.

Qualifications

ONC Civil Engineering
HNC Building Studies

Project Experience

Beatson Oncology Centre Glasgow	**£100m**
Oak Park Community Hospital Portsmouth	**£65m**
Fareham Community Hospital Portsmouth	**£30m**
Bridgend CAMS Unit Bridgend Wales	**£25m**
Hope Hospital PFI Manchester	**£400m**
Addenbrookes Hospital PFI Cambridge	**£200m**
Caerphilly Local General Hospital Wales	**£65m**
Barts & The London Hospital PFI London	**£1,000m**

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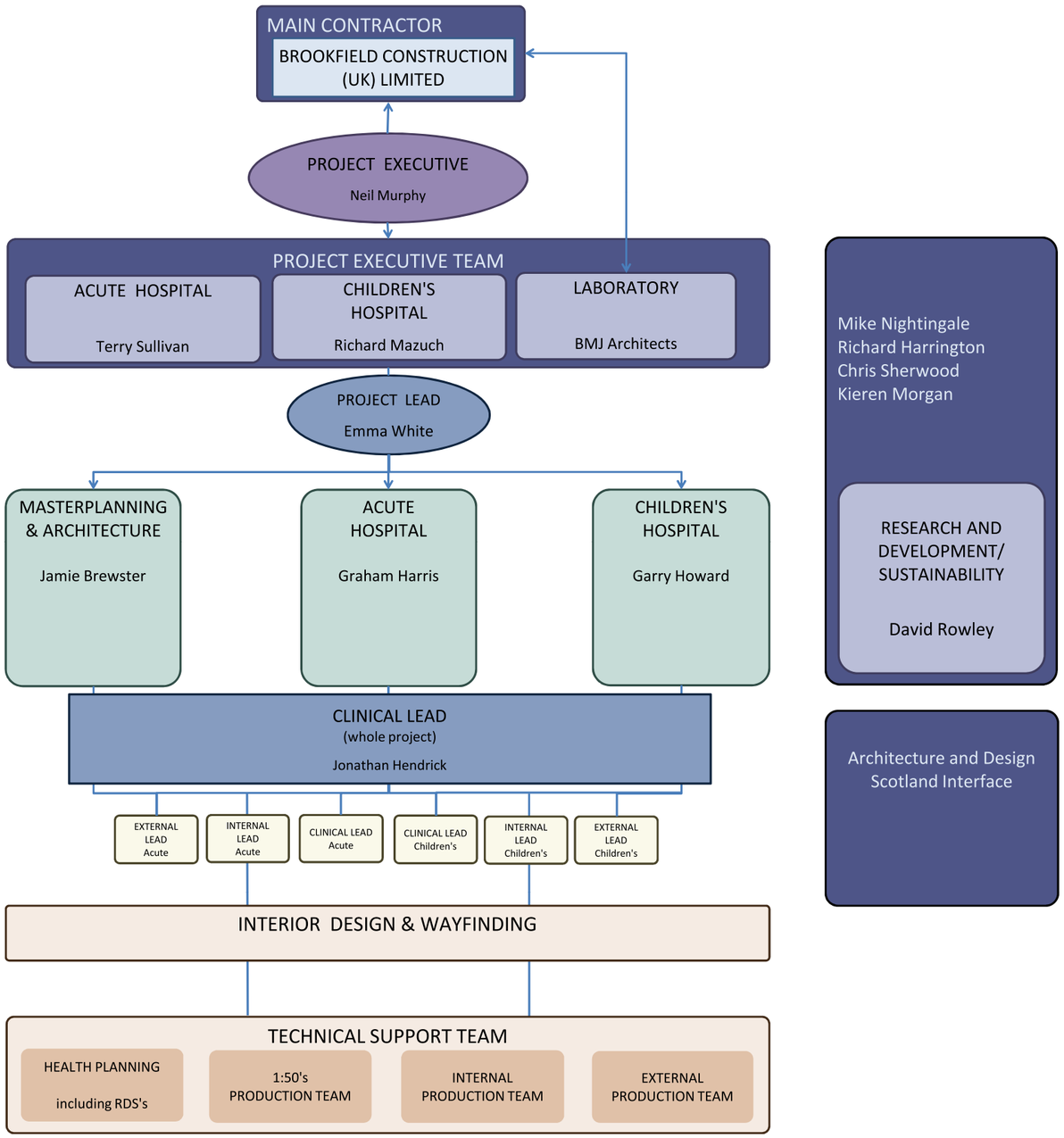
LEAD CONSULTANT - NIGHTINGALE ASSOCIATES
ARCHITECTURAL DESIGN TEAM FOR NEW SOUTH GLASGOW HOSPITALS PROJECT



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NIGHTINGALE associates

Principal

Neil Murphy

Neil joined Nightingale Associates in 1994, he became an Executive Director in 2002 and thereafter Principal of the London Office. Neil believes that one of the critical success factors for any project and his office is the ability of all team members to integrate. Neil and his team have successfully delivered numerous complex and large scale health projects in live hospital environments using various contract procurement methods eg: design and build, two stage tender, NEC, PFI, traditional etc.

Career Overview

Neil is the Senior Director responsible for the successful delivery of Peterborough PFI with Brookfield Construction Limited which is on programme and budget.

He has been the Project Executive Director for all stages of the successful bid and delivery of the Birmingham New Hospitals Mental Health PFI and the three phase traditional contract of the £100 million Royal Berkshire Hospital redevelopment. The site was a congested site in a built up urban area which required complex phasing,planning and liason to deliver continuity of service and minimise risk for the Trust during the construction process.

He was also responsible for the highly successful refurbishment of listed buildings for the Horton Mental Health Unit in West London and the award winning East London Personality Disorder Unit P21(Mental Health) pilot scheme.

He has successfully worked with Trusts, Consortia's, contractors and design teams at all stages of design and procurement on projects ranging from £5 – 350+ million.

Neil has strong leadership,coupled with excellent communications and interpersonal skills.

Qualifications

Arch. Tech. Dip

Project Experience

Peterborough Hospitals PFI, Acute Hospital, Mental Health Unit and Integrated Care Centre, Project Lead Peterborough	**350m**
Royal Berkshire Hospital Amalgamation Berkshire	**100m**
Birmingham New Hospitals Project Mental Health PFI Birmingham	**52m**
Colchester & Tendring LIFT Primary Care Centres Colchester	**31m**
St Anns P21, Mental Health Services Poole	**18m**
East London Personality Disorder Unit P21 Medium Secure Mental Health Unit East London	**5.5m**

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NIGHTINGALE associates

Principal

Terry Sullivan

Terry joined Nightingale Associates in 1994 and was made a Partner in 1998. He now has over 25 years experience in the UK Healthcare sector and for the last few years has specialised in major Hospital developments for Nightingale Associates. As one of Nightingale Associates most experienced healthcare designers Terry's love of design tempered with a strong practical streak has been characterized by his ability to take projects from the initial design stages through to completion on site.

Career Overview

Terry has a huge width of healthcare experience in general and in major PFI bids in particular. He has produced the concept masterplans behind several successful PFI projects including Kings College hospital, Peterborough Hospitals PFI and North Middlesex University Hospital PFI. Kings college was voted the Best Operational PFI Hospital (all categories) in 2004.

Terry also led the bid on the Bart's and the Royal PFI (Royal London Hospital Site) and although unsuccessful at BAFO stage the design produced was widely acclaimed as superior to the overall winning submission.

Current PFI experience includes the ongoing leadership of the North Middlesex project which is now on site, ahead of programme, with completion due in mid 2010.

Other large scale healthcare schemes include the Royal Berkshire and Battle Hospitals Consolidation Project where Terry was instrumental in the design of four of the five phases which resulted in the successful translocation of the clinical services from Battle hospital whilst retaining a fully operational hospital at Royal Berkshire.

The 'Designed for Life' Welsh framework has yielded the opportunity to reconfigure clinical services on the Morriston Hospital site in Swansea. This project, won in a framework competition, is currently at planning stage.

Over the course of his architectural career, Terry has built up a wide range of experience. From early projects such as designing Funfair installations through to commercial, retail, social housing and recreational buildings such as the west grandstand at The Oval cricket ground.

Qualifications

BA (Arch)
ONC (Building Technology)
Dip.Arch
ARB Registered

Project Experience

Barts and The London Hospital Hospital **A new acute PFI Scheme** London	**450m**
Peterborough Hospital - Integrated Care Centre Peterborough	**350m**
Royal Berkshire Hospital **Consolidation of Royal Berkshire and Battle Hospitals on to single site** Reading	**100m**
Oxford Radcliffe Hospital - Cardiac P21 Oxford	**82m**
North Middlesex Hospital - PFI project North London	**90m**

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NIGHTINGALE associates

Senior Director

Richard Mazuch

Richard Mazuch is a Senior Director responsible for Research & Development, Design Excellence & Major projects in Nightingale Associates. He has 30 years healthcare experience in both the private and public sector, having worked for leading British and American healthcare Architects. He has worked on numerous healthcare projects in England, Europe, Asia, Middle East, South America Wales, Ireland, Italy, Hong Kong, Brazil, Oman, Abu Dhabi, and more recently Australia including the Royal North Shore Hospital.

Career Overview

In September 2008 Richard was invited to present "The Perfect Children's Hospital" to both Glasgow and Edinburgh Trusts with follow up workshops to be held in May 2009.

He has authored and is assisting, the NHS on a number of guidelines, HBN's, HTM's and workshops concerning Children and Young people, Acute Ward Design, maternity, Cardiac Care etc. he has helped the Government Treasury Task Force produce a key seminal document – "How to achieve design quality in PFI projects" and worked more recently with the NPSA, Princes Foundation and the King's Fund. He is the "therapeutic environment" sector leader for the NHS website and is presently authoring two new NHS Guidelines for Evidence – Based Design Healthcare Environments'. He is leading, liaising and participating closely with many university research projects in this country and abroad as well as advising Key manufacturers in design issues.

In the last 10 years he has extensively and enthusiastically researched and developed 'Sense Sensitive Design', 'Emotional Mapping', 'The Design Prescription' and more recently the 'hPod', focusing on key evidence based design issues such as the psychological and physiological affects of colour, light, views, smell, noise etc on many patient groups thereby creating optimum healing environments.

Qualifications

B.Sc. (Arch.) with Honours
BArch with Distinction
ARB Registered

Project Experience

Southmead Hospital **784 bed acute hospital** Bristol	**370m**
Royal North Shore Hospital - PFI Scheme Australia	**300m**
New Coventry Hospitals Project **New Build Women's and Children's** Coventry	**300m**
Peterborough Hospitals PFI, Acute Hospital including Women's and Children's Hospital Peterborough	**350m**
North Middlesex University Hospital **Acute PFI Scheme**	**70m**
The Royal Alexander - Children's Hospital Brighton	**30m**

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NIGHTINGALE associates

Director

Emma White

Since joining Nightingale Associates in 2000 Emma has demonstrated her ability to organise, manage and deliver large healthcare developments and teams.

Her knowledge of healthcare delivery on “live hospital sites” and managing the problems associated has led to a practice wide role and recognition as a peer review panel member. Emma is involved in the peer review of the practice’s large scale healthcare schemes.

Career Overview

mma was lead Architect on West Middlesex PFI, which was a phased construction ated by the new Acute facility, including Wards, Operating Theatres, A&E, Diagnostic aging and Outpatients. The phased decanting and refurbishment of existing buildings concluded with the successful handover in 2003.

Subsequently, Emma progressed to the role of Team Leader for the Peterborough Hospitals PFI scheme. She project managed the design delivery of the Bid through each progressive stage, including programming of the deliverables and leading the interface with Brookfield Construction Limited. From our successful appointment as Preferred Bidder she was promoted to Project Director, where she is responsible for the Acute element.

She continues to lead the design interface with Brookfield and the Trust, and has successfully completed the programming and co-ordination of the production information, including the management of the 1:50 process to Nightingale Associates Cape Town office.

Her intense exposure on large scale healthcare projects has provided her with the skills and ability to successfully manage projects, teams, clients and contractors on her own merits.

Qualifications

BA (Hons) Arch
ARB Registered

Project Experience

Peterborough Hospitals PFI, Acute Hospital, Mental Health Unit and Integrated Care Centre Peterborough	350m
West Middlesex University Hospital Acute Development PFI Scheme West Middlesex	53m
West Middlesex University Hospital Mental Health T-Block West Middlesex	3.7m
Hillingdon Riverside Centre Adult Mental Health Unit	5m
Leigh House Adolescent Mental Health Unit	3m

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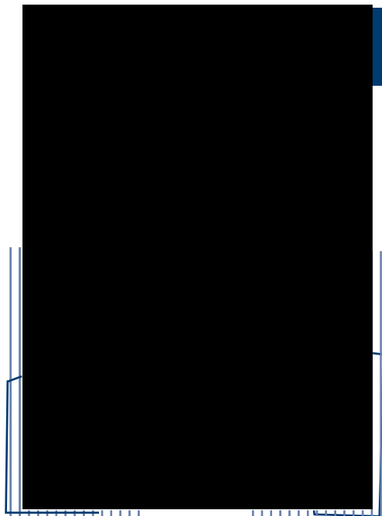

NIGHTINGALE associates

Studio Director

Jamie Brewster

Having joined NA in 2002, Jamie became a director of the Cardiff office in 2005. Through his demonstration of design, presentation skills and project delivery via a range of projects developed at both strategic and detailed levels and via a range of procurement methods, Jamie was made Cardiff studio director in 2008. Jamie enjoys his responsibility for maintaining the studio's high standards of design output and for developing new inter-office design focused initiatives.

Career Overview

Jamie's skill and enthusiasm for design and presentation has been recognized by the RIBA, having won prizes for his thesis project and Europan'94 (winning competition entry for a site in Finland). From 1999 to 2002, Jamie gained a useful introduction to healthcare design whilst at Capita and consolidated his role as a senior healthcare designer in his move to Nightingale Associates in 2002.

Since joining Nightingale Associates, Jamie has gained considerable experience of all facets of healthcare design and procurement and was Lead Consultant/Contract Administrator for the new £22M Rhondda Valley Hospital in South Wales. Jamie was also project director for the new renal/cardiac rehabilitation unit at West Wales General Hospital, Carmarthen which was shortlisted for a regional RIBA award.

Jamie is also the Cardiff studio director with responsibility for the development of projects in the primary care field. Jamie is also interested in the incorporation of sustainable strategies and leads the Cardiff studio in ensuring all design proposals have an integrated approach to sustainability and environmental design.

Qualifications

BA (Hons) Dip Arch RIBA

Project Experience

Royal Glamorgan Hospital
New 87 Bed Mental Health Unit
Lead Consultant (for Capita) — **8m**

Ysbyty Cwm Rhondda
New 108 Bed Community Hospital
Lead Consultant — **22m**

West Wales General Hospital, Carmarthen
New Renal Dialysis/Cardiac Rehabilitation Unit
Lead Consultant — **5.5m**

Mountain Ash, South Wales
New Primary Care Resource Centre
Lead Consultant — **9m**

Princess of Wales Hospital, Bridgend
Proposed CAMHS Unit and Site Infrastructure
Project Director — **18m**

West Wales General Hospital, Carmarthen
Proposed Mortuary
Project Director

Withybush Hospital
Proposed Renal Dialysis Unit, Haverford West
Project Director — **3m**

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NIGHTINGALE associates

Senior Director

Graham Harris

Graham joined Nightingale Associates in 1998. Graham has a keen interest in both acute and primary care facilities and strives to ensure that design objectives are achieved through the most practical form of procurement and contract.

Graham`s detailed knowledge of healthcare design, clients, design teams and contractor relationships from briefing through the design stage and ultimately to delivery on site have been key to the success of all of his previous schemes. His ability to integrate the total team has been a key factor in gaining Nightingale Associates and Graham repeat business with our clients.

Career Overview

Graham has extensive experience in healthcare projects and has worked both at a strategic level in the early design and development control stages through to the contract administration of both new build and refurbishment schemes.

Graham successfully designed, lead and delivered Phase 3 of the amalgamation project at Royal Berkshire Hospital. Phase 3 was delivered ahead of time and on budget. The scheme involved enabling works, demolition and utilizing/refurbishing an existing in ground basement area as well as designing and delivering a new acute facility on a highly congested fully functioning hospital site.

He has extensive experience on partnering contracts and has designed and delivered a state of the art Cardiothoracic Centre under Procure 21/NEC contract.

The scheme has been designed on a standard module to allow ease of expansion; soft space was planned adjacent to critical areas also to allow for expansion. The majority of rooms have been planned to maximize natural daylight including operating theatres.

Qualifications

BA Architecture
ARB Registered

Project Experience

Barts and The London Hospital **A new acute PFI Scheme** London	**450m**
Royal Berkshire Hospital **Amalgamation of Royal Berkshire Hospital** Berkshire	**100m**
Basildon Hospital P21 **Cardiothoracic Centre** Basildon	**35m**
Colchester and Tendring LIFT **Colchester Primary Care Centre &** **Dovercourt Health Centre** Colchester	**25m**
Homerton Hospital **Acute Services Development** Homerton	**14.5m**

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NIGHTINGALE associates

Senior Director

Garry Howard

Garry has been at Nightingale Associates for 13 years, becoming a Senior Director in 2006. He has wide ranging experience in many healthcare sectors especially major Acute developments.

Garry is one of Nightingale Associates' most talented designers, and therefore enjoys working at the front end of projects where his design skills, combined with a wealth of knowledge, provide him with an excellent platform to execute complex design exercises, helping clients achieve their aspirations and aims.

Career Overview

Garry has substantial experience within Acute hospital environments having worked on three of the major PFI schemes in the UK to have evolved through this process namely, Royal London and Barts PFI, Peterborough Hospitals PFI and Southmead Hospital, Bristol PFI.

As an experienced Architect and Health Planner Garry has extensive knowledge and understanding of how all departments need to function within a hospital. This understanding is crucial in allowing Garry to translate user needs and aspirations into reality in both an exciting architectural and functional way.

His most recent experience has been working on the Southmead PFI hospital.The fundamental driver for the project was to ensure the architecture and built environment received as much importance as the function of the building with positive comments from both the Trust and CABE it was acknowledged this goal was successfully achived.

Qualifications

BA (Hons) Arch
Dip.Arch
ARB Registered

Project Experience

Barts and the London Hospital PFI Project London	450m
Southmead Hospital Bristol	370m
Peterborough Hospitals PFI Acute Hospital Peterborough	350m
King's College Hospital, PFI Maternity & Outpatients London	15m
Guy's & St. Thomas' Hospital Paediatric & Women's Department London	55m
Edgware Community Hospital Edgware	25m
Diana Princess of Wales Hospital Maternity and Day Surgery Unit Lincolnshire	11m

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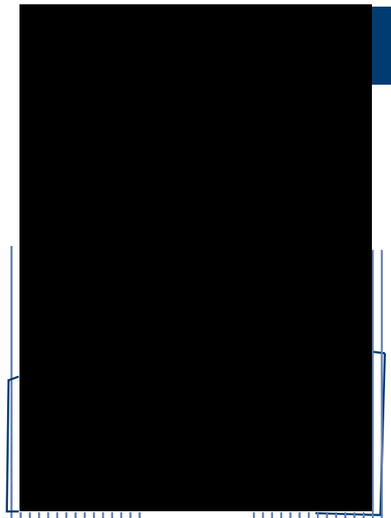

NIGHTINGALE associates

Clinical Design Manager

Jonathan Hendrick

Jonathan joined Nightingale Associates in 2002. Jonathan's extensive experience in clinical planning has led to his role as Clinical Design Manager for the Cardiff Office and also as the champion within Nightingale Associates.

He has recently been involved in Nightingale Associates successful bids for "Framework Scotland" and subsequently Dumfies and Galloway Royal Infirmary.

Career Overview

With over 20 years' experience of providing advice and delivering successful healthcare projects throughout the UK,Jonathan has extensive knowledge of a range of services and building types across the healthcare spectrum.

The "Design for Life" Building for Wales Framework was launched in Wales in summer 2006. Nightingale Associates were awarded the first two major projects under the framework. Jonathan has been Clinical Design Lead for the new £90M Ysbyty Ystrad Fawr LGH for Gwent Healthcare NHS Trust and has taken the project from concept design to 1:50 sign off stage. This 274-bedroom hospital is the first new build hospital to be built with 100% single rooms.

Jonathan is a member of the Nightingale Associates' Acute Network, a group of people across the Practice which exchange ideas on best practice, research and knowledge for the benefit of the Practice and our clients.

Qualifications

BA (Hons) DipArch (Cantab)
ARB Registered
RIBA Registered

Project Experience

Peterborough PFI
PFI Scheme acute hospital — 350m
Peterborough

Gwent Healthcare NHS Trust
A Designed for Life:
Building for Wales 'Pathfinder' Project — 133m
Gwent

Cym Taff NHS Trust
A New Build Second Rhondda
Community Hospital — 25m
Llwynypia

Cardiff and Vale NHS Trust
The Rationalization of Acute Services
at the University Hospital of Wales
Cardiff

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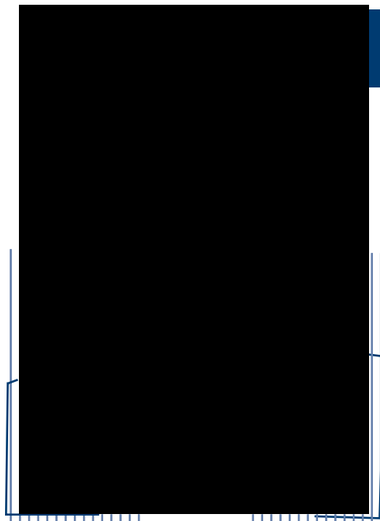

NIGHTINGALE associates

Health Development Director

Kieren Morgan

Kieren joined Nightingale Associates in 2002. He was appointed Principal of the Cardiff Office in 2005 working primarily in the primary, secondary and mental health sectors. Kieren is currently Health Development Director and a member of the Nightingale Associates Management Board.

With over 18 years' experience of providing advice and delivering successful healthcare projects throughout the UK and overseas, Kieren has extensive knowledge of a range of services and building types across the healthcare spectrum.

Career Overview

In September 2008 Kieren was invited to present "The Perfect Children's Hospital" to both Glasgow and Edinburgh Trusts with follow up workshops to be held in May 2009.

He has taught at the UK top rated Welsh School of Architecture for over 12 years and is a Design Review Panel Member for both the Design Commission for Wales and the NHS Estates in England. He has presented at a number of national conferences on subjects including design quality, evidence-based design and the therapeutic environment. He has also reviewed and developed guidance for cancer services, primary care and mental health.

Kieren is a member of the Nightingale Associates' mental health network, a group of people across the Practice which exchange ideas on best practice, research and knowledge for the benefit of the Practice and our clients.

Kieren is also responsible for managing and directing research and innovation within the Practice, which includes subjects such as the inpatient environment, evidence based design, therapeutic environments for different patient types and product design.

Qualifications

BA (Hons)
DipArch (Cantab) ARB Registered
RIBA Registered

Project Experience

Royal Glamorgan Hospital
New Build 300 Bed District General Hospital — **120m**
Llantrisant

Ysbyty Ystrad Fawr
A Designed for Life:
Building for Wales 'Pathfinder' Project — **114m**
Caerphilly

Princess Elizabeth Hospital
Redevelopment of existing Hospital — **35m**
Guernsey

Ysbyty Alltwen Hospital
New Build Community Hospital — **13m**
North Wales

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NIGHTINGALE associates

Senior Director and Research Laboratory Specialist

Adrian Gainer

Adrian has specialised as an architect and designer in the research laboratory field for the past 17 years in the UK, Europe and the US. During this time he has carried out a full range of duties from briefing, feasibility and concept studies, through scheme, detail and production information to operations on site including carrying out the role of a site architect. He was an assessor for the Welcome Trust during the Joint Infrastructure Fund.

Career Overview

Adrian is particularly interested in designing laboratories that allow flexibility and adaptability of use, which encourage and promote scientific interaction and that adapt an energy efficient and sustainable solution.

Adrian has contributed to the latest guidelines for pathology laboratories HBN.

He was a panel member and speaker at the AT Osbourne Research Facility design conference in Utrecht, Holland in 2008.

Adrian specialises in the feasibility, briefing, concept and detail design of research buildings.

Recently Nightingale Associates and Adrian as lead designer have collaborated with MAKE architects to design and deliver a new research building for 450 scientists within a unique flexible laboratory module.

Adrian is currently Senior Director in charge of the Rutherford Appleton Laboratory Research Complex which is a new leading global centre for science and innovation.

Qualifications

BSc (Hons)
DipArch
RIBA Registered
ARB Registered

Project Experience

University of Oxford **Old Road Campus Research Building** Oxford	**55m**
University of Manchester **New Biology Laboratories** Belfast	**35m**
Science and Technology Facilities Council **Rutherford Appleton Laboratory** **Research Complex** Harwell	**20m**
Oxford Radcliffe Hospital NHS Trust & **University of Oxford** Oxford	**8.5m**

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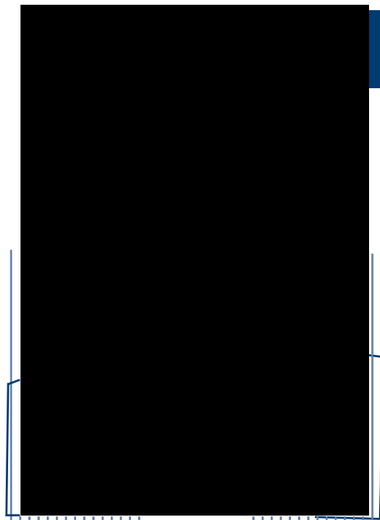

NIGHTINGALE associates

Associate Director

Charles Stokes

Charlie joined Nightingale Associates in 1997 and has a wide range of experience in large complex buildings particularly in the design of buildings for women and children.

In 2004 he instigated a continuing research partnership with John Moore's University studying the effect of design on behavior and has used this experience in projects throughout the UK. Over the years he has built up a knowledge that allows him to understand complex design issues, helping clients efficiently achieve their aspirations and aims. He is a pragmatic architect with the ability to build strong relationships and demonstrate high levels of integrity and credibility, whilst gaining client confidence and trust.

Career Overview

Charlie has delivered a number of primary and tertiary healthcare projects through various methods of procurement. He is currently working as trust advisor for the Royal Liverpool Trust designing several key departments: Theatres, Imaging, A&E and Wards.

His design work for women's services range from the dedicated Women's and Children's facility at the Diana Princess of Wales Hospital Grimsby to the award winning Ulster maternity in Dundonald.

Charlie's experience of working within children facilities at Nightingales has involved work at West Middlesex University and Homerton Hospitals. He also managed Phase 1 of the redevelopment of Great Ormond Street Hospital. This project incorporated a patient hotel, wards, operating theatres, mental health and outpatients. Located in a conservation area and spanning view corridors to St. Paul's Cathedral, achieving planning was a major concern in the buildings delivery. The project delivered a building that satisfied disparate groups of clients whilst maintaining an overall conceptual approach and design.

Qualifications

BA DipArch
BArch
ARB Registered

Project Experience

Royal Liverpool University Hospital Trust Technical Advisors and Design Team Leader — 350m
Liverpool

Dumfries Infirmary Redevelopment of the existing Hospital — 90m
Dumfries

New Maternity Unit Project Architect responsible for client brief clarification — 15m
Northern Ireland

Great Ormond Street - Phase 1 — 40m
London

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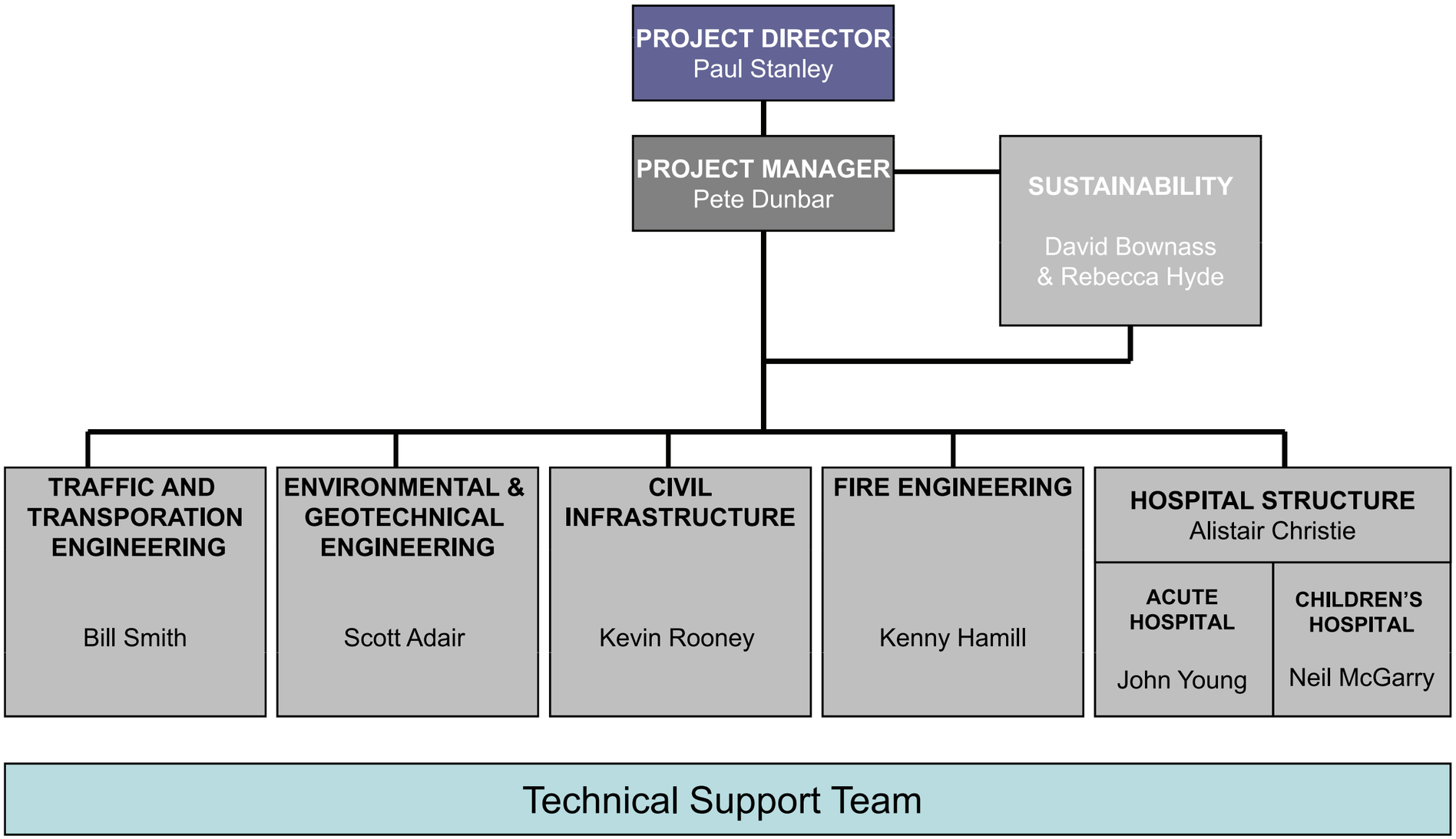
WSP Team for New South Glasgow Hospitals Project
Brookfield Construction UK Ltd
Lead Consultant – Nightingale Associates



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WSP

Director – Healthcare Champion

Paul Stanley

30 years experience in the management design and construction supervision for a variety of civil and structural engineering works.

Director responsible for WSP Healthcare Business in the UK. The role encompasses major PFI's, Procure 21, Technical Advisory and Independent Certifier commissions. Responsibilities include the overall direction and management of WSP multi-disciplinary Healthcare teams operating from 14 offices.

Career Overview

Paul joined WSP with the merger of Graham Consulting Group in 1997; his background as a Civil & Structural Engineer prior to that time included hospital schemes at Bromsgrove & Redditch DGH, Rugby St Cross, Bedford, Walsgrave, in the Midlands, Aldeburgh, West Suffolk, Addenbrookes and Hinchingbrooke in East Anglia.

In his early years for WSP Paul was responsible for the Management of WSP offices in Birmingham and Bury St Edmunds during which time a bigger portfolio of Healthcare work came into the UK business. In 2003, Paul took on the 'Healthcare Champion' role for WSP. Paul's project experience includes being Director responsible for all major PFI Healthcare projects, the NHS Frameworks P21, DFL (Wabs) and Frameworks for Scotland, in addition to Advisory roles for Healthcare projects where Trusts are the Client.

Major PFI projects completed where Paul was directly involved include the Norfolk & Norwich University Hospital, Addenbrookes Elective Care and Oxford Churchill Oncology.

Paul is the current Project Director of North Staffordshire University Hospitals, Forth Valley Acute and Walsall Manor, which are all PFI's currently under construction and approaching completion. Other recent prestigious Healthcare projects where Paul has a direct involvement include the phased Redevelopment of Great Ormond Street Hospital (£200m) London; a project which includes extensive decanting and enabling works projects in addition to the main phased redevelopment.

Current Procure 21 projects include development of OBC documentation for major new schemes at North Tee's (£400m), Broadmoor (£200m), and Brighton (£200m).

Qualifications

BSc FIStructE MICE MIHT (University of Birmingham)

Project Experience

Great Ormond Street Hospital for Children Phased Redevelopment London	**£200m**
North Staffordshire University Hospital PFI Stoke	**£350m**
Walsall Manor Hospital PFI	**£130m**
Oxford Churchill Oncology PFI	**£90m**
Addenbrookes Elective Care Centre	**£70m**
Norfolk & Norwich University Hospital PFI	**£150m**
Hinchingbrooke Hospital DTC PFI	**£20m**
Garrett Anderson Centre PFI Ipswich	**£30m**
Birmingham and Solihull LIFT Various Schemes	

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WSP

Technical Director

Pete Dunbar

Pete joined WSP in 2006 as the Technical Director for the Structural Team in Edinburgh. His background is principally in major multi-disciplinary projects across a variety of sectors including Healthcare, Education, Power, and Commercial.

Pete's contribution to Healthcare Projects includes the Forth Valley Acute Hospital, where he was involved in the Internal Design Reviews; and the Tayside Mental Health Unit, where he provided the Scheme Design and support to OBC. Pete continues to be directly involved in providing support to the Healthcare for Scotland Framework and has also fulfilled the Project Director role on the delivery of Design Services for large PFI schemes including the South and North Lanarkshire Schools.

Other multi-disciplinary projects of note where Pete has added value through managing the design process and the introduction of innovative solutions include Halliburton High Pressure Test Facility, Shrubhill Residential Redevelopment and Chapelcross Flask Handling Facility.

Career Overview

Pete joined WSP in 2006 as the Technical Director for the Structural Team in Edinburgh. His background is principally in major multi-disciplinary projects across a variety of sectors including Healthcare, Education, Power, and Commercial.

Pete's contribution to Healthcare Projects includes the Forth Valley Acute Hospital, where he was involved in the Internal Design Reviews; and the Tayside Mental Health Unit, where he provided the Scheme Design and support to OBC.

Pete continues to be directly involved in providing support to the Healthcare for Scotland Framework and has also fulfilled the Project Director role on the delivery of Design Services for large PFI schemes including the South and North Lanarkshire Schools.

Other multi-disciplinary projects of note where Pete has added value through managing the design process and the introduction of innovative solutions include Halliburton High Pressure Test Facility, Shrubhill Residential Redevelopment and Chapelcross Flask Handling Facility.

Qualifications

BSc (Hons) Civil Engineering, University of Strathclyde
C.Eng M.I.Struct.E

Project Experience

Forth Valley Hospital Larbert	**£300m**
Tayside Mental Health Unit Perth	**£90m**
Dumfries & Galloway Mental Health Unit	**£25m**
RBS Data Centres Edinburgh	**Confidential**
Halliburton Head Office and Test Facility	**£15m**
HMNB Clyde - REDF Facility	**Confidential**
Tanjung Jati 'A' Power Station	**£400m**
Birmingham Novotel	**£20m**

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Technical Director

David Bownass

David has over 25 years experience in Building Services engineering with contractors, design consultants and client organisations.

David champions sustainability for WSP UK and makes certain he adds value through sustainability to all projects.

David's comprehensive experience has involved pre design client work through to post construction commissioning and final account close out.

Career Overview

Paradise Street Development Area (PSDA), Liverpool : Project Director
A large scale city centre re-development covering 22 hectares and 27 different sites. The project involved complex engineering solutions and achieved BREEAM Very Good, total value was £450 million. David had overall responsibility for delivery of the project to the client's specifications and to budget as well as being recognised by the client as the only point of contact for all of WSP's internal teams.

BSF Cambridgeshire, Cambridge: Project Director – Sustainability
Development of sustainable building designs for two exemplar schools as part of the Building Schools for the Future programme. WSP delivered energy efficient and sustainable M&E designs for two exemplar BSF schools in Cambridgeshire.

Energy Strategy for Stansted Airport, Essex: Project Director – Sustainability
Delivered a holistic energy strategy and embodied carbon report. Using embodied carbon inventories all construction materials required for the buildings, airfields, car parks and expansion of the transport infrastructure were covered. The carbon footprint was cut by 40% against the baseline value.

Qualifications

MSc Engineering Business Management, MSc Vibration & Noise Control
BEng Hons Building Services, HTEC Building Studies
CEng
MCIBSE, Member FEANI, MI Mech E
Associate Member Energy Institute
Associate Member, Association for Project Management
Member Chartered Institution of Building Services Engineers
LEED Accredited Professional

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Technical Director

Bill Smith

Bill is a Technical Director responsible for our Glasgow based traffic and transport technical staff. Bill has over eighteen years experience in the fields of policy development, the evaluation of transportation proposals and the development of multi-modal strategies. Bill has been responsible for managing projects throughout Scotland and Ireland (especially the development of policies and strategy and the appraisal of schemes in terms of the needs of a STAG or GOMMMS appraisal - this has included road, rail and park and ride based proposals) and also in the Middle East. Bill brings a pragmatic approach and practical experience of scheme development and assessment.

Bill has coordinated the WSP input with regards to Traffic and Transportation on the New South Glasgow Hospitals Bid.

Career Overview

Project Director – Dubai Flexible Parking Fee Policy Study.
Roads and Transport Authority
Bill is directing the team developing an appraisal approach and testing options for a flexible parking fee policy for Dubai. This is a challenging commission being undertaken by WSP from across a range of offices and drawing together a mix of skill sets to produce a practical assessment tool and develop a deliverable strategy for implementation across the City.

Transport Advisor – Coatdyke Masterplan. North Lanarkshire Council
Bill oversaw the transportation and engineering team providing technical support for the development of a masterplan for the regeneration of Coatdyke. This project required an assessment of existing infrastructure to identify constraints and potential costs associated with improvement/expansion.

Project Director, Transport – King Hussein Business Park, Jordan. Hines
Bill directed the transport team looking at roads, parking and public transport options for services and infrastructure for this one square mile development area on the western edge of Amman. This included consideration of existing and proposed roads and transport networks, accessibility of the site and internal networks to support the emerging masterplan.

Qualifications

BA Hons Town and Country Planning
MSc Transport Planning
PgDip Management

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Associate

Scott Adair

Scott has 15 years experience as a geotechnical engineer in the construction industry. Working for both the public and private sector on a wide variety of projects he has developed expertise in the critical issues associated with difficult ground conditions. His more recent experience includes healthcare projects in Scotland including Forth Valley Acute and Tayside Mental Health Unit. He is currently engaged on site investigation work at the Glasgow Southern General Hospital for the temporary catering facilities project. Scott is currently an Associate with WSP where he is responsible for the management of the geotechnical engineering design team in the Glasgow Office.

Scott has provided Environmental & Geotechnical engineering input on the Southern General bid being led by Brookfield.

WSP

Career Overview

Scott's early career included time spent in Hong Kong providing some the most difficult geotechnical challenges to be found. On return to the UK he worked on a number of infrastructure and civil engineering schemes and more recently joined WSP where he has had involvement advising on geotechnical and site issues for a variety of building projects. His experience includes all facets of ground engineering including contamination assessments and remedial strategies.

Scott's healthcare experience includes:

Forth Valley Acute Hospital, £250m
Scott provided geotechnical and site advice on this 850 bed new acute hospital in Falkirk. This project required both contamination and engineering properties assessments together with recommendations for bedrock strengths to optimize foundation sizes.

Tayside Mental Health Unit
This is currently a bid stage project but Scott has provided upfront input to the content of the site investigation and has reported on the results with recommendations for engineering properties and contamination risk assessment.

Temporary Kitchens, Glasgow Southern General
Scott is currently undertaking the geotechnical investigation for this project.

Qualifications

BEng (Hons) Civil Engineering – Strathclyde University

Project Experience

Forth Valley Hospital Larbert	**£250m**
Tayside Mental Health Unit Stoke	**£90m**
Upper Forth Crossing Kincardine	**£120m**
A90 Inchture Interchange	**£4m**
Redevelopment of Port Glasgow	**£6m**

Other Projects

Upper Forth Crossing, Kincardine
Management of the Geotechnical Design for all of the approach works to the main crossing. Design elements included basal reinforcement, band drains, load transfer platforms, piled support embankments, controlled modulus columns, ultra light weight fill, and staged embankment construction.

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Associate Director

Kevin Rooney

Kevin has 15 years experience in the construction industry. Working for both the public and private sector he has been involved in many healthcare, commercial, industrial and residential infrastructure projects. He has also been involved in the remediation works to a number of brown field sites. Kevin is currently an Associate Director with WSP where he is responsible for the management of the civil and infrastructure engineering design team.

Kevin has provided the lead role for the Civil Infrastructure bid support to Brookfield on the New South Glasgow Hospitals Bid.

Career Overview

Kevin started his career with HJT Consulting Engineers which subsequently became part of WSP Group. Kevin is now Associate Director in the Newcastle office responsible for design work on highway and sewerage infrastructure for healthcare, residential, industrial and commercial developments.

Kevin has significant healthcare experience including:

The Newcastle Hospitals PFI scheme, £170m
Rationalisation of the healthcare services across the two sites of the Freeman Hospital and the Royal Victoria Infirmary (RVI). Kevin led the team responsible for the design of the site infrastructure on this project.

Roseberry Park, Middlesbrough
Multi-million pound plans by Tees Esk and Wear Valleys NHS Trust to replace the ageing St Luke's hospital with modern mental health facilities.

Sunderland PCT
Refurbishment of 9 Health Centres procured under the NHS ProCure 21 Framework agreement. Provision of drainage and external works design.

Hull & East Yorkshire Hospitals NHS Trust
Castle Hill Cardiac & Surgical Development. The scheme will contain a state-of-the-art cardiac centre and hi-tech operating theatres and training facilities. Provision of drainage and external works design.

Qualifications

BSc Civil Engineering, Kingston-Surrey University

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Senior Engineer

Kenny Hamill

For nine years Kenny was a Building Standards Surveyor with several Scottish Local Authorities. Kenny's background has developed an excellent understanding of the Scottish Building Control system and Firecode issues. This knowledge can prove valuable in technical negotiations with Local and Fire Authorities. He has extensive experience in developing fire engineering solutions using both a Building Code compliant approach and a performance based design approach within the UK and internationally, both as a designer and regulator.Kenny has led the Fire engineering input on the Southern General bid being led by Brookfield.

Career Overview

Kennys' Technical skills include fire dynamics, (combustion theory, fire development, smoke movement and computer modelling), evacuation analysis, (human behaviour, management procedures and computer modelling) and fire risk assessments.

Forth Valley Acute Hospital, UK
Principle fire engineer for the review of existing Fire Strategy and related documents to establish a risk register to clarify the implications of any gaps or uncertainties in the existing fire strategy, the magnitude of the implications and their impact on the critical design path. 2008 – current (£290m).

Crosshouse Hospital, UK
Detailed survey of fire separation throughout Crosshouse Hospital, Kilmarnock (including seven storey ward block and extensive ground storey ward and non-patient areas). Development of recommendations to improve fire separation based upon a risk ranking matrix provided to assist in prioritising the work.

Crosshouse Hospital, UK
Building Standards Surveyor for East Ayrshire Council responsible for major extension works to form new Accident & Emergency Ward; Day Surgery & Endoscopy Ward and Maternity Unit. Involvement in these projects was from design approval to construction and occupation.

Irvine Central Maternity Unit, UK
Building Standards Surveyor reviews and inspection of warrantable construction works within Unit. These included several 'wing' extensions to form Ward areas.

Project Experience

Forth Valley Hospital — £250m
Larbert

Crosshouse Hospital

Irvine Central Maternity Unit

Qualifications

HNC Building (Arch.Technology)
Advanced Diploma in Building Control
BSc (Hons) Fire Risk Engineering (First Class)
Member of Royal Institution of Chartered Surveyors (MRICS)
Member of the Institution of Fire Engineers (MIFireE)

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WSP

Technical Director

Alistair Christie

Alistair has over 20 years experience in project management, design and construction supervision for a range of civil and structural engineering works both in the UK and the Republic of Ireland.

As Technical Director he is the Centre Head for the civil and structural engineering team in WSP's Edinburgh Office and is currently responsible for the delivery of civil, structural and environmental engineering services on the £300 million Forth Valley Hospital in Larbert.
He also sits on the WSP healthcare technical forum and has an overseeing role to maintain consistency in approach in the delivery of WSP's services in the healthcare sector in Scotland.

Alistair has provided support on the hospital structures on the New South Glasgow Hospitals Bid being led by Brookfield.

Career Overview

Alistair joined WSP in 2005 after spending 4 years in the Republic of Ireland as a project manager on large PFI/PPP schemes. His earlier career prior to this saw him working on a variety of projects in the commercial, defence and industrial sectors as both a structural design engineer and project manager.

He has occupied a pivotal role in major projects working for both the client and the contractor providing a broad perspective across project teams.

Alistair was the WSP project manager for Forth Valley Acute, a 850 bed acute services hospital. He was responsible for delivery of all WSP multi-disciplinary services since joining WSP in 2005. Construction commenced in 2007 and the structure is now all but complete on programme. Alistair was instrumental in developing the teams' 3D design capabilities and this culminated in receiving the Autodesk Revit award for the structural 3D design model.

Alistair is also currently involved with Tayside Mental Health Unit. This is currently a bid under a not for profit PPP model requiring significant design development in the lead up to preferred bidder. Both sites involve construction while maintaining operational health facilities.

Qualifications

Bachelor of Science (Civil Engineering) University of Edinburgh
Diploma in Project Management (RICS)
CEng MIStructE

Project Experience

Forth Valley Hospital Larbert	**£250m**
Tayside Mental Health Unit Perth	**£90m**
Greystones Marina PPP Wicklow, Eire	**£250m**
Various PPP Road Schemes Waterford, Cork, Kildare and Navan, Eire	**£1bn**
New Mess and Accommodation Block for MoD CSB Faslane	**£7m**

continued…

Alistair is Project Director for this recently appointed commission for provision of civil and structural services to NHS Lothian health board for their capital works programme

Alistair is also part of the Scottish healthcare framework where WSP are in the contractor's supply chain for civil structural, environmental and building services consultancy for major projects. WSP have commenced their first project under the framework in the form of a new mental health facility for Dumfries and Galloway with a value of £25 million.

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Associate

John Young

John has a broad range of experience in various types multi disciplinary projects on building structures and external works with large and small consultants as well as contractors. This experience has provided an appreciation of the challenges faced by other disciplines allowing him to focus areas of the design development to accommodate these aspects. It has provided an opportunity to explore a wide variety of solutions for challenges encountered and enables efficient innovative solutions to be proposed. His approach to the project management with WSP allows the design and detailing of projects to be simplified and refined to design-in efficiency and economy.

John has provided the main structural input on the Acute and Childrens Hospital on the New South Glasgow Hospitals Bid for Brookfield.

WSP

Career Overview

John has experience of delivery of complex new build and refurbishment projects.

Fromm this experience John has an appreciation of the challenges faced by other disciplines allowing him to focus areas of the design development to accommodate these aspects.

A clear understanding of all disciplines within the civil and structural environment in addition to understanding the complete design process.

300M Forth Valley Acute Hospital PFI – Structural Design Leader for large reinforced concrete framed hospital building with concrete basement and steel framed roof, energy centre and main entrance atrium structures, and timber framed mental health block.

£70M ACAD Victoria Hospital, Glasgow – Scheme Structural Designer.

£6M PFI Easter Ross Resource Centre, Invergordon – Civil and structural design and project manager.

£13M PFI Mid Argyll Community Hospital, Lochgilphead – Scheme structural and externals designer.

Qualifications

BEng (Hons) CEng MICE 2004

Project Experience

Forth Valley Acute Hospital	£300m
Victoria Hospital	£70m
Easter Ross Resource Centre	£6m
Mid Argyll Community Hospital	£13m

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WSP

Associate Director

Neil McGarry

Associate Director in the Glasgow Office (with WSP since 2001) within the Civil and Structural Engineering Department. Neil has over 12 years experience in the industry, with extensive experience in the design and management of a variety of projects in healthcare, retail, prisons, residential and industrial sectors.

Neil has provided Infrastructure and Structural support to Brookfield on the New South Glasgow Hospitals Bid.

Career Overview

Project Manager and Lead Engineer for phase 4 HMP Glenochil new build prison accommodation with a total project value of £15m.

Project Manager and Lead Engineer for phase 3 HMP Glenochil new build prison accommodation with a total project value of £20m.

NHS Highland - Provide peer review and SER certification for NHS Highlands projects.

HFS - Provide peer review and SER certification for HFS projects – D&G and stornoway.

Project Manager and Lead Engineer for new build prison accommodation with a total project value of £70m. This comprised the construction of new houseblocks at both HM YOI Polmont and HMP Glenochil, Segregation and Regimes block at HMYOI Polmont and Health and Staff/Visits building HMP Glenochil.

Residential Development, Oxford Street, Glasgow £6M. Residential development comprising a 5 storey steel frame over a concrete basement car park structure.

Former Canniesburn Hospital: Re-Development (major residential development) £27M. Development comprised the construction of circa 250 units on a former hospital site. The project comprises the refurbishment of listed buildings, construction of new build flats and townhouses.

Project Experience

Glenochil Prison	£35m
Canniesburn Hospital Redevelopment	£27m

Qualifications

Chartered Engineer (CEng)
Member of the Institution of Civil Engineers (MICE)
MEng (Hons) in Civil Engineering
HND in Civil Engineering

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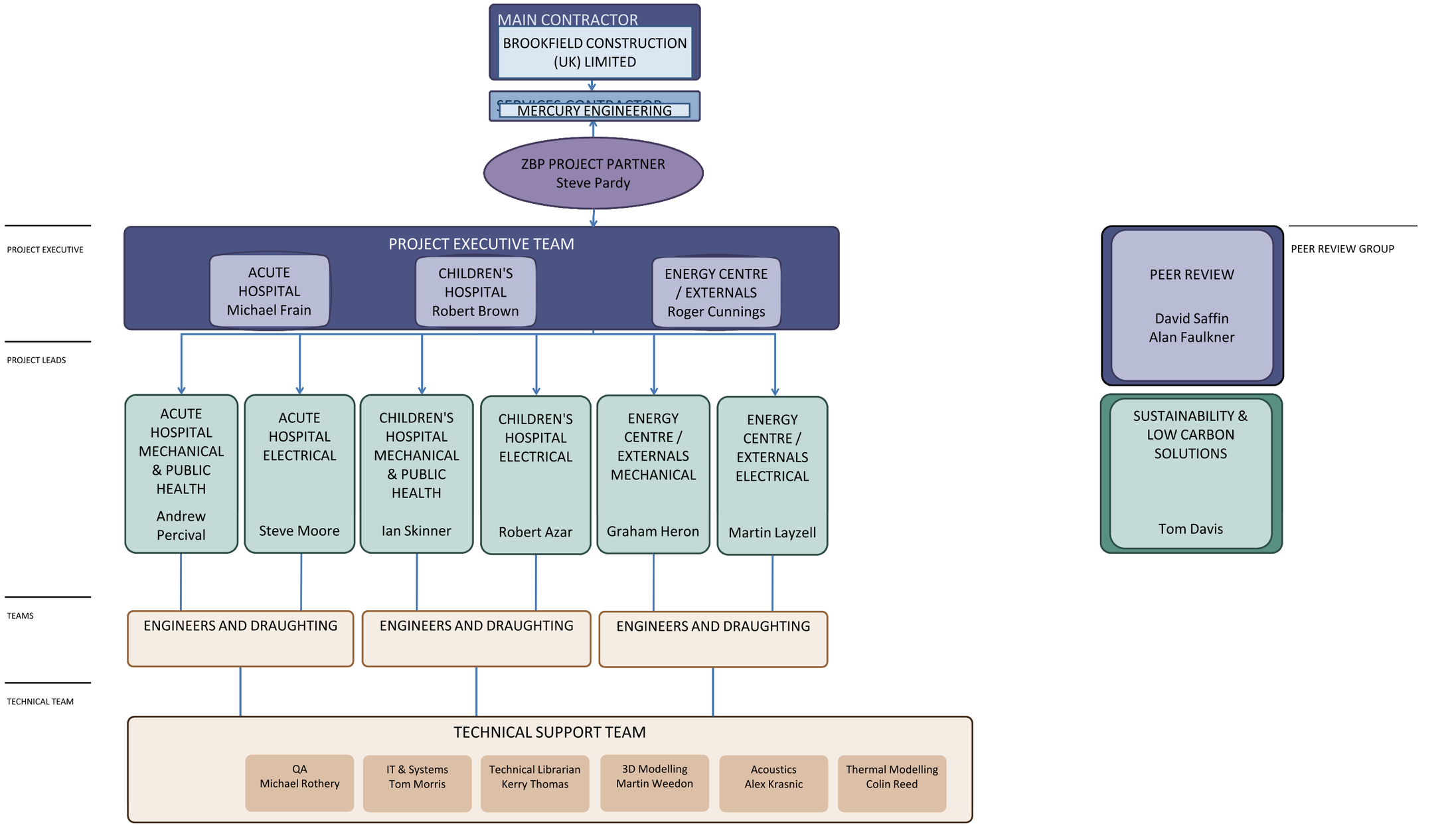
ZISMAN BOWYER AND PARTNERS - MECHANICAL AND ELECTRICAL CONSULTING ENGINEERS FOR NEW SOUTH GLASGOW HOSPITALS PROJECT



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Zisman Bowyer & Partners LLP
Consulting Engineers

Partner

Steven Pardy

Steve leads one of ZBP's three multi-discipline design groups covering a wide range of projects. He has over 30 years' experience as a mechanical and electrical engineer, and has concentrated on the healthcare sector and similar complex projects for the last 20 years.

Steve adopts a hands-on approach, drawing on his design and management skills to actively contribute to projects. He is also responsible for the firm's approach to health and safety and is a registered member of the Association for Project Safety, providing the role as CDM Coordinator. Steve has been responsible for and led the design team during the bid stage of NSGH. Steve will continue as project partner for the duration of the project and will take an active role throughout the design and construction phases. Steve has also led the design dialogue meeting process.

Career Overview

Steve joined Zisman Bowyer in August 1994 as a key mechanical member of one of the design groups, leading the mechanical design for the first phase of Barnet General Hospital redevelopment in North London.

He subsequently became an Associate in 1996 and Senior Associate in 2001, leading a number of major projects including the £118m PFI for Bromley Hospitals, the £40m PFI second phase at Barnet General Hospital, and those for the University of Cambridge, namely the £40m Li Ka Shing Cancer Research Centre and the £14m Centre for Advanced Photonics and Electronics. Steve became a Partner in 2005 and has recently been responsible for the £340m Peterborough Hospitals PFI project with Brookfield Construction.

Steve began his career serving an apprenticeship with M&E contractor, Thorn Benham, during which time he gained a degree in Environmental Engineering at Southbank University. Prior to joining ZBP, he spent 12 years at DSSR working on numerous healthcare projects such as the Princess Alexandra Hospital at Harlow and West Dorset Hospital, Dorchester.

Steve's extensive experience on major engineering service projects ensures a full understanding of the procurement process from initial concept, through the design process, to successful implementation during the construction phase.

Qualifications

Bachelor of Science (Hons), South Bank University
Chartered Engineer, Member of CIBSE, IMechE, RMaPS

Project Experience

Peterborough Hospitals PFI Peterborough	**£350m**
Princess Royal Hospital PFI Bromley, Kent	**£118m**
Royal London Hospital Pathology London	**£38m**
Homerton University Hospital London	**£7m**
Li Ka Shing Cancer Research Cambridge	**£40m**
IAH Pirbright Surrey	**£140m**
Cancer Research UK Clare Hall, South Mimms	**£15m**

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Zisman Bowyer & Partners LLP
Consulting Engineers

Senior Associate

Michael Frain

Michael Frain has nearly 25 years' experience as an electrical building services engineer, and leads the electrical design in one of the firm's three multi-discipline design groups covering a wide range of projects. He is also responsible for the firm's training and development programme.

Mike has lead the electrical services design during the bid stage of NSGH and will continue in leading the design of the Acute Hospital for the duration of the project, taking an active role throughout the design and construction phases. Mike attended the design dialogue meetings and was a member of the presentation team to the Board.

Career Overview

Michael joined ZBP in 2004 as a Senior Engineer, becoming an Associate in 2005 and a Senior Associate in 2007.

Michael is the Project Associate responsible for managing the electrical design for the Peterborough Hospitals PFI. Michael's team of electrical engineers selected Bentley Building Electrical Systems software to streamline the lighting design process. By using the innovative technique across the 4,000 hospital rooms, ZBP has achieved considerable savings in programme and budget.

Michael is also leading the electrical design for a groundbreaking germ free egg production unit for Ovagen in Ireland. He provided technical advice to Cancer Research UK for its new Poplar Block laboratory at Clare Hall.

Michael was the Project Engineer for a new computer centre at HM Government Communications Centre which included the design of a robust backup system compromising an emergency generator, UPS and switchgear, all of which were prefabricated and fully commissioned, and 'containerised' off-site. This solution provided the necessary flexibility in the programme.

Prior to joining ZBP Michael worked for nine years as Chief Electrical Engineer for the Austin Co UK Ltd where he was involved in the design of numerous laboratory facilities for major pharmaceutical companies such as Astra Zeneca, 3M and Pfizer. Michael started his career as a Graduate Engineer with Ove Arup & Partners before joining Brian Webb Partnership and later Glynn Miller Partnership as a Senior Engineer.

Qualifications

Bachelor of Science, University of Sunderland
Chartered Engineer, Member of IET, IHEEM

Project Experience

Peterborough Hospitals PFI Peterborough	**£350m**
Institute of Neurology - Functional Imaging Lab London	**£1m**
Cancer Research UK Poplar Block Clare Hall	**£15m**
Northwick Park Hospital OMFS Dept Harrow	**£3m**
HMGCC Hanslope Park	**£7m**
Ovagen, Germ Free Production Unit Ireland	**£40m**
St Joseph's Care Home Mill Hill, London	**£30m**

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Partner

Roger Cunnings

Roger leads one of ZBP's three multi-discipline design groups covering a wide range of projects. He has over 40 years experience as a mechanical and electrical engineer and has been involved with the healthcare, higher education, science and research sectors and similar complex projects for 35 years.

He has particular expertise and experience in the design of high voltage systems, standby generation, lighting and lifts and leads these specialisms within the practice.Roger has been involved in the bid stage of NSGH acting as an advisor for the electrical infrastructure, an area which he will take the lead role on as the project develops.

ZBP
Zisman Bowyer & Partners LLP
Consulting Engineers

Career Overview

Roger joined Zisman Bowyer in 1999 when his own practice, Roger C Cunnings & Associates, which was formed in 1993, was amalgamated with ZBP. Roger was responsible for the new £80m Headquarters Building for the Met Office, Exeter, and recently, a number of major projects including £34m Stewart Stockman Laboratory Building at VLA Weybridge, the £18m Brookes Lawley Research laboratories investigating cancer at ICR Sutton, the new £140m Bio-containment Laboratory at IAH Pirbright, and the £340m Peterborough Hospital.

Roger began his career with an Apprenticeship and has worked at Arup Associates and Oscar Faber & Partners becoming Chief Engineer, responsible for engineering standards throughout the Practice.

Roger has served as Director at James R Briggs and Associates and Aukett Environmental Engineers working on major projects in Europe. Roger then joined D.Y Davies PLC in 1993 as Managing Director of the M&E Practice, Gaia Consulting Engineers responsible to the Main Board for all aspects of management and control of the Practice.

Roger's extensive experience on a wide range of major engineering services projects ensures a complete understanding of all forms of the procurement process from initial concept, through the design process to successful implementation during the construction phase.

Qualifications

European Engineer (Eur.Ing)
Diploma Electrical Engineering
The University of Westminster
South Bank University
Chartered Engineer
Fellow of IEE
CIBSE
Member SLL

Project Experience

The Met Office HQ Exeter	**£80m**
Stewart Stockman Laboratory Building VLA, Weybridge	**£34m**
Peterborough Hospitals PFI Peterborough	**£340m**
IAH, Pirbright Surrey	**£140m**
New Medical School, Brighton & Sussex University NHS Trusts	**£17.3m**

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ZBP
Zisman Bowyer & Partners LLP
Consulting Engineers

Partner

Robert Brown

Robert leads one of ZBP's three multi-discipline design groups covering a wide range of projects. Robert has over 45 years experience as a mechanical engineer and has particular experience on the more complex projects such as healthcare and research facilities.

Robert has a strong hands-on approach to projects, bringing many years of healthcare design and installation experience to schemes leads or reviews. Robert has been involved in the bid stage of NSGH, acting as advisor on the mechanical systems. Moving forward, Robert will take the lead role on the Children's Hospital.

Career Overview

Robert joined Zisman Bowyer & Partners in September 1973 as a Senior Mechanical Engineer and some of his first projects were various schemes at Great Ormond Street Children's Hospital.

Robert became an Associate in 1977 and a Senior Associate in 1982, during which time he worked at Barnet General Hospital, London Chest Hospital, Dulwich General Hospital, Northwick Park Hospital and various projects at Royal Sussex County Hospital, Brighton. Robert took a leading role in the first PFI new design scheme at Darent Valley Hospital, Kent. This new Acute General Hospital provided 400 new beds and covered an area of 42,000m².

Robert became a Partner in 2000 and has led a team on several major healthcare schemes such as the new Clinical Wing PFI scheme at Kings College Hospital, the new Pathology and Pharmacy Building at Royal London Hospital, Peterborough Hospitals PFI, Integrated Care Centre and Mental Health Unit, the Gloucestershire Royal Hospital PFI and, more recently, carrying out the Technical Advisor role at both the new 740 bed University College Hospital PFI scheme London and the Royal Alexandra Children's Hospital PFI in Brighton. Robert began his career at GN Haden, serving a 4 year Student Apprenticeship before becoming a Design Engineer for Haden Young. His first major design project was the then new Addenbrookes Hospital in Cambridge, which was followed by work at Hammersmith Hospital, London.

Qualifications

Chartered Engineer
Member of CIBSE
FIHEEM
FRSH

Project Experience

Darent Valley Hospital PFI	**£120m**
Golden Jubilee Wing - Kings College PFI London	**£76m**
Royal London Hospital **New Pathology & Pharmacy Building** London	**£38m**
Public Health & Pathology Laboratory **Royal Sussex County Hospital**	**£10m**
IAH Pirbright Surrey	**£140m**

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Senior Associate

Andrew Percival

Andrew Percival has 26 years' experience in building services consultancy as a mechanical services engineer. Working within one of the firm's multi-discipline design groups, he is responsible for managing the mechanical design team and leading the mechanical engineering concept and system design.

Andrew has lead the mechanical services design during the bid stage of NSGH and will continue in leading the mechanical services design of the Acute Hospital for the duration of the project, taking an active role throughout the design and construction phases. Andrew was a member of the presentation team to the Board.

Career Overview

Andrew joined ZBP in July 2007 as a Senior Engineer and was soon promoted to Associate.

He has spent his time with ZBP working on the mechanical services detailed design for Peterborough Hospitals PFI, and has also been associated with projects at Homerton University Hospital and IAH Pirbright.

Andrew began his career in consultancy in 1985 as an Engineer working on the phased re-development of Whipps Cross Hospital. He was involved in the phase one project from outline design to handover.

In 1991 Andrew moved to a small consultancy as a Senior Engineer. The consultancy was involved in supplying specialist project management services to a major food retailer while also undertaking projects in the education and commercial sectors. He later became a Director of the company, combining project work with the responsibility of marketing the organisation.

After ten years he moved to a medium size consultancy practice as an Associate. Andrew was involved in various pharmacy department projects at St George's Hospital in Tooting, a number of design and technical advisor roles with Nuffield Hospital projects, and undertook due diligence checks for healthcare PFI schemes.

Qualifications

Bachelor of Science, University of Surrey
Chartered Engineer, Member of CIBSE, IMechE

Project Experience

Peterborough Hospitals PFI — £350m
Peterborough

Homerton University Hospital — £7m
London

Whipps Cross Hospital — £15m
London

St George's Hospital — £4m
London

IAH, Pirbright — £140m
Surrey

Nuffield Hospitals — £15m
Various Locations

PFI Schemes - Due Diligence Checks
Various Locations

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Senior Engineer

Stephen Moore

Stephen is a Senior Electrical Engineer, who has design experience of a wide range of major projects. He has over 30 years experience as a Mechanical and Electrical Engineer, working on major multi-disciplinary projects. For the last 15 years he has concentrated on electrical services for major healthcare and laboratory projects.

Stephen applies a flexible approach, utilising his in-depth experience, design skills and multi-disciplinary background to proactively contribute to the success of projects. Stephen has carried out electrical design, particularly for the High Voltage services during the bid stage of the NSGH and will continue in leading the electrical services design for the Acute Hospital for the duration of the project, taking an active role throughout the design and construction phases.

ZBP
Zisman Bowyer & Partners LLP
Consulting Engineers

Career Overview

Stephen joined Zisman Bowyer & Partners in May 1997 as a key electrical member of one of the firm's design groups, providing a major contribution to the design of the electrical services for the £110m Dartford & Gravesham Hospitals PFI project. He progressed from this to the £118m Bromley Hospitals PFI, the £40m CR-UK/Li Ka Shing Cancer Research Centre for the University of Cambridge and, most recently, the £340m Peterborough Hospitals PFI project.

Stephen began his career working for DOE/PSA managing the maintenance of M&E services of the Government Property Estate. He gained his knowledge in Electrical and Electronic Engineering at the University of Huddersfield (then a Polytechnic), and progressed to the design of mechanical and electrical infrastructure and building services for major Law Courts, Computer Centre Office Buildings, Airfield and Naval Base projects over a period of 14 years, working in multi-disciplinary design.

On the privatisation of PSA, Stephen provided specialist consultant services on a self-employed basis, working on electrical refurbishment of projects for H.M Prison Service and re-drafting of the MOD Electrical Safety Regulations.

Stephen moved to Zisman Bowyer & Partners in 1997, bringing with him his wealth of varied experience on major building projects. His most recent major projects have included UPS, Standby Generation and CHP Plant.

Qualifications

Bachelor of Science (Hons) University of Huddersfield
Eur.Ing Chartered Engineer
Member of IET, CIBSE

Project Experience

Peterborough Hospitals PFI Peterborough	**£350m**
Princess Royal Hospitals PFI Bromley, Kent	**£76m**
Darent Valley Hospitals PFI Dartford, Kent	**£38m**
Li Ka Shing Cancer Research Cambridge	**£10m**
Centre for Advanced Photonics Electronics Laboratory University of Cambridge	**£140m**

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Senior Associate

Ian Skinner

Ian is a principle member of one of ZBP's three multi-discipline design groups covering a wide range of projects. He has over 25 years experience as a mechanical and electrical engineer and has concentrated on the healthcare and research sector and other complex projects for the last 20 years.

Ian adopts a hands on approach, drawing on his design and management skills to actively contribute to projects. He takes a lead role in promoting technical competence and excellence and leads the Practice in several areas of technical expertise. He also acts in a mentor role for many of the younger members of the ZBP.team. Ian has lead the Energy Centre and External Services design during the bid stage of NSGH. Ian will lead the mechanical services design for the Children's Hospital, taking an active role throughout the design and construction phases. Ian has also led the laboratory dialogue meeting process.

ZBP
Zisman Bowyer & Partners LLP
Consulting Engineers

Career Overview

Ian joined Zisman Bowyer & Partners in January 1995 as a Senior Engineer, developing the mechanical design for the first phase of the Barnet General Hospital Redevelopment in North London.

Ian subsequently became an Associate in 2001, with a leading role in a number of major projects including the £38m Royal London Hospital Pathology/Pharmacy, £63m PFI Barnet General Hospital Redevelopment and £40m Ministry of Defence development. Ian became Senior Associate in 2007 and has recently led the £140m Institute of Animal Health redevelopment.

Ian began his career serving a 4 year apprenticeship with M&E Contractor, Towco Ltd, before joining Consultancy DSSR for a duration of 8 years. During this period he gained a Degree in Environmental Engineering at Southwark University as a mature student. During the period at DSSR he worked on major healthcare projects including Southend General Hospital, Princess Alexandra Hospital and West Dorset Hospital.

Ian's extensive experience on major complex engineering projects ensures a full understanding of the procurement process from initial concept through the design process to successful implementation during the construction phase.

Qualifications

Bachelor of Engineering (Hons) South Bank University
Chartered Engineer
Member of CIBSE
Member of IMechE

Project Experience

IAH, Pirbright Surrey	**£140m**
Royal London Hospital Pathology London	**£38m**
Barnet General Hospital London	**£63m**
Institute of Ophthalmology (Moorfields) London	**£11m**

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Senior Engineer

Robert Azar

Robert has a wide experience in the electrical engineering field including analysis of systems requirement, design, specifications and site supervision for a large range of projects. During more than 25 years experience within the industry, Robert has undertaken surveys, design, M&E co-ordination and site work embracing building services works, hospitals, power system studies, site construction and procurement of material.

Robert will lead the electrical services design for the Children's Hospital.

Career Overview

Robert joined Zisman Bowyer & Partners LLP in October 2008 as a Senior Engineer, working on the electrical distribution for the IAH Pirbright project.

ZBP
Zisman Bowyer & Partners LLP
Consulting Engineers

Prior to joining ZBP, Robert had worked with several multi-disciplinary consultants including Babtie, Mott MacDonald, Kellogg Brown and Root, and WSP. He had a key role in many of their projects including the Trans Manche Link (TML) where he was the Team Leader of the claims electrical group for the preparation of the technical and the cost aspects for the substantial claims in connection with the M&E fixed equipment at the Channel Tunnel.

He spent 18 months at DSSR working on the design of £750m new Royal London Hospital; he was in charge of the preparation and submitting to Edf of the related documents in connection with paralleling of five 11kV, 2MW standby generators to the public supply in accordance with G59 requirements; also in charge of the design of the electrical installation for several floors in accordance with MHRA documents that included operating theatres and imaging rooms.

Robert spent also more than 3 years working on the PFI project at the National Physical Laboratory in Teddington, Middlesex that consisted of the construction of 16 new buildings mainly of science laboratories. He was the Work Advisor to the General Manager of Serco/Laing consortium, then a Lead Engineer for implementing the design master task fit-out list. Robert worked in the capacity of Electrical Independent Certifier for several healthcare centers in the Greater London area.

Project Experience

Royal London Hospital London	**£750m**
National Physical Laboratory (NPL) PFI Middlesex	**£330m**
IAH Pirbright Surrey	**£140m**

Qualifications

MSc, Electrical Engineering, Imperial College, University of London
DIC, Diploma of Imperial College in Power Systems
Chartered Engineer, Member of the IET

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Associate

Graham Heron

Graham is the associate for one of ZBP's three multidiscipline design groups covering a wide range of projects.

Graham has over 36 years experience as a mechanical building services engineer covering the full range of project types from residential through industrial/commercial to healthcare and research facilities.

Graham's approach is hands on, becoming involved in every aspect of each project and providing support to younger members of the design team.

Graham will lead the mechanical design of the Energy Centre and External Site Infrastructure for the NSGH project moving forward.

ZBP
Zisman Bowyer & Partners LLP
Consulting Engineers

Career Overview

Graham joined ZBP in Dec 2006 as Senior Engineer and rapidly progressed to Associate.

He has led a team on various projects including a low carbon stores building for DEFRA, University of Reading bio chemistry labs, restaurant fit out at T5 for Gordon Ramsay and CL3 and 4 bio-containment laboratories for IAH Pirbright.

Prior to joining ZBP Graham has worked on a variety of projects including:

Kingston Hospital Phase 5 PFI, as Technical Advisor to the Trust

Private hospital upgrade and refurbishment projects, as Lead Engineer

Industrial laboratories for British Gas, as Client Review Engineer

Imperial College Chemistry Building refurbishment, as Lead Engineer

Graham began his career at Taylor Woodrow Construction progressing to appointments at Hoare Lea & Partners, Bylander Waddell Partnership, British Gas, Balfour Kilpatrick and Doy Webster Partnership.

Qualifications

MEng (Hons)
Member of CIBSE
London South Bank University

Project Experience

Hopkins Laboratory Building University of Reading	**£11m**
IAH, Pirbright Surrey	**£140m**
Stores Building, VLA Weybridge	**£5m**
Plane Food - Restaurant Terminal 5 Heathrow	**£1.8m**

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Zisman Bowyer & Partners LLP
Consulting Engineers

Senior Associate

Martin Layzell

Martin has over 30 years' experience as an electrical engineer, and has held senior management positions in both contracting and consultancy organisations. Working within one of the firm's multi-discipline design groups, he is responsible for managing the electrical design team and leading the electrical engineering concept and system design.

Martin will lead the electrical design of the Energy Centre and External Site Infrastructure for the NSGH project moving forward.

Career Overview

Martin joined ZBP in 2008 as a Senior Engineer and was soon promoted to Associate Engineer. He has spent his time with ZBP working on the electrical services detailed design for Aldford House, a highly complex project that will see a sixth and seventh floor added to an existing 1930's residential building. The two-storey extension, which will house six high specification four and five bedroom apartments, will 'tie in' with an adjoining eight-storey Park Lane elevation.

Martin was Senior engineer responsible for design of LV distribution and containment systems, lighting layouts and power and fire alarm systems for the biocontainment laboratories, IAH Pirbright.

Martin started his electrical apprenticeship in 1973 before moving on to larger electrical contracting companies. Martin was a founder partner of EDS (1995 to 1998), having previously worked for T Clarke plc and, for seven years, for the major building services contractor, William Steward Group.

Martin first moved into consultancy in 1998, joining MacKecknie Jarvis & Graham where he became an associate in 2000 and was responsible for running the new London office following a merger with property group, Kennedy Haywards. He then spent three years with hurleypalmerflatt, gaining design experience in the rail sector.

Prior to joining ZBP, Martin worked for Foreman Roberts as lead design engineer on major schemes including his first overseas project, the Al Wosail Tower in Doha, Qatar.

Qualifications

Master of Science (anticipated 2010)
Chartered Engineer, Associate of CIBSE
IEng

Project Experience

Aldford House Park Street	**£8m**
Hopkins Building University of Reading	**£11m**
IAH Pirbright Surrey	**£140m**
Data Centre Hertfordshire	**£80m**
Al Wosail Tower Doha, Qatar	**£74m**
Heron Tower London	**£200m**

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Engineer

Tom Davis

Since joining ZBP Tom has gained mechanical design experience on a range of projects across the commercial, education, healthcare, residential and leisure sectors , also he plays a leading role within the company in generating low carbon design solutions. Tom is registered on the CIBSE Low Carbon Register and, as an accredited Low Carbon Energy Assessor, is qualified to issue Energy Performance Certificates (EPCs). His skills also include the modelling of both new and old buildings within the IES Virtual Environment computer package. Tom has been leading the energy / carbon modeling process during the bid stage of NSGH and will continue with this role, together with a mechanical design role for the Acute Hospital during the design stage.

ZBP
Zisman Bowyer & Partners LLP
Consulting Engineers

Career Overview

Tom graduated from the University of Southampton in 2006 with a 2:1 MEng (Hons) degree, joining Zisman Bowyer & Partners as a graduate engineer in the same year. He was promoted to engineer status in 2008. Tom was involved in the design of the heating and ventilation systems within the new 95,000m2, five-storey Peterborough Acute Hospital accommodating 600 beds.

Tom has been responsible for the design of all mechanical systems up to Stage C for the South Marshes Community Hub sports regeneration project. Duties included carrying out an option appraisal that could produce on-site renewable energy so as to achieve the specified minimum 20% reduction in carbon emissions from the total energy needs of the development. Tom was Project engineer for a high spec office refurbishment in Wimbledon, South London. Planning conditions dictated that 20% of the building's carbon dioxide emissions had to be met by on-site low and zero carbon technologies. Tom played a key role in this process, proposing a VRF (Variable Refrigerant Flow) system to meet this target.

Tom was the Engineer responsible for the scheme design of the mechanical services, and the integration of renewable energy technologies, on this conversion of St Josephs College, a Grade II listed college into a luxury care home. Tom detailed findings and recommendations was included in the scheme planning application. ZBP succeeded in achieving a 20% reduction in carbon output.

Qualifications

Bachelor of Engineering (Hons), Southampton University
Graduate Member of CIBSE
Low Carbon Consultant/Energy Assessor

Project Experience

Peterborough Hospitals PFI Peterborough	**£350m**
South Marshes Community Hub	**£5m**
2a Lancaster Road Wimbledon	**£1m**
CR-UK Long Term Accommodation	**£6m**
Skipton House Department of Health	**£1.3m**
St Joseph's College Mill Hill	**£30m**

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GILLESPIES

Masterplanning, Public Realm and Landscape Design Team
Team Organisation Diagram

KEY:
A = Acute
C = Childrens
L = Laboratories

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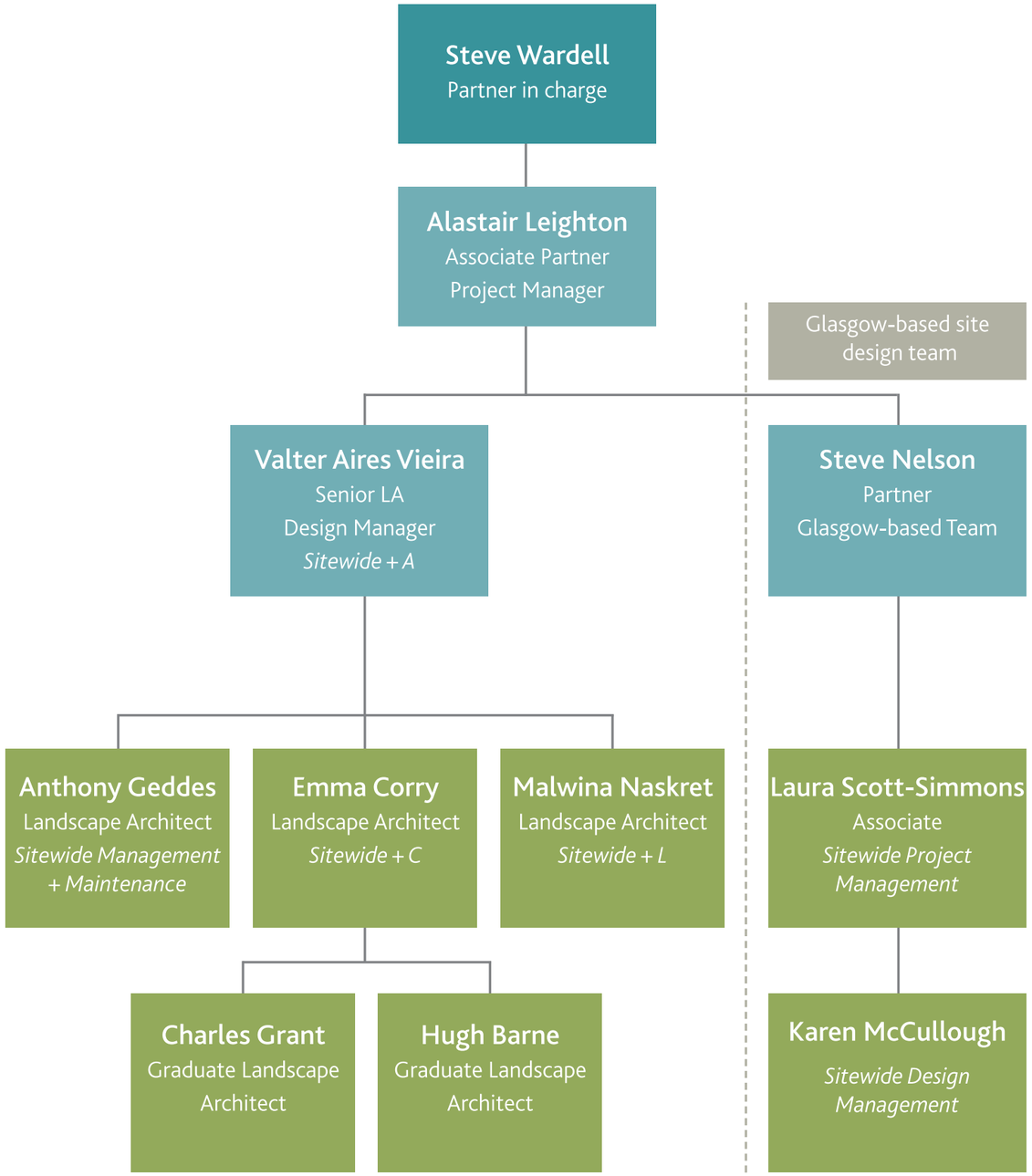

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GILLESPIES

Partner in Charge

Stephen Wardell

Stephen has been a Partner in Gillespies for 20 years. He has provided a lead for the development of the practice's role in landscape design and public realm design in the UK and abroad. In particular, he has provided landscape design, direction and leadership on a number of major health projects, and a similar role on major higher education campus based projects. Stephen has been associated with the South Glasgow Hospitals project from the outset, and will continue to act as Partner in charge of the project for its duration.

Career Overview

Since joining the Company in 1984 following leading roles including with WS Atkins, Stephen has led Gillespies teams on a host of significant projects, including Coventry Hospital, one of the UK's largest PFI projects. Currently he is engaged on Peterborough Hospital, with both Brookfield and Nightingale Associates. He is also leading the landscape team for the design of the external areas for the North Middlesex Hospital in Enfield. Similarly he was the partner for Gillespies significant contribution to the PFI bids for the London Hospital in Whitechapel, Walsall Hospital and the John Radcliffe Children's and Head and Neck wings.

Stephen has also been responsible for leading landscape design teams on a number of successful major corporate projects including GlaxoSmithKline's £675m Research Headquarters in Stevenage and Pfizer's campus heart at Sandwich in Kent. He has also led the landscape design on a number of Higher Education projects including Anglia Ruskin's Chelmsford campus and the Birmingham City University's campus in Edgbaston.

In the development of major urban public realm projects he has led the Oxford Street, Regent Street and Bond Street Improvement Strategy and is the partner in charge of other key London public realm projects, including Leicester Square, a new public square at Centre Point, St Giles Circus, and a Public Realm Strategy for Camden Town. Stephen also helped to deliver both the master-plan and first phase of public realm designs for the redevelopment of the successful Paddington Basin project.

Stephen's role in this project will continue to be in senior client and team liaison, and in directing the design activities of the Gillespies.

Qualifications

Diploma of Landscape Architecture
Chartered Member, Landscape Institute

Project Experience

North Middlesex Hospital
Enfield, London — £2m

Coventry Hospital
Coventry — £5m

GSK Research Campus
Stevenage — £8.5m

Pfizer Headquarters
Sandwich, Kent — £3m

Walsall Hospital
Birmingham

Paddington Basin Redevelopment
London

BBC Media City - Masterplan Study
Salford

Anglia Ruskin University
Chelmsford

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GILLESPIES

Associate Partner

Alastair Leighton

As an Associate Partner Alastair is an experienced Landscape Architect with extensive skills in the management, design and implementation of major development projects including health care and care management projects.

Alastair has been extensively involved in the Masterplan and Landscape Design development of Brookfield's bid from the outset of the project and has led on masterplanning aspects of the

Dialogue process for the team. Alastair is nominated to continue to lead Gillespies team for the duration of the project.

Career Overview

Alastair trained as a Landscape Architect after a period spent as a management accountant, and with background training in fine art and art history. From 1999 Alastair joined Chris Blandford Associates first as Graduate then moving into a Senior Landscape Architect role.

In 2004 Alastair moved to Gillespies as an Associate Landscape Architect, progressing into the role of Associate Partner in 2007. His recent experience reflects a balance between strategic landscape and public realm design, and a number of healthcare facilities including the following; Walsall Hospital, PFI Scheme; landscape and public space design proposals for the redevelopment of the Manor Hospital site working within the Carillion consortium with Nightingales architects. Design proposals included a new arrival and entrance plaza and a significant internal public courtyard. Nazareth House, Isleworth; Landscape design for a new care village to be located within the grounds of a listed former convent, situated east of Richmond on the River Thames.

He was the Associate responsible for design concept development of Whipps Cross Hospital, PFI Scheme with Nightingale Associates for the replacement of the existing fragmented campus of hospital buildings with a new campus.

Alastair will provide senior project management responsibility for the Gillespies project team and will undertake wider team liaison responsibilities, ensuring adherence to the brief and Trust requirements and successful delivery of all aspects of landscape and external works design.

Qualifications

Bachelor of Landscape Architecture (Hons)
Chartered Member, Landscape Institute

Project Experience

Ebbsfleet Valley Thames Gateway	**£30m**
Leicester City Centre Leicester	**£5m**
Walsall Civic Quarter Walsall	**£2m**
Gloucester Docks Gloucester	**£1.5m**
Walsall Hospital PFI Birmingham	
Weston Park Sheffield	
River Lea Bridge Hackney, London	
Nazareth House - Masterplan Study Isleworth, London	

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GILLESPIES

Senior Landscape Architect

Valter Vieria

Valter has over ten years' experience as a landscape architect working in the UK, Portugal and Africa. He has considerable experience of leading design teams on complex and demanding multi-disciplinary projects.

Valter has acted as Senior Landscape Designer in Gillespies team on the Southern General Hospital project from the outset and has an intimate understanding of the complexities of the masterplan, landscape design and public realm aspects of the scheme. Valter would continue his senior role on the project for its duration.

Career Overview

Sustainable masterplanning and environmentally sensitive landscape design are Valter's particular areas of interest. This includes employing where possible the sustainable construction techniques which he was exposed to over five years whilst working for a well known leader in sustainable design. Valter's other main interest besides environmentally sensitive design is to reveal the unique identity of each area he works in and to respond to the context and feel of a place.

Valter is experienced in taking design from concept to implementation on a wide range of sites including urban, rural, urban fringe and coastal projects.

Valter worked on the development of a new University Campus in Chelmsford for Anglia Ruskin University. The University has embarked upon an ambitious expansion programme for its new Rivermead Campus. Valter lead Gillespies design team to create a series of environmentally sustainable public spaces within a public realm framework for the campus, which accompanied the design of new buildings and helped to connect them with the existing campus framework. He has also been responsible for the site planning and landscape design for a new business park being built to the South West of Moscow in response to a rising demand for high quality commercial premises around the capital. Key things included a major park and open space at the heart of the business park, with a significant water feature, restaurant and other amenity features which provide a focus for the prestigious development.

Qualifications

Licentiate of Landscape Architecture
Portuguese Association of Landscape Architects (recognised by LI)

Project Experience

Yenkit Resort
Oman

Skolkovo
Moscow

Anglia Ruskin University
Chelmsford

Quinta Do Outeiro Urbaniszation Seixal
Portugal

Gandarinha Urbaniszation in Cascais
Portugal

Detailed Plan from the Parque Desportivo Until Acude De Pedrain Tomas
Portugal

Urban Park
Portugal

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Brookfield

GILLESPIES

Partner

Stephen Nelson

Steve is a Chartered Landscape Architect and Partner of Gillespies based in Glasgow. He has 30 years experience in master-planning and landscape design for complex urban projects and has worked on healthcare, educational, recreational, residential, commercial and industrial projects as both designer and manager.

Based in Glasgow, Steve would oversee the Glasgow team who will be responsible for assisting Brookfield in the implementation of site-wide external works and landscape design aspects of the project.

Career Overview

Steve leads the firm's input to healthcare projects in Scotland and Northern Ireland and has acquired a very good understanding of the needs and requirements for hospitals and healthcare sites in terms of building relationships, vehicular and pedestrian access provision, importance of parking and the creation of quality environments for patients, hospital staff and visitors.

In recent years he has led the firm's input to the extension and renewal of three healthcare centres in Belfast on behalf of The South and East Belfast Trust, at Castlereagh, Lisburn Road and Holywood Arches; The Ulster Hospital master-plan for the South and Eastern Health and Social Trust which incorporates refurbishment and new build with an associated decant strategy; Gransha Mental Health Crisis Unit in Derry which includes a master-plan review of the 30 acre campus as well as the detail design of the external works for the new unit itself and the New Victoria Hospital in London which is a new build hospital to replace an existing facility with new residential forming part of the new complex.

Qualifications

Diploma of Landscape Architecture
Chartered Member, Landscape Institute

Project Experience

Gransha Mental Health Unit Derry City	
Ulster Hospital Belfast	
Belfast Community Healthcare Centres Belfast	
New Victoria Hospital London	
Bainbridge CTCC & Daycare Bainbridge	
Glasgow Harbour Waterfront Glasgow	**£100m** (overall)
Forthside Stirling	**£40m** (overall)
Tay Street Project Perth	**£5m**

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Brookfield

Associate

Laura Scott-Simmons

Laura is a Chartered Landscape Architect who has over 20 years of experience and is an Associate based in Gillespies' Glasgow office. Laura has a broad base of expertise including masterplanning, work in the healthcare environment, high quality public realm design and implementation and environmental impact assessment. Laura is a skilled communicator and specializes in the coordination of large multidisciplinary teams, community planning and public engagements.

Career Overview

Laura worked as part of a multi disciplinary design team on the redevelopment of the Ulster Hospital, Dundonald, Belfast. The project involved creating a strong landscape framework for the hospital's rationalized site plan allowing it to fit sympathetically into its site on the transition between the urban edge of Belfast and the green belt. Site planning and phasing of the works is critical to ensure that the existing hospital remains operational at all times.

She also worked as part of a multi disciplinary team to develop design proposals for a new mental health crisis unit at the heart of the existing Stradreagh site. The team prepared a landscape strategy as part of a development control plan for the entire site to guide future development and to ensure that the existing landscape qualities of the site were recognized and enhanced. The design solutions for the MHCU itself were worked up following detailed consultation with the existing managers and staff.

Laura is leading Gillespies landscape team within the multi disciplinary design team appointed by the Southern Health and Social Care Trust to develop feasibility proposals for a new community treatment and care centre and day care centre on the site of the Old Banbridge Hospital.

Qualifications

Landscape Architecture BA (Hons) Dip LA CMLI

Project Experience

Ulster Hospital
Dundonald, Belfast

Gransha, MHCU
Londonderry

Banbridge CTCC and Daycare
Banbridge, Northern Ireland

NHS Lothian

Belfast Health and Social Care Trust, Royal Hospitals Estates Dept

PCCI Exemplar Design Team, Southern Trust

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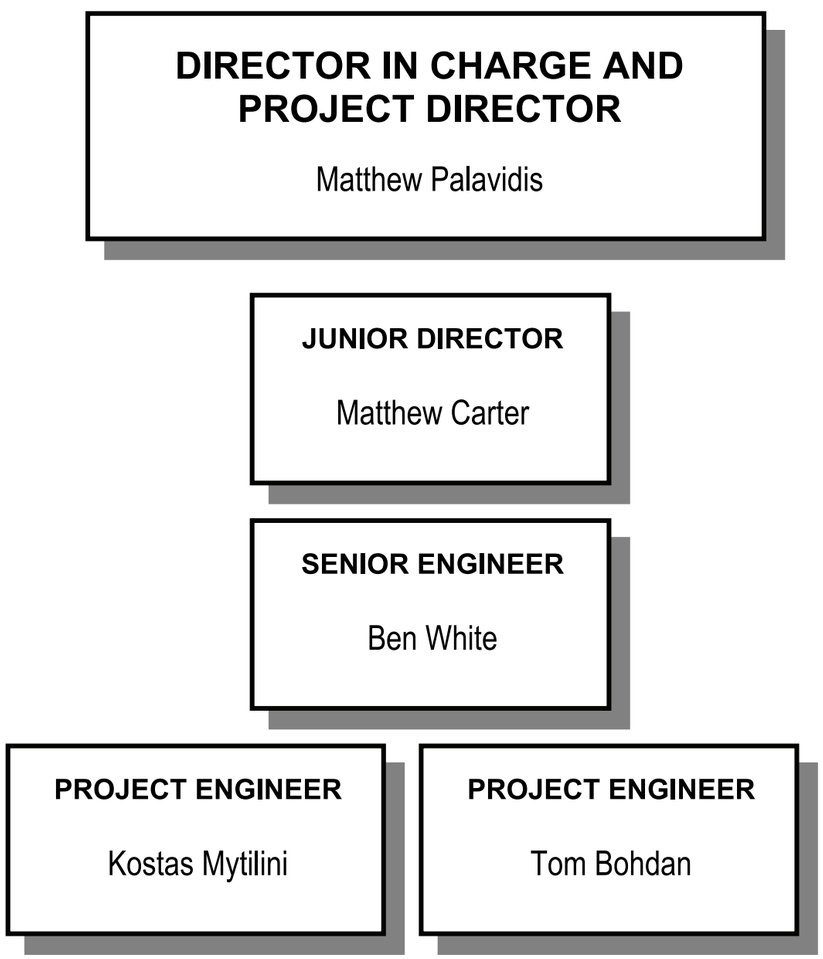

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ACOUSTIC LOGIC CONSULTANCY

Managing Director

Matthew Palavidis

Matthew has worked as an acoustics consultant for over 24 years, and has built a particular expertise in the areas of building, auditoria and studio acoustics. His architectural background provides him with a practical understanding of the building documentation and construction processes.

Matthew also has extensive experience in the areas of environmental, construction and industrial acoustic and as well as experience in the design of noise control in mechanical services.

He has also acted as an expert witness in legal proceedings.

Career Overview

Matthew was employed at Renzo Tonin & Associates from 1985 until 1994, becoming and Associate Director in 1990.

Matthew's role as Associate Director at Renzo Tonin & Associates saw him be responsible for all aspects of projects from initial concept planning to the development of design, site supervision and project compliance. He has lead project teams consisting of up to 5 people and was responsible for programming time and resources of team members.

From 1991, he also became responsible for the management and quality control of Windtech Wind Engineers. In this role he developed company policy, reviewed all work produced by the company and oversaw its business affairs.

Matthew started Acoustic Logic Consultancy in 1994 and today the company is engaged in project in Australia, New Zealand, UK, UAE and Singapore.

Matthew's areas of expertise include:

- Building acoustics and building services noise control
- Auditoria and Studio acoustics
- Environmental noise modeling and assessment
- Construction Noise
- Expert Witness

Qualifications

Bachelor of Science (Architecture) 1982
Bachelor of Architecture 1986
Member of the Acoustic Society of Australia (M.A.A.S)

Project Experience

Conservatorium of Music Sydney	**£100m**
Ernst and Young Tower Sydney	**£200m**
Woolloomooloo Finger Wharf Residential Hotel Sydney	**£120m**
GPO Re-development Westin Hotel Sydney	**£350m**
Citibank Centre Commercial Office Sydney	**£350m**
Westfield Bondi Junction Shopping Centre Sydney	**£200m**
Strata, SE1 Residential London	**£80m**
Ion on Orchard Retail Residential Singapore	**£250m**
Hyatt Residences Auckland	**£50m**
Al Burj 1.2km Tower Dubai	**£5bn**
Al Zenia 1100 Apartments Abu Dhabi	**£1bn**
Peterborough Hospital Peterborough	**£300m**
Riparian Plaza Commercial & Residential Brisbane	**£200m**

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ACOUSTIC LOGIC CONSULTANCY

Junior Director

Matthew Carter

Matthew has worked as an acoustics consultant for over 11 years, and has built a particular expertise in the areas of hospital, building, cinema, environmental and industrial acoustics. His engineering background provides him with a practical understanding of the building documentation and construction processes.

Matthew also has extensive experience in the design of noise control in mechanical services and in the areas of construction and industrial acoustic and as well as experience in Traffic, Helicopter and Aircraft noise modeling and intrusion. He has also acted as an expert witness in legal proceedings.

Career Overview

Matthew has worked with Acoustic Logic since ’98 as a project engineer since graduating from university. His final year of studies consisted of numerous acoustics based subjects and his thesis project was in the area of sound transmission. Matthew was appointed as a Director in 2007.

Matthew’s role as a Director at Acoustic Logic has him responsible for all aspects of projects from initial concept planning to the development of design, site supervision and project compliance. Matthew currently oversees and works on projects in Australia, New Zealand, UK, UAE and Singapore.

Matthew’s areas of expertise include:

- Building acoustics and building services noise control
- Cinema Acoustics
- Court Room Acoustics
- Hospital Acoustics
- Environmental noise modeling and assessment
- Construction Noise
- Helicopter and Aircraft Noise
- Traffic and Rail Noise Prediction
- Industrial Noise Control
- Vibration Control
- Expert Witness

Qualifications

Bachelor of Mechanical Engineering (Hons) 1997

Project Experience

Peterborough Hospital Peterborough	**£350m**
Berwick Hospital Victoria	**£150m**
Canterbury Hospital Sydney	**£120m**
Coffs Harbour Hospital NSW	**£100m**
Campbelltown Camden Hospitals	**£150m**
Bathurst Hospital NSW	**£150m**
Liverpool Hospital NSW	**£180m**
Auburn Hospital NSW	**£80m**
Westmead Private Hospital NSW	**£20m**
Westmead Hospital Upgrade Works NSW	**£120m**
Norwest Private Hospital NSW	**£50m**
Concord Hospital Upgrade and Mental Hospital NSW	**£40m**

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Senior Engineer/Office Manager

Ben White

Ben has worked as an acoustics consultant for over 8 years, and has built a particular expertise in the areas of hospital, building acoustics, building services, environmental noise control, construction noise and vibration and building acoustics during his time at Acoustic Logic Consultancy. His engineering background provides him with a practical understanding of the building documentation and construction processes.

Ben also has extensive experience in the design of noise control in mechanical services and in the areas of construction and industrial acoustic and as well as experience in Traffic, Helicopter and Aircraft noise modeling and intrusion

He has also acted as an expert witness in legal proceedings.

ACOUSTIC LOGIC CONSULTANCY

Career Overview

Ben has worked with Acoustic Logic since 2001 as a project engineer since graduating from the University of Sydney.

Ben's role as a Senior Engineer and Office Manager at Acoustic Logic has him responsible for all aspects of projects from initial concept planning to the development of design, site supervision, project compliance and organization of office staff.

Ben has been actively involved with projects in a number of countries including Australia, UK and the UAE.

Ben's areas of expertise include:

- Building acoustics and building services noise control
- Hospital Acoustics
- Environmental noise modeling and assessment
- Construction Noise and Vibration
- Helicopter and Aircraft Noise
- Traffic and Rail Noise Prediction
- Industrial Noise Control
- Vibration Control
- Mechanical Noise Design
- Building acoustics and building services noise control

Qualifications

Bachelor of Mechanical Engineering USyd 1999

Project Experience

Peterborough Hospital — £350m
Peterborough, UK

Liverpool Mental Hospital
Victoria, Australia

Bathurst Hospital
NSW, Australia

Liverpool Hospital
NSW, Australia

Ernst and Young Tower, World Square
NSW, Australia

Sydney Wharf
Pyrmont, NSW, Australia

Al Raha Beach
Abu Dhabi, UAE

Port Side Development
Brisbane, Australia

King Street Wharf Site 9 and 10
Sydney, NSW, Australia

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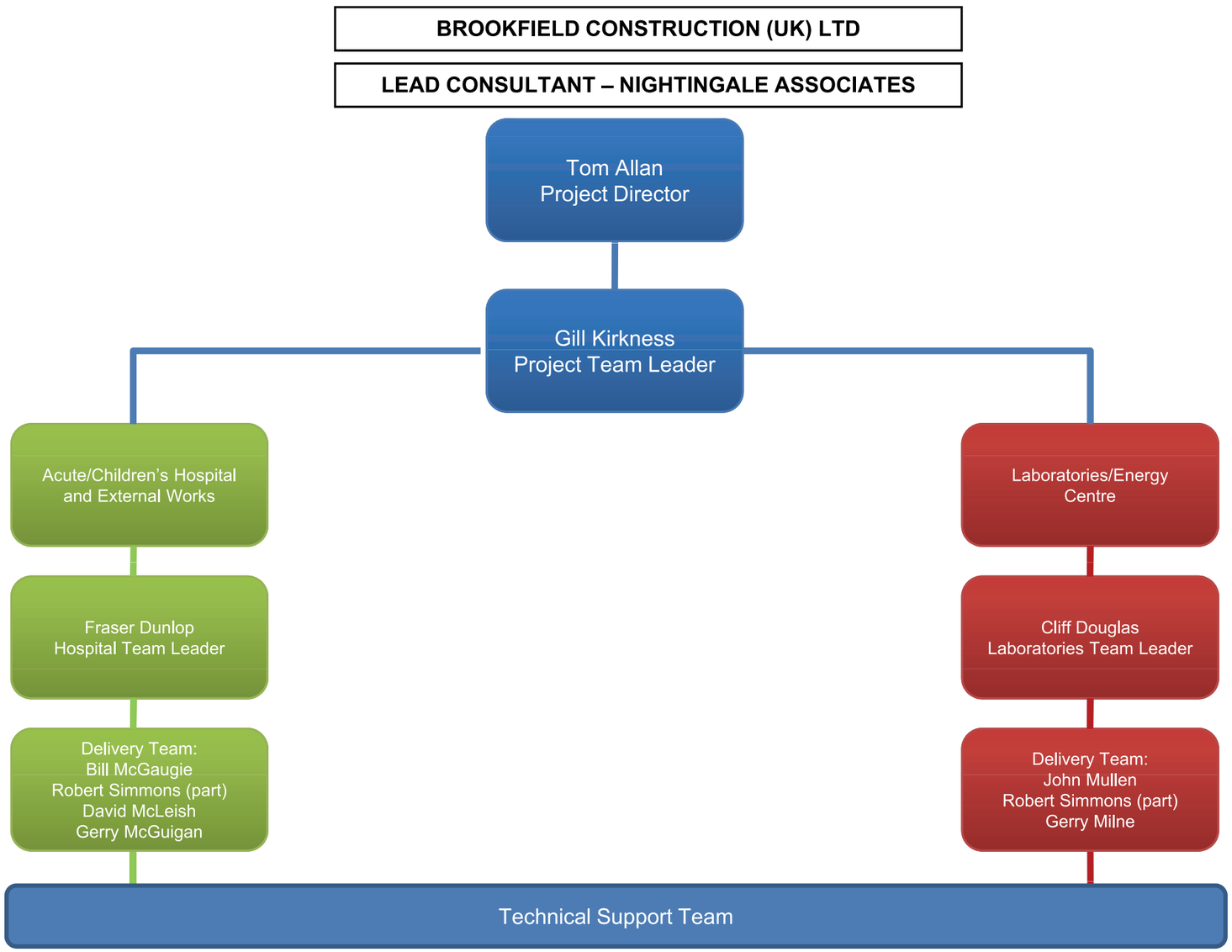
Doig+Smith Team for New South Glasgow Hospital



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Partner

Tom Allan

Tom has been a member of the commercial team throughout the preparation of the bid submission for the New South Glasgow Hospitals. He will continue to be involved with the commercial delivery throughout the project until its successful conclusion.

Career Overview

Tom joined Doig+Smith in 1974 as a trainee, qualified in 1986, was an Associate in 1993 and became a Partner in 2000. He has particular expertise in advising clients of the various procurement options in terms of programme and risk mitigation.

He has gained experience across all sectors of the industry particularly large scale complex projects and in all forms of traditional and non- traditional procurement. Tom has unrivalled experience of working with the EEC suite of contracts and has chaired workshops and provided training to new client users of this form of procurement.

The Trust will benefit from Tom's strategic decision making skills, in addition to his role of leading the team of procurement advisers and cost managers.

Qualifications

Dip ProjMan MAPM MRICS

Project Experience

Primary Healthcare Facility Musselburgh	**£20m**
Biomedical Facility University of Strathclyde	**£25m**
ACAD Victoria Hospital	**£60m**
ACAD Stobhill Hospital	**£60m**
Victoria Hospital Kirkcaldy	**£130m**
Forensic & Psychiatric Unit Stobhill Hospital	**£15m**
Neo Natal Unit Southern General Hospital	**£13m**
Private Hospital Paisley	**£20m**
Beatson Oncology Glasgow	**£50m**
Glasgow Airport Development	**£200m**
RBS Headquarters Edinburgh	**£350m**

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Partner

Gillian Kirkness

Gillian has been a member of the commercial team throughout the preparation of the bid submission for the New South Glasgow Hospitals. She will be involved with the management of the overall commercial delivery of the project throughout until its successful conclusion.

Career Overview

Gillian graduated in 1989 and commenced her career with Tarmac Construction Ltd working on the Channel Tunnel project as an Assistant Cost Manager. She qualified in 1992.

Gillian then joined Doig+Smith in 1996 as a Senior Cost Manager becoming an Associate in 2004. Since then she has gained a wealth of experience across a number of sectors including carrying out major construction works within an operational environmental for instance the current £70m re-development of Glasgow Airport including the relocation of the "fuel farm".

Gillian will support Tom by being Team Leader in the provision of procurement and cost management services.

Finally she has also considerable experience of the EEC suite of contracts from our commissions with BAA at Glasgow Airport.

Qualifications

BA (Hons) DipQS MRICS

Project Experience

Maternity Ward Southern General Hospital	**£1m**
Ultrasound Theatre Southern General Hospital	**£2m**
Bacteriological Laboratory Southern General Hospital	**£3m**
Biomedical Facility Glasgow University	**£25m**
Primary Healthcare Facility Musselburgh	**£20m**
Private Hospital Paisley	**£20m**
Langside College Glasgow	**£30m**
Shopping Centre East Kilbride	**£30m**
Glasgow Airport Development	**£200m**

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Associate (Mechanical & Electrical Cost Manager)

Fraser Dunlop

Fraser has been a member of the commercial team throughout the preparation of the bid submission for the New South Glasgow Hospitals. He will be involved with the commercial delivery of the Acute and Children's Hospitals and the External works throughout the project until its successful conclusion.

Career Overview

Fraser first joined Doig+Smith in 1989 where he was elected a Member of RICS.

The lure of the chance to work abroad proved too great and for a period of five years commencing in 1993 Fraser worked in the Philippines and Belize, Central America with companies such as Turner Diesel and David Langdon & Seah, where he began his specialism of M&E cost management.

Upon returning to Scotland in 1998 Fraser rejoined Doig+Smith and in 2005 became an Associate.

Fraser will be the team leader of the M&E cost managers in support to Project Partner Tom Allan and team leader Gillian Kirkness.

Finally he has also considerable experience of the EEC suite of contracts from our commissions with British Airport Authority.

Qualifications

BSc MRICS

Project Experience

Clinical Research Facility Western General Hospital, Edinburgh	**£2.7m**
Private Hospital Paisley	**£20m**
RBS Headquarters Edinburgh	**£350m**
ACAD Victoria Hospital	**£60m**
ACAD Stobhill Hospital	**£60m**
Glasgow Airport Development	**£200m**
Heathrow Airport London	**£1500m**
Clyde Wind Farm Scotland	**£150m**
Shopping Centre East Kilbride	**£30m**

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Senior Surveyor

Cliff Douglas

Cliff has been a member of the commercial team throughout the preparation of the bid submission for the New South Glasgow Hospitals. He will be involved with the commercial delivery of the Laboratories and energy centre buildings until their successful conclusion.

Career Overview

Cliff joined Doig+Smith in 2003 as a senior surveyor and has gained a particular experience of large projects.

Cliff currently leads a team comprising surveyors and graduates within the Glasgow office, all of whom have worked on a variety of projects under his direction.

He has considerable experience in all aspects of both pre and post contract works on a variety of different procurement routes. Most recently he has been responsible for the successful delivery of a number of major developments at Glasgow Airport utilizing the EEC suite of contracts.

Cliff and his team have successfully supported Tom Allan and Gillian Kirkness on many commissions.

Qualifications

FRICS

Project Experience

Biomedical Facility University of Strathclyde	**£25m**
Private Hospital Paisley	**£20m**
PFP Inverclyde Hospital Belfast	**£60m**
Glasgow Airport Development	**£200m**
RBS Headquarters Edinburgh	**£350m**

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Temporary Accommodation and Welfare

Submission Reference

10.1.2. Temporary Accommodation And Welfare

Submission Response

Location

Brookfield have selected an office and welfare location as shown on drawing number BE-AK-LOG-101 enclosed.

The location is on the area designated in our Master Plan to become the Children's Park and therefore has a minimum impact on the completion of construction works.

Use of land is confirmed by response to RFI's 071 and 132.

The location we have selected benefits from not requiring Glasgow City Council Planning permission nor involving third party negotiations for acquisition of land or facilities outside the site boundary.

Distinct access to the accommodation compound is provided off Hardgate Road, and avoids impacting on the existing hospital entrances and roadways.

This location allows safe segregation from construction site activities and deliveries, and has close adjacency to the works, without impacting on prime space under crane radii or storage areas.

Layout Details

See drawing BE-AK-LOG-102 enclosed.

The final scheme at Stage 3 will consist of approximately 126 no. prefabricated units (subject to finalised subcontractor requirements), providing office facilities for NHS GG&C staff, the Brookfield Design Team, Brookfield staff and subcontractors, as well as welfare facilities for all staff and operatives.

131 car parking spaces are allocated to Board staff (31 no.), Brookfield and subcontractor's staff as well as provision for visitors.

Covered cycle sheds are provided to encourage this mode of transport.

To reduce the size of the compound and maximise use of the area available, units have been stacked 3 high in 3 blocks accessed by internal and external staircases and linked where necessary.

Adjacencies between the various party's welfare facilities have been considered in the layout and positioning of the 3 no. blocks.

Phased Installation Of Units

Phase 1 – (contract award for Stage 1 - Design and Construction of New Laboratories) and Stage 2 (Detailed Design of Adult, Children's and Infrastructure to FBC submission).

Our location plan shows that we have set out the accommodation blocks such that Block 1 and Block 2 do not encroach on the existing Ambulance Station site which is still occupied at this time.

Construction of New Laboratories

We will erect adequate facilities to support our requirements to construct the Laboratory Block only. Ground and first floor units of Block 2 (26 No.) would be fitted out providing welfare on the ground floor and office accommodation on the first floor. These would be fitted out to suit Phase 1 and adapted to the Phase 2 scheme at a later date.

Detailed Design of Adult, Children's and Infrastructure to FBC submission

Flexibility and scope exists within Blocks 1 and 2 to increase the extent of Phase 1 installation to accommodate the Co-location of Board Staff and Brookfield Design Team in addition to Stage 1 Construction.

Layouts will be arranged to make this provision following discussion with the Board.

Phase 2 (Stage 3 Engagement to carry out the Construction of the Adult, Children's and Infrastructure)

At this stage the Ambulance Station site is available.

Block 3 can be erected, Blocks 1 and 2 completed and refitted where required and services extended in line with our detailed Stage 3 drawings.

The 131 No. car parking spaces will be provided in a tarmac surfaced car park, possibly utilising any hard standing remaining from the Ambulance Station site.

Throughout the construction, welfare facilities will be supplemented by satellite wc/wash units positioned strategically on the site itself to reduce travel distances. Locations will include the South East corner of the site and upper floors of the Adult Tower.

Our Site Accommodation Programme No. BROOKFIELD-NSGH-TN00-0015

Revision 00 is enclosed.

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Office And Accommodation Fit Out Details

See Drawings 3003737-001 showing Block 3 (Inc NHS GG&C offices)

3003737-002 showing the full detailed layout at Stage 3.

Brookfield recognise that whether it is a Client, Member of Staff, Visitor or Operative, our offices and welfare set up gives a “first impression”.

This impression is important, setting standards that our workforce can expect from us, as well as demonstrating our professional approach to construction delivery.

Our experience shows that first class facilities bring respect and that both operatives and staff are more content and productive in a quality environment.

All fit out is to exceptionally high standards providing excellent facilities for both operatives and staff. Welfare facilities include large kitchen, canteen, cloak rooms (complete with lockers), WC, wash and shower rooms for both male and female operatives and a well equipped and fully attended Occupational Health / First Aid room.

Office Accommodation provides ample natural daylight, a well heated and ventilated environment with all associated WC and tea making facilities.

The quality and specifications we propose for the project are based on those we have provided on our Edith Cavell Hospital site in Peterborough, visited by the NHS GG&C Board members on 13 August 2009.

General Accommodation Specification

External

Space Frame

Fully welded steel space frame with a galvanised steel floor and roof chassis. Rolled hollow section steel corner posts.

Floor Structure

Floor loading 3kN/m2 consisting of 18mm thick WBP Grade plywood decking fixed with driven screws to a fully welded galvanised steel floor chassis. Floors are under drawn with 0.6mm galvanised steel sheet. The floor is insulated with mineral wool between the joist voids, and complies with the current requirements of Building Regulations for Thermal Insulation.

Wall Structure

The walls are constructed from galvanised steel channels, fully welded, with stud work at nominal 400mm centres, the panels are formed in nominal 1200mm and 300mm wide sections, and lock together at each vertical joint section. The external of the panels are clad with 12.7mm moisture resistant plasterboard under a vacuum press bonding operation. The walls are insulated with mineral wool between the studwork voids, to comply with the current requirements of Building Regulations for Thermal Insulation.

The Roof

The roof shall comprise of a fully welded galvanised steel chassis, consisting of cold rolled channel side beams and galvanised steel joists, providing support for the external roof system. The roof is a proprietary manufactured insulated panel, comprising of a profiled external weather sheet of Colourcoat HPS200 Plastisol, bonded to a rigid closed cell insulation core, and an internal liner sheet of Colourcoat HPS200 Plastisol. The panel system is supported by galvanised steel roof joists, and is mechanically fixed in accordance with the manufacturers standard methods. All panel joints are fully weather sealed as required, and have Colourcoat HPS200 Plastisol trims to form a weather tight roof within the chassis. The roofing system complies with the current requirements of Building Regulations for Thermal Insulation. Rainwater is discharged from the roof into a UPVC guttering and downpipe system.

Windows

UPVC double glazed units c/w restrictors.

External Doors

Doors ply flush, solid core, paint finish.

Internal

Ceilings

2700mm Plasterboard ceilings to welfare areas and 2500mm suspended ceiling to offices.

Internal Partitions

Internal partitions are formed from a proprietary partitioning system of galvanised steel channel sections with studwork at nominal 400mm centres. Vinyl faced 12.5mm plasterboard, incorporating a two-part ‘H’ section at panel joints. The walls are insulated between the studwork voids.

Internal Doors

Pre-finished, veneer with good quality ironmongery.

Internal Trims & Finishes

Skirting to be PVC type, nominally 100mm deep finished in black.

Coving to be an uPVC two-part clip-on type, nominally 40mm x 40mm, with a 45deg chamfer.

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Internal walls are faced with white vinyl faced plasterboard.

Internal door frames are finished in white wood paint.

Floor Finishes

Vinyl / non slip sheet flooring to all areas or carpet tiles where specified to offices.

Fitting Out

Tea point fit out, cupboards, sinks and extraction system.

Electrical

Fluorescent light fittings with Cat2 diffusers to office/classroom areas.

Non maintained and maintained emergency lighting.

13amp, double sockets throughout.

2kW wall mounted convector heaters with integral thermostat.

All sockets and switches to comply with BS3676.

Lighting controlled by PIR except all meeting rooms where projectors may be used.

FI stand alone fire detection and alarm services including detectors, alarms, panels, cabling and equipment.

Integral floor trunking with floor box mounted sockets and wall mounted sockets / power outlets as specified in tender.

Mechanical

Air conditioning to 1F and 2F Block 3, Induction Room Block 1.

Maintenance

The offices are procured on a lease arrangement which also includes maintenance, thus ensuring that standards do not deteriorate to the fabric, whilst our contract cleaning company provide daily services to all accommodation and welfare facilities.

FURTHER ACTIONS REQUIRED BEFORE MANUFACTURE AND INSTALLATION

1. Survey on site to establish accurate fit and best setting out detail.
2. Dialogue with Board on Co-location options and their finalised office layouts and specifications.
3. Dialogue with the Board on Car Park 2 construction access requirements and anticipated timings.
4. Details to be drawn up of foundation design for site units.
5. Details to be drawn up for service layouts and connections. Brookfield have established availability of incoming services.
6. Dialogue with catering subcontractor for kitchen / servery layouts.
7. Dialogue with subcontractors for their detailed requirements.

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NHS Greater Glasgow and Clyde

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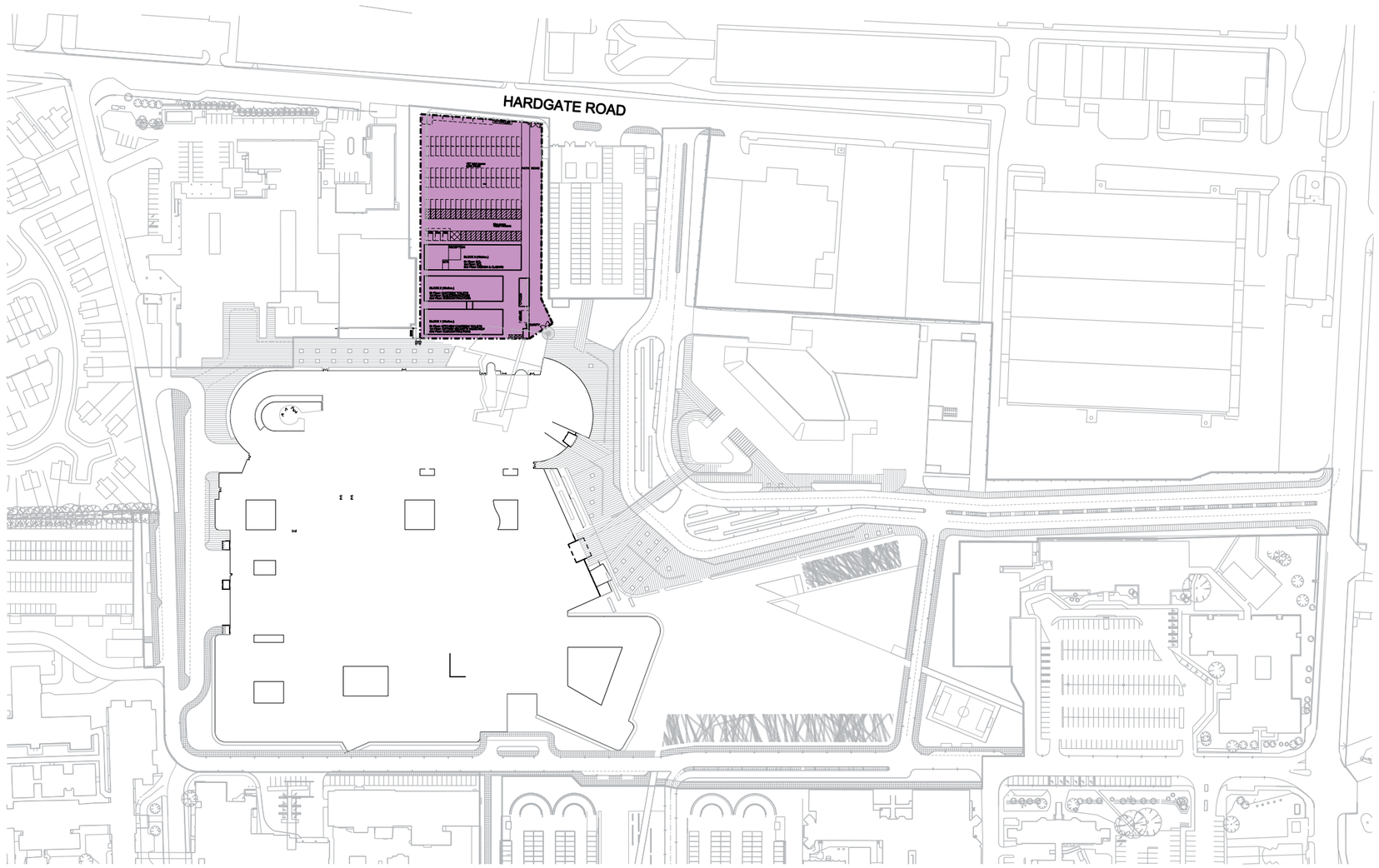

ITPD Reference:
VOLUME 10
Section 10.1.2

TEMPORARY ACCOMMODATION AND WELFARE - LOCATION PLAN.

New South Glasgow Hospitals (NSGH) Project ITPD

Date: 03.09.09
Scale @A1: 1:1000
Drawing Number: BE-AK-LOG-101 TENDER
Revision:

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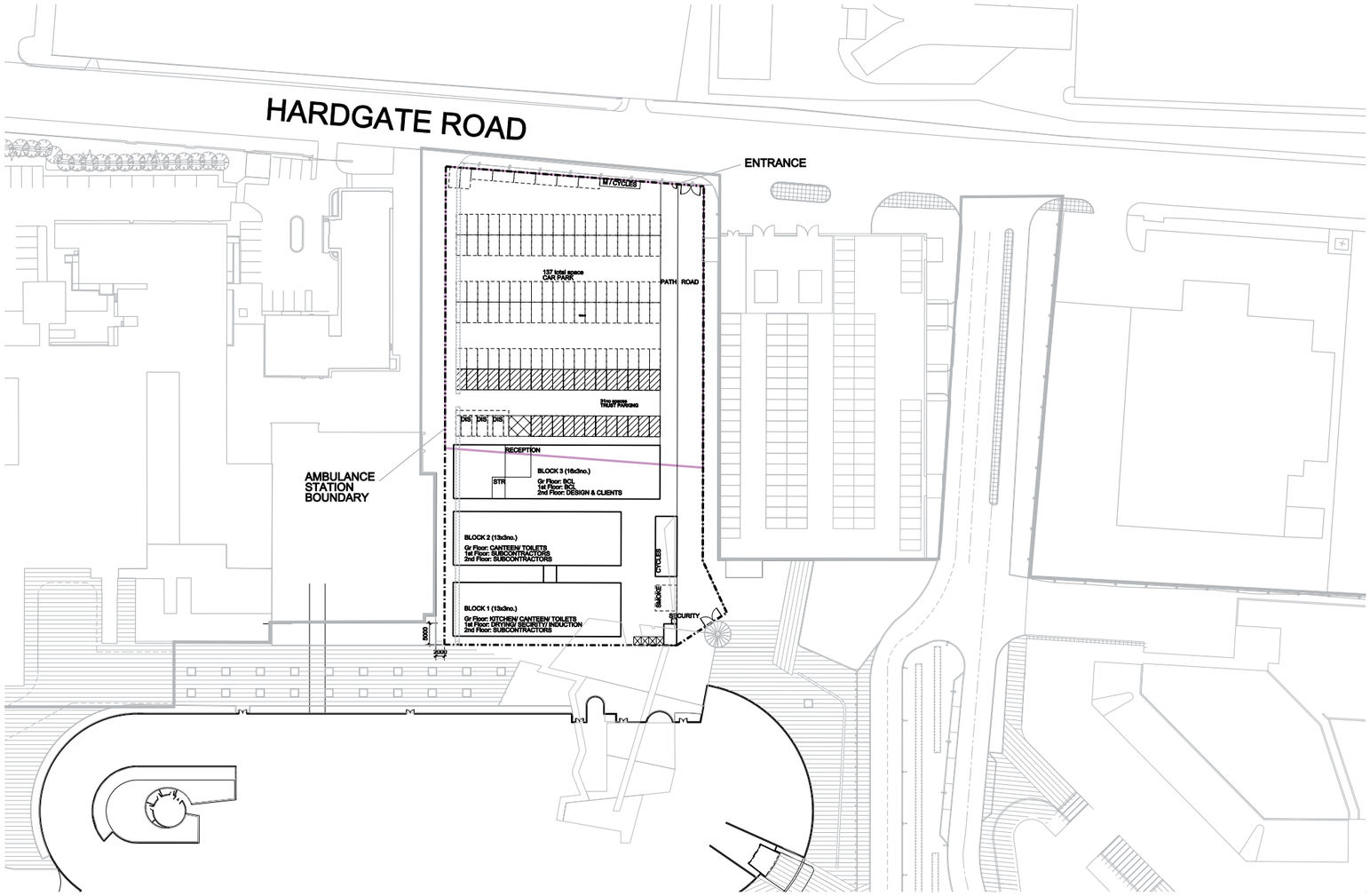

ITPD Reference:
VOLUME 10
Section 10.1.2

TEMPORARY ACCOMMODATION AND WELFARE - LAYOUT DETAILS

New South Glasgow Hospitals (NSGH) Project ITPD

Date: 03.09.09
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Drawing Number: BE-AK-LOG-102
Revision: TENDER

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New South Glasgow Hospitals Project

Volume 10 Section 10.1 Site Accommodation Programme

This programme is strictly for information only, and will not form any part of any resulting Sub-Contract

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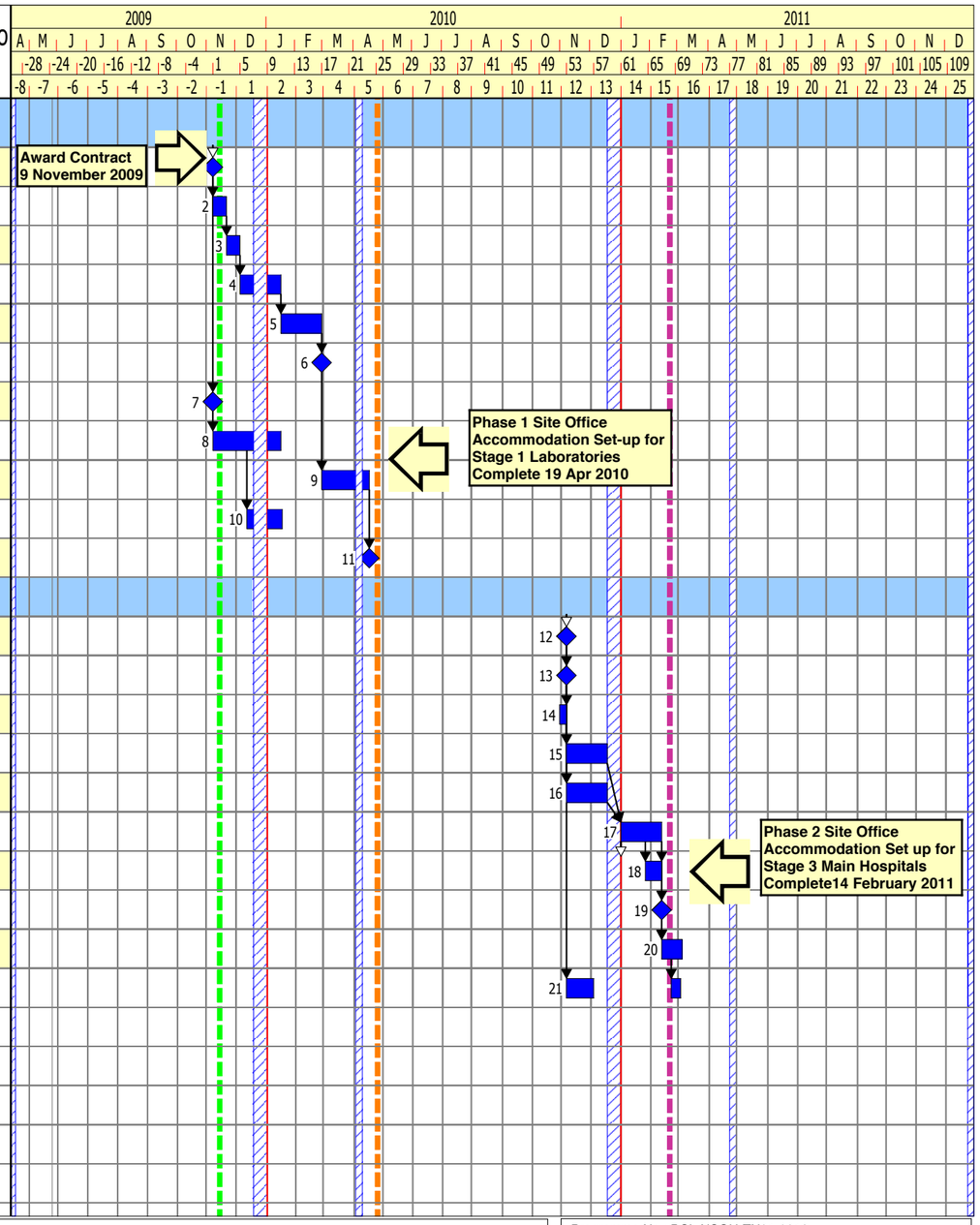
Line	Activity	Week No Start	Date Start	Duration	Date Finish	Week No Finish
	Phase 1 Office Accommodation					
1	Stage 1 (Laboratories) Contract Award	1	09/11/09		09/11/09	1
2	Agree on Phase 1 Office Use	1	09/11/09	2w	20/11/09	2
3	Agree Final Office Layout	3	23/11/09	2w	04/12/09	4
4	Procurement / Place Order	5	07/12/09	4w	15/01/10	10
5	Manufacture	11	18/01/10	6w	26/02/10	16
6	Office Available	17	01/03/10		01/03/10	17
7	Site possession	1	09/11/09		09/11/09	1
8	Prepare site for office (Foundations / Drainage)	1	09/11/09	8w	15/01/10	10
9	Deliver & install offices	17	01/03/10	6w	16/04/10	23
10	Service connections	6	14/12/09	3w 1d	18/01/10	11
11	Staff move in	24	19/04/10		19/04/10	24
	Phase 2 Office Accommodation					
12	Availability of ambulance station site	53	08/11/10		08/11/10	53
13	Stage 3 (Hospitals) Contract Award	53	08/11/10		08/11/10	53
14	Agree Phase 2 Office layout (incl subs)	52	01/11/10	1w	05/11/10	52
15	Instruct office supplier to manufacture	53	08/11/10	6w	17/12/10	58
16	Prepare site	53	08/11/10	6w	17/12/10	58
17	Delivery and installation	61	03/01/11	6w	11/02/11	66
18	Service connections	64	27/01/11	2w 2d	11/02/11	66
19	Phase 2 office available	67	14/02/11		14/02/11	67
20	Decant / refit Phase 1	67	14/02/11	3w	04/03/11	69
21	Construction of 137 Space Car Park	53	08/11/10	5w 2d	03/03/11	69



Date of Issue: 01/09/2009 Drawn By: DAB
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Comments: For Bid Submission

Programme No.: BCL-NSGH-TN01-0012
Revision: 01 Revision Date: 01/09/2009

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Logistics

Submission Reference

10.1.3 Logistics

Submission Response

10.1.3 Logistics

The new South Glasgow Hospitals project can be broken down into 4 distinct Phases: -

- Laboratory, FM, and Mortuary build (Stage 1)
- Laboratory buildings in parallel with Adult, Children's, and Energy Centre. (Stage 3)
- Adult and Children's construction, and Energy Centre fit out with Laboratory complete. (Stage 3)
- Demolition and Landscaping works. (Stage 3A)

This section details the logistical controls put into place relating to the management of the works within the confines of the site and is to be read in conjunction with the whole of this project execution plan particularly sections 10.1.4 - Traffic Management and 10.1.9 Site Interfaces that detail the specific interfaces with the hospital facility.

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Submission Reference

10.1.3.1. Logistics Phasing Plans

Submission Response

Logistics Plan - Phase drawings BE-DJ-LOG-101, BE-DJ-LOG-102, and BE-DJ-LOG-103 attached, provide information for the management of the construction works at the various stages of the project.

Wherever practical, protective fencing will be erected to separate hospital staff and visitors from construction activities. These are also highlighted on the traffic routes and logistics drawings. This fulfils a number of functions including prevention of unauthorised access, public protection, and the safety of site operatives, as well as promoting the Brookfield ethos of providing a quality environment as a considerate contractor.

The fencing will consist of a 2.40 m high plywood hoarding progressively installed until the site is fully enclosed. The hoarding will be painted and signed in accordance with NHS Scotland signage guidelines including co-branding with the Brookfield identity and information boards. The NHS Scotland identity will be prominently displayed with a minimum of 350mm in height. It will, in all instances, be accompanied by the Scottish executive logo and strap-line and will be sufficiently large to be prominent from the opposite side of the road.

NHS guidelines note that vision panels be located within the hoarding, these will be limited to areas accessible to pedestrians.

2.00 m high Heras mesh panel fence with concrete block feet supports will be used where a requirement for segregation is short-term and work being undertaken is a low safety/ security risk.

Similarly the NHS Scotland identity, Scottish executive logo and strap-line, and Brookfield co-branding will be securely fixed to the centre of each area of Heras in accordance with the NHS Scotland guidelines.

In limited instances the tree protection fencing will also serve as a hoarding line and will be installed in compliance with British Standards.

A site sign board will be installed to a location to be agreed with the Board prior to start on site. This will be branded in the same style as in the hoarding above and be fully in accordance with NHS Scotland signage guidelines

Our Traffic Management Plan (Section 10.1.4) details the measures Brookfield will take to reduce the risk of injury to personnel from traffic movement within the Glasgow Southern General Hospital Campus. Construction vehicles will access the Site via Renfrew Road whist site operatives will access the site via a separate access from Hardgate Road as explained in Section 10.1.2 Temporary accommodation and welfare.

Appropriate signage will be installed in conjunction with the above as well as at the site entrance and throughout the site. This will consist of both mandatory and advisory information including directional signage, speed limits, construction traffic warnings, protective equipment requirements, and considerate contractor information.

Security Huts and road barriers will be installed to Gates 1 and 3 to assist in the management of vehicles onto and off the site through all 3 primary phases of the works.

Weekly site logistics meeting will be held to agree the strategy for the coming activities including changes to pedestrian routes, haul roads and exclusion zones. These discussions will be documented and site layouts updated to reflect changes and posted on the site notice boards.

Drawing BE-DJ-LOG-101 details the logistics strategy for the Stage 1 Laboratories, FM, and Mortuary construction that includes the following provisions: -

- Hoarding erected to perimeter of available land, segregating site from existing hospital, with additional hoarding installed to tie in to existing fencing line to segregate offices from construction site activities
- Temporary car parking area provided on reduced level dig and partial pile mat to Children's Hospital building footprint.
- Security cabin and turnstile controlled site access installed in accordance with security proposal (Section 10.1.7)
- Secure storage facilities will be located in 2 zones as identified on the above layout and convenient to the site access gates and building footprint.
- An area will be provided for the management and segregation of waste on site in accordance with our waste management strategy. During phase1 this will be located to the west of the site adjacent to the haul road to enable it to be accessed by forklift that will be the primary plant feeding into it.
- Haul roads will be constructed using permanent specification to base course macadam where practical.
- Waiting and unloading zones will be provided in conjunction with both the stores and tower crane provisions as indicated. Unloading areas have been allocated from the haul road within the lifting radius of both TCL1 and TCL2 as well as a lifting zone within the service area of the new build within the radius overlap of both cranes
- Access will be provided for the adjacent demolition works to be carried out by others, through the installation of Gate 5 to the South east corner of the site. Demolition vehicle access through this gate will controlled by the demolition contractor. This gate will be kept secure at all other times.

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- Pedestrian routes are to be installed from the office and welfare areas into the building and to the storage and waste management areas. Pedestrian routes are to be segregated from vehicular traffic with a physical barrier. Crossover points are to be appropriately signposted to both the pedestrian and plant operative.
- Tower cranes are to be erected at an early stage to facilitate the concrete frame and envelope activities. Due to the proximity of Scottish Water, and the insurance repair centre 50m Luffing Jib tower cranes will be installed and zoned to ensure no over-sailing will occur, for which a licence would be required.

Drawing BE-DJ-LOG-102 details the logistics strategy for the Stage 3 Adult Hospital, Children's Hospital, and Energy Centre running in parallel with the Laboratories, FM, and Mortuary construction. It includes the following provisions: -

- Hoarding is erected progressively to complete perimeter segregating site from existing hospital
- Secure storage facilities will be retained in 2 zones as shown on the above layout which is convenient to the site access gates and all building footprints.
- The area provided for the management and segregation of waste on site in accordance with our waste management strategy will also be retained to the west of the site during phase 2 adjacent to the haul road to enable it to be accessed by forklift that will continue to be the primary plant feeding into it.
- The south section of the primary haul road from phase1 will be relocated away from the Children's Hospital building footprint and extended east. This will again be constructed using permanent specification to base course macadam where practical. In all instances the primary site haul roads will have a macadam surface that in some instances will be sacrificial.
- A wheel wash facility will be installed to the site access road to the rear of the existing therapy unit. This will be sited on the widened east section of the road and fully managed throughout the groundwork and superstructure operations, with attendant labour.
- Further waiting and unloading zones will be provided in conjunction with additional tower crane provisions as indicated below TC1, TC5, and TC6. Unloading areas will be allocated for other tower cranes and be flexible around the secondary haul roads. These have been removed from the drawing for clarity.
- A secondary haul road will be constructed to the perimeter of the building in a type 1 material. This will be constructed to tie in with the existing hospital road levels with minimal gradients to tie into the new building floor levels.
- Further haul roads will be established and relocated through the construction process as and when agreed in the weekly site logistics meeting.

- Pedestrian routes are to be installed from the office and welfare areas into the building and to the storage and waste management areas. Pedestrian routes are to be segregated from vehicular traffic with a physical barrier. Crossover points are to be appropriately signposted to both the pedestrian and plant operative.
- Additional welfare units will be installed to the more remote parts of the site for the convenience of the site operatives and to minimise down time from breaks.
- Tower cranes will be removed from the Laboratory Building and installed to the Adult and Children's Hospitals construction. 8 cranes in total will be installed to supply the concrete frame construction to both tower and podium areas. These will consist of 2nr 50m Luffing Jib tower cranes and 6nr 60m saddle jib tower cranes. All cranes will be zoned to avoid clash and ensure no loads will over-sail public areas or other buildings.
- Hoists LT1 and LT2 are to be erected to feed into the laboratory building for the fit out works. These are located outside the building footprint in locations to minimise material travel distance and convenient to envelope and corridor configurations
- Hoists 1and 2 are to be erected to the Adult hospitals tower to facilitate the movement of men and materials during the frame construction. Hoist 1 will be used solely for the purpose of transporting personnel, primarily to the upper floors of the tower building, whilst hoist 2 will be dedicated to the movement of materials to the upper levels and removal of waste to maximise the efficiency of the cranes to heavier lifting requirement.

Drawing BE-DJ-LOG-103 details the logistics strategy for the Stage 3 Adult Hospital, Children's Hospital, and Energy Centre fit out after completion of the Laboratories, FM, and Mortuary construction. It includes the following provisions: -

- Hoardings and gates will be reconfigured to suit the completion of the Laboratories, FM, and Mortuary building and facilitate access for both staff and services.
- This will include the erection of a new hoarding segregating the new FM service road from the Car Park 2 and Main site areas and the relocation of Gate 1 approximately 60m south of its phase1 location.
- Secure storage facilities will be relocated to free the area for the Car Park construction works. The secure storage near to gate 1 will be extended for part of this relocation with the remainder allocated on request, within the area adjacent to maternity and south of the site compound, all to suit subcontractor's specific requirements.
- The area provided for the management and segregation of waste on site will be reconfigured to the west of the site during phase 3, with an additional area provided to the area vacated from the service compound. Both areas are adjacent to the haul road which enables it to be accessed by forklift which will continue to be the primary plant feeding into it.

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- Wheel wash facility will be removed as the work enters the fit out stages. A local wash down facility will be kept available to site gates and the inspection regime maintained by site security throughout
- The primary haul roads from phase 2 will be retained. The permanent specification to base course macadam used for the construction of the primary haul roads means little maintenance of these routes will be required throughout the construction duration.
- Secondary haul road where constructed to the perimeter of the building in a type1 material, will also be retained during phase 3. Some maintenance will be required following change to external levels and drainage works.
- Other haul roads established and relocated through the construction process will be removed, and landscaping works to courtyard areas progressed following tower crane removal
- Pedestrian routes are to be maintained from the office and welfare areas into the Adult and Chidren's Hospital building and to the storage and waste management areas. Pedestrian routes are to be segregated from vehicular traffic with a physical barrier. Crossover points are to be appropriately signposted to both the pedestrian and plant operative.
- Additional welfare units will be retained to the more remote parts of the site for the convenience of site operatives and to minimise down time from breaks. At this stage of the project, this provides the additional advantage of reducing the risk of unauthorised use of the permanently installed works.
- All Tower cranes will have been removed from the Adult and Children's Hospitals construction and Hoists 3 to 6 installed at key points around the structure for the fit out works. These will generally be located outside the building footprint in locations to minimise material travel distance and be convenient to envelope and corridor configurations

Drawing BE-DJ-LOG-104 details the logistics strategy for the Stage 3A existing building demolition, and associated landscaping and drainage works. It includes the following provisions: -

- Erection of Heras fencing to segregate demolition works from hospital activities
- Phased construction operations to maintain access from hospital to new hospitals and laboratory building.
- Site office and parking facility is set up within the fenced area to maintain control of site operations without impact on the existing or new hospitals facility.

Further details of Phase 3A operations are provided in Section 10.1.9 site interfaces and Volume 3 section 3.28 Demolition Strategy.

Temporary Services

Overview

Brookfield calculated site temporary peak electrical load area based on three stages.

Stage 1 Laboratory construction calculated peak electrical load 0.7MVA.

Stage 2. Main site welfare, accommodation and canteen calculated peak electrical load up to 0.30 MVA

Stage 3. Main hospital construction calculated peak electrical load 2.0 MVA

Stage 3A Small office for demobilisations and external landscape completion works.

During the design dialogue advice was given that the power utility company can provide up to a 1MVA power supply for site temporary electrical power requirements.

Brookfield will, during the pre-construction & site mobilisation stage, liaise with the NHS GG&C Health Board and a utility power company to arrange the installation the temporary of 1 MVA utility power supply required for stage 1 Laboratories Building construction.

Upon mobilisation of the Adult and Children's Hospitals construction phase including the increase size of the main site office welfare and accommodate facility the site temporary electrical power supply will be increased to 2.0 MVA. The increased power supply will be reviewed in the delivery of the permanent 33kVA new main incoming supply and or if necessary augmented with generator supply for a limited period until the new main incoming supply is activated.

From the incoming utility supply serving the stage 1 power supply requirements a low voltage transformer will be provided with distribution by a low voltage supply to the site welfare and office compound facility main distribution board. From this main distribution board the construction low voltage supply will then serve a number of strategically located sub distribution boards.

Emergency egress lighting will be located to provide minimum safe levels for lighting for access to and egress from work areas.

During the construction period all temporary task lighting and portable tools will be supplied via locally positioned 400 /110V isolating transformers.

As the construction phases progress an 11kv / 400V distribution network will be developed in parallel. This Network will consist of 5 small substations each provided with a low voltage switch board positioned during the construction period to enable distribution of site temporary electrical power minimising cable sizes.

Sub distribution temporary MV/LV transformer and distribution supply cables will be routed by way of under ground ducting adjacent to the internal site road networks to the energy centres and out to the temporary switch boards positioned adjacent to the progressing construction phases.

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Each temporary board will distribute 400 / 220V via substation distribution boards to 110V transformers for task lighting and power tools.

Temporary site installations will be subject to full maintenance, testing and report procedures.

All electrical power tools, leads etc will be subject to Portable Appliance Testing (PAT) and verification on a monthly basis.

Environment

Management of the temporary installations will be planned to reduce carbon emissions utilising:

- energy saving devices and control systems, such as lighting control systems to turn off all task lighting at night from a single central point within the safety office.
- Protection of service cables in ducts to minimise damage and increase re- use.
- Careful location and guarding of distribution switch boards to prevent damage to enable re-use.
- During the construction, where possible all waste materials will be recycled or disposed of in the most environmentally conscious manner available to the team.

Temporary Electrical Services Scope Of Works.

Supply, install and maintain during the construction period all systems, plant & equipment to comply with statutory site health safety regulations and Brookfield site temporary electrical services intentions.

The works will cover all levels from the Laboratory building, Energy Centre, Adult Hospital and Children's Hospital.

The project site temporary accommodation facilities will involve a minimum of three stages.

Phase 1 - Stage 1 Laboratory construction with site accommodate and welfare facilities that include for the stage 2 preconstruction team

This will include the Site facilities, Canteen, Security, Wheel Wash, Power Tools, External Lighting, Internal Lighting Temp Fire Alarm and Sounders to cater for up to 400 personnel.

Phase 2 - Main hospital construction Adult, Children's Hospital, Energy Centre, Enhance the Site Facilities to cater for approx 1300 personnel all as detailed on Site temporary compound services plan attached

Electrical Works.

The peak site temporary electrical load requirement for the project will be approximate 2 MVA.

The site temporary electrical systems are to include the following sustainable features with the objective to target the reduction of carbon emission during the construction period.

Example of Site Temporary Electrical Sustainable Features.

- Electrical mains distribution from the contractor's facilities to the labs, energy centre, Adult and Children's hospital includes the use high voltage cable connected to a HV/LV transformer to reduce copper cables and sizes.
- Main distribution board to be fitted with sub metering to monitor power consumption to optimise energy efficiency.
- Emergency exit and egress lighting will use energy efficient T5 lamps.
- Subcontractor task lighting will only be allowed to use energy efficient lamps in lighting.
- Lighting systems will use a central lighting control system to turn off the temporary lighting in areas at times when no works are in progress.
- The head of the lighting control system will be located in Brookfield's site compound.
- All perimeter and external lighting to be PE cell controlled to optimise daylight.
- All main distribution power supplies have been designed to avoid single point system failure and will include meters to monitor key plant electrical power consumption.
- All electrical power tools will be restricted to 110Volt.
- Permanent electrical systems between plant rooms will be brought into use site temporary systems progressively removed
- Replacement lamps will be provided where these have expired during the construction.

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HV Installation.

Contractors Compound - Package Substation A.

Supply and install the following from the utility provider HV ring main unit and fused switch in a containerised Enclosure

1 No. 4Way OCB HV Switch

1 No. HV transformer close coupled HV Switch

Laboratory Building
1 No. HV transformer positioned outside the lab building fed directly from 3Way HV Switch withinn a Fenced containerised Enclosure

Adult and Children's Hospitals and Energy centre
3 No. separately located HV transformers positioned outside the respective building fed directly from 3Way HV Switch

all within independent fenced enclosure

Mains Distribution

Welfare and Site Accommodation Stage 1
Supply and Install from the HV Transformer and Mains Distribution Board sited adjacent to the above transformer including incoming 4 pole Circuit Breaker and Single Core Armoured cable.

All main outgoing circuit breakers from the Mains Board are 4 pole and have Earth Leakage protection with Variable Time and Variable Sensitivity settings.

Laboratory Building 0.7MVA Stage 1
Supply and Install from the HV Transformer and Mains Distribution Board sited adjacent to the above transformer including incoming 4 pole Circuit Breaker and Single Core Armoured cable.

All main outgoing circuit breakers from the Mains Board are 4 pole and have Earth Leakage protection with Variable Time and Variable Sensitivity settings.

Welfare and Site Accommodation 0.3 MVA Stage 2
The works will involve the installation of further sub distribution switchboards and low voltage supplies connected to additional site cabins and facilities.

Adult Hospital & Final Site Accommodation 2.0 MVA Stage 3
Supply and Install from the HV Transformer and Mains Distribution Board sited adjacent to the above transformer including incoming 4 pole circuit breaker and single core armoured cable.

All main outgoing circuit breakers from the Mains Board are 4 pole and have earth leakage protection with variable time and variable sensitivity settings.

Children Hospital Stage 3
Supply and Install from the HV Transformer and Mains Distribution Board sited adjacent to the above transformer including incoming 4 pole circuit breaker and single core armoured cable.

All main outgoing circuit breakers from the Mains Board are 4 pole and have earth leakage protection with variable time and variable sensitivity settings

Energy Centre Stage 3
Supply and Install from the HV Transformer and Mains Distribution Board sited adjacent to the above transformer including incoming 4 pole circuit breaker and single core armoured cable.

All main outgoing circuit breakers from the Mains Board are 4 pole and have earth leakage protection with variable time and variable sensitivity settings.

Sub-Distribution
The site distribution is to be designed and installed with suitable protection to prevent single point failure of the system, and to prevent causing failure to other critical site temporary electrical services.

Site distribution is to be based on series of 3 phase distribution boards located at various floor levels through out the building supplied from the 5no substations.

The attached Site temporary services site plan and temporary electrical schematic identifies the site sub distribution plans that would include for the following: -

- Tower Crane Supplies.

  Stage 1 - 2 No Tower cranes.

  Stage 3 - 8 No Tower Cranes.
- Main / Goods Hoist.

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Stage 1 - 2No Hoists.

Stage 3 - 6no Hoists.

- 415V Stud Welding Supplies
- 110V Small Power and Task Lighting Transformers
- Satellite WC's.
- Security/Induction offices
- Lift Commissioning (Builder's works lifts)
- Wheel Wash Supplies.
- External lighting.
- Hoarding Lights.
- Pedestrian Covered Walkway Lighting.
- General Perimeter Floodlighting.
- Site Entrance Floodlighting.
- Tower Crane Lighting.
- Internal Lighting.
- Egress& Task Floor lighting.
- Staircase & Egress Lighting.
- Hoist Landing Lighting.
- Roof /Open Area Floodlighting.
- Laboratory Building Stage I, 2 /and Stage 3 Main Hospital & Energy Centre.
- Head End Control System MDA's and Lighting Transformers.
- Booster Sets supply for mechanical water distribution

Site and Site Accommodation Fire and nurse call alarm system

In addition to the above Brookfield will supply and install in accordance with our group Health and Safety policy a radio controlled fire alarm system.

Temporary Plumbing Services

Supply, install and maintain during the construction period all systems, plant & equipment to comply with statutory site health safety regulations.

The project site temporary accommodation facilities will also involve three stages and installed in accordance with the attached temporary mechanical schematic.

Mains Water Intake.

Water tanks and pump sets will be installed to receive the incoming water for site distribution. This will be located in the management compound in a dedicated FRP water proof facility complete with MCC.

Phase 1 Welfare and Site Office Accommodation and Laboratory Building (Stage 1 and 2)

Supply and Install from the above connection, 110mm diameter mains supply to feed:-

- Office and management facilities.
- Wheel wash
- Water supply points to site gates and at each floor level
- Water supply for offices, canteens, and toilet block facility's to cater for approx 400 employees.

Phase 2 Adult and Children's Hospitals and Energy centre.

Supply and install from a future connection point provided at Stage 1, 110mm supply to the on Site Welfare, Welding Bay's, Adult Hospital, Children Hospital, and Energy Centre serving

- Contractors Welfare facility
- multiple connections at each floor level to maintain dust control, Mechanical Pressure Testing to adult, childrens and energy centre
- Wheel Wash supply
- Water Supply main Site Welfare
- Drainage to main Site Welfare
- Water Supply to site satellite toilets
- Water Booster set and main riser pipes
- Pumped drinking water to welfare and site accommodation

Site Temporary Sustainable Features.

The existing on site Scottish water supply for the permanent boosted water will be made available to all areas.

Other considerations to achieve sustainable performances to the site temporary plumbing facilities will include:

- Reduction in energy consumption and reduction of carbon emissions
- Improved quality control.
- Reduction in waste material.

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- Efficient recycling of waste material.
- Reduction of on site labour resources.
- Reduction in site generated noise and pollution.
- Reduction in the risk of environmental accidents.
- Reduction in unnecessary packaging brought to site.

Soil waste pipe work will be installed to the site compound facilities and connected to the foul waste drain on Hardgate Road

Temporary Welfare units will be also connected to the foul drain following the south and east site boundary.

Further site temporary toilet facilities will be installed to the podium roof and within the tower core at approximately levels 6 and 10 feeding through temporary connections to permanent soil pipe installation.

Supply, install and maintain during the construction period all systems, plant & equipment to comply with statutory site health safety regulations.

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Submission Reference

10.1.3.2. Management Of Logistics

Submission Response

The pre-planned logistics scheme drawn up for various stages of the project will be managed by a team with responsibility for the day to day movement of plant and materials, vehicles and personnel.

Although all managers, engineers and staff will assist them, we have highlighted those personnel who are key members with responsibility for management of logistics and site work interface with the Hospital.

We also list the roles and responsibilities of those personnel associated with logistics.

Project Construction Director

- Direct and deliver all construction activity. Although the Logistics Manager reports directly to the Project Manager, the Construction Director will assume responsibility for site wide logistics management and resources.
- Liaison with Procurement Manager on scope, attendance and subcontract conditions relating to logistics for individual subcontractors.
- Liaise with the NSGH Board on a weekly / fortnightly basis.

Procurement Manager

- Ensure that contract and planning conditions are related to subcontractors and suppliers and incorporated into subcontract documents and material orders.
- Items included are delivery notification periods, booking in procedures, delivery restrictions, working hours, access routes to and within the site, parking arrangements, site induction requirements, site rules and procedures.
- Issue of logistic drawings and traffic management plans after placing of subcontracts identifying routes to site, gate numbers, haul roads and access roads.

Project Managers

- Provide support to the logistics team by liaising with subcontractors at pre-start and in regular progress meetings.
- Liaising with logistics manager on day to day issues and on specific issues such as out of hours working, major plant deliveries, any construction activities outside hoarding lines.

Logistics Manager

- Manage the logistics scheme.
- Head the logistics team.
- Responsible for:
  - Booking in and scheduling of site deliveries.
  - Traffic management.
  - Car parking arrangements and facilities.
  - Site signage on and outside hoarding lines.
  - Hoardings.
  - Site security (all aspects).
  - Office and welfare facilities, maintenance.
  - Road cleaning and wheel wash facility.
  - Hire and off hire of small plant and equipment.
  - Inspections and maintenance of above items.
  - Being the point of contact for Considerate Constructor Scheme and recording and closing out complaints.
  - Liaison with NHS GG&C facilities management.
- Protection of the public.
  - Manage and review security arrangements.
- Time sheet / wages input for directly employed operatives.
- Call off of fuel deliveries, PPE and consumables.

Logistics Foreman

- Working in conjunction with the logistics manager.
- Responsible for vehicle movements and unloading within the site hoardings.
- Supervision of BCL direct plant and labour including fork truck, hoists and drivers.
- Maintenance of roads and walkways, segregation between vehicles and operatives and way finding.
- Site husbandry of ground area outside building footprint, including storage areas and fuel storage provision.

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- Inspection of, and protection to excavations, temporary services and their identification.
- Mechanical and Electrical Manager
- (Temporary Electrics and External Works)
- Responsible for external lighting provision.
- Diversion of existing services.
- Supplies to satellite welfare facilities.

Security
(This discipline will be subcontracted)

- Reporting to the Logistics Manager.
- Supervise the security team providing:
  - Pedestrian access control

    Following successful site induction, operatives will be issued with either swipe card or alternative security identification. The operatives must then pass through access control (turnstiles) whenever entering or leaving the site. The access control will be manned during all site working hours and other pre-arranged times.
  - Vehicle gate control

    Any gate in use will be manned by a security guard who will have a list of booked-in deliveries and direct these and other deliveries to place of unloading. They will also prevent site operatives entering through these gates on foot and prevent public entry.
  - General daytime control

    Site personnel parking, movement of operatives and wayfinding will require policing at various stages of the project and this will all be under the control of the Security Manager, briefed by the Logistics Manager.

Health, Safety and Environment Manager

- Organise site inductions for new starts and liaise with Occupational Nurse and Security prior to issue of site passes.
- Carry out regular reviews and inspection of site logistic procedures, traffic management, segregation, storage of fuel and materials etc.
- Identify any training needs for logistic team members.
- Inspection and review of public safety provisions.

The Logistics team will have access to directly employed fork lift truck, hoist drivers and general operatives, the Logistics Manager has the authority to call in road sweepers, generators etc as well as order signage, road salt and small tools.

Interface with NSGH Facilities Team
Brookfield will request to meet weekly with the Hospital Facilities Management representatives to discuss logistics for the forthcoming week and review procedures. These meetings have, in our experience, proved to be invaluable on other contracts, identifying needs of both parties, avoiding problems and allowing notification to be given to Brookfield operatives or Board staff. They have also been a mechanism for general interaction during which individuals learn the business needs and functionality of other parties.

Meetings generally would not last longer than 1 - 1½ hours

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Submission Reference:

10.1.3.3. Nuisance Controls

Noise

Glasgow City Council Outline Planning Permission Decision Notice ref. 07/01158/DC is subject to condition 19.

Noise associated with construction and demolition works in residential area shall not occur before 8am or after 7pm from Monday to Friday, and not before 8am or after 1pm on Saturdays; unless otherwise agreed in writing by the Planning Authority. Noise from construction or demolition works shall be inaudible at the sites perimeter on Sundays and public holidays. The Director of Land and Environmental Services shall be notified of emergency works likely to create noise that will occur at these hours.

Noise levels produced will be a consideration in methods of construction and demolition chosen and in the selection of plant and equipment used.

Strict adherence to permitted working hours will be enforced. Should any works run on beyond these times or necessitate out of hours working then notifications will be issued and permissions sought.

Periodic noise monitoring will be carried out during working hours, for specific activities on site and at site boundaries, to establish levels over and above ambient noise levels. This will be an express requirement of our safety procedures.

Suppression of plant and equipment and the use of electrical pumps rather than diesel driven for dewatering overnight are examples of mitigation measures available.

Dust and Mud

Both potential nuisances are related to weather conditions and specific construction activities. The degree of control required is influenced by the extent and stage of the construction works at the time the nuisance arises.

Below are typical measures we shall take to avoid nuisance to hospital staff, patients, visitors and the general public. As specific operations are identified that cause excessive dust or mud, then preventive measures will form part of the task risk assessments and method statements.

1. Dust

Many construction activities generate dust from bulk earthwork operations in the early stages, to sweeping, drilling and grinding and, probably the most critical, demolition of the existing hospital. Dust nuisance increases proportionately with windy conditions and proximity to people and facilities.

Prevention Methods

- Wetting down introduction of water before and/or during construction activities prevents the release of dust. On large open areas during top soil strip and excavations, and on construction circulation areas (roads, parking), wetting down will be by mechanical plant, with integral vacuum sweeping where appropriate. On smaller confined areas, localised wetting down will be by hand-held hose off mains or bowsers.
- Dust can be reduced for operations such as chasing, grinding and drilling by attaching an extractor to the plant itself. This primarily protects the operator's safety and minimises risk to those nearby, but also eliminates the potential for dust to escape the site boundary.

Containment Measures

- Wetting down and extraction are more effective if the area is manageable and planned sequencing and timing of work may be such that permanent wall construction may be utilised as barriers.
- Screening off areas with temporary barriers. Site hoardings, although only 2.40m high, do aid dust containment.
- Debris netting or Monarflex sheeting on external scaffolds contain dust, sprays, polystyrene etc within the building prior to erection of cladding.
- In excessively dusty conditions, sensitive areas and operations difficult to contain by other methods, higher screens will be erected, consisting of scaffold framing with debris netting or Monorflex sheeting attached. Bracing back of these screens against wind loads is difficult, however, especially when using Monarflex.

Combinations

During demolition, a combination of prevention and containment will be used. Our sequence of working will be agreed between our structural engineer and subcontractor when appointed. Where possible, external walls will be retained and openings boarded or sheeted to contain dust.

Demolition equipment will be fitted with hosing down equipment, applying water to the dust source, and loading operations will be wetting down constantly. This operation is one of few where inclement weather is beneficial.

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2. Mud

Mud is easier to contain than dust; however it is more difficult to prevent at source and harder to remove. The chief concern is to prevent mud leaving the site (ie beyond hoardings), and to clean up any mud that does escape.

The three most likely ways for mud to escape from site are:

- Falling from cart-away lorries. This risk is low drivers are aware of potential statutory fines if they allow this to happen so inspect their loads before leaving site and sheet over if necessary.
- By foot. Hundreds of men leaving site in muddy boots can soon contaminate public footpaths. Similar preventive measures apply to both foot and vehicle traffic. We will provide hard-based temporary footpaths on site and men not employed in earthwork operations will not be expected to walk through mud. Boot wash facilities will be provided for those working in muddy conditions. Any contamination of footpaths outside pedestrian gates will be cleaned before becoming a nuisance.
- On wheels and chassis vehicles taking spoil off site, or delivery vehicles leaving site. This is the major means of mud transfer to public areas, with risk highest earlier in the contract when earthwork operations are ongoing. Later on, more on site areas are hard-surfaced and access points to public highways are fewer. Restricting off-site vehicles to hard areas, particularly in wet conditions, will minimise the amount of mud leaving site. Excavated material will be carted from work-faces to hard-surface central areas by on-site vehicles, and transferred from there to cart-away lorries. If mud control cannot be achieved in extreme inclement conditions, cart-away will be suspended until weather improves.

Installation and maintenance of an extended pile mat will assist control of mud in the early stages.

These procedures will reduce but not eliminate the nuisance nor prevent some vehicles getting muddy wheels. A static wheel wash facility will be sited on our main entrance / exit road off Govan Road. All vehicles leaving site will use this. The wheel wash will be supplemented where necessary by use of mobile pressure washers at localised points and by tanker type road sweepers. If necessary, works will be suspended if controls cannot cope in extreme conditions.

Unauthorised Parking and Antisocial Behaviour from Site Personnel

All personnel will attend a site induction by Brookfield staff before being allowed on site. This will include briefing on health, safety and the environment and also cover site specific details such as site access, working hours and parking arrangements, as well as smoking areas, welfare facilities and site layout (stairs, walkways, escape routes etc). It will also make personnel aware of site rules regarding behaviour on and around the site, for example the importance of being respectful to hospital staff, visitors and general public, no smoking in unauthorised areas, no use of transistor radios, no eating on site etc. Disciplinary procedures will be explained and copies of site rules distributed.

Any changes to parking arrangements, access routes and updated information will be communicated to the workforce by further presentations, site notices and visual displays in canteens, toolbox talks by their supervisors and at monthly safety committee meetings. All site personnel will therefore know what is provided for them and what is expected of them.

Our site security team will enforce procedures and site rules at locations of interface between construction workers and third parties, and implement disciplinary procedures if necessary. Persistent offenders will be excluded from site.

Lighting

Temporary lighting must be selected, located and directed to avoid inconvenience to adjacent residents and motorists. External lighting will be required for safety access and egress for task lighting in winter months. Some of this lighting will remain on all night in summer and winter for security reasons. We are particularly aware that in some locations our structure is very close to the existing hospital and internal lighting overspill could inconvenience hospital users.

We will have an Electrical Manager with responsibility for Temporary Electrics (power and lighting), who will consider the above factors in the design of the scheme and will be aware of potential problems when selecting best locations for external lighting.

A switching-off regime for temporary lighting will be incorporated into the power distribution design and our security team will be responsible for turning off some temporary lights for cost and environmental reasons.

Considerate Constructors Scheme

Brookfield Construction (UK) Ltd will register the NSGH site with the above scheme. We enclose their literature on how to be considered as a summary of commitments associated with the scheme and a copy of our site rules as issued to operatives at site induction.

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How To Be A Considerate Contractor

All sites registered with the Scheme are monitored by an experienced industry professional to assess their performance against the eight point Code of Consideration Practice which includes the categories Considerate, Environment, Cleanliness, Good Neighbour, Respectful, Safe, Responsible and Accountable.

The three main areas that the Scheme's Code covers are:

The environment

Registered sites should do all they can to reduce any negative effect they have on the environment. They should work in an environmentally conscious, sustainable manner.

The workforce

Registered sites should provide clean, appropriate facilities for those who work on them. Facilities should be comparable to any other working environment.

The general public

Registered sites should do all they can to reduce any negative impact that they may have on the area in which they are working. Sites should aim to leave a positive impression on those they effect.

Brookfield Construction Ltd

Site Rules

Induction

Prior to commencing work on site, all personnel must attend a Site Specific Induction (and be issued with security access card) by Brookfield.

Parking

Site Personnel MUST NOT park in Hospital Car Parks, or on Hospital roads in the vicinity of the Hospital. Construction vehicles must be parked in designated car parks only.

Existing Hospital Entry and the use of the Hospital facilities is not permitted unless as a visitor to hospital.

Access

Staff and operatives MUST keep to the signed routes to and from the welfare facilities, car parks and building site.

Site Working Hours

Site working hours are 8.00am to 6.00pm Monday to Friday and 8.00am to 1.00pm Saturdays. No working on Sundays or Bank Holidays.

The site will open ½ hour before starting time to allow access to the work place and close hour after finishing time to allow egress from site. These times are not an extension to the working day.

Welfare facilities will be open 1 hour before, and close 1 hour after site working hours.

Note for NHS GG&C Brookfield Construction Ltd will want to discuss with Glasgow City Council the possibility of an earlier start time. This would avoid existing peak traffic times.

Behaviour

Operatives are asked to respect the surroundings and the proximity of our neighbours, hospital staff, patients and visitors.

Unacceptable behaviour includes:

- Foul language
- Wolf whistling and unnecessary comments
- Leaving vehicles running and their radios on in car parks
- Littering
- Fighting and fooling around
- Speeding and playing in-car music loud
- All other anti-social behaviour
- Theft

Improper behaviour will not be tolerated outside or inside the site boundaries and offenders will be excluded from site.

Smoking

Smoking will only be allowed in designated areas; these will be notified and signed accordingly. No smoking will be allowed in any site offices, welfare facilities or canteens. It is also an NHS policy that the hospital grounds are smoke free.

Drugs and Alcohol

No alcohol and no drugs may be brought onto site. Any persons suspected of bringing on to site or being under the influence of drugs or alcohol will be excluded from site immediately.

Site workers using prescribed or non-prescribed medication that may affect their ability to work safely must notify their supervisor and Brookfield manager.

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Eating and Drinking

Eating in drying rooms, stores etc or anywhere on hospital grounds is not allowed. Canteen facilities are provided for this purpose.

Whilst drinking on site is not prohibited, Brookfield asks that containers be disposed of into the bins provided. Drinking in finished areas is prohibited to prevent damage / soiling. These areas will be signed as works progress.

Welfare Facilities

Operatives are asked to respect the facilities provide and assist management in maintaining them to a high standard of tidiness and presentation.

Graffiti is unacceptable misuse of, and wilful damage to facilities will not be tolerated.

Toilets are provided at various locations, anyone found urinating on site will be excluded from site immediately.

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NHS Greater Glasgow and Clyde

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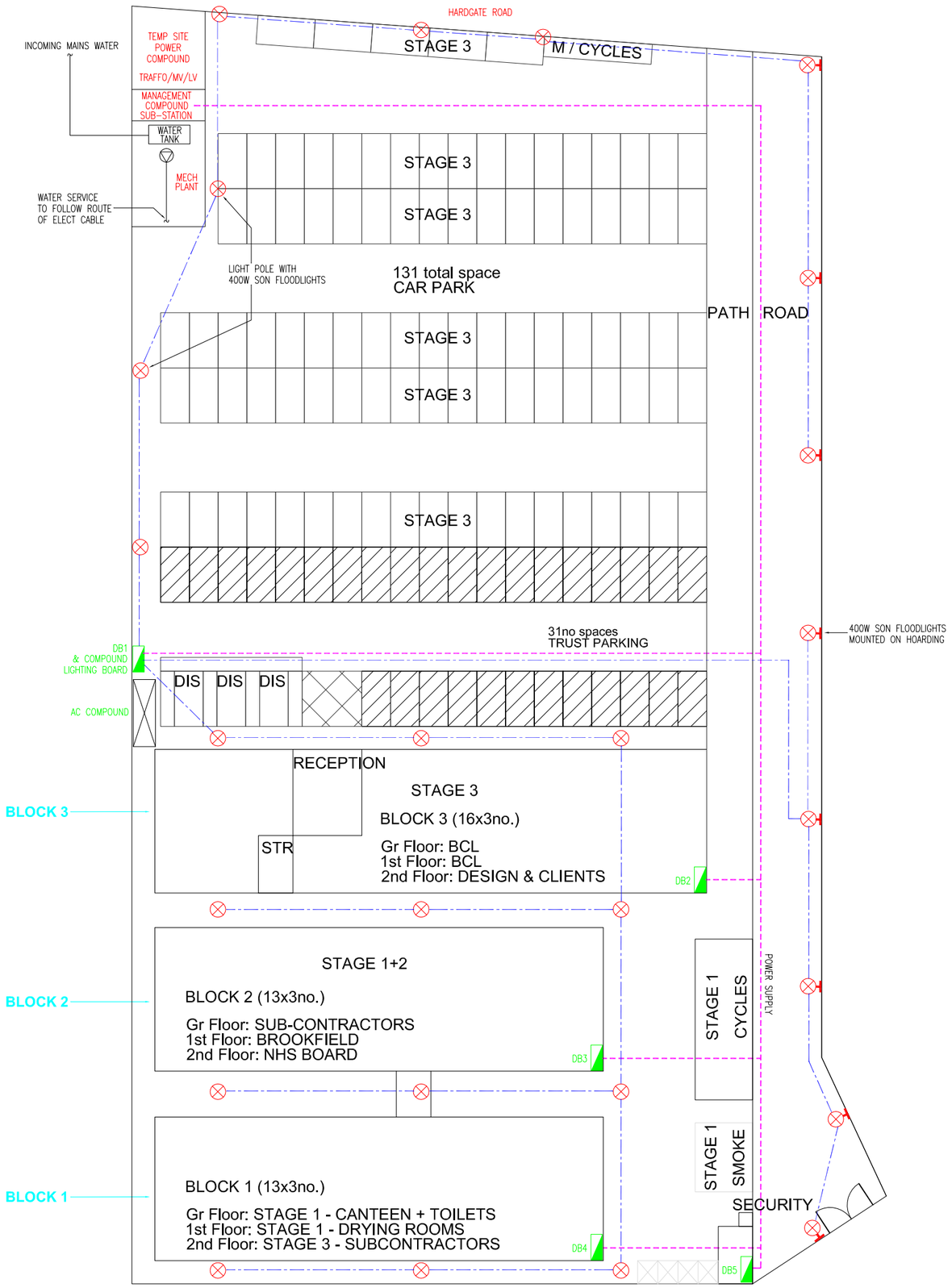

ITPD Reference:
VOLUME 10
Section 10.1.3

On Site Office, Welfare Accommodation & Associated Carparking
New South Glasgow Hospitals (NSGH) Project ITPD

Date: 8.9.09
Scale @A1: 1:200
Drawing Number: TEMP-SERVICES-02
Revision: A

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NHS Greater Glasgow and Clyde

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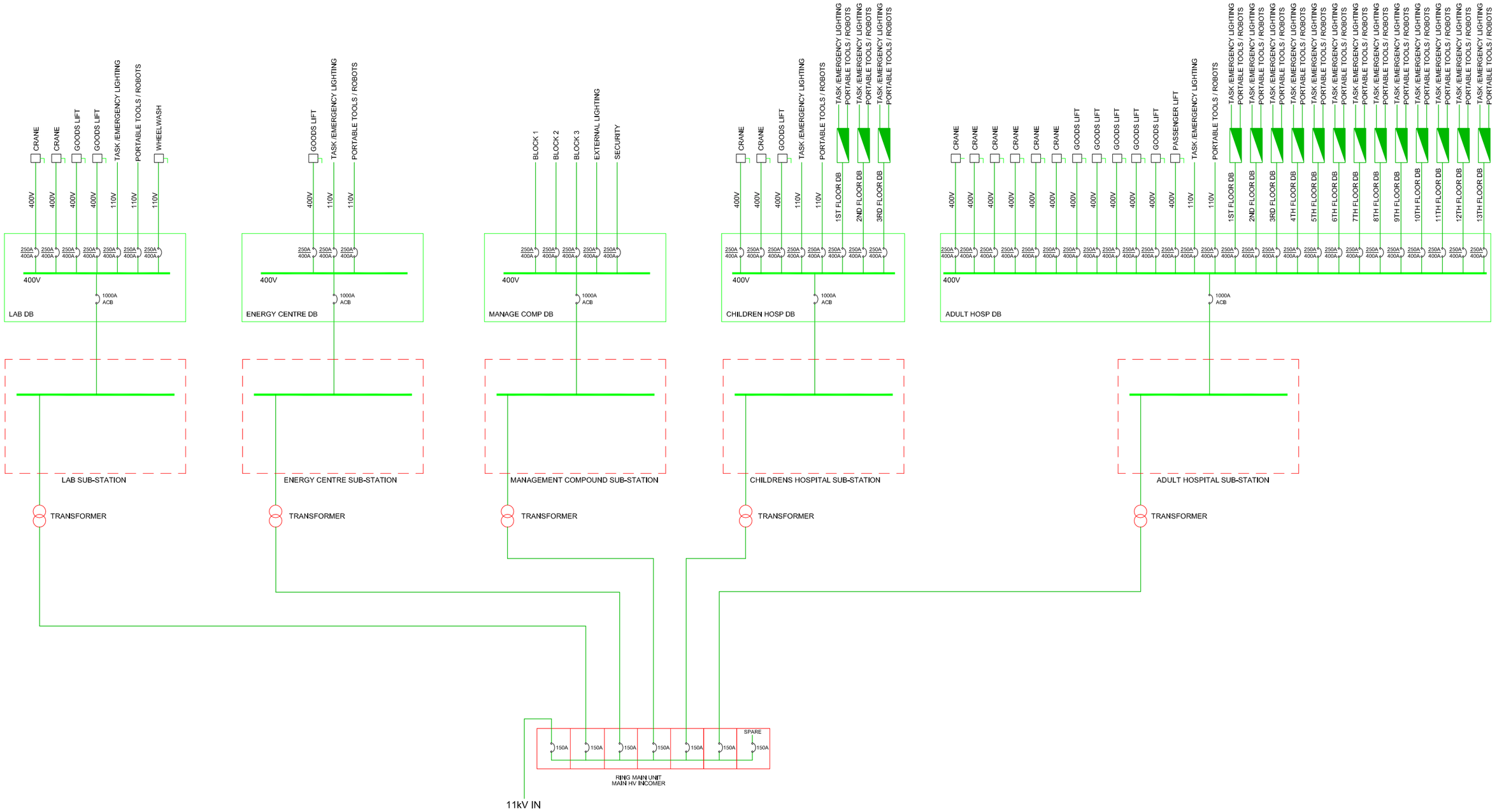

ITPD Reference:
VOLUME 10
Section 10.1.3

Electrical Schematic for Temporary Services
New South Glasgow Hospitals (NSGH) Project ITPD

Date: 8.9.09
Scale @A1: N.T.S
Drawing Number: TEMP-SERVICES-03
Revision: A

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NHS Greater Glasgow and Clyde

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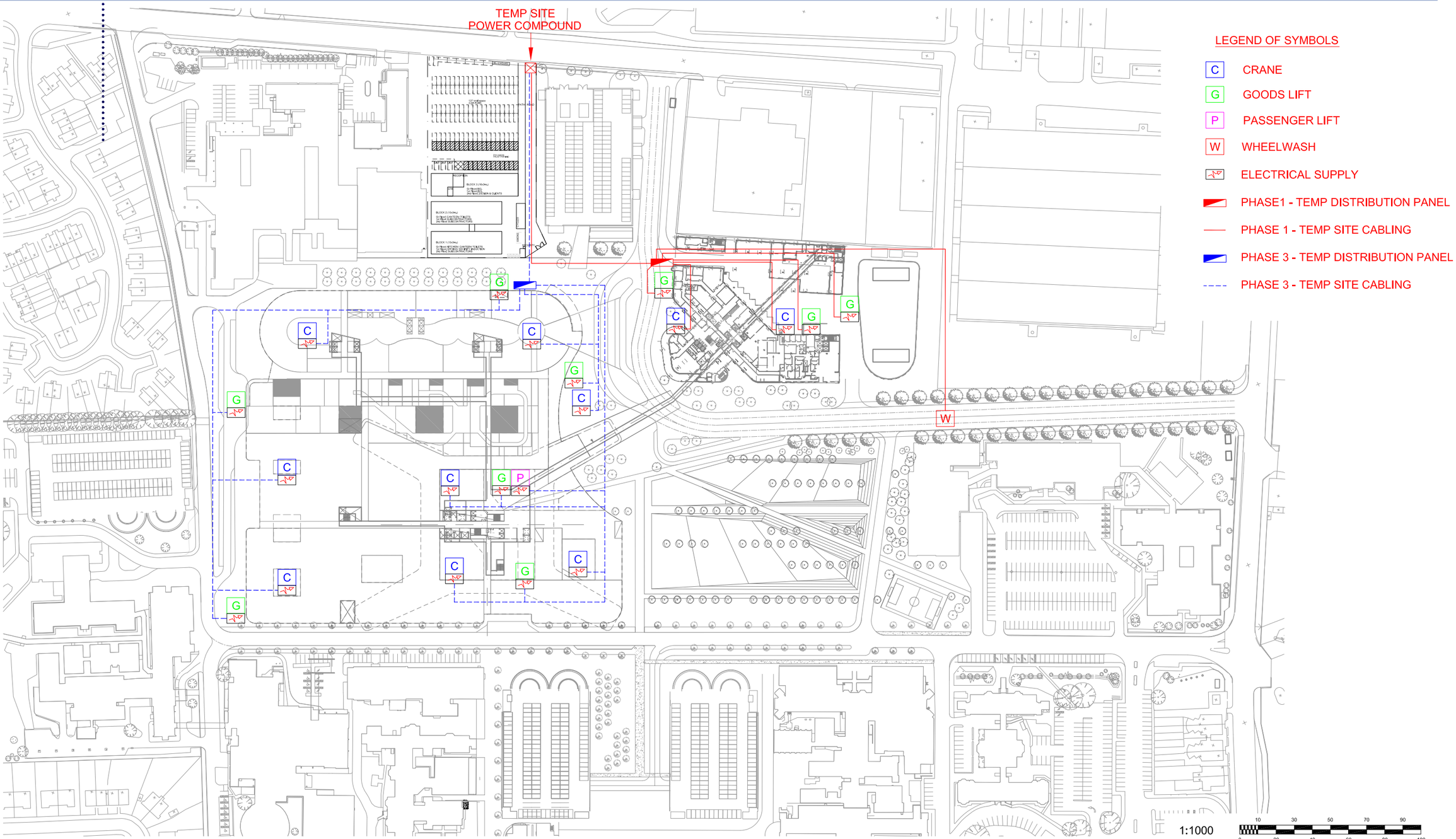

ITPD Reference:
VOLUME 10
Section 10.1.3

Site Temporary Services
New South Glasgow Hospitals (NSGH) Project ITPD

Date: 8.9.09
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Revision: A

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NHS Greater Glasgow and Clyde

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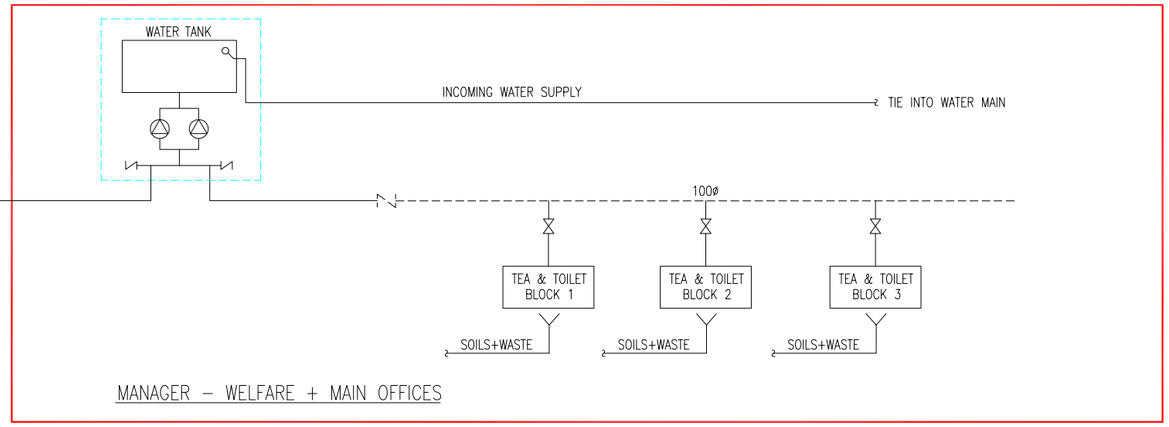
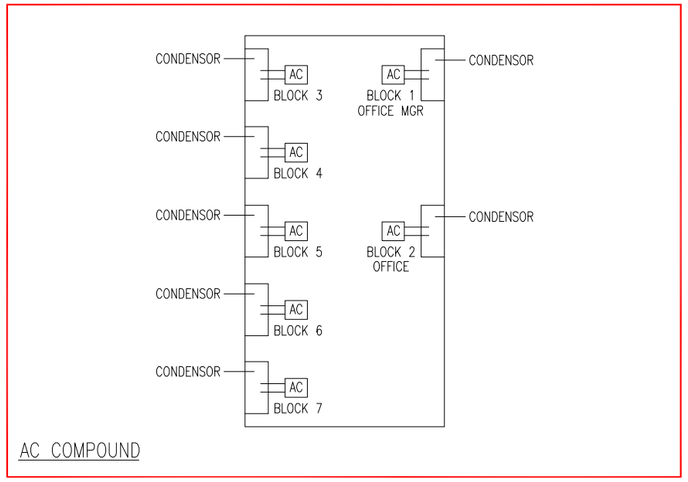
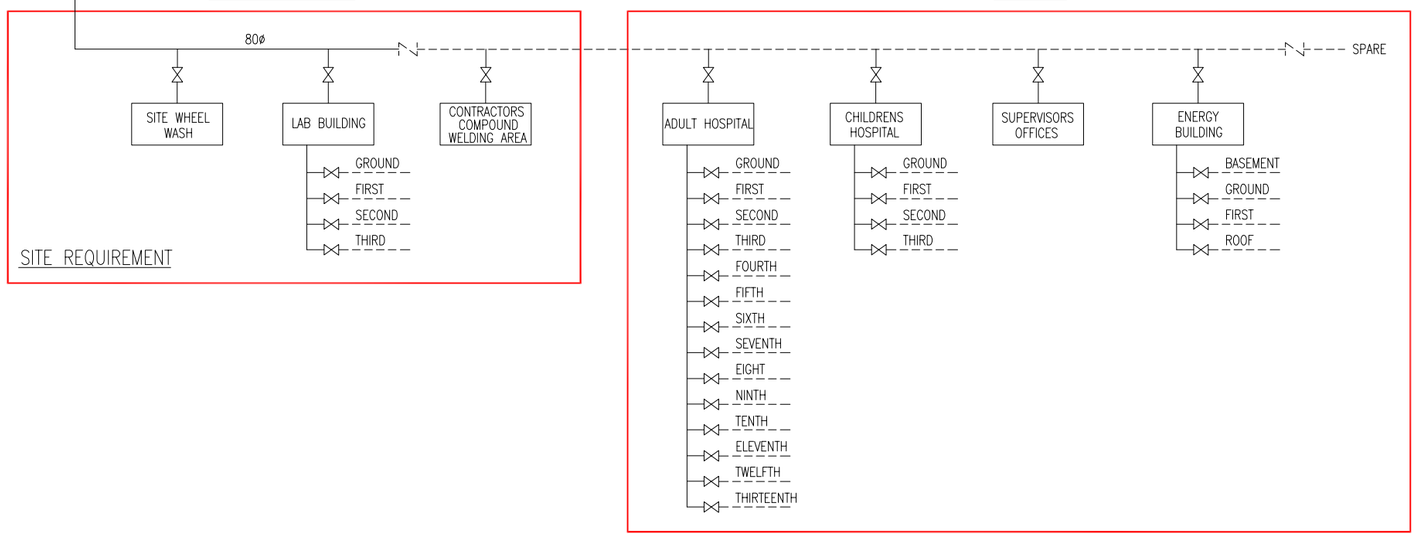
PHASE 1





PHASE 1 – LABS

PHASE 3



NOTE:
PHASE 1 – LABS & OFFICE COMPOUND
PHASE 2 – DESIGN
PHASE 3 – ADULT/CHILDREN HOSPITAL & ENERGY CENTRE

Brookfield

Traffic Management Plan

Submission Reference:

10.1.4. Traffic Management Plan

Submission Reference.

Introduction

The Traffic Management Strategy for this project is a key document in minimising the impact on the Hospital service delivery through eliminating the interface wherever possible between Hospital traffic and Site traffic, reducing the number of deliveries wherever practicable, including the staging of deliveries such that the volume of traffic is kept as even as possible, avoiding peaks, and controlling vehicular movements on the project.

Every year around 70 people are killed or injured by vehicles at work. This document provides practical guidance on the planning of these issues, the control measures that will be implemented to the New South Glasgow Hospitals (NSGH) project, and highlights further points for consideration with any necessary actions in the ongoing development of this plan for the Adult and Children°Øs hospitals through Stage 2 works.

Avoiding hazards and controlling the risks arising from the use of the vehicles in construction work is essential. The Health and Safety Executive (H.S.E) anticipate seeing traffic management plan that includes:

- Planning and managing both vehicles and pedestrian routes
- The elimination of reversing where possible
- Safe driving and working practices
- Protection of the public
- Adequate vision and lines of sight
- The provision of signs and barriers
- Adequate parking and off loading/storage areas

Further information on this topic is available from the Health and Safety Executive website on www.hse.gov.uk/pubns/indg199.pdf

Purpose of This Traffic Management Plan

The construction of the NSGH is due to take place over the period of six years. During this period there will be construction operatives and construction traffic travelling in and out of this site.

Purpose of this management plan is to set a summary of actions that will be undertaken to help minimise the impact of the construction traffic activities on the local area, notably the functioning of the existing hospital facility.

The controls associated with the construction operatives are addressed through sections 10.1.5 and 10.1.6 through this project execution plan.

It is not intended to be a Full Management Plan but more a framework style traffic management plan which demonstrates the Traffic Management principles that will be applied for travel issues for construction traffic during the demolition and building works phases on site.

The Traffic Management plan will make use of the construction method statement, to be prepared by Brookfield in line with its corporate policies.

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Existing Southern General Site and Building

Glasgow Southern General Hospital is in an easily accessible location and close to Junction 26 of the M8 and the current plot for the site is on landscape to biochemistry, surgical and ambulance depot and partially on construction scrub land which is part of the existing Southern General Hospital campus to be cleared prior to Brookfield commencing on site.

The plot for the site as indicated in figure 1 consists predominately of scrubland, administration buildings, and dining facilities that are to be cleared prior to Brookfield commencing work on site.

Further demolition is to be carried out to the building and ambulance station biochemistry and surgical ward to clear for landscaped areas.

The proposed development is on the site adjacent to the existing Southern General hospital. It will include managed car parking, secure covered cycle parking, pedestrian access, off-street set-down and pick-up facilities, ambulance parking and bus stop facilities

The site is situated to the east of Hardgate Road and north of Shieldhall Road. Currently the biochemistry, surgical and ambulance depot buildings are situated within the site. There are sections of the current site which is used for staff and visitor parking.

The site forms part of the wider Southern General Hospital campus which occupies much of the area east of Hardgate Road south of Govan Road. There are about 1703 off-street parking spaces within the campus area and these are heavily used by staff and visitors.

The adult acute hospital, new Children°Øs hospital, and laboratory facilities site is well located on the Southwest side of the city centre. It will be served by all transport modes and have access to local facilities and services.

The site is served by a network providing connections by bus, underground and rail services to facilities and services in the city centre.

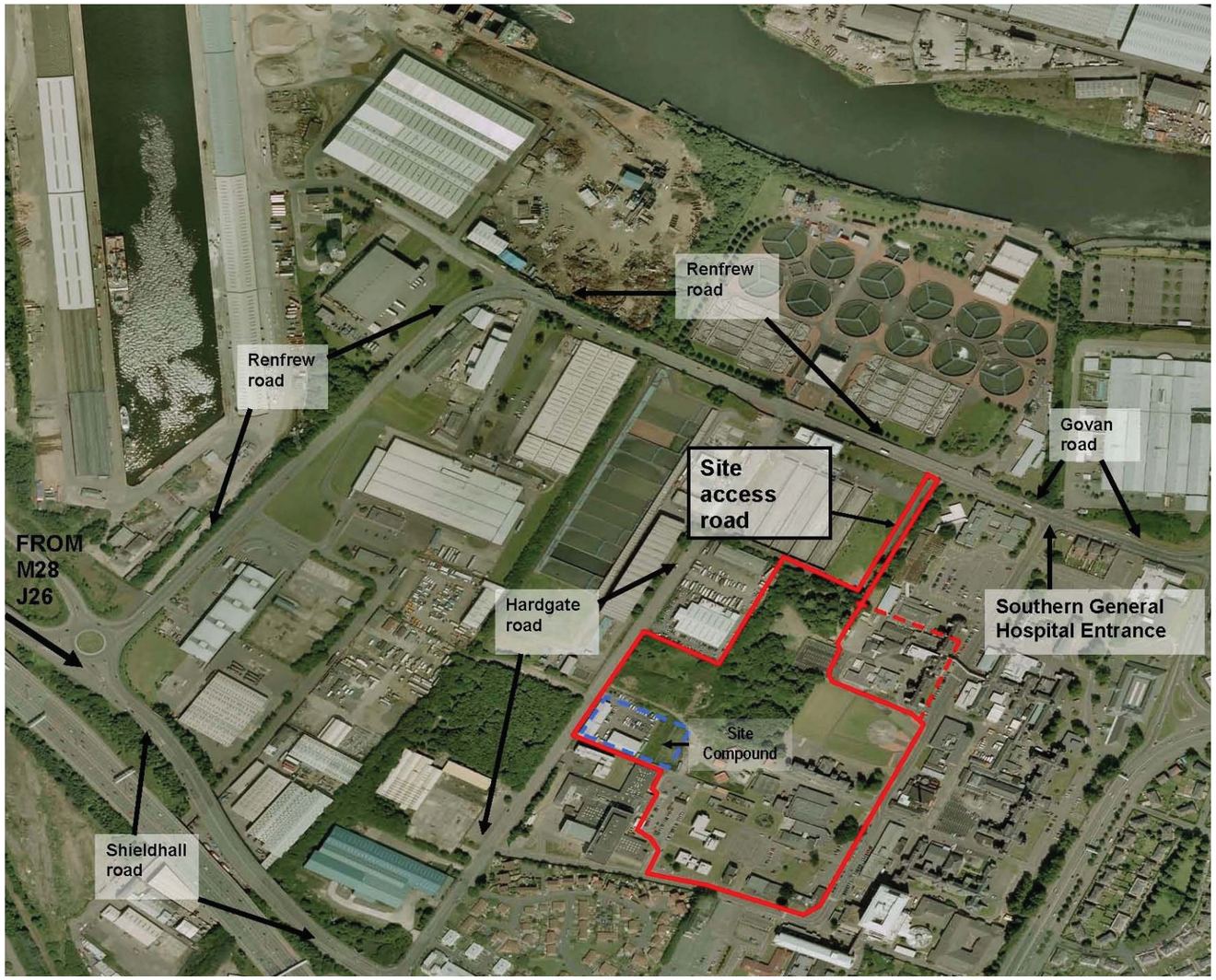

Figure 1

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Travel Patterns and Access to Site

The ease of accessibility of the Southern General hospital can be ascertained from the route was as in Figure 2.

Directions from the East (City Centre) and South (M77):

Following signs onto M8 eastbound continue on M8 to J25A/J26, at the roundabout 3RD exit onto Hillington Road A736, at the roundabout 3rd exit onto Renfrew road A8 where suitable signage will be in place to direct all construction vehicles to site.

Direction from the West (Airport):

Following signs to M8, continue on M8 westbound (city centre), leaving M8 at J25A/J26, at the roundabout 3rd exit onto Renfrew road A8 where suitable signage will be in place to direct all construction vehicles to site

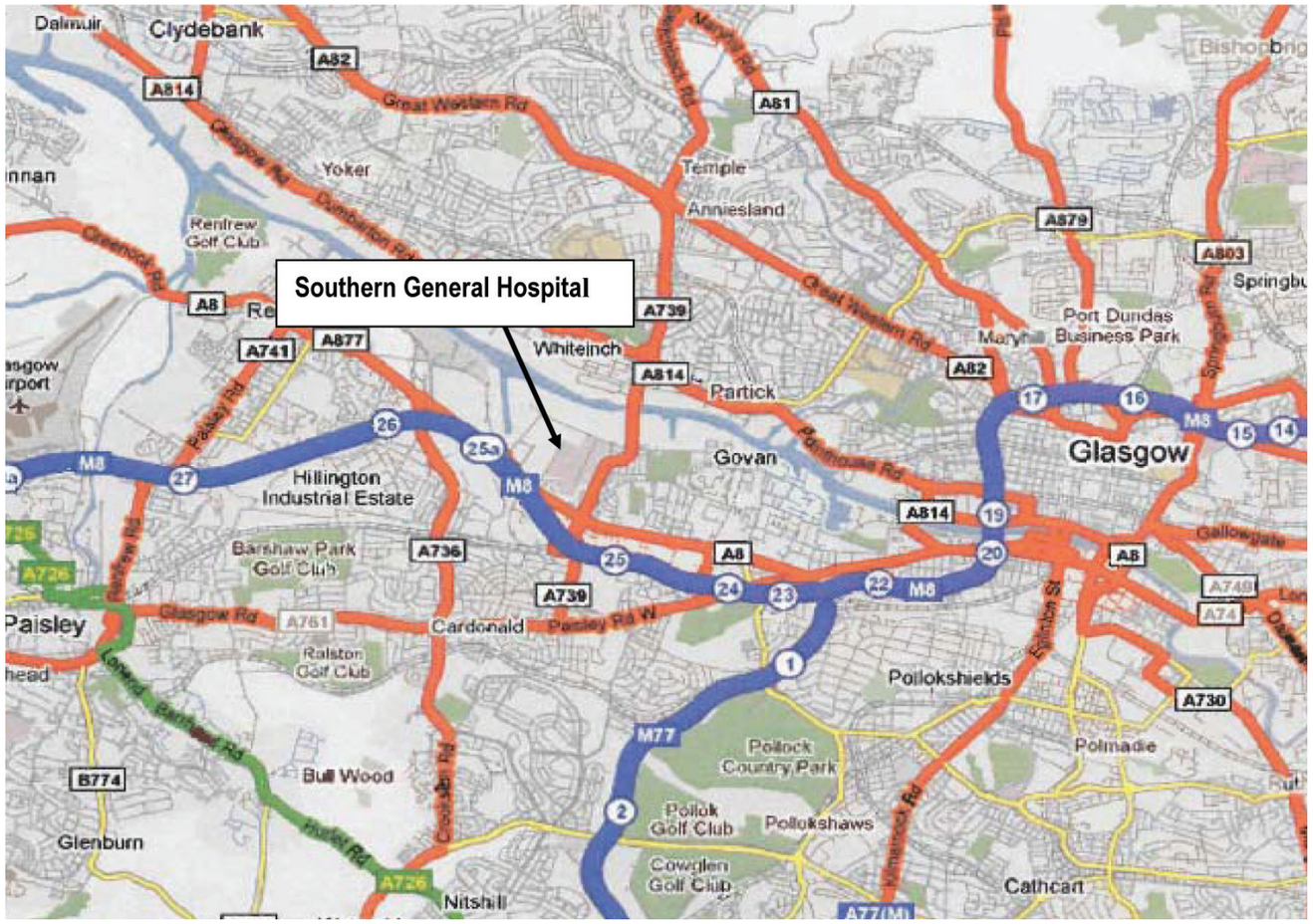

Figure 2 - Southern General Hospital Route Map

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Where practical the construction vehicles will access and leave the site via Renfrew road to the M8 (J26).

Figure 3 shows the proposed route that all site deliveries will be directed along to gain access to the construction works. They also highlight the routes to be taken when leaving the site along Renfrew Road that avoids site delivery vehicles trafficking through adjacent residential areas.

After taking the 3rd exit off the roundabout onto Hillington road A736, take the 3rd exit onto Renfrew road on the following roundabout from here follow Renfrew Road North and around to the East. The site entrance road is approximately 400m down to the right and will be signposted to direct site vehicles onto the site access road and into the site.

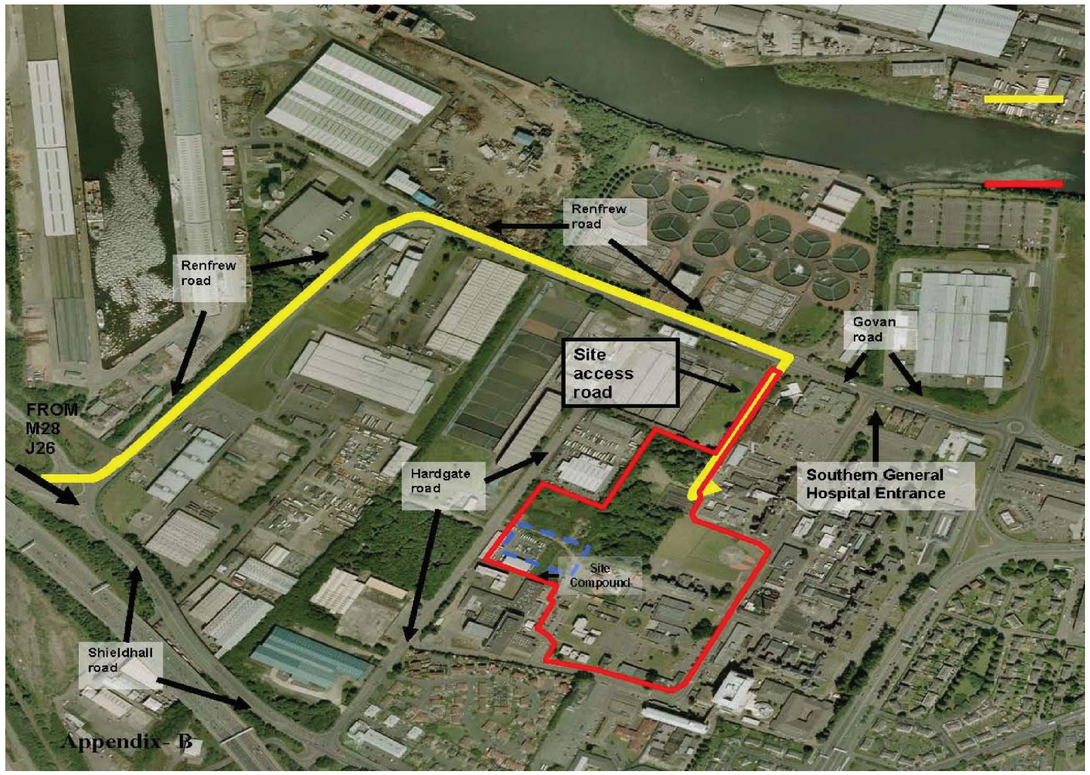

Figure 3 - Hospital delivery routes

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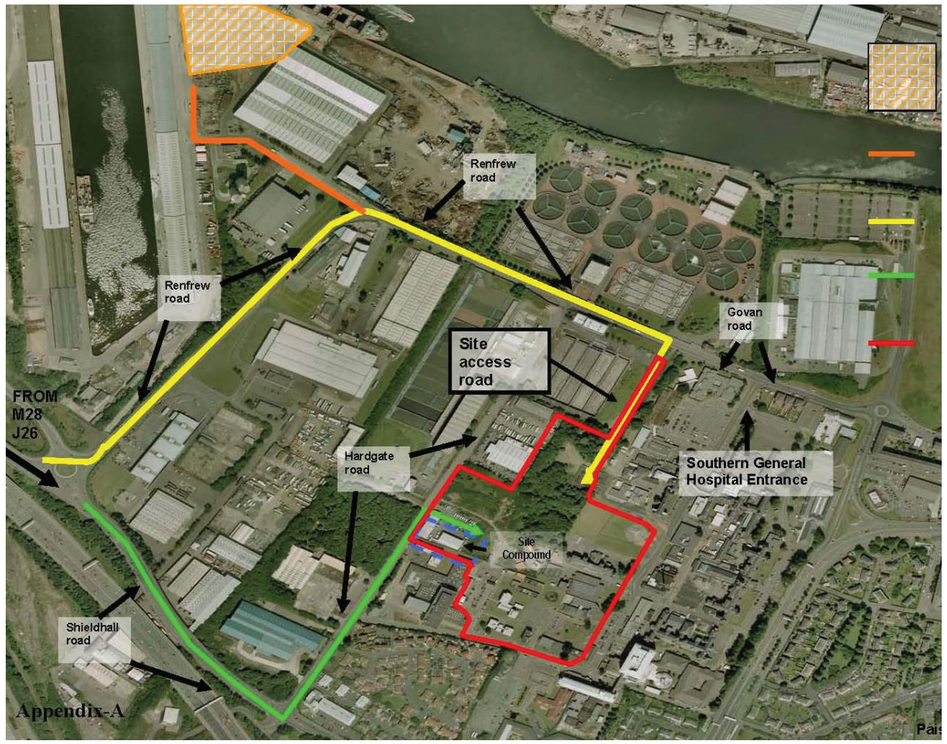
Figure 4 below shows Construction Traffic Routes shows all access routes that will be used to gain access to the construction site. It highlights the routes to be taken by both construction delivery vehicles and construction operatives when accessing and leaving the site.

Appropriate Highway Signage will be erected along these routes, to ensure all site construction traffic is directed along Renfrew road and site operatives down Shieldhall Road to Hardgate Road and site offices.

Overall traffic levels are unlikely to increase noticeably as a result of the development. The implementation of using Renfrew road for all construction vehicles, will avoid impact on local junctions. Using Renfrew road for all site delivery vehicles will avoid congestion with other vehicles attending the hospital using Govan road and Shieldhall road.

Brookfield together with their supply chain partner Dunnes have made arrangements through Bardon Concrete, for a concrete batching facility to be set up within the King George V docklands that will have its aggregates delivered directly from the Clyde.

This not only keeps the roads clear of concrete and aggregate delivery vehicles but the extremely close proximity of the Dock to the site access down Renfrew Road also mitigates the significant risk of traffic delays to concrete delivery vehicles at a critical points of the project.



Concrete batching plant

Concrete delivery route

Site deliveries

Site office and parking

Site boundary

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Site Administration

An integral part to the progress meetings held with all trade contractors is the delivery schedule pro-forma. All contractors are required to give details of proposed timing of material deliveries to the site; at this stage they will be given a specific gate number for delivery.

The Traffic Management Plan and the control measures therein are included within all trade contractor tender enquiries to ensure early understanding and acceptance/ compliance with the rules that will be enforced on this project.

Under no circumstance will construction vehicles be allowed to lay-up along roads local to or within the Hospital facility

Responsibility for Construction Traffic movement within the site is that of the Logistics Manager who together with the Security team will:

- Ensure that subcontractors and suppliers adhere to procedures set out in the Pre-site conditions by booking in deliveries giving the required notices.
- Set up and maintain way finding signage for delivery vehicles and parking
- Prevent unauthorised contractors parking and congestion of traffic. All personnel within the team will be in radio contact with each other and site management who in turn will have mobile and telephone contact with the subcontractors.
- Provide security at any access gates that are in constant use and left unlocked.
- Maintain roads in a clean and safe condition.

It is recognised that all deliveries are not notified to ourselves such deliveries are usually smaller, deliveries by third parties and on occasion simply not booked in. Deliveries from overseas often have difficulty in giving accurate Estimated Time for Arrival. The Logistics team will then manage the delivery situation with the priority to get the vehicle off the surrounding road network and within the site. Other options open to the team are to send deliveries away (persistent offenders) or temporarily send deliveries to a lorry park with a return time. There is some scope to hold vehicles along the site access road where Brookfield will have carried out the early road widening exercise. We reiterate that construction vehicles will not be allowed to lay-up along Hospital or adjacent Public roads.

Muck away lorries and concrete delivery lorries will not be booked in but the Logistics Team will be aware of these activities, which generally will occur early on in the Project when other deliveries are less numerous.

Management Plan Measures and Action Plan

The key measures for construction traffic controls will be:

- As far as is practical construction traffic will access the site via Renfrew road
- Direction signing will be provided to the site from the main routes
- As far as is practical, construction traffic will egress the site via Renfrew road
- Traffic Management Plans, providing routeing and other details will be sent out to suppliers and sub contractors
- Entrance and exit arrangements to the site will be designed to prevent vehicles turning right into Govan road
- Information to the suppliers will be passed on the location, availability and timing of delivery points, to avoid problems of uncoordinated traffic movements and deliveries.

The construction and hospital traffic route plan as above figure 4 demonstrates measures to segregate construction hospital traffic as far as is reasonably practicable and providing good traffic circulation through continuous and safe traffic movements.

The key measures to minimise the impact on the community and maintain good public relations will be:

- Emergency contact telephone numbers will be displayed at key locations around the site
- Utilise Renfrew road to access site maintaining Govan road and Shieldhall road for Hospital traffic movements

Monitoring and Review

The monitoring process are summarised in Table 1 below that set out the Action Plan for implementation of the Traffic Management Plan, linking measures to the monitoring and assessment processes.

There will be regular liaison meetings between the contractors, client and other interested parties as required.

Brookfield shall identify a member of staff to act as a traffic management coordinator to conduct the surveys, report back on results and suggest actions as necessary in liaison with the City Council.

There should be a check at an early meeting that the measures are in place are functioning and the first travel survey should be arranged.

Any contractor failing to use the designated haul route shall be liable for any damages caused. Every time a contractor is in violation of not using the designated haul route shall be considered a separate offence and will be reported to the Construction director

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Measures	Leading Implementers	Monitoring	Assessment	Contribution to objectives
Measures to encourage operatives to use public transport	Principal contractor to promote and council to provide the travel information	Simple travel survey as primary monitoring tool.	Travel survey at start of construction and then at six months interval.	Minimise parking onsite on hospital grounds and encourage use of public transport
Measures to manage construction vehicles	Principal contractor to define measures and advise suppliers and sub contractors	On site inspections, monitoring of vehicle movements.	Compliance with agreements	Appropriate routeing of vehicles. Good traffic circulation.
Measures to provide information about construction progress	Principal contractor and City Council	Feedback from public and other parties via site contacts, site meetings, by phone and complaints book.	Log of comments/complaints. Discussions at progress meetings.	Good public relations.
Measures to segregate the construction and hospital traffic as far as is reasonably practicable	Principal contractor to define measures and advice suppliers and sub contractors	Construction traffic logistics to be implemented	All sub contractor to be informed as per the agreements	Continuous and safe traffic movements
Measures to control impact on community	Principal contractor and City Council	Travel Survey (for site operatives) as primary monitoring tool	Emergency telephone numbers and Contacts. Log book for suggestions and complaints. Delivery schedule.	Good feedback and information for review on travel patterns.

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Central Control Register

	W/C :				
	Day	Delivery Details	Contractor	Contact No.	

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Car Parking

Submission Reference

10.1.5 Car Parking

Submission Response

Existing Car Parking Situation

NSG ACL Appendix W °© Travel Plan produced by JMP Consulting for The NHS GG&C Health Board (°∞the Board°±), gives extensive information on staff and visitor parking and modes of transport used by them. This document has been very useful and together with our own observations in and around the Hospital site we have a good understanding of the current situation.

On Site

Although 1384 no. formal parking spaces are provided within the grounds of the SGH this is recognised as being insufficient. Items 5.47 and 6.18 of the Travel Plan refer to vehicles parking on yellow line areas, verges and areas restricting pedestrian movement.

Off Site (adjacent to the Hospital)

Neither Hardgate Road nor Govan Road have parking restrictions and vehicles park on both sides of these roads using virtually every possible space. Travel Plan Tables 6.7 and 6.4 show low percentages of staff and visitors to the Hospital parking on streets, however these tables are the result of surveys in which 22% of staff did not specify where they parked.

From observations we consider that many of the vehicles parked in streets around the Hospital are associated with the Hospital itself. Other vehicles appear to belong to staff and visitors of local businesses and building contractors.

The conclusion is that the area is already close to saturation point for parking.

Quantification of personnel and private vehicles for the construction works

Personnel

From our Construction Programme and Staff Organisation Charts we are able to quantify numbers of personnel on site at any time throughout the contract duration.

Parking Spaces

Of the above personnel some will arrive to work by:

- Walking
- Cycling
- Public transport, bus, train
- Motorcycle
- Crew bus (provided by their employers)
- Being dropped off by partners and friends
- Car sharing with work colleagues

From experience on other similarly located urban sites (i.e. neither city centre nor rural) we have established the number of parking spaces required at various stages of the construction, as a percentage reduction factor applied to personnel numbers.

We enclose our labour and parking space requirement charts for the Laboratory Building Stage 1 and 2 only, and for combined Stage 1, 2 and 3. We have also presented this information in the form of graphs.

Our reduction percentage from personnel to car park spaces is 12% °© 13% lower than that calculated from Travel Plan Table 6.6 Hospital Staff mode of travel which shows 73% of Hospital staff bringing cars to work. This reduced percentage we suggest is the result of our anticipated use of crew buses and car sharing.

Key information taken from prediction tables / graphs

1. Our graph Stage 1-2-3 shows that our peak requirement for parking spaces is approximately 800.
2. On site car parking created for Stage 1 (165 No.) will suffice until December 2010.
3. On award of Stage 3 Construction in November 2010 we would need to provide increased parking by December 2010.
4. At December 2010 we would need to acquire 500 additional spaces to take us up to June / July 2012.
5. From July / July 2012 a further additional 200 spaces would be needed to completion.

During construction we will closely monitor the actual quantities of personnel and vehicles on site against our predictions and adjust our requirements if necessary.

For numbers of car parking spaces we have worked on relatively high percentage of cars to personnel and hope to reduce our requirements in the following ways;

- Encourage people to cycle to work. Providing covered secure cycle sheds at the location of welfare facilities.
- Allowing motorcycles to park in the most convenient parking areas. This will encourage this mode of transport which requires reduced area.
- Post details of bus routes and timetables.
- Earlier introduction of Public transport improvements. Some of the future improvements planned for Public Transport could be introduced earlier and our workforce benefit from additional / more frequent buses and more convenient stops. We will be approaching local bus service operators to pursue this possibility.

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- Car sharing. Our workforce often work in gangs who start and finish work at the same time and car sharing is not unusual. The extent of sharing will become apparent during the contract and is usually driven by their will to save on cost of fuel.
- Use of crew buses. Many of our subcontractors provide company transport, collecting operatives from strategic pick up points. This service saves the operative money and encourages regular attendance and loyalty.
- Consideration of the use of Shuttle Service. We may provide shuttle service from strategic locations such as the SPT Govan station to encourage use of the rail system.

Options to provide additional car parking spaces required

Car Park 2

If this car park was constructed at an early stage then it could provide enough parking for all our requirements other than for taller vehicles needing greater headroom.

(The current intended construction start date by others, would not deliver this car park in time to be of use to us).

Locate and secure parking within walking distance to site

Our preference would be to utilise an existing established parking facility or similar. This would avoid cost of construction and avoid requirement for Planning Approval either for constructing a car park or for change of use.

The King George V Docks would be reasonably suitable but we doubt for security reasons that this would be available. Other areas similar to this may be available and identified following further enquiries and a more thorough search.

An alternative to the above is to construct/form a car park on land not currently used, even with the requirement for planning permission and cost this could be a viable solution.

The Ogilvie Site off Hardgate Road is an ideal location for access to site and potentially available. Initial contact has been made with Ogilvie. Negotiations with Ogilvie could start prior to award of Stage 3 and planning approval obtained by this date also. Construction could provide car parking in time and of sufficient size to fulfil all requirements.

Car Park 2 or the Ogilvie site are best situated for access to our Site Accommodation and Welfare Facilities and bring operatives to a point away from the existing entrances.

Use of either of these locations increases traffic at the congested junction of Hardgate Road with Shieldhall Road. However, we believe further congestion could be avoided by staging site starting and finishing times with the shift times of Hospital staff.

We anticipate having dialogue with Mr Blair Greenock of Glasgow City Council on the subject of car park locations and site working hours to the mutual benefit of all parties involved.

The vacant site at Linhouse Road has been identified by ourselves as a further possibility although ownership is not established, it will require planning permission, hard-standings to be formed and is less secure than the Ogilvie site. Neither is the location as convenient.

Parking facility beyond walking distance from site

Once again a ready made facility is preferable although for the quantities we require, apparently not readily available. The facility of a Park and Ride is also difficult to implement. Difficulties involve importing over 1000 men from a nearby car park in a time period spanning 2 hours in the mornings with high levels of traffic, reducing through the day with another peak period again in the late afternoon.

The implementation and management is feasible, although expensive, and made more difficult to police due to the amount of unrestricted parking available on streets adjacent to the Hospital, which our workforce would use by arriving early.

If other alternatives are not available, then this method could be made to work with high levels of security and transport.

Car parking is one of the most challenging aspects of the logistics scheme and is continuing to receive attention in the development of a final proposal.

One difficulty to overcome is the opportunity to negotiate for acquisition of land or facilities, for one year hence and without having a firm contractual commitment in place.

We are however satisfied that a practicable solution to workforce parking can be reached without negatively impacting on the existing environment.

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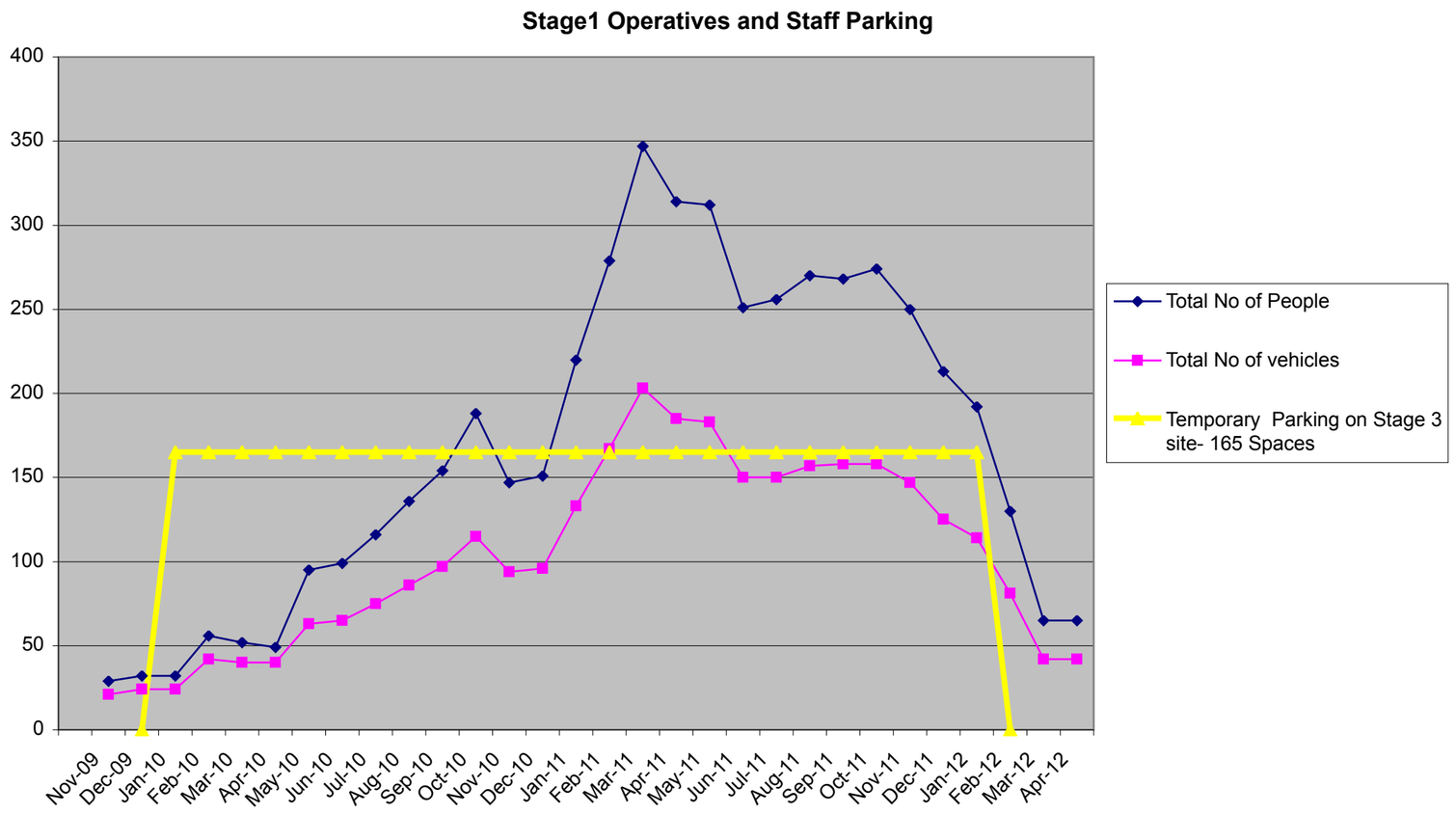

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Stage 1- Operatives and staff Parking

Date- Time	Total No of People	Total No of Vehicles
Nov-09	29	21
Dec-09	32	24
Jan-10	32	24
Feb-10	56	42
Mar-10	52	40
Apr-10	49	40
May-10	95	93
Jun-10	99	95
Jul-10	116	105
Aug-10	136	116
Sep-10	154	127
Oct-10	188	145
Nov-10	147	124
Dec-10	151	126
Jan-11	220	163

Date- Time	Total No of People	Total No of Vehicles
Feb-11	279	197
Mar-11	347	233
Apr-11	314	115
May-11	312	113
Jun-11	251	180
Jul-11	256	180
Aug-11	270	187
Sep-11	268	188
Oct-11	274	188
Nov-11	250	177
Dec-11	213	155
Jan-12	192	144
Feb-12	130	81
Mar-12	65	42
Apr-12	65	42

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Stage 1-2-3 Operatives and staff parking

Date- Time	Total No of vehicles	Total No of People
Nov-09	21	29
Dec-09	24	32
Jan-10	24	32
Feb-10	42	56
Mar-10	40	52
Apr-10	40	49
May-10	63	95
Jun-10	65	99
Jul-10	75	116
Aug-10	86	136
Sep-10	97	154
Oct-10	115	188
Nov-10	157	218
Dec-10	176	252
Jan-11	266	394
Feb-11	325	501
Mar-11	391	622
Apr-11	420	677
May-11	440	711
Jun-11	443	707
Jul-11	443	710
Aug-11	444	700
Sep-11	456	733
Oct-11	467	751
Nov-11	494	799
Dec-11	481	800
Jan-12	529	867
Feb-12	619	1028
Mar-12	620	1030
Apr-12	629	1056
May-12	668	1125
Jun-12	709	1200
Jul-12	754	1284
Aug-12	755	1280
Sep-12	755	1295
Oct-12	782	1333
Nov-12	766	1350
Dec-12	807	1379
Jan-13	857	1472
Feb-13	865	1489
Mar-13	819	1490
Apr-13	825	1419
May-13	742	1272
Jun-13	675	1152
Jul-13	648	1103
Aug-13	587	1001
Sep-13	532	899
Oct-13	473	801
Nov-13	413	690
Dec-13	355	585
Jan-14	315	512
Feb-14	245	383
Mar-14	179	261
Apr-14	99	149
May-14	62	81
Jun-14	54	67

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Glasgow Hospital- Laboratory and Acute/Children's

Date- Time	Month Total	BCL Staff Acute/Childs	BCL Staff Lab	54% Reduction of (a)	Subcontracter Staff	66% of Lab Subcontracters	NSGH Board/ Staff	Total No of People	Total No of vehicles
	(a)	(b)	(e)	(d)	c	(f)	(g)	a+b+c+g+e+f	g+b+c+d+e+f
Nov-09	18	7	7	10		4		29	21
Dec-09	18	8	8	10		6		32	24
Jan-10	18	8	8	10		6		32	24
Feb-10	30	16	16	16		10		56	42
Mar-10	26	16	16	14		10		52	40
Apr-10	23	16	16	14		10		49	40
May-10	69	16	16	37		10	30	95	63
Jun-10	73	16	16	39		10	30	99	65
Jul-10	90	16	16	49		10	30	116	75
Aug-10	109	17	17	59		10	30	136	86
Sep-10	124	18	18	67		12	30	154	97
Oct-10	158	18	18	85		12	30	188	115
Nov-10	132	15	19	71	10	12	30	218	157
Dec-10	166	15	19	90	10	12	30	252	176
Jan-11	278	34	20	150	20	14	30	394	266
Feb-11	382	34	21	206	20	14	30	501	325
Mar-11	503	34	21	272	20	14	30	622	391
Apr-11	557	35	21	300	20	14	30	677	420
May-11	590	38	19	319	20	14	30	711	440
Jun-11	573	43	19	309	28	10	30	707	443
Jul-11	580	45	15	313	30	10	30	710	443
Aug-11	479	45	15	259	30	10	30	609	327
Sep-11	602	45	16	325	30	10	30	733	456
Oct-11	617	48	16	333	30	10	30	751	467
Nov-11	663	48	16	358	32	10	30	799	494

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Brookfield

Date- Time	Month Total	BCL Staff Acute/Childs	BCL Staff Lab	54% Reduction of (a)	Subcontracter Staff	66% of Lab Subcontracters	NSGH Board/ Staff	Total No of People	Total No of vehicles
Dec-11	640	49	14	346	32	10	30	775	481
Jan-12	734	48	13	396	32	10	30	867	529
Feb-12	889	51	13	480	35		30	1028	619
Mar-12	892	56	10	482	36		30	1030	620
Apr-12	927	59	10	500	40		30	1056	629
May-12	994	61		537	40		30	1125	668
Jun-12	1067	63		576	40		30	1200	709
Jul-12	1153	61		623	40		30	1284	754
Aug-12	1034	63		558	40		30	1167	691
Sep-12	1058	64		571	40		30	1192	705
Oct-12	1198	65		647	40		30	1333	782
Nov-12	1168	65		631	40		30	1303	766
Dec-12	1244	65		672	40		30	1379	807
Jan-13	1337	65		722	40		30	1472	857
Feb-13	1356	63		732	40		30	1489	865
Mar-13	1273	62		687	40		30	1405	819
Apr-13	1292	57		698	40		30	1419	825
May-13	1152	54		622	36		30	1272	742
Jun-13	1037	50		560	35		30	1152	675
Jul-13	988	50		533	35		30	1103	648
Aug-13	899	44		485	28		30	1001	587
Sep-13	798	43		431	28		30	899	532
Oct-13	713	38		385	20		30	801	473
Nov-13	602	38		325	20		30	690	413
Dec-13	500	35		270	20		30	585	355
Jan-14	427	35		230	20		30	512	315

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Brookfield

Date- Time	Month Total	BCL Staff Acute/Childs	BCL Staff Lab	54% Reduction of (a)	Subcontracter Staff	66% of Lab Subcontracters	NSGH Board/ Staff	Total No of People	Total No of vehicles
Feb-14	299	34		161	20		30	383	245
Mar-14	178	33		96	20		30	261	179
Apr-14	109	30		59	10			149	99
May-14	41	30		22	10			81	62
Jun-14	27	30		14	10			67	54

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Glasgow Hospital: Laboratory

Date- Time	Month Total	BCL Staff	54% Reduction of (a)	Subcontracter Staff	NSGH Board/ Staff	Total No of People	Total No of Vehicles	Total No of Vehicles
	(a)	(b)	(d)	c	(e)	a+b+c	b+c+d	b+c+d+e
Nov-09	18	7	10	4		29	21	
Dec-09	18	8	10	6		32	24	
Jan-10	18	8	10	6		32	24	
Feb-10	30	16	16	10		56	42	
Mar-10	26	16	14	10		52	40	
Apr-10	23	16	14	10		49	40	
May-10	69	16	37	10	30	95	63	93
Jun-10	73	16	39	10	30	99	65	95
Jul-10	90	16	49	10	30	116	75	105
Aug-10	109	17	59	10	30	136	86	116
Sep-10	124	18	67	12	30	154	97	127
Oct-10	158	18	85	12	30	188	115	145
Nov-10	116	19	63	12	30	147	94	124
Dec-10	120	19	65	12	30	151	96	126
Jan-11	188	20	101	12	30	220	133	163
Feb-11	244	21	132	14	30	279	167	197
Mar-11	312	21	168	14	30	347	203	233
Apr-11	279	21	150	14	30	314	185	115
May-11	279	19	150	14	30	312	183	113
Jun-11	218	19	117	14	30	251	150	180
Jul-11	231	15	125	10	30	256	150	180

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Date- Time	Month Total	BCL Staff	54% Reduction of (a)	Subcontracter Staff	NSGH Board/ Staff	Total No of People	Total No of Vehicles	Total No of Vehicles
Aug-11	245	15	132	10	30	270	157	187
Sep-11	242	16	132	10	30	268	158	188
Oct-11	248	16	132	10	30	274	158	188
Nov-11	224	16	121	10	30	250	147	177
Dec-11	189	14	101	10	30	213	125	155
Jan-12	169	13	91	10	30	192	114	144
Feb-12	107	13	58	10		130	81	
Mar-12	49	10	26	6		65	42	
Apr-12	49	10	26	6		65	42	

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Date- Time	Total No of People	Total No of vehicles	Temporary Parking on Stage 3 site- 165 Spaces
Nov-09	29	21	
Dec-09	32	24	0
Jan-10	32	24	165
Feb-10	56	42	165
Mar-10	52	40	165
Apr-10	49	40	165
May-10	95	63	165
Jun-10	99	65	165
Jul-10	116	75	165
Aug-10	136	86	165
Sep-10	154	97	165
Oct-10	188	115	165
Nov-10	147	94	165
Dec-10	151	96	165
Jan-11	220	133	165
Feb-11	279	167	165
Mar-11	347	203	165
Apr-11	314	185	165
May-11	312	183	165
Jun-11	251	150	165
Jul-11	256	150	165
Aug-11	270	157	165
Sep-11	268	158	165
Oct-11	274	158	165
Nov-11	250	147	165
Dec-11	213	125	165
Jan-12	192	114	165
Feb-12	130	81	0
Mar-12	65	42	
Apr-12	65	42	

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Stage 1-2-3 Operatives and staff parking

Date- Time	Total No of vehicles	Total No of People	
Nov-09	21	29	
Dec-09	24	32	
Jan-10	24	32	
Feb-10	42	56	
Mar-10	40	52	**Laboratory Only: Stage 1**
Apr-10	40	49	
May-10	63	95	
Jun-10	65	99	
Jul-10	75	116	
Aug-10	86	136	
Sep-10	97	154	
Oct-10	115	188	**Laboratory + BCL +Client: Stage 1 & 2**
Nov-10	157	218	
Dec-10	176	252	
Jan-11	266	394	
Feb-11	325	501	
Mar-11	391	622	
Apr-11	420	677	
May-11	440	711	
Jun-11	443	707	
Jul-11	443	710	
Aug-11	444	700	
Sep-11	456	733	
Oct-11	467	751	
Nov-11	494	799	
Dec-11	481	800	
Jan-12	529	867	**Laboratory Handover**
Feb-12	619	1028	
Mar-12	620	1030	**Adult and Child- Stage 3**
Apr-12	629	1056	
May-12	668	1125	
Jun-12	709	1200	
Jul-12	754	1284	
Aug-12	755	1280	
Sep-12	755	1295	
Oct-12	782	1333	
Nov-12	766	1350	
Dec-12	807	1379	
Jan-13	857	1472	
Feb-13	865	1489	
Mar-13	819	1490	
Apr-13	825	1419	
May-13	742	1272	
Jun-13	675	1152	
Jul-13	648	1103	
Aug-13	587	1001	
Sep-13	532	899	
Oct-13	473	801	
Nov-13	413	690	
Dec-13	355	585	
Jan-14	315	512	
Feb-14	245	383	
Mar-14	179	261	**Relocate for Completion of Childrens Park**
Apr-14	99	149	
May-14	62	81	
Jun-14	54	67	

Staff Movement

Submission Reference:

Section: 10.1.6 Staff Movement

Submission Response.

Brookfield are aware of the potential impact our operatives could have on the functionality and general appearance of the Hospital if planning of their movement and controls are not in place.

Our objective is to reduce the interface to a minimum between our workforce and hospital, hospital staff, patients and visitors. With an anticipated peak of approximately 1300 operatives on site we will ensure that the hospital maintains its identify and is not given the appearance of a building site.

Impact will be minimised by the following measures:

Arriving and leaving the site

Our site accommodation and welfare facilities will be accessed from Hardgate Road only.

There will be one point of pedestrian entry to the site which will be via turnstiles off the welfare compound, ensuring that our operatives always arrive at and leave from, this location. (See drawing BE-AK-LOG-102 in section 10.1.2)

For the first 12 months of the project car parking will be provided for our operatives on site, again accessed off the Hardgate Road.

Car parking after this period is yet to be confirmed and operative movement from any car park will depend upon its location and whether or not park and ride is introduced.

Public transport

We will actively encourage our operatives to use public transport to reduce traffic and car parking requirements. This will mean that our operatives will be sharing busses and bus stops with Hospital users and making their way from bus stops to Hardgate Road and visa versa on their return journey.

We will be discussing with local responsible authority, the possibility of relocating and adding additional bus stops. There are existing bus stops on Langlands Drive reasonably close to Hardgate Road. The unavoidable interface on public transport is a matter of behaviour of our operatives to be managed and controlled by our site rules and induction. (See Nuisance Controls 10.1.3.3)

Similarly there will be a number of personal walking and cycling to work and making their way to Hardgate Road through the Hospital campus.

Working on site

Once through the turnstiles our operatives will be confined to within the hoarding, with no gates opening out to the Hospital grounds.

Our site rules prohibit operatives from using the Hospital facilities and this is stressed at their induction.

Our site facilities are fully contained such that operatives have all their requirements without the need to leave the site or the compound at break times or during working hours.

Summary

Routes for operatives will be designated, avoiding Hospital grounds where possible. Where this is unavoidable, for example, making their way to public transport terminals they will be instructed which routes to take.

Site induction and site rules are very much focussed on contract specific issues. Inconsiderate and poor behaviour will not be tolerated and disciplinary action will be taken against offenders.

Movement of staff and operatives from car parking facilities is yet to be finalised but will be developed within the first 12 months of contract award, before the first offsite parking facility is required.

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Site Security

Submission Reference:

10.1.7. Site Security

Submission Response:

Site security services will be provided by a specialist security company working under a subcontract arrangement.

The benefits this brings are:

- Experience in security procedures and equipment.
- Recruitment and supply of personnel registered with the Security Industry Training Organisation (SITO).
- Flexibility to cover shift working and holiday cover.
- Although part of our Logistics Team and working within that team, security personnel will have distinguishable uniforms and keep their identity as Security staff.

Some aspects of security are a balance between the cost of provision against the risk of theft and vandalism.

There are many options available, some very sophisticated and very expensive. We need to provide what we believe is necessary but be ready to react to situations or events as they occur.

Selection of Subcontractor

The security subcontract package will be procured locally. A local company will have a greater knowledge of the area and ideally will have the support of the local police. Local sourcing is considered to be an opportunity for Community Engagement and we will investigate available options before sending out Invitations to Tender.

Based on our logistics drawings, identifying the number of gates to be manned, our knowledge of parking restrictions and our experience of site security, we have drawn up a schedule of duties and levels of security personnel anticipated for pricing purposes.

Tender returns for this one aspect of security service will effectively be in the form of hourly rates.

In addition to the requirement for a prescribed level of personnel with specified duties, our Invitation to Tender will also invite proposals for specification and costs for access control systems

From our initial prequalification procedure, we will establish what expertise individual organisations can offer, in particular the Personnel Access Control system options and costs.

This will be verified in the evaluation of tender returns.

Final selection of Subcontractor would only be made after interviews and thorough review of references and past performance on previous contracts.

Security Plan for NSGH

There are three main functions of our security.

- Pedestrian Access Control.
- Logistics Support during site working hours
- Out of hours security provision.

1. Pedestrian Access Control

A turnstile restricted access will be provided as the sole means of pedestrian entry to site.

All staff and operatives, before being allowed on site, will attend a site specific induction where they will be made aware of site facilities available, site procedures and site rules.

Following successful site inductions all personnel will complete a form with their details (wherever possible these forms are sent in advance by their employers), their photographs will be taken and a °Æpass°Ø issued with their photograph on it and which will activate the turnstile once they have undergone a medical.

Security will not carry out the induction or medicals but will be responsible for holding personnel data, issuing and activating passes.

Actual selection of the Access System will be through dialogue with tenderers, but will operate on similar principles as above.

The system will provide, at anytime, a download of who is on site, this data is required in the event of a site evacuation, enabling us to account for everyone who has entered. It also allows us to establish that everyone has cleared site at the end of the working day and records numbers of men on site by trade.

Feedback obtained from the system is valuable in monitoring operative levels against those predicted and used in our car parking requirement calculations.

When individuals leave or are dismissed from site the pass can be cancelled and will not function.

All details of personnel is held subject to and in compliance with current legislation, including the Data Protection Act.

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2. During Site Working Hours

The point of pedestrian access control is manned at all times while personnel are on site. Accompanied visitors may be signed in by certain staff, where passes have been mislaid or forgotten, temporary passes can be issued after verification (a limited number of times per individual) and to assist with any exceptional problems.

Gatemen

As noted in our Management of Logistics, all gates will be manned by Security Guards who will assist drivers of vehicles, directing them to their unloading / loading point and issuing to them °∞site rules for drivers°±. Guards will also prevent entry or exit through vehicle gates by personnel and unauthorised vehicle entry.

Accommodation Compound

Preventing unauthorised parking, assisting visitors and general surveillance of compound area.

A relief guard for cover during comfort breaks also provides a resource to attend to any reports of nuisance caused by our operatives, any bad practices that occurs, such as unauthorised parking, and for general observations outside our hoardings.

3. Out of Hours Security

Our first line of defence will be a secure hoarding / fence and security lighting. However this alone will not prevent entry by those intent on breaking in.

The site will be manned at all times, including overnight, weekends and public holidays. We will not rely solely on visiting patrols, cameras or intruder detection. It is during out of hours periods when break-ins occur or children attempt entry.

Guards will provide security of the Accommodation Block and site at weekends, nights and public holidays. The use of a certified dog handler guard is anticipated and the night guard resource will be increased as the building progresses towards completion, particularly once building finishes are commenced, and as specific events dictate.

These guards will all be encouraged to deal with minor events but will have lists of contact numbers of Brookfield staff and subcontractors.

Their remit is to look out for loose tarpaulins, unsecured doors, plant left running, and other source of nuisance and deal with it.

Reviews

The Logistics Manager will review requirements during the progress of the works against the plan, meet with the security manager to discuss reports and incidents and effect changes as construction moves between stages. He will also continuously monitor performance of the security provider.

Security Guards can become complacent or too familiar with some operatives and changing guards from one site to another is an option available to mitigate this.

Training in First Aid, Fire Warden and Traffic Management will be given.

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Construction Health & Safety Plan

Submission Reference 10.1.8 construction Health & Safety Plan

Submission Response

Construction Phase Environment, Health & Safety Plan

Approved by:	Title:	Signature:
Ross Ballingall	Project Director	
Alan Keeley	Construction Manager	
Jim Senior	Senior EHS Manager	

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Appendices

1. Fire and Emergency Plan
2. First Aid Emergency Response Plan
3. Logistic / Traffic Management Plan
4. Lifting Operations Plan
5. Accident Reporting Procedure
6. Project Organisation Chart
7. Project Environmental Management Plan
8. Temporary Works Procedure.
9. Construction Risk Register
10. Submittal Flowchart

REVISION RECORD

Revision	Date	Amendment
	12/08/2009	Tender

CIRCULATION

Copy No.	Issued to:	Location:
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INTRODUCTION

1.1 Project Description

Brookfield Construction (UK) Ltd (BCL) are bidding to be selected by NHS Greater Glasgow & Clyde (NHSGG&C) to design and construct the New South Glasgow Hospitals (NSGH) on the site of the existing Southern General Hospital Campus in Glasgow, Scotland.

This Construction Phase (Health and Safety) Plan describes the specific arrangements which shall be implemented during the duration of the project to provide a place of work that is safe and without risk to the health, safety and welfare of all its employees, independent contractors, members of associated companies and the general public, so far as it is reasonably practicable.

New South Glasgow Hospitals encompasses the construction of an integrated adult acute and children's hospital, laboratory facilities, associated support areas and other site facilities and infrastructure.

The site is part of the overall existing Southern General Hospital Campus that is bounded by Govan Road to the north, Hardgate Road to the west, the A739 to the east and Shieldhall Road to the south. Local landmarks in close proximity include junction 25 on the M8 motorway to the south, and Scottish Water Shieldhall Waste Water Treatment Works to the west

The Project involves in the order of approx [165,000m2] of new hospital facilities together with the Laboratories [24,000m2] for the Board's services comprising:

- a 1,109 bed adult hospital
- a 240 bed children's hospital
- Laboratory facilities
- Support accommodation, including energy facilities management structures and infrastructure.

The Adult Acute and Children's Hospital buildings are situated to the south end of the existing campus adjacent and East of Maternity with The Laboratories building is a 4/5 storey concrete structure located to the North West of the

The Adult Acute consists of a 12 storey concrete ward block tower over entrance area and, 3 storey podium. The 4/5 storey Children's Hospital is located to the West of the podium with the uppermost level set back from the general facade line.

The existing hospital will be fully operational during construction of the new buildings, with the new Laboratories being targeted for completion and handover in 2012 that allows partial decanting of the existing buildings releasing areas to finalise construction of the road and drainage infrastructure to the new adult acute and children's hospitals.

I.2 Project Team

Role	Organisation	Contact Person	Location	Telephone	Email
Client	NHSGG&C	Jim McFadden			
CDM Co-ordinator	Brookfield Constructions (UK) Ltd	Jim Senior	40 Berkeley Square, London, W1J 5AL		
Lead Designer					
Principal Contractor	Brookfield Constructions	Ross Ballingall	69 Buchanan		
	(UK) Ltd		Street, Glasgow, G1 3HL		
Designer					
Designer					
Consultant					
Consultant					

1.3 Existing Information

The following existing information is available relating to the site:

Information	Location	Contact Person	Telephone	Email
Health & Safety File				
As built drawings				
O & M Manuals				
Asbestos Register	BIW (Type 2) survey			
Ground Surveys				
Planning Consents	BIW			
Local Authority Agreements	BIW			

The following items concerning the existing site are identified as potential hazards

HAZARD	NOTES
Working within the existing hospital facility	Ensuring that the operation of the existing hospital facilities is in no way compromised.
Existing buried live services	Survey site and collate all available data. Develop and implement procedure to mitigate known hazards prior to the commencement of any excavations (permit to dig).
Presence of asbestos	Existing steam ducts may contain asbestos and a type 3 survey will be required prior to removal. Existing buildings have been subjected to a type 2 survey to identify any potential asbestos containing materials. A type 3 survey and controlled removal will be required as part of any demolition activities.
Demolition of existing buildings and associated services / fuel lines / fuel tanks, and decontamination of existing ground.	Prior to the commencement of any works, documentation must be obtained from the Hospital board confirming that any health hazards have been neutralised or identified/documented.
Following a review of the surrounding area no significant hazards have been identified with regards to the existing environment	None Applicable

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2 Project Environmental Health and Safety Policies

It is the policy of BROOKFIELD that this project will implement the requirements of the UK environmental, health and safety policies.

These policies will be displayed on notice boards throughout the site and within the project site offices.

Policies are updated on at least an annual basis and notice boards will therefore be maintained to ensure that the current policies are displayed.

3 Management Structure and Responsibilities

3.1 An organisation chart for the project is included in Appendix 6

3.2 The responsibilities of the Brookfield Construction Team are listed in the table below.

This table represents key sections from the Brookfield EHS Management System. Further responsibilities may be identified within the EHS Management System.

In the event of a responsible person being unavailable to discharge a specific responsibility they must ensure that an appropriate deputy has been appointed in their absence. Further responsibilities may be identified within the Brookfield Policies and Management systems. All Brookfield personnel must ensure they understand their responsibilities and they have received any specific training, information or instructions to enable them to discharge that responsibility fully and effectively.

Procedure No	Title	Sub Procedure Point(s)	Person(s) Responsible	Deputy
100	Specific Environment and Health and Safety Responsibilities		Project Manager Alan Keeley	
105	Construction Environment and Health and Safety Plan	**4.2**	Supervisor	
110	F10 Notification	**3.1**	CDM Co-ordinator	
115	Design Hazard Identification and Risk Assessment		Design Manager	
COM-001	Assessment and Management of Appointed Contractors	**3.0**	Commercial Manager	
300	Hazard Identification, Risk Assessment and Method Statement	**4.1**	Project Manager Alan Keeley	
300	Hazard Identification, Risk Assessment and Method Statement	**4.2**	Construction Manager	
300	Hazard Identification, Risk Assessment and Method Statement	**4.3**	Site	
310	EHS Project Meetings and Communications	**4.1**	Project Manager Alan Keeley	
315	Permits to work	**4.3**	Permit Manager	
320	Fire Procedures	**4.2**	Site Fire Co-ordinator Deputy Site Fire Coordinator	
330	PPE	**5.9**	Responsible Person	
350	Statutory Registers	**4.2**	Construction Manager	
355	Environment and Health and Safety Inspections	**4.2**	Appointed Person	
370	Temporary Works	**5.2**	Temporary Works Co-ordinator	
375	Health Surveillance	**5.1**	Occupational Health	
500	Control of Substances Hazardous to Health	**4.1**	Appointed Person	
505	Noise	**3.2**	Appointed Person	
510	Vibration	**3.2**	Appointed Person	
515	Electricity		Appointed Person	
525	Lifting Equipment / Lifting Operations	**2.0**	Appointed Person	
		3.5	Crane Co-ordinator	
530	First Aid	**5.1**	Construction Manager	
530	First Aid	**5.4**	Construction Manager	
560	Confined Spaces	**4.2**	Appointed Person	

4 EHS Meeting, Consultation and Liaison

4.1 EHS shall be included on the agenda of internal and contractor progress meetings

4.2 Meetings will also be arranged to specifically cover EHS issues as follows:

Meeting	Frequency	Attendees (Minimum)	To be Chaired by
Project EHS Meeting	At least monthly	BCL Construction Manager BCL EHS Manager Contractor Project Manager Contractor EHS Manager	BCL Construction Manager
Meeting	Frequency	Attendees (Minimum)	To be Chaired by
Project EHS Committee Meeting	At least monthly	BCL Construction Manager BCL EHS Manager Workforce Elected Reps Union Convenors	BCL Construction Manager
Project Design Review Meetings	As agreed by BCL Design Manager	BCL Design Manager Client Representative Lead Designer Designers CDM Co-ordinator	BCL Design Manager
Project Coordination	At least weekly	BCL Construction Manager Contractor Representative (All	BCL Construction Manager

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Meetings		Contractors are to attend)	
Client EHS Meeting	As agreed with client	Client Representative BCL Construction Manager BCL EHS Manager	To be agreed with client

4.3 Additionally Brookfield have an open door policy whereby any person with a concern relating to EHS should bring it to the attention of their supervisor or manager and where the issue is not resolved can bring it to the attention of the Brookfield Construction Manager or Brookfield EHS Manager.

4.4 Where design is undertaken during the construction phase of the project or changes are made to the existing design the Project Design Review Meeting will ensure that any EHS issues arising from these changes are taken into consideration.

5. CONTRACTOR SELECTION, ASSESSMENT & APPOINTMENT

5.1 Tender lists will be prepared of potential contractors. Pre-qualification of contractors will be undertaken in line with Brookfield Procedure UK-COM-P-001. Reference will be made to the Contractor Health and Safety (CHAS) database and where a contractor is appropriately registered, a stage 2 assessment only will be required as outlined in Appendix 4 of the CDM Regs. Reference may also be made to past performance on Brookfield projects and checks should be made on the HSE's databases to confirm notices and prosecutions. Companies which demonstrate an unsatisfactory safety record will not be invited to tender.

5.2 Potential contractors will be sent a set of health & safety contract conditions and will be required to provide any additional information as required by Brookfield to demonstrate their ability to carry out work to a satisfactory standard, for example, resource levels and CVs of key personnel.

5.3 Contractors will be required to attend a Pre-Start EHS Meeting prior to the start of their work on site to ensure that all necessary arrangements are in place.

6. SITE SECURITY

6.1 BCL will make appropriate arrangements to ensure that no person can access the site unless authorised to do so.

6.2 An assessment will be undertaken to establish the most appropriate means of securing the site and to ascertain the levels of security personnel required and additional systems to assist in the control of access (e.g. swipe card entry system, CCTV monitoring etc.)

6.3 The site will be secured by the installation of appropriate hoardings or fencing with relevant signage posted to ensure that the site entrance is easily located.

6.4 Any third party (client, designer, consultant or contractor) requiring access to site must use the designated access points as detailed on the Site Logistics Plan in Appendix 3.

6.5 Third parties will be required to provide advance notice of any person requiring access to site as identified in this plan or the Logistics Plan.

6.6 Any person given access to site will be provided with a relevant security pass which must be retained at all times and produced at the request of any Brookfield person or member of the security team.

6.7 The Logistics Plan will be periodically reviewed and updated to ensure all security arrangements remain appropriate.

7. INDUCTION BRIEFING

7.1 All personnel must attend the Brookfield EHS Induction prior to accessing site.

7.2 Contractors are to identify to Brookfield and security appropriate personnel to authorise access to site for their workforce and they are to provide 72 hours notice to security of persons requiring a full induction. Access to visitors must be authorised by a Brookfield manager on form UK-EHS-F-015.

7.3 All personnel carrying out work activities will be required to attend the full EHS Induction. A person requiring access as a visitor and not undertaking on site work activities may be provided with a brief 'Visitor Induction' following which they will be required to be accompanied by a competent person throughout their time on site. Brookfield may authorise appropriate representatives from contractors to provide Visitor Inductions, a list of such personnel will be held at security.

7.4 Personnel will be required to provide personal details to enable Brookfield to confirm their identity, eligibility to work and that they have received the appropriate levels of training to undertake the work they have been assigned. Additionally persons accessing site will be required to declare any medical condition which may place themselves or others at risk whilst on site. Personal records will be held securely and handled and used only in compliance with the Data Protection Act.

7.5 Certain areas of the project may have restricted access and therefore require an additional induction prior to access being provided.

7.6 Induction briefings will be given at the following times and occasions:

Full Induction – 08:30 Mon-Fri

Visitor Induction – as required

Restricted Access Induction – as authorised by Brookfield

7.7 A log of all persons inducted will be maintained on site.

8. TRAINING

8.1 Contractors are responsible for ensuring that all of their employees are trained and competent to undertake works assigned to them. Supervisors will also need to be trained in the work they are supervising. Contractors are to retain records of relevant training.

8.2 Brookfield will conduct audits of such records as part of the Brookfield auditing and inspection regimes.

8.3 All personnel accessing site will be required to provide evidence that they have received appropriate training for the work that they are to undertake.
As a minimum, operatives, supervisors and managers are to be in possession of a valid CSCS/CPCS card relevant to their work. Where a CSCS/CPCS card is not available but a Contractor can demonstrate that the level of training, knowledge and experience is such that a person can be deemed competent, the person may be authorised to access site and work at the discretion of the Brookfield Construction Manager.

8.4 All supervisors and managers are to have attended the 5 day SMSTS course (or equivalent or 2 day refresher) within the last 4 years.

8.5 Supervisors will also be required to attend a site specific supervisor's training briefing within one week of commencing on site. Once this training is completed the supervisor will be issued with a 'Supervisor Blue Vest' which must be worn on site at all times. (Where a supervisor is undertaking another role such as Slinger/ Signaller for a lifting operation, the blue vest should be replaced with the relevant vest for that specific role).

9. WELFARE

9.1 Brookfield will provide welfare facilities in compliance with, as a minimum, Appendix 2 of CDM. Where a contractor provides facilities for their own workforce they must also comply with this standard as a minimum.

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9.2 The following welfare facilities will be provided:-

Description	Location	Provided by
Canteen	See Appendix 3	
Changing / Drying Roo	See Appendix 3	
Male and Female Toile	See Appendix 3	
Showers	See Appendix 3	
1st Aid Room	See Appendix 2	

9.3 Brookfield have available a number of personnel who are trained first aiders. Contractors must ensure that they undertake a First Aid Assessment and provide an appropriate number of qualified first aiders to cover their workforce. First aiders are to display a green cross on their hard hat and provide their details to the Site Medic/ Nurse.

9.4 Security is to be provided with a list of all qualified first aiders which will be updated on a daily basis to indicate those on site. This list is to be displayed at the site entrance.

9.5 The following are qualified first aiders

Name	Contractor

9.6 The first aid boxes are located: See appendix 3

9.7 This project provides an Occupational Health Nurse who will be available to provide health screening and will monitor work activities to assist in the identification of measures to assist in the prevention of health issues as a result of work activities. The nurse will also provide first aid treatment when available.

9.8 Specific health surveillance will be identified in Risk Assessments, COSHH Assessments, Noise and Vibration Assessments etc. Where the requirement for Health Surveillance is identified the Occupational Health Nurse will be provided with relevant assessments and assist in monitoring controls.

10. SITE LAYOUT, ACCESS, SIGNAGE AND SECURITY

Site layout drawings are provided in Logistics Plan in Appendix 2 to illustrate the following:-

a) Third Party Considerations
b) Security Arrangements
c) First Aid Posts / Medical Centre
d) Emergency Services access
e) Site Access for plant and personnel
f) Fire Points
g) Fire Assembly Points
h) Site Signage

These drawings will be periodically updated and current copies displayed on site notice boards and site entrances

11. INCIDENT REPORTING PROCEDURES

11.1 All accidents, incidents and dangerous occurrences must be notified to the Brookfield Construction Manager at the earliest opportunity. In the first instance this may be through the site Medic/ Nurse or EHS Manager, however, confirmation must be sought that the Construction Manager has been made aware. Any incident that requires reporting to the HSE under RIDDOR must be notified to Brookfield immediately with a copy of the F2508 forwarded via the standard submittal process.

11.2 Contractors are required to undertake a thorough investigation following all RIDDOR reportable accidents and dangerous occurrences and provide details of findings and corrective actions to Brookfield. Where the cause of an accident is not immediately apparent and preventative/ corrective measures can not be introduced the contractor is to suspend operations where there is a risk of a reoccurrence.

11.3 Serious/ major accidents may also be investigated by Brookfield. Contractors are required to cooperate with the Brookfield investigating team and make available any individual identified as a witness.

11.4 A flowchart identifying the requirements for accident reporting is provided in Appendix 5.

12. DESIGN PHASE HAZARD IDENTIFICATION AND RISK ASSESSMENT

12.1 Designers are required to identify and assess any significant residual risks arising out of their design. The Brookfield Design Manager will ensure that these Designers Risk Assessments are received from the CDM Co-ordinator and forwarded to the relevant Contractors to enable them to incorporate any measures to manage those risks.

12.2 Any Designers Risk Assessments prepared during the Construction phase of the project must also be submitted to the CDM Co-ordinator for review. The Brookfield Design Manager will be responsible for ensuring these Risk Assessments are carried out, received and reviewed and where necessary forwarded to the relevant Contractors to enable them to incorporate any measures to manage those risks.

13. CONSTRUCTION PHASE HAZARD IDENTIFICATION, RISK ASSESSMENTS AND METHOD STATEMENTS

13.1 The project program will be reviewed and, by making reference to the Project Risk Register template and by referring to the Cardinal Legislation Registers, all hazardous operations are to be identified and a Project H&S Risk Register developed and published in Appendix 9. This document represents a high level register. Further detail is to be established during the course of the program as set out in 13.3 – 13.6 below.

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13.2 The project program will be reviewed against the Project Environment Aspects Register template and the Cardinal Legislation Registers (note Cardinal Environmental legal summaries are included in CoSHEQ R Series 300 to 500), all relevant environmental aspects are to be identified and a Project Environmental Aspects Register published in Appendix 9. Note also that any requirements within the contract to undertake environmental monitoring or any other environmental obligations should be taken into account and included in the Project Environmental Aspects Register. This document represents a high level register. Further detail is to be established during the course of the program as set out in 13.3 – 13.6 below.

13.3 Note a summary of legal requirements should be given in register UK Env R 203 Project Legal Requirements. The accuracy of this register should be reviewed with the project system review.

13.4 Contractors will review all of their work activities with the Brookfield Construction Manager or an appropriate appointed person and identify all significant, foreseeable risks and environmental aspects arising out of their works, assess these and identify appropriate controls. Furthermore Contractors will be required to establish a programme of Method Statements for submittal to Brookfield for review. Periodic meetings will be established to enable the ongoing review of Risk Assessments and Method Statements.

13.5 All Method Statements and Risk Assessments are to be submitted, reviewed and returned in line with Brookfield procedure 300. A flowchart is attached for reference in Appendix 10.

13.6 Copies of Risk Assessments and Method Statements will be maintained in the project safety filing system.

13.7 Risk Assessments and Method Statements are to be communicated by way of a briefing to relevant personnel by the Contractor and a signed register maintained of all such briefings.

14. SITE RULES

14.1 The following site rules are to be adopted on all Brookfield projects. The site induction is to incorporate these site rules and any other requirements as required by third parties such as clients, local authorities and statutory undertakers.

i. All personnel accessing site are to attend induction training.

ii. Appropriate personal protection equipment shall be worn. The minimum requirements for all Brookfield projects is specified in section twenty four of this plan.

iii. Every accident and near miss event must be reported to Brookfield.

iv. No person is to interfere with or misuse any fixtures, fittings or equipment provided in the interest of health, safety or welfare.

v. Visitors must report to the security offices, and will be allowed entry at BCL's discretion. Whilst on site, visitors are to comply with the minimum PPE requirements. Shirts and full length trousers are to be worn at all times.

vi. Vehicle drivers must remain in the cab of their vehicles unless the minimum PPE requirements are complied with. Vehicles are not to be reversed on site unless under the control of an authorised Banksmen. On no account are vehicle drivers to be unaccompanied at any time whilst not in their vehicles unless they have attended the full site induction.

vii. All safety signs and notices must be complied with.

viii. Radios or personal stereos are not to be used.

ix. No photography or video filming is permitted on site unless authorised by Brookfield.

x. All site personnel are required to fully comply with their employer's Method Statements and Risk Assessments.

xi. Site fire and emergency procedures are to be complied with at all times.

xii. The consumption of alcohol and drugs is prohibited. Any person under the influence of alcohol or drugs will not be permitted entry to site, and if found on site will be removed. Prescribed drugs for medical reasons are permitted provided they in no way reduce the person's ability to carry out his duties safely. The resident Medic/ Nurse must be informed if anyone onsite is taking prescribed drugs that may affect that person's ability to work safely.

xiii. No person is to operate any mechanical plant or equipment unless they have been appropriately trained and are competent to do so.

xiv. Any mechanical plant or equipment found to be defective is not to be used and must be taken out of service. All plant and equipment is to be clearly marked with the supplying contractor's name.

xv. Ladders are not to be used as work platforms unless alternative access is not practicable then a separate Risk Assessment must be submitted to Brookfield stating control measures in place. Ladders used for access must always be secured to a stable structure.

xvi. The use of trestles is prohibited. Bandstands may only be used up to 600mm in height and width and be clearly identified in a specific Risk Assessment. Thereafter properly constructed and guarded mobile towers or scaffolds are to be used. Mobile towers must comply with the manufacturer's specifications and the Working at Height Regulations 2005. When not in regular use mobile towers are to be dismantled and stored accordingly. All mobile towers must have displayed a current record of inspection (Scaftag.) Only trained competent persons are to erect lightweight mobile tower scaffolds.

xvii. Food is only to be consumed within the designated canteen / messing areas.

xviii. No person, other than an authorised and competent electrician, is to make any connection, disconnection or alteration to any electrical supply.

xix. Fighting, horseplay or practical jokes is not permitted on site.

xx. Emergency equipment must not be interfered with and should it need to be relocated this must be through liaison with Brookfield.

xxi. All personnel working on site must be appropriately trained and competent.

xxii. Proof of training is to be available for review by Brookfield on request both prior to commencement on site and at subsequently.

xxiii. Vehicles / mobile plant / site transport are not to reverse without 360 degree all round vision and a trained banksmen in attendance. All vehicles to have an operational flashing beacon and reverse audible warning sounder.

xxiv. Only supervisors are to be issued with two-way radios.

xxv. All personnel must utilise pedestrian access routes at all times and not walk along site vehicle access routes.

xxvi. Vehicle access is only permitted via the designated access points unless alternative arrangements have been agreed with Brookfield.

xxvii. All deliveries are to be agreed with BCL a minimum of 24 Hrs in advance, no parking or waiting on public approach roads is permitted.

xxviii. There will be no parking for cars on site. Parking for contractors is to be within designated car parks.

xxix. Site hours will generally be:

Monday to Friday - 8.00 - 18.00
Saturdays - 8.00 - 13.00

xxx. No work is permitted outside these hours unless notification has been approved by Brookfield.

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xxxi. The maintenance at all times of vehicle and pedestrian access to and egress from all adjacent buildings is paramount. All escape routes and emergency access routes must be kept clear at all times. No vehicles or plant may be stationed outside the agreed boundaries of the site without specific approval from Brookfield.

xxxii. Any works taking place outside the hoardings of the site including hoarding erection and service diversions etc. are not to take place without fully detailed Method Statements reviewed by Brookfield to ensure protection of the public at all times.

xxxiii. Courtesy, respect and tact must be used at all times when dealing with members of the public. Foul language/ gestures, wolf whistling, suggestive remarks etc. are not permitted within sight or sound of the public.

xxxiv. All personnel must be suitably dressed for the operations they are carrying out. No bare chests or shorts and no offensive slogans on articles of clothing will be permitted.

xxxv. No cranage, use of other plant or erection installations are to over-sail the site boundary unless specifically identified in a Method Statement submitted to Brookfield for review.

xxxvi. All site personnel are required to swipe in and out of site and carry a security pass for their exclusive use at all times whilst on site. Any operative not in possession of his/her security pass will only be permitted access to site at Brookfield discretion via security reception.

xxxvii. Safety meetings will be held regularly and attended by contractors staff.

xxxviii. Crane Banksmen are to wear orange helmets and hi-visibility vests.

15. EMERGENCY PROCEDURES

15.1 Arrangements covering emergencies on this project are covered by two main documents.

a) The Fire and Emergency Plan (Appendix 1) provides the arrangements for dealing with fire, bomb threat, structural collapse and any other situation where there may be a requirement to evacuate the site.

b) The First Aid Emergency Response Plan (Appendix 2) provides the arrangements for dealing with specific incidents where a person is injured or falls ill and requires urgent medical attention.

15.2 Details of the emergency arrangements will be included in the site inductions.

15.3 The Brookfield Construction Manager will arrange for briefings to be held to ensure all those identified in the emergency plans are aware of their responsibilities. These briefings should involve liaison with the emergency services where appropriate.

15.4 Following any incident where an emergency plan is implementation the Brookfield Construction Manager will arrange for a review to be undertaken with key individuals to assess the effectiveness of the plan and identify areas for improvement.

15.5 Emergency services contact details

Service	Address	Telephone
Fire		999
Ambulance		999
Police		999
Hospital – Accident and Emergency		
Brookfield Safety Department		0207 659 3500
Health and Safety Executive	375 West George Street, Glasgow G2 4LW	0141 275 3000
Environmental Agency	Todd Campus, Acre road, Glasgow, G20 0XA	0141 945 6350
Local Authority		

15.6 Statutory Authorities

Appropriate arrangements will be made to accommodate all existing services and the provision of temporary services to serve the site during the construction phase.

Information on existing services will be maintained by Brookfield and contractors are to make suitable enquiries regarding any services that may interface with their works.

Assistance may be sought from the relevant statutory undertakers who contact details are provided below.

Statutory Authority	Address	Telephone
Electric	Scottish Power	
Telecom	BT	0800 800 152
Media Cables	NTL UK	01256 752 000
Water	Scottish Water	
Drainage	Scottish Water	
Gas	National Grid	0800 111 999

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15.7 The following Brookfield personnel can be contacted in event of an accident or emergency

Role	Contact Name	Office Telephone	Mobile Telephone
Project Director	Ross Ballingall	[redacted]	
Construction Director	Alan Keeley	[redacted]	[redacted]
Senior Safety Manager	Jim Senior	[redacted]	

15.8 The following existing services are located on this project. In the case of emergency the following persons must be contacted.

Service	Telephone	Contact Name
High Voltage Electricity	In the event of an emergency in respect to the areas noted then the contacts will be: Alan Keeley Who will make the necessary contact with the Hospital Board representative	
Low Voltage Electricity		
Boilers & Pressure Systems		
Petrol Oil & Lubricant		
Confined Spaces		
Piped Medical Gas		
Information Technology		
Fire Alarm System		
CCTV		
Client H & S officer		

16. PERMITS TO WORK

16.1 The following permits are required on this project

Permit/Activity	Signatory	Notes
Excavation / Permit to Dig	**Primary Signatory's** Enabling works manager or section Manager and services manager. **Secondary Signatory** Permit to be counter signed by the BE Engineer.	TWO signatures required
Hot Works Permit	**Primary Signatory's** Section Manager Secondary Signatory Site Manager	TWO signatures required
Confined Space	**Primary Signatory's** Section Manager Secondary Signatory Site Manager	TWO signatures required
Electrical Shut Down / Isolation	**Primary Signatory's** M & E Section Manager Secondary Signatory	TWO signatures required
	Site Manager	
Out of Hours Access	**Primary Signatory's** Logistics Manager	

17. CLIENT/THIRD PARTY CONSIDERATIONS

17.1 The following issues need to be considered which may impact on others.

Third Party Consideration	Notes
Public Footpaths	Closure of Public Footpaths
Roads and pavements	Waste/muck on the roads & footpath closure
Occupied building	Protection of the adjacent buildings & occupants
Live watercourse	Contamination of the water course

18. EHS INSPECTIONS AND AUDITS

18.1 The Brookfield project team will undertake periodic EHS inspections and produce reports in compliance with Brookfield standard procedures. Reports will be issued to contractors identifying findings, corrective actions and dates for actions to be completed. Contractors are to ensure that relevant actions are closed out and confirmation returned to Brookfield.

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18.2 The Brookfield project team will also establish a schedule of audits to be undertaken with contractors to establish compliance with legal requirements, policies, procedures, method statements and risk assessments. Audits will be notified in advance to contractors who are to make available relevant personnel.
Audit reports will be issued to contractors with any non-conformances, corrective/ preventative actions and recommendations attached dates for completion identified. Contractors are to ensure that relevant actions are closed out and confirmation including relevant evidence returned to Brookfield

18.3 Other checks, inspections or audits may be undertaken as required by the Brookfield management systems or as deemed necessary by the Brookfield project team and will be managed I line with the requirements identified in 14.1 and 14..2 above.

18.4 Contractors will also be required to undertake regular recorded safety inspections of their works and provide copies of such inspections to Brookfield.

18.5 The project may also be audited by Head Office or external auditors. Both the Brookfield project team and contractors will be required to cooperate with these auditors and assist in the closing out of any actions identified.

18.6 A file of all inspections and audit reports will be maintained on site.

19. REMOVAL OF WASTE FROM SITE

19.1 The general arrangements for the management of waste are defined in the Site Waste Management Plan (Appendix 7). Contractors are required to comply with this plan and any other statutory requirements relating to waste.

20. PLANT

20.1 Particular or specialised items of plant may only be operated by a person who holds a valid certificate of training achievement (e.g. CPCS) from a recognised training body.

20.2 A record of all items of plant brought onto site, together with details of their operators, are to be maintained by Contractors. Thorough examinations, inspection registers and any other maintenance that is required will be recorded with records maintained on site and made available for inspection by Brookfield on request.

21. LIFTING EQUIPMENT / LIFTING OPERATIONS

21.1 All lifting operations are to be carried out in compliance with the Lifting Operations and Lifting Equipment Regulations 1998 and the Brookfield Lifting Operations Plan (Appendix 4).

21.2 All lifting operations must be covered by an appropriate risk assessment and lift plan.

21.3 Brookfield will undertake periodic reviews, inspections and audits of lifting operations to ensure that they are being carried out in line with the Lifting Operations Plan. Contractors are required to assist with such monitoring and provide relevant evidence where requested such as test certificates and training certificates.

21.4 Brookfield will appoint a person to oversee the planning of lifting operations (AP). All contractors undertaking lifting operations will be required to submit their lifting plans to the Brookfield Appointed Person for review in line with the procedures for submittal of Method Statements and only when assessed as 'A' or 'B' status can a lifting operation commence.

22. TEMPORARY WORKS

22.1 Brookfield will appoint a Temporary Works Coordinator in accordance with procedure 370. All temporary works are to be undertaken in accordance with the agreed procedure. A list of temporary works will be maintained. The information to be retained will be detailed within the temporary works procedure.

23. COSHH

23.1 Contractors are required to review all of their work activities and identify any hazardous substances. Safety Data Sheets are to be obtained and COSHH Assessments undertaken and identified controls implemented. Where a hazardous substance has the potential to cause significant harm a copy of the Safety Data Sheet and COSHH Assessment are to be provided to the Site Medic/Nurse.

23.2 Contractors are to maintain a file of all COSHH Assessments undertaken and form a register of these assessments.

23.3 COSHH Assessments shall be communicated to any person who may be affected and records maintained.

24 PERSONAL PROTECTIVE EQUIPMENT (PPE)

24.1 Where the risks to Health and Safety may not be adequately controlled by other means a Risk Assessment shall be carried out to assess these needs. The arrangements shall include the provision, control, monitoring and maintenance of PPE.

24.2 The minimum requirements on all Brookfield sites for PPE is:-

- Hard Hat to BS EN 397
- High Visibility Vest or Jacket to BS EN 471 Class 2
- Footwear to EN245 200 with toecap and midsole
- Eye protection to EN 166 Type 1F
- Gloves

24.3 Only where a specific risk assessment has been undertaken and the wearing of one or all of the above PPE has been identified as not required can personnel chose to not wear that specific item.

24.4 The issuing of all PPE is to be recorded in an appropriate register.

25. TEMPORARY ELECTRICITY AND GAS SUPPLIES

25.1 All electrical supply installations will comply with IEE Wiring Regulations and Electricity at Work Regulations.

25.2 Installations will be checked by a competent electrician at time of installation and thereafter on a three monthly basis.

25.3 An installation inspection register will be maintained recording the 3 monthly checks.

25.4 All gas supplies must be installed by a member of the Gas Safe Register.

26. NOISE AND VIBRATION

26.1 Noise will be kept down to the minimum consistent with efficient working at all times.

26.2 Personal radios may not be used on site.

26.3 The sites normal working hours will be in accordance with the planning conditions as follows:

Day/day(s)	Working Hours
Monday – Friday	08:00 to 1800
Saturday	08:00 until 13:00pm
Sunday	Only by special arrangement
Bank Holidays	Only by special arrangement

26.4 If instructed or agreed with the Client, local authority and Brookfield additional hours may be worked to those quoted above.

26.5 A list of operations/machinery for which specific noise assessments will be required (activities likely to expose a person to noise levels in excess of 80 dB(A)) will be maintained on site.

26.6 If a person is likely to be exposed to a daily personal noise dose of 80 dB(A) or more during work, a full noise assessment will be carried out by a competent person. Records of such assessments shall be maintained.

26.7 Where any person is likely to be exposed to a daily personal noise dose of more than 80 dB(A) suitable and sufficient hearing protection must be worn.

26.8 If any person is likely to be exposed to a daily personal noise dose of 85dB(A) or more an "Ear Protection Zone" will be created and signs posted.

26.9 Where operatives are potentially identified as being at risk of being exposed to HAVS or exceeding the duration of exposure trigger values or action levels (using HSE action level of 2.8 m/s² for various measured vibrations) then BCL will ensure that contractors implement a vibration management program to identify potentially hazardous work and work equipment and assess the risks through the established risk assessment procedures. Preventative and correct programmes will be introduced and implemented.

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26.10 BCL will ensure that Suppliers and contractors include as part of their pre-qualification and working procedures a vibration management programme that addresses the following issues as a minimum:

- Identify hazardous work and assess risks;
- Introduce a preventive programme to eliminate or control the risk of injury to include
  - Process Design / selection / modification
  - Tool selection and maintenance programmes
  - Training & information for operators, supervisors and managers
  - Limitation of duration of exposure (“trigger time”)
  - Health surveillance programme
  - Tool purchasing policy

26.11 All such programmes introduced will be regularly reviewed and subject to periodic audit by the contractor and independently by BCL.

27. TOOL BOX TALKS

27.1 Arrangements will be made for contractors to undertake regular tool box talks on site. A record of attendees of Toolbox Talks is be maintained by contractors and made available to Brookfield.

27.2 Appropriate tool box talks will be held by contractors following any incident to ensure that any identified corrective actions are communicated to the workforce.

28 WORKING AT HEIGHT

28.1 All work undertaken at height must be carried out in compliance with the Working at Height Regulations 2005.

28.2 Prior to any work being undertaken at height a risk assessment must be carried out. The assessment must be undertaken with strict adherence to the implementation of the hierarchy of controls. i.e. where possible avoid work being carried out at height through appropriate planning, where working at height can not be avoided prevent falls from occurring e.g. through the introduction of edge protection etc. Further guidance is available within the Brookfield Supervisor Manual.

28.3 A number of activities have been identified where a minimum standard of control is to be implemented as follows:-

- Where a person needs to access a vehicle which results in the potential to fall from height e.g. loading/unloading a flat bed trailer, a risk assessment must be undertaken identifying suitable means for preventing such a fall or reducing the impact of a fall to an acceptable level. The means of access to and from height needs to be included in such an assessment. Consideration should be given to loads being delivered where no access to height will be required e.g. with lifting strops already attached or materials palletised. Where loads are being mechanically lifted from a vehicle no person is to remain on the vehicle during unloading. Typical systems that contractors are expected to be used are mobile hand rail units, air bags etc.
- The use of step ladders must be subject to a risk assessment where the identification of all other means of access is documented and justification is provided for not using them.
- The use of man riders must be subject to a risk assessment where the identification of all other means of access is documented and justification is provided for not using them.

28.4 Where there is a risk of fragile materials being present within a structure that is accessible to operatives and may result in a fall, suitable arrangements will be introduced to prevent access to such areas and appropriate signs placed. Any design that creates such a risk should in the first instance consider a change of design to remove the initial hazard.

29 EXCAVATIONS, GROUND CONDITIONS AND UNDERGROUND WORKING

29.1 Any work involving excavating, tunnelling or accessing drains/wells/pits etc are to be undertaken under a Permit to Work issued by Brookfield. Such work must be covered by an appropriate Method Statement and Risk Assessments. Only personnel with appropriate training are to become involved with such works and where temporary works are required arrangements must be made to liaise with the Brookfield Temporary Works Co-ordinator.

30 ASBESTOS

30.1 All asbestos has been removed from the project prior to the commencement of work. Clearance certificates are available from Brookfield. Should any person be unsure as the likelihood of a material containing asbestos they should cease work and inform their supervisor who is to liaise with Brookfield.

31 CONTAMINATED LAND

31. Site surveys have been undertaken and areas of contaminated land are identified on the site layout drawings in Appendix 3. Any work which may involve contact with these areas are to be carried out under a Permit to Work issued by Brookfield. Such works must be covered by an appropriate Method Statement and Risk Assessments.

32 OCCUPATIONAL HEALTH

32.1 Brookfield provide an on site Occupational Health support scheme which is available to all personnel working on site. An initial assessment can be undertaken when a person starts on site.
Additional to formal initial assessments the occupational health nurse will assist in the ongoing management of health issue through on site monitoring including assessing exposure to noise, vibration, hazardous substances and manual handling.

33 OTHER RISKS

33.1 Should any other significant risks arise out of the undertaking of works associated with this project, these can be raised through a number of methods including correspondence, meetings, reports or by verbal notification followed by written confirmation.

34. LIAISON WITH THE HSE

34.1 All visits from the HSE Inspectors / Enforcing Authorities must be notified to the Director responsible for Safety, the Safety Manager and the appropriate Area Manager as soon as they have been completed. Co-operation must be given to HSE / Enforcing Authority inspectors at all times and any instructions complied with.

34.2 All correspondence received from the HSE / Enforcing Authority must be copied to Safety Manager. The Director responsible for Safety or Safety Manager or their designee(s) must approve any proposed reply.

35 HEALTH AND SAFETY FILE

35.1 The layout, format and required content for the Health and Safety File will be agreed with each contractor to enable the completed file to be handed to the client at completion.

36 ADDITIONAL REQUIREMENTS ON CONTRACTORS

36.1 Contractors are to ensure compliance with the following additional requirements:-

- Over and above the requirements of the Management of Health and Safety at Work Regulations with regards young persons a risk assessment is to be undertaken for any person under the age of 21 taking into account their relative training, knowledge and experience to establish appropriate levels of supervision and limitation of work to be undertaken.
- All personnel involved in the use of work equipment that exposes them to vibration are to be monitored through the use of a personal vibration monitoring device, such as a Havpro personal vibration monitor, which provides a real time record of a person’s daily exposure to vibration.
- For the installation of standard and designed scaffolds only scaffold contractors who are full members of the National Access and Scaffolding Confederation (NASC) are to be employed on the project whether directly by Brookfield or by a Contractor

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36 APPENDICES

1. Fire and Emergency Plan
2. First Aid Emergency Response Plan
3. Logistic / Traffic Management Plan
4. Lifting Operations Plan
5. Accident Reporting Procedure
6. Project Organisation Chart
7. Project Environmental Management Plan
8. Temporary Works Procedure.

9 Construction Risk Register

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SUBMISSION REFERENCE: 10.1.9.

SUBMISSION RESPONSE.

SITE INTERFACES

Throughout all phases of the construction process an interface exists with the operation of the existing hospital facilities and the surrounding areas.

Through the dialogue process with the NHSGG&C Health Board, and in an ongoing review of the existing campus and surrounding areas the following critical matters have been identified.

- Maintenance of the Blue Route running through the hospital from Govan to Hardgate Road.
- Protection of existing HV service around the perimeter of the new construction site.
- Maintaining existing functional services around and across the new construction site.
- Retaining access to existing facilities including oil storage, VIE compound, and service compound.
- Impact of construction activity to existing maternity unit and adjacent residential area.
- Management of site traffic around the traffic pinch points at the hospital main entrance and junction of Hardgate Road with Shieldhall Road.

Interface between construction works and hospital activities becomes more stabilised, with less variability, upon establishment of full hoarding around the site. Subsequently, management of routine and procedure is less problematic, with fewer live working areas.

There do however remain a number of areas of construction works involving service diversions, road and path diversions, demolition and construction to isolated areas linked to existing facilities that will result in changes to hoardings, parking and general access with the added distraction of contractor's plant movement and temporary protection requirements.

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Our construction programme (Volume 9) and phasing plans (Volume 2 Section 2.1 and attached) provide details of the timing of such works so that all parties including Brookfield, the Board, and Brookfield sub-contractors fully understand the works and the sequence.

Brookfield are responsible, with the assistance of the other parties, for co-ordination of work activities with signage, notifications, temporary lighting, personnel assistance and safety measures to minimise risk and inconvenience to all site users.

It is proposed to hold weekly liaison meetings with the Board during periods of these activities to discuss these works and agree any specific requirements associated with all works

Details are provided below on the areas where these interfaces occur, which read in conjunction with our phasing plans, indicate the measures taken in managing the works to remove or reduce the impact on the existing facility.

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Phase 1 (Stage 1) – Laboratories/FM build

See drawings GIL-WS-00-PL-121, GIL-WS-00-PL-122 and GIL-WS-00-PL-123 attached.

Site Access Road
As noted on drawing GIL-WS-00-PL-121 and in agreement with the planning authority, trees will be removed to the existing access road from Renfrew/Govan Road located to the west of the main hospital entrance. This will allow the road to be widened using the permanent construction detail.
The existing access will be maintained until this work is complete, at which time the new road will be utilized to access the site while the existing access is lifted and also upgraded to the permanent specification

Hoardings and Fencing
Hoardings will be erected as detailed in section 3 to encapsulate the site with main site access gates installed beyond the oil storage area. Fencing is to be erected to tie into the rear of the existing A&E and therapy units, and continued to tie into the existing fence at Govan Road to prevent unauthorised access by the general public into the above works area.

Access to VIE and oil storage
Access will be maintained throughout operations along the site access road during normal working hours for oil and VIE delivery vehicles. Gates 1 and 4 into the site area will also be available for access and vehicle turning requirements

Service Compound
The service compound will be relocated by the Board prior to the works commencement to a revised location adjacent to the Helipad. Brookfield will erect a hoarding around this area to segregate the site from the compound.

Office set up and parking
Hoarding will be erected along Hardgate Road to tie into the ambulance station fencing with access provided through to site office and parking arrangement as detailed in sections 2 and 5 of this document.

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Demolition works.
Access will be provided onto site through Gates 1 and 5 for vehicles associated with the hospital board demolition works. These vehicles will access and leave the campus through the site access and haul roads from Renfrew/Govan Road. Control of vehicles and personnel through gate 5 will be managed by the demolition contractor for the duration of their works.

Drawings GIL-WS-00-PL-122 and GIL-WS-00-PL-123 highlight the area adjacent to the existing blue route within which the demolition contractor will be functioning, for their hoardings and capping of existing services. It also highlights the area to which Brookfield as part of phase 2 detailed below will relocate the existing bus stop, should the need arise to carry out this work at an earlier stage.

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Phase 2 (Stage 3) – Main Build, Laboratories, and Energy Centre

See drawings GIL-WS-00-PL-124, GIL-WS-00-PL-125 and GIL-WS-00-PL-126 attached.

Culvert and Foul Drain Diversion
Culvert and foul drain diversion works are to be carried out within the area highlighted on drawing GIL-WS-00-PL-126 and as detailed under Volume 3 section 27. These works are designed to remain within the site boundary to the greatest possible extent, but will still require the closure of parking bays adjacent the Pharmacy building to maintain full functionality of the blue route throughout the duration of the works.

Bus stop relocation
The existing bus stop along the south boundary is to be relocated toward Maternity. Temporary Heras type fencing will be installed to enclose this operation, with plywood hoarding to site, held until completion to allow works to be carried out from the site.

Hoardings and fencing
Hoarding erected to complete perimeter, segregating the site from the existing hospital as detailed in Section 4 along the blue route. Localised lane narrowing measures will be instigated to provide workforce protection during this exercise

Site Access Road
This will be maintained from Renfrew/Govan Road with permanent road works ongoing adjacent to the site access road with access maintained for VIE and oil deliveries

Preliminary SUDS construction
Drainage works are to be installed to facilitate construction activity and an operational Laboratory. This will involve connection onto the culvert within the blue route.
The existing blue route will be widened temporarily at this location to allow traffic management to be put in place that maintains traffic in 2 directions throughout the works duration. (GIL-WS-00-PL-126)

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Phase 3 (Stage3) – Main/Childrens Build only

See drawings GIL-WS-00-PL-127, GIL-WS-00-PL-128 and GIL-WS-00-PL-129 attached.

Site Access Road
Permanent road works are generally complete with the East section of closed off road with 2-way site access retained on the West carriageway for site and VIE access (Drawing GIL-WS-00-PL-132).
The area around the oil tank is to be secured to allow the demolition works to be carried out, and the permanent road construction completed to the area. Revised traffic control and signage is introduced to maintain access to the VIE compound until it is relocated toward the end of the Phase.

VIE compound
The VIE compound is to be relocated to a new temporary location adjacent the vacated biochemistry building prior to Phase 3 completion. This will be carried out as detailed in Volume 3 Section 3.28

In brief, we will, in conjunction with Air Products, disconnect the existing pipework arrangement and move the stores approximately 35m to the south and 15m east of its current location.
To ensure that operations within the existing hospital campus do not suffer any down time or disruption, it is intended to install J type cylinders and manifolds to temporally back feed the existing oxygen systems. This temporary system will be linked to local oxygen alarms that will be monitored during the compound relocation.

In critical areas emergency back up oxygen bottles will be made available to give additional resilience in these areas should the need arise.

Service compound
The waste facilities management are to be managed from the new FM facility. This allows the existing compound to be cleared and this area incorporated within the site hoarding early in this phase

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Road closure to Biochemistry building for new road construction
The existing road to the South and West of the existing Biochemistry building will be closed, with access to the adjacent buildings provided via the existing road to the North and East with white lining amended to accommodate two-way traffic.

Link Bridge construction
Two link bridges are to be constructed, linking the new Children's Hospital to the existing Maternity Unit, and the new Adult Hospital to the neurosurgical unit.
This work will be subject to a comprehensive method statement and a temporary works plan which includes public protection measures to span the existing carriageway, thus maintaining clear blue route at all times.

Access to new Laboratory building
The main site access through gate 1 and the associated hoardings are to be relocated to provide clear visibility of, and access to the new laboratory, mortuary, and FM buildings.
A pedestrian crossing will be installed across the new entrance and site access road to provide safe access from the existing hospital and Car Park 1a.
A through route will be maintained for waste transfer from the existing hospital via the existing road to the North and East of the Biochemistry building as note above.

Service road complete to Laboratory and FM building
The new service road from Hardgate Road into the FM service yard will be completed with the Laboratory Building handover as drawing GIL-WS-00-PL-128. It will be fenced off from the main entrance road and Car Park 2 area that will remain part of the ongoing construction activities.

Works to the new VIE compound and external works, including a new bus stop facility will be carried out to the south side of Langlands Drive adjacent to Car Park 3, as noted on drawing GIL-WS-00-PL-129. These works will have minimal impact on the blue route but will be phased to ensure that the pedestrian access is maintained throughout

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Phase 3a (Stage 3a) – Demolition and Landscaping

See drawings GIL-WS-00-PL-130 and GIL-WS-00-PL-132 attached.

New road construction
With the relocation of the existing VIE compound in the Phase 3 works, the redundant concrete hard-standing is broken up and the remaining section of road constructed to permanent specification, providing full benefit to the new facility including availability for Fastllink operations and access for phase 3a operations, as indicated by drawing GIL-WS-00-PL-130

Link road to existing hospital
A temporary section of road is to be installed to tie the existing road to the south of Biochemistry into the new hospital road. On completion Heras type fencing will be installed to fully enclose areas 1 and 2 for demolition works.

Demolition
Demolition controls will be as detailed in Volume 3 Section 3.27.
In summary, the works will consist of the controlled demolition of the existing Surgical, Ward, Biochemistry, and Orthopaedic buildings within a confined site, segregated from the existing hospital activities by secured Heras type fencing around areas 1 and 2, and the more complex demolition of the existing link bridge spanning the hospital blue route as indicated by the Phase 3a drawing GIL-WS-00-PL-132.
All demolition works will be subject to a comprehensive method statement and temporary works plan to include public protection measures where works are to be carried out across the existing carriageway, maintaining the blue route clear at all times.

New Crosslink
On completion of the demolition works will be carried out immediately to the new crosslink construction to the north end of the site within area 1.
The completion of the crosslink and release to public access will allow the closure of the temporary link road within area 3 and completion of landscaping activities in conjunction with area 2

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Hoarding and fencing
All boundaries erected during this phase of the works will consist of Heras type fencing as detailed within section 3. This will provide segregation of the works from the general public and existing hospital operations, whist leaving the flexibility to allow landscaping operation to be tied into previously completed areas.

Completion of SUDS
The completion of the landscaping will entail construction of Swales through areas 1 and 2 that will enhance the previously constructed SUDS installation.

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SUBMISSION REFERENCE: Section 10.1.10 WASTE MINIMISATION AND MANAGEMENT PLAN

SUBMISSION RESPONSE

Waste and meeting WRAP Best Practice

"Reducing pollution and waste to avoid health impacts and the depletion of natural resources." SHINE

Best Practice Guidelines will be used to determine how waste will be managed on site and also to ensure that the waste hierarchy is put into practice, by minimising waste and reducing the amount which needs disposal[1]. One effective means to reduce the total amount of waste created by the project is to reduce the wastage allowances on each supply contract. This will be implemented by Brookfield ensuring that reduced levels are agreed as part of the tendering process, thus reducing the amount of materials which enter the site.

Modern Methods of Construction for some elements will also reduce the amount of waste generated. Mechanical Electrical and Plumbing Solutions will be used to supply ready made bathroom and ward components, which include multi-service modules of pipework, ductwork, medical gases and all electrical services. Pre-cast concrete beams and staircases are to be supplied from Dunne's own pre-casting site in Bathgate, reducing waste and carbon emissions through the avoidance of long journeys.

Given the fact some demolition on site will be undertaken, the demolition materials will be incorporated into the landscaping and construction. Sandstone from the demolished surgical buildings has already been allocated for parts of the landscaping elements. It is recommended, if Brookfield is not conducting the demolition, that it should follow the Institution of Civil Engineer's Demolition Protocol to maximise the amount of material available for re-use.

WRAP's Net Waste Tool

Waste Resource Action Plan (WRAP) guidance has been used to try to design out waste where possible, as detailed above, and for the remaining waste predicted to be generated on site, the Net Waste Tool will be utilised. Once the final design is complete and the materials have been specified, the Net Waste tool will be completed for the New South Glasgow Hospitals Project. The resulting waste targets, based on the analysis of waste segregation, recovery and recycling options, will be integrated into the Site Waste Management Plan (SWMP). Although this has not yet been completed, it is anticipated that the tool will also assist in

[1] Using WRAP's Designing out Waste Guide for examples of best practice

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determining the targets for waste reduction in contractual conditions for sub-contractors and help Brookfield achieve a high level of resource efficiency across the construction site.

Details of the sustainable design for reducing waste:

- A Site Waste Management Plan (SWMP) will be developed before construction starts. The SWMP centres on the results from the WRAP Net Waste Tool, and will set targets and assign specific responsibilities to subcontractors and the Brookfield management team.
- The most significant waste streams will be identified through a pre-construction review and plans made for their segregation and most cost effective recovery solutions.
- The main hospitals and the ancillary buildings are designed to facilitate segregation at source and accommodate the storage of different waste streams in a waste compound.

Construction Waste

In Scotland, annual construction and demolition waste totals approximately 10.6 million tonnes (2005/2006). This makes construction sites responsible for approximately 20% of all waste, with wasted materials worth millions disposed of in landfill each year. Avoidance of waste creation is the first step but waste that is generated on site will be segregated to allow ease of recovery or recycling. Brookfield has signed up to WRAP's commitment to halve waste to landfill, a target they have committed to exceeding by 30% in their Corporate Responsibility Statement. In order to achieve this, a SWMP is an integral part of Brookfield's Site Environmental Management Plan. During construction, a dedicated waste compound will be established and to facilitate achievement of the waste targets on site; less than $12m^3$ waste/100 m^2 of floor area and a landfill diversion rate of 80%. Waste minimisation and management will be the direct responsibility of the construction site manager, with contract conditions to defer a mandatory requirement on all suppliers and contractors to reduce waste and packaging on site. This will be achieved by implementing the following objectives:

- Where possible, materials with a high level of recycled content will be chosen for use on site, to support the development of a recycled material supply chain. Examples at NSGH include cement replacement and recycled aggregates.
- Transportation of waste off site will be done as efficiently as possible in order to minimise the number of journeys.
- Through the use of the Net Waste Tool, recovery rates will be set for the different waste streams. These targets will be monitored as part of the overall construction site management, with financial penalties in place for contractors who do not meet these targets.

- Liaison with NISP Scotland will find as many alternative routes for waste generated on site as possible and thus reduce the amount of waste sent to landfill or reprocessing.

Energy Used in Construction

During construction an important aspect will be to minimise the impact of the construction activities on carbon emissions. Targets will be set for the construction site as a whole to reduce energy consumption (BREEAM Man 3) through careful use of powered equipment, lighting and also through a construction site travel plan.

- Building (Scotland) Regulations, set by the Scottish Building Standards organisation, will be implemented and exceeded.
- Construction site targets will be set for site energy consumption and carbon emissions (BREEAM Man 3).
- The choice of recycled content and materials reduces embodied carbon in materials (reference the Materials section).
- Pre-fabrication will be specified for large parts of the hospital which is an energy and waste efficient means of production.

Materials

The following points illustrate a range of sustainability measures that will be undertaken during construction:

- Materials will be locally sourced wherever possible. Local sourcing of construction materials has a range of benefits including reduced carbon emissions through shorter vehicle journeys to the site and benefits for the local economy through utilising local suppliers and businesses.
- The nature of the cladding systems proposed dictates a large proportion of off-site fabrication utilising a modular system which provides greater production efficiency with less waste and energy expenditure.
- The concrete structure will incorporate a proportion of recycled material (for example, Ecocem which utilises GGBS to reduce cement content) within the concrete mix. Steel for reinforcement in the UK is 100% recycled.
- Brookfield's Sustainability Strategy outlines sustainable procurement as part of its construction project management, which will encompass choosing sustainable materials and minimising wastage allowances.

Water Used in Construction

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Although in comparison to the operational period, less water will be used through the construction period, the same attention to water consumption will be observed by Brookfield and their subcontractors.

- Water consumption targets will be set for the construction site and usage will be monitored. Visible targets like these help to encourage behaviour change within staff members, so that hoses are not left running or excessive water usage for vehicle wash down is avoided.
- Any water from washing down of items on site or run off after storms will be captured and filtered to avoid contamination of local watercourses by sediment.

Operation

A review by the National Audit Office (2005) estimated that waste management costs the NHS around £8 million each year and that the cost of clinical waste disposal could be reduced by about £1.3 million if hospitals sorted waste properly. The way that the NSGH has been designed will ensure that for the foreseeable waste streams, this volume of waste can be minimised and properly segregated and managed. Public areas will be designed to accommodate separate waste streams and the food outlets will avoid supplying goods in packaging which cannot be recycled. Reducing the amount of waste sent to landfill is not only good for the environment as it reduces the depletion of natural resources but is also sound financial management as it avoids paying landfill tax, which is scheduled to keep rising. Brookfield's Waste Management Plan has been developed on the basis of WRAP guidance and Brookfield is committed to finding alternate waste recovery routes for the NSGH waste wherever possible.

- Once collected, sufficient space has been allocated to the waste compound so that waste on site can be stored in the necessary waste streams, compacted and baled on site where necessary (BREEAM Wst3/Wst4).
- Waste management will be the responsibility of a named individual on the Brookfield team.
- Retail outlets on site will be encouraged to reduce the amount waste for which they are responsible, by ensuring that they are fully aware of the waste management costs as part of their lease agreements.
- Food waste will be collected and stored separately on site so that it can be either composted and or transferred off site for use elsewhere (As stated in the Board's clarification to ITPCD Documents, Volume 2/1, Appendix M&E 7 Pneumatic and Automated Material Transfer Systems.).

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SUBMISSION REFERENCE: VOLUME 10. SECTION 10.1.11

DESIGN MANAGEMENT STRATEGY

SUBMISSION RESPONSE:

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10.1.11.1. Introduction

Brookfield's expertise in collaborative design management will be a key factor in the successful delivery of this world class facility.

The principal objectives of Brookfield's Design Management philosophy are to achieve:

- Best Value for the Client.
- A cohesive team working environment for all contributors.
- To ensure that efficient design management is at the forefront of successful project delivery.

Sound design management, aligned to the management of the Cost Plan, particularly at the pre-construction stage, has a major impact on the outcome.

The Brookfield approach will facilitate the full and efficient coordination, verification and validation processes between the interfacing elements of work at the NSGH Project, utilising systems successfully employed in other parts of the Brookfield business.

Using our Design Management Systems we aim to deliver:

- Clarity of project objectives.
- Clear understanding of risk.
- Definition of design responsibilities.
- Programming for complete design.
- Design solutions to Cost Plan.
- Maintenance of a structured team approach.
- Maximum team efficiency.
- A seamless integration of design & construction information to and between all relevant parties.

The Brookfield overall design management strategy includes:

- Appointment of Nightingale Associates as Brookfield's Design Strategic Partner, in the role of Lead Consultant, to ensure the integrity of the base design, the coordination of the detailed design as it develops and ensuring delivery of the 4 Gateway Stages of the NSGH Projects.
- Development and agreement of clear Contractors Proposals that are fully integrated with the Employers Requirements.
- Implementation of a Design Mobilisation Period at the commencement of the each Gateway Stage.
- Fulfilling the NHSGG&S Health Board's aspirations by building on the good interaction and flow of 'ideas' during the 6 Design Dialogue sessions.
- Identification, confirmation and agreement of residual briefing information, both from the Board, Board Adviser, end end users, the procurement and construction team, and other third parties (e.g. maintenance providers).
- Establishment of a Project Design Brief and Design Control Plan, which will include agreed processes and controls to ensure that a coordinated and agreed design is delivered.
- Communication of clear design deliverables for Stages 1, 2, 3 and 3A of the Project.
- Closure of any outstanding spatial and functional design issues, ensuring that the Board, the end users and other parties have been engaged in all proposed design solutions and have confirmed their acceptance of such.
- Identification of all parties who will have a role in the design, together with their individual scope of responsibility, including specialist consultants and designing subcontractors, with appointments made to ensure effective design input at the appropriate stage.
- Inclusion of cost planning input to the design process to ensure a common understanding of restraints and priorities between all designers, and to effectively manage any budgetary constraints.
- Recognition of safety, health and environmental issues to ensure that design solutions can be optimised within the framework of project constraints to mitigate risk and allow the final development to operate safely with minimum environmental impact.
- Communication of practical procurement issues in terms of lead in times, buildability, temporary works solutions, phasing and logistics that may impact on the design process.
- Frequent communication of design progress to all design stakeholders.

10.1.11.2. Design Management Team Structure and Roles

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For the New South Glasgow Hospital project, Brookfield's Design Management team will be headed by the Project Design Director who will report to the Project Director. The design management team structure is as shown in Section 10.1:

The Brookfield Design Managers will have a detailed understanding of the Employer's Requirements (ERs)

The Design Managers will have a key role in The Approval Gateways (Stages 1, 2, 3 & 3A) ensuring compliance with the Employers Requirements. The control process will also include the documenting of the incorporation of any changes to the Project Design Brief at all stages.

The Project Design Brief will be one of the tools by which the Design Managers will control the design process. It will also provide other members of the project team with an insight into the design management tasks, controls and constraints.

The Project Design Brief will identify:

1. The Lead designer.
2. The design team, with full scopes of work.
3. Design Packages (with specific items and limit of design being undertaking).
4. Package Interface matrix.
5. Design information transfer & document transmittal protocols.
6. A guide to the Designers in developing their design and subsequent documentation; and
7. Source of value engineering opportunities.

10.1.11.3. Specialist Subcontractor Design

As in any project, there will be Subcontractors with design responsibility.

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Some will undertake a full design role directly from the Employer's Requirements and Consultant's performance specifications, while others will undertake design development or detailing, for approval, from the Consultant's more defined concept designs.

The Project Design Manager will liaise closely with the Brookfield Procurement/Commercial team to identify the trade packages that will be subject to the varying levels of Subcontractor design input.

Subcontractors pre-selected to date having full design responsibility are:

- Structal (UK) Ltd – Unitised Curtain Walling.
- Mercury Engineering – Mechanical, Electrical and Public Health Services.
- Schindler Ltd – Lifts & Escalators.
- Swisslog – Automated Guided Vehicles / Pneumatic tubes.

Subcontractor pre-selected to date, having design development responsibilities are

- Astins Ltd – Partitions and Dry Lining.
- Dunne Building and Civil Engineering Ltd – Sub and Superstructures and Site Works.

Brookfield has a current working relationship with all the pre-selected sub-contractors with the exception of Swisslog. Each of the sub-contractors has a successful track record of work carried out in the design and development process with large healthcare projects.

The designing sub-contractors are being engaged to work alongside the consultants and each other, and feed their expert knowledge and experience into the design process from the earliest possible stage, ensuring full integration and coordination of

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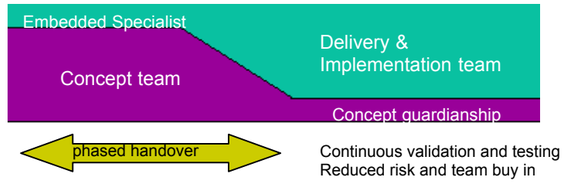
interfaces. The delivery of the design or design development then becomes the responsibility of the sub-contractor from detailed proposals to site implementation.

The process also lends itself to continuous validation, testing and cost confirmation.



Embedded Design:
Concept into Delivery: a two way process whereby specialists are embedded with the concept team and the concept team act as '**concept guardians'** through to delivery.

Once sub-contractor design is underway, all design information produced will be reviewed/commented and allocated a status by the relevant Consultants to ensure the design intent is maintained and thereby confirming compliance to the ERs, in effect the consultants become 'guardians' of the original concept.

Design coordination workshops with the Subcontractors and Consultants will take place regularly. Brookfield Design Managers will coordinate and 'chair' these meetings as necessary.

10.1.11.4. Professional Relationships & Structured Team Approach

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We will seek to establish an inclusive team culture, with emphasis on good team cohesion that looks beyond each member's individual responsibilities in isolation, to the integration of each specialism into the project as a whole. We hope that this has been successfully demonstrated to a degree during our dialogue sessions and is already embedded throughout the Brookfield team.

We will encourage a culture of communication, innovation and information transfer within all the project teams and to this end we will pursue an early involvement of the Board, Board representatives, clinicians and trade contractors working with the design team, in order to foster an integrated working relationship where the successful delivery of the Project takes the highest priority.

We will establish multi-disciplinary Design Steering Groups (as detailed in our Project Management Structure):

The benefits of this approach will be:

- Early Team integration and efficiency.
- Good understanding of the complexity and 'drivers' of the project.
- Accommodation of the inevitable iteration and rework.
- Being prepared for unforeseen changes.
- Working to consistent processes and terminology.
- Use of appropriate project management methodologies & tools.

We will endeavor to select specialist contractors and teams that have experience of working on similar projects in collaborative frameworks and who already have a successful track record.

In line with this approach we have researched and begun to assemble a team for this purpose on the NSGH project that will augment and work with the Board's own team through the forthcoming Stages of the Project.

10.1.11.5. Design Coordination and Collaborative Working (Design Steering Groups).

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The Brookfield ethos in realising the Board's aspiration for a world class healthcare facility is the application of the principle of 'form follows function'. Our interpretation of the exemplar design through the dialogue period has been on the basis that both the Adult and Children's hospitals facilities must fulfill their respective functions.

The delivery of this functionality will only be realised by the Board, the Board's advisors and end users being part of the decision making procedure within the design and construction process. The implementation of this integration is through the multi-disciplinary design steering groups identified in our Project Management Structure and listed below:

Medical Planning Group	Design Team; Planners; Clinicians **Validation & agreements of 1:50 layouts- as design evolves**
Technical Group	Design Team; Board; Advisors; Supply Chain Planning Conditions; Statutory Approvals; NHS Guidelines; SHTM / SHGN / HBN etc **Fire Strategy, Acoustic; Access; Lighting; IT; BMS; Pneumatic Tube Stn; Reception Areas**
Interior Group	Design Team; Board; Advisors; Supply Chain **Interior Finishes; Factory Visits; Mock-ups; Sample sign-offs**
Art Group	Stakeholders; Design Team **Opportunities for arts**
Equipment Group	Design Team; Board; Clinical Reps; Supply Chain **Final selection & approval; Final Specs; Spatial Requirements**
Joint Commission Group	Design Team; Board; FM; Equipment Suppliers; Commissioning Team **Validation of facilities**;
Construction Group	Design Team; Board; BCL Operations and Logistics; Supply Chain. **Minimise disruption to live hospital**;

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Medical Design coordination for the NSGH project will be led by the Medical Planning Group (with Nightingale Associates at its core) and the other groups will integrate as 'form follows function':

10.1.11.6. Medical Planning Group

Design Methodology and Approach of Sample Projects
Through our experience of working in the healthcare sector we are able to identify pertinent risk factors and have developed methodology to manage the design and construction process to mitigate their effects.

Fig. A – Sign Off Design Stages, illustrates each stage of the design process, highlighting the iterative approach.
This is an invaluable tool from the commencement of a project to engage all parties' understanding.

The methodology is founded on quality input and easy to follow consultation.
We appreciate that the process may be unfamiliar to many of the clinical end users. Nightingales will take on the role of liaising with the end users and assisting with some of the more arcane aspects in order that we all achieve the overriding objective, and as far as possible ensure the experience is an enjoyable one.

Project Initiation
We would propose that an early meeting is held with the user groups after the initial project team appointment. We would use this as an opportunity to establish the objectives for design and to outline the design process. Here we would identify the key input from the clinicians together with its timing for delivery.

The meeting will focus on:

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- The Board's vision.
- The project scope.
- Quality expectations.
- Budget criteria.
- Timescale and programme.
- Sustainability agenda.
- Expectations from all parties.
- Exemplar projects for review and or visit.

We would also use this meeting to outline the issue of a change protocol.
We accept that change is part of the design process and we will be flexible in our approach to accommodate it.
However we would use this early meeting to highlight the comparative consequence of making early stage changes against change at the construction phase.
We would also highlight the importance of ensuring all changes are costed and agreed through a structured and consistent procedure which needs to be controlled by the Board's project management team.

This meeting will set up a suitable framework on which to base all project meetings going forward, and allow us and the clinician groups to plan ahead and ensure consistent representation and participation.

As well as setting parameters for the Board's team it is important to communicate the responsibilities of each member of the design team.
In addition we need to agree tasks, responsibilities and a series of project milestones.
Nightingales would then produce the Project Control Plan and an outline design programme. Setting these parameters early is extremely useful if the design team has never worked together to ensure there is no ambiguity.

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The Briefing Process
Setting the brief, understanding the Board's vision and understanding the financial constraints early, is vital to the success of the project.
The functional brief starts with the Schedule of Accommodation. We would use our team's expertise to question all aspects of this brief to ascertain whether and what possibilities exist for a different solution; for example, opportunities for reducing some areas to increase others etc. We would bring together exemplars from Nightingale's own designs and from around the world to push the boundaries of design potential.

The Board's 'vision' for the project would also be explored asking the clinicians to produce mood boards and showing examples of exemplar projects or other examples of what they classify as good design or design solutions (not necessarily architectural) to ensure we are all in agreement with the end goal to which we jointly aspire.

The Cost Consultant will continuously review the brief and provide advice for realistic budgeting for the emerging design.

Within the design programme there will be a number of project milestones for the briefing process, the most important of which are the staged signoffs.

The 1:200-1:50 Process
Nightingales have an experienced team of health planners who will guide the end users through the complex process of design production. An initial meeting will be held to go through the whole process outlining the time constraints and programme, the significance of the ADB sheets and the importance of getting this process correct to ensure an effective transition to Construction. It is vital that this process is controlled by the Board to avoid ambiguities, misunderstanding and affordability issues. Clinicians can be very passionate and it is important that the cost control process is clearly understood and operates effectively as the key evaluator in agreeing adopted design solutions.

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The 1:50 process is something that Nightingale has refined using computer software known as Codebook, having recourse to a wide ranging equipment database including standard room layouts.

It is often very difficult for end users not conversant with CAD drawings to fully understand a 2D plan but their database will allow almost all types of rooms to be visualised in 3D making the process more easy to engage with. Their experienced team will ensure that the layouts fully coordinate with the M&E services and structure, avoiding clashes and potential delays in construction.

Coordination and Staged approval
Milestone approvals are used to avoid both ambiguity and to ensure money is not wasted by misunderstanding.
Throughout the design process a series of presentations and design reviews will be held with the Board and end users.
These not only allow the end users to feel they have a say in the scheme but ensures that the design team are going in the right direction.
As the design progresses to completion, it will be submitted to the Client for approval.
A delay to a project programme can cost money. As lead consultant at each milestone, Nightingale will review the design content against a number of criteria which are set out within their internal Quality Management System.
These criteria include the brief (area schedules), technical standards, design quality, fire, functionality and others. At each stage they would review the Structural and M&E strategy to ensure the initial concept was still robust and the current design was fully coordinated.

Again, as the design progresses with all disciplines, it is vital to ensure that cost parameters are regularly checked and milestones set on the master programme to ensure we are always fully aware of cost.

The Risk register will be implemented from the start of the project design and include both physical and financial risks.
As the design progresses in a fully coordinated manner then the financial risks will either transfer as a real cost in the design budget or be managed out

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Detailed Design
The completion of this stage is a key milestone in the design process.
At this stage all aspects of the design are worked up and presented to the Board for approval, including any three dimensional work, to allow the Board to fully understand the scheme. The approval of the design at this stage will allow the submission of a planning application and the commencement of preparation of documentation for further package tendering.

Design Quality
Design quality not only matters to Brookfield but also to the ultimate end user of the building, for it is they who will have to live with defective design work.
To ensure that the quality is maintained throughout the design process, Nightingale employ a number of internal processes and protocols. They employ a design review process which ensures the building is reviewed at regular milestone stages not only by members of the design team but by outside parties to give a fresh perspective. This process has been produced to comply with both the NHS and CABE guidance.

Construction
Once construction commences, Nightingale's interface with the Board will be twofold;

- Firstly they will meet with the Board for regular updates and,
- Secondly they will be present on site and engaging in dialogue with all members of the Brookfield team.

During the construction phase it is essential to set up regular liaison meetings.

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Experience shows that knowledge of what is going on and why it is happening, significantly increases the levels of tolerance from clinical staff.

Handover / Occupation

The Brookfield team will strive to ensure that the Client is fully briefed and aware of the operational requirements of the building, via dialogue, records and by use of the Operational and Maintenance Manuals.

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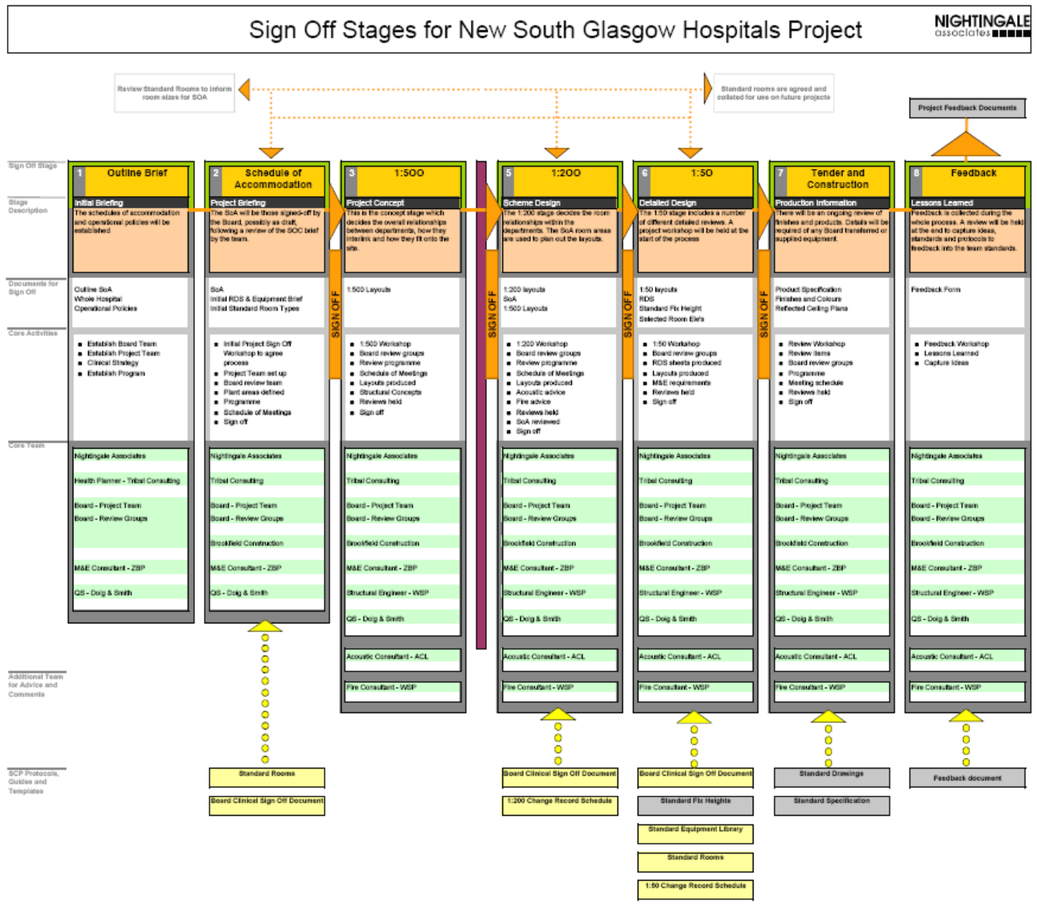

Figure A – Sign Off Design Stages

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10.1.11.7. Design Plan for Stage 1

At the start of this stage we will have the opportunity to bring specialist subcontractor benefits to assist the designers in delivering the right level of detail to ensure cost certainty. This also allows the construction team to help the design develop towards achieving best value and establishing buildability principles in the design process.

Brookfield Objectives:

- To develop a procurement strategy to enable the designers to understand the key drivers in managing cost.
- Agree with the designers the scope and deliverables required for each element of the procurement strategy and contract sum.
- Specialist subcontractors will work with the designers to agree required drawing and information levels necessary to arrive at optimum target or firm cost.
- Specialist subcontractors will work with the designers to identify innovative or better value solutions.

Our Approach:

- Empower BMJ as lead consultant to provide a management framework for effective delivery.
- Ensure feedback and input is allowed between all design teams by establishing common forums.
- Work with the designers to provide design management plans showing how they will resource, programme and deliver the required information.
- Provide interface contacts between the supply chain and designers to specify information in the appropriate depth and content.
- We will provide a " What do you need from us " relationship to enable the designers to reduce iteration and save time.
- Adopt a "draw it once" approach to promote agreed solutions based on team input.

Performance management/improvement

We will work with the client to obtain feedback and benchmarking against other Laboratory projects.
The current design programme can be used as a reference point to measure improved design and delivery.
Reduced design time and earlier work package agreement could be used as a key indicator of improved delivery.
Supply chain input can be measured to ascertain whether a reduced number of interfaces has resulted in reduced site time and the elimination of building problems.

Benefits:

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- More effective and targeted design team working related to procurement and delivery on site.
- Better co-ordination and the reduction of clashes on site.
- Information provided more quickly to the supply chain in the right content and scope.
- More Buildable solutions based on supply experience and knowledge.
- Information to the site delivery team is more focused and tailored to site needs.
- Possible reductions in site time based on better co-ordination and more buildable solutions.
- Identifying and incorporating specialist design input from the subcontract supply chain at appropriate times.
- Satisfying all mandatory requirements.
- Managing change beyond the agreed design to date.
- Conveying procurement and construction constraints on the design
- Reducing design iteration and the danger of designers being led down 'blind alleys'.
- Ensuring that sustainability issues are fully appreciated and addressed in the developing design.
- Planning for first class quality construction through good design detailing.

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SUBMISSION REFERENCE: 10.1.12 Community Engagement/Benefits

SUBMISSON RESPONSE:

Introduction

At Brookfield we take our Corporate Social Responsibility very seriously. Our core values include care and respect for the location and environment in which we work. We place great emphasis on teamwork and the need to work together in a collaborative approach to ensure we not only deliver on the design and construction of the project but that the community are engaged during the build phase, and in the longer term, the community derives benefit from the legacy that is created.

With regard to the New South Glasgow Hospitals Project this is no exception. We acknowledge NHS Greater Glasgow and Clyde's Performance, Policy and Planning Group have approved an Employability and Health Strategy which incorporates a procurement strategy which gives a commitment to pursuing community benefit in procurement. We welcome and embrace these Community Benefit requirements and acknowledge that these focus on:

- Targeted Recruitment and Training;
- Small/Medium Enterprises (SME's) supplier development; and
- Social Enterprises (SE's) development,

The objective is to maximise the opportunities for securing training and employment, business start up and business growth.

Brookfield are pleased to set out below our strategy, methodology and key performance indicators (KPI s) together with our monitoring proposals which will allow us to deliver on these promises and provide the NHS Greater Glasgow and Clyde Health Board with feedback and give the local community the comfort that we will engage with them with great enthusiasm and a clear purpose. Whilst we may provide details in our text which responds to some of the questions raised in ITPD Volume 2/1 (Hospitals) Appendix V CB1 and CB2, for ease of reference we set out the questions and answers again.

We have set up a robust, comprehensive community benefits strategy that Brookfield, together with NHS Greater Glasgow and Clyde Health Board, to which our key supply chain partners and the various Community Engagement partners referred to later in this section are required to support and contribute. Our initial estimate of the number of individual operatives and staff that will work

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on the Project site is 2,500. Brookfield is confident that with our “can do” attitude and collaborative approach this Project will act as a catalyst in the heart of Glasgow to bring long term sustainable benefits.

We have included in **Appendix A** to this section our response together with those responses from our Supply Chain partners already engaged with us, namely Astins, Dunne Group, Structal and Mercury Engineering. Notwithstanding their responses all community engagement activities will be channelled through Brookfield and our Lead Community Engagement Partner to ensure that a structured and consistent approach is maintained.

Appendix B includes our estimated labour histogram used to assess the levels of operatives that are likely to be engaged to deliver the Project

As required, we enclose a completed Community Benefit certificate as set out in ITPD Volume 2/1 appendix V, appendix CB4 in **Appendix C**.

Background

From our meetings during the dialogue stage, we appreciate that Community Benefits are clearly divided into two distinct elements;

1) Engagement; and
2) Benefits

1) Engagement

This refers to engagement with the local community in relation to the design and construction of the Project. This requires liaison with the Community Engagement Manager to ensure both the NHS Greater Glasgow and Clyde and the local community are involved throughout the process on matters that are relevant to them.

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In particular, during the design stage this will include liaison on the:

- Adult Hospital
  - Design of the hospital/patient experience
  - Community and staff involvement

- Children's Hospital
  - Engagement Advisory Panel
  - Family Panel
  - Youth Panel

During the construction phase this will include:

- Neighbourhood Engagement through our Logistics and Liaison Managers
- Developing and maintaining good relationships in and around Southern General Hospital
- Ensuring local groups are kept aware of construction matters that may impact on the local residents with the intention of making sure there are no surprises. It's about keeping people properly informed.

Charts 1 and 2 (titled *"Community Themes"* and *"Local Catchment"*) highlight some of the key principles and local areas that Brookfield seek to penetrate through active Community Engagement. As part of our research Brookfield carried out many visits both on foot and by car in and around the local areas to obtain a full appreciation of the local environment and the people that live and work in and around the existing Southern General Hospital and Glasgow. There is a huge resource to tap into and we see this as a major positive aspect for the Project and for the community. Local residents, local groups together with local schools and colleges are seen as appropriate for the type of engagement we envisage. Information leaflets to local residents in close proximity to the Project on forthcoming construction activities are essential. During discussions with the Linthouse Housing Association we have become aware of a local project to create a caf_ facility for mothers and toddlers in Elder Park, Govan. There are various ways in which the Brookfield team could provide support for this local project, one being the provision of apprentices to assist in the construction of this important facility.

Furthermore, Brookfield would also seek to reach out to local schools and promote a series of Independent Learning Programmes to encourage the pupils to investigate and learn about the construction industry using the New South Glasgow Hospitals project as a source of learning. (This is a scheme we trialled at our Peterborough Hospitals project and proved so successful with the pupils that it is being repeated for a second year.) This is something that we would seek to replicate on this Project. Using our relationship

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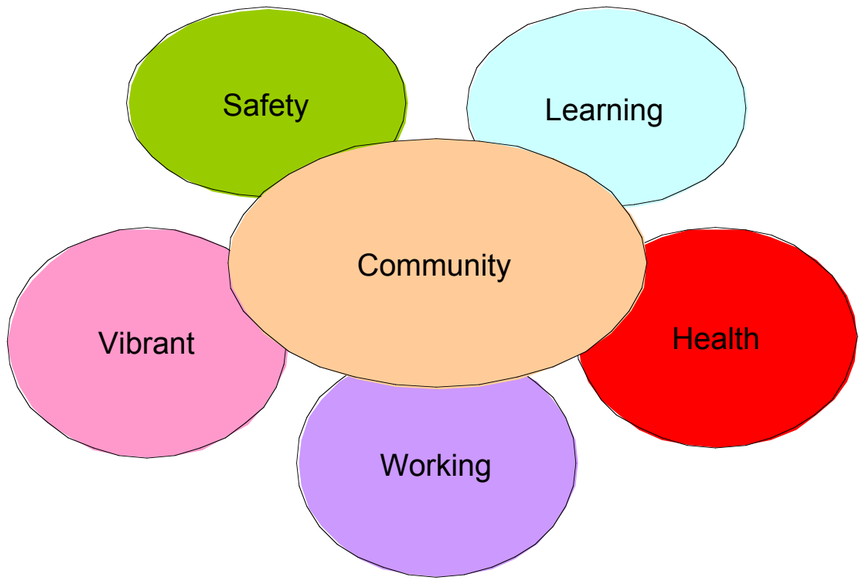
with Glasgow South West Regeneration Agency (GSWRA) they have strong links with South West schools and are actively engaged with the school community. Working in partnership we are sure the combined strengths our both parties will maximise this opportunity.

Through our investigations and discussions we also understand the five key themes that consistently resonate with the local community.

COMMUNITY THEMES (Chart 1)



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These “themes” strike at the centre of what is extremely important to regenerating this area. A safe, healthy working environment, which promotes learning and ultimately creates the vibrancy that Glasgow as a city offers is something Brookfield are keen to embrace and develop through the duration of the Project, a duration which lends itself to long term investment of time and resource. Longevity is at the core of Brookfield.

The image below (Local Catchment) identifies a number local areas that we have visited over the duration of the dialogue stage to obtain a deep understanding of the people and culture that exists. We see these areas feeding into the Hospitals both during the construction phase and beyond when fully operational.

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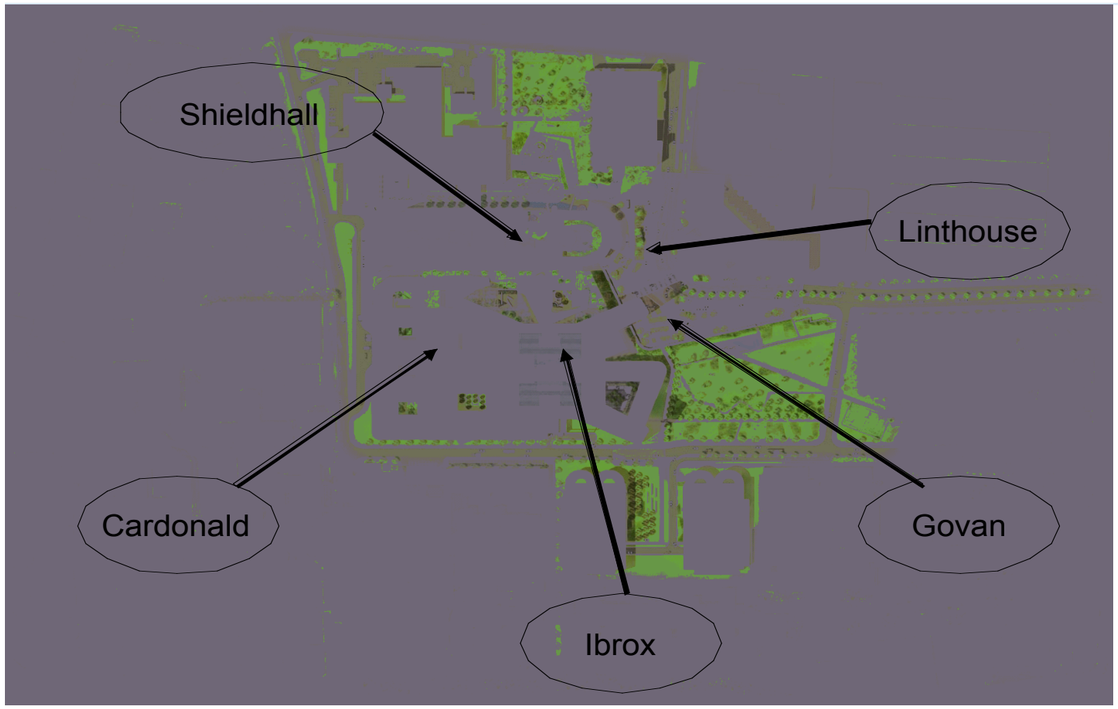
LOCAL CATCHMENT (Chart 2)



2) Benefits

This relates to the benefits that can be realised from the impact that this large construction project can have on the community in terms of individuals, businesses and the wider Glasgow regions.

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The NHS Greater Glasgow and Clyde's requirements in relation to Benefits are summarised into three categories as follows:

1. Targeted Recruitment and Training
2. Small and Medium Enterprises (SME's) supplier development
3. Social Enterprises (SE's) development

With reference to the list of agencies/bodies contained in Volume 2/1 Hospitals Appendix V Community Benefits Appendix CB3 together with other parties we have identified through our research, Brookfield with our key supply chain partners have met with each party identified in the Chart 3 (titled "*Community Engagement Partners*") to introduce the Brookfield team, to explain the community benefits requirements and to understand what they can bring to the Project.

We held very productive sessions with individuals including Rosh Campbell (GSWRA), Sharon McGrath (City Building), Maggie Lennon (Bridges Programme). Loraine Irvin (West of Scotland Colleges Partnership), Jim Brown (EU Skills), John Lindsey (Skills Development Scotland), Ian Stirrat (Summit Skills), Robert Andrew, (Glasgow City Council), Lauren NcNichol (Glasgow Chamber of Commerce), Jillian Moffat (Scottish Enterprise), and Gerry Higgins (Community Enterprises in Strathcylde (CEiS)). Brookfield received extremely positive feedback from all the individuals and there was a genuine desire to work with us should we be successful in the bid.

Following on from the individual meetings, Brookfield also held a collective "*meet and greet*" session at "The Glynhill Hotel", Renfrew in July with all of the Community Engagement partners together to begin to develop the collaborative team approach we seek to engender in this project in order to deliver on the requirements. Following a short presentation by Brookfield we then held discussions informally about community benefit experiences, (Govan/Pollock, Silverburn Development) and what support there was from those partners who would like to become involved in this prestigious Project of which it will come as no surprise that they all wished to be a part of something special i.e NSGH.

What is also apparent is that there exists a wealth of many partners/agencies with access to many resources be it individuals, SME's and/or SE's. In addition, there is significant funding available from a variety of sources which these partners/agencies are able to access and secure for this Project. These funding sources include the European Union, the Scottish Executive and various Charities.

Following on from these meetings we identified some key partners which are discussed in more detail in the Strategy section.

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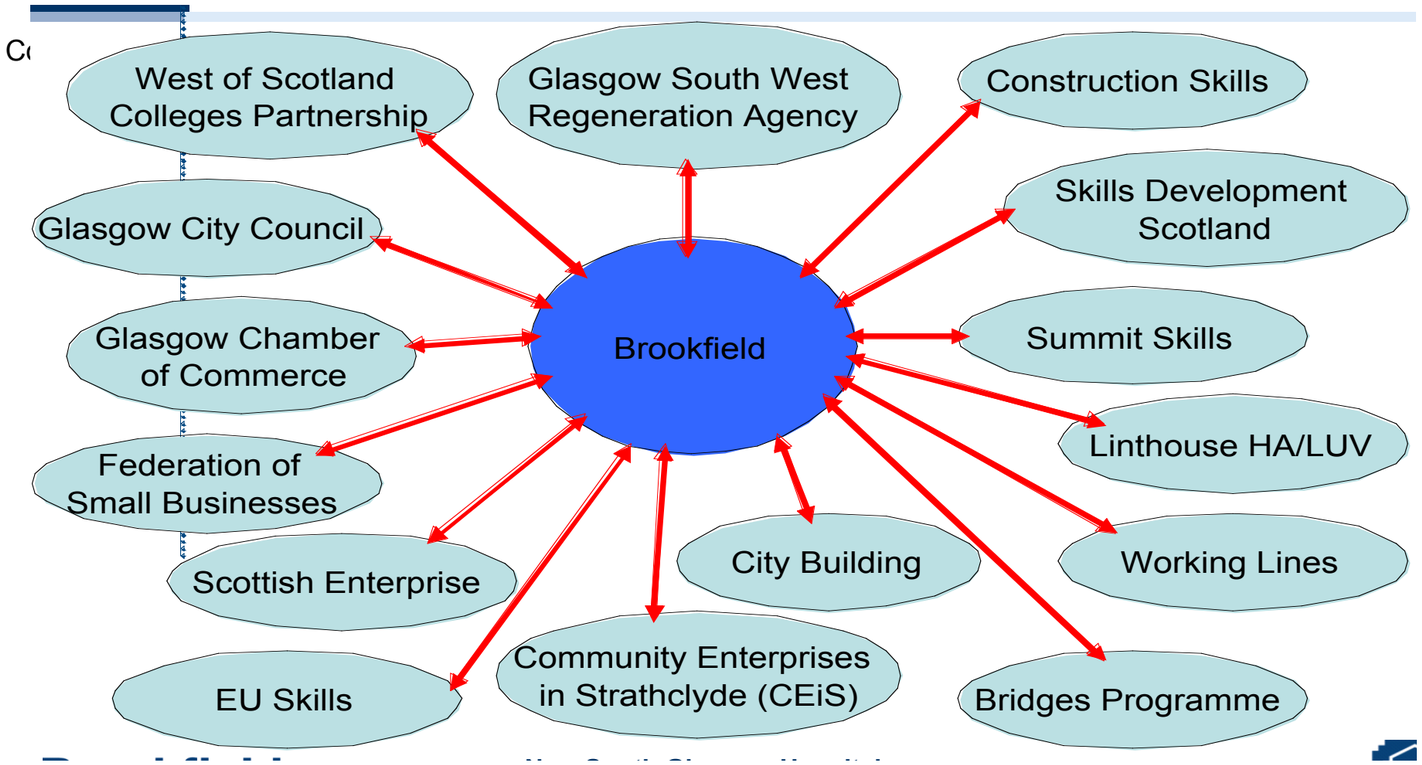

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Strategy

To ensure we maximise the community benefit to its full potential our strategy is to create a strategic team using a partner agreement with ‘buy in’ from some of the key partners/agencies. The strategic team will report to a Lead Partner acting as a single point of contact to Brookfield and NHS Greater Glasgow and Clyde.

We have a firm commitment that should Brookfield be the successful bidder our Lead Partner will be Glasgow South West Regeneration Agency (GSWRA) who will act as a conduit to the opportunities that arise out of the Project.

Each section will be headed up by the relevant agency who in this case has demonstrated they have the resources and contacts to deliver in accordance with the requirements.

As the simple structure (Chart 4) demonstrates, GSWRA will also head up the Targeted Recruitment and Training, and again we have firm commitments from Glasgow City Council who will head up SME’s and CEiS who will head up SE’s and also confirmation of their willingness to participate and their acceptance of reporting to the Lead Partner. These partners have access to a significant network of potential New Entrants, SME’s and SE’s and can bring added benefits to the Project.

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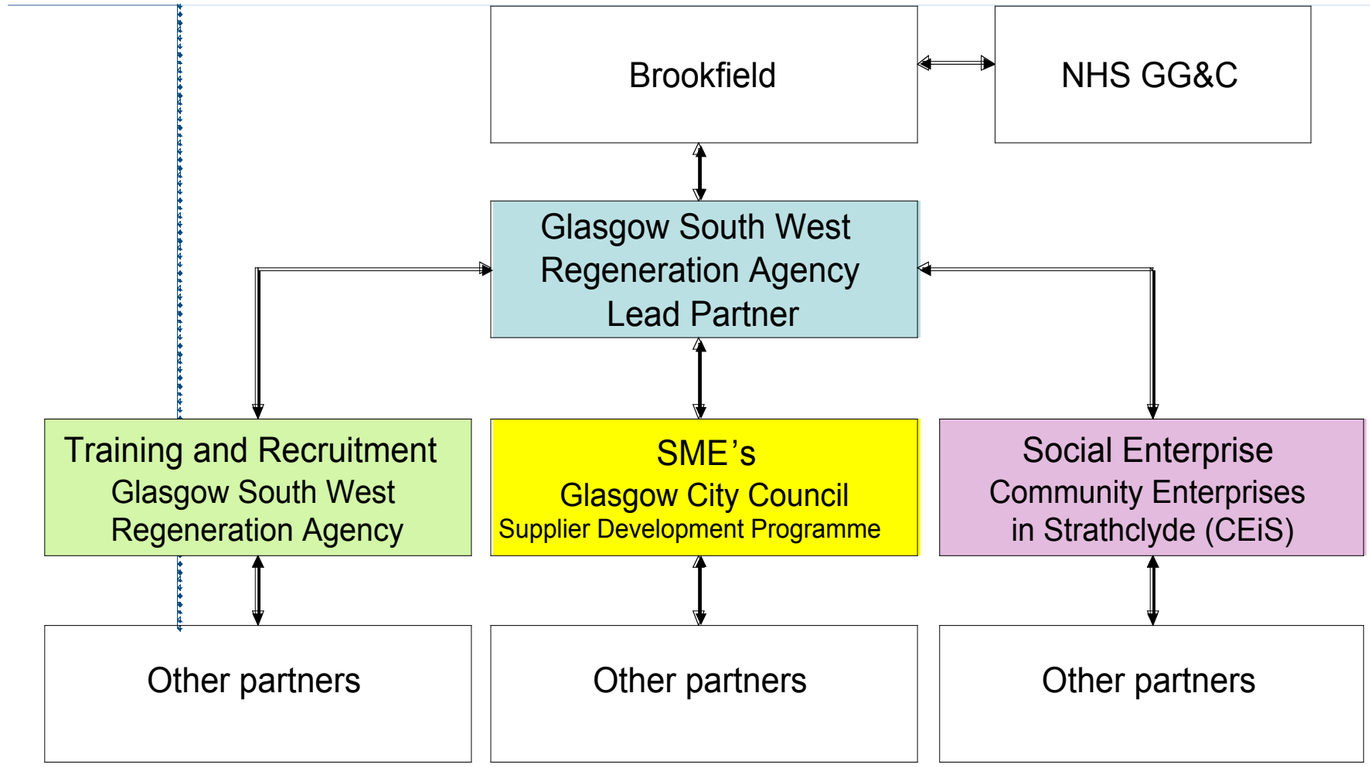
Simplified CE Structure (Chart 4)



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As discussed in the dialogue meetings Brookfield also intend to set up either on site or in close proximity to the Project a training and recruitment centre which shall be managed by GSWRA. This will act as a dedicated point of contact for both those invited and “cold callers”.

In addition, Brookfield following agreement with NHS Greater Glasgow and Clyde would introduce a project website to deal with three key elements:

1) Progress of the Project: to allow people interested in the Project to view how the development is progressing including photographs and brief descriptions/updates/news;
2) Construction Procurement/Employment Opportunities: For those individuals/SME’s, SE’s who would be interested in getting involved, news of “meet the buyer” events and other appropriate marketing; and
3) Long term employment opportunities: we propose a link to NHS Greater Glasgow and Clyde Employment Opportunities at the New South Glasgow Hospitals (again subject to agreement with the Board)

We set out a brief introduction for each of our key Community Engagement Partners (identified in Chart 4):

Glasgow South West Regeneration Agency (GSWRA):

Based at various geographic locations throughout the South West, the Employability Service provides a range of employability support to local residents with the aim of either (a) moving them into training, education or employment or (b) progressing them within their current job. Support is delivered through a range of mechanisms which address worklessness and the multiple barriers associated with economic inactivity and social exclusion. Through this Project we would seek to tackle some the problems of high levels of benefit dependency and low levels of skills within the local area.

Under the ‘People’ Objective, the Inclusion Service within GSWRA seeks to address the issues of worklessness within the area by breaking down many of the barriers faced by specific groups within the community. Some of these groups include those who face barriers to training and employment due to lack of affordable childcare and those who experience physical and/or mental health issues. The Inclusion Service also works with young adults who are not currently engaging in the labour market, i.e. they’re not in education, employment or training – known as the More Choices More Chances (MCMC) cohort.

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The Skills Training Team within GSWRA offers a range of different programmes, each of which is designed to maximise training and employment opportunities through the provision of learning support to people living within the South West. Each of these programmes responds to the needs of local people with the aim of providing them with the skills necessary to compete in the wider labour market.

GSWRA is therefore best placed to be Lead Partner and has the structure, funding and network to be a valued member of the CE team.

Glasgow City Council

As the Local authority for the area, Glasgow City Council is concerned with maximising the welfare and well being for all of the people in the area. The Council established the Supplier Development Programme (SDP) in 2006 in response to a business need survey which highlighted that procurement with the public sector was a high priority for small to medium enterprises but also one which involved barriers when it comes to engagement in the tendering process. The main concerns that existed in the view of these businesses were a lack of awareness of available opportunities, a lack of knowledge about the tendering process and a lack of confidence that they had adequate resources to support any bid for a public sector contract. The Supplier Development Programme was formed in order to address these concerns. SDP continues to grow its membership and currently operates with a mailing list of some 17,000 businesses with over 3,000 of these firms actively engaged in our training and awareness events. We are very successful in working in partnership with colleagues in the business support organisations, the professional procurement teams and clearly the small and medium sized business community.

Community Enterprises in Strathclyde (CEiS)

At CEiS we have an Enterprise Support Service which assists existing emerging and aspiring social enterprises to become, and remain sustainable businesses that fulfil a social purpose. It is also our role to increase business start ups by spotting and nurturing future potential, particularly amongst social economy organisations that see trading as part of their growth strategy.

Brookfield

Working with social enterprises is how Enterprise Support Team designs and delivers business consultancy services. We believe in social enterprise as a means for delivering significant and measurable social, economic and environmental impacts. We want social enterprise to be recognised as a pillar of Scotland's economic infrastructure.

Our enterprise support services and activities are commissioned directly by clients or delivered in partnership with public sector and other economic development agencies. They include:

- Business consultancy.
- Programmes for building the capability of organisations and their people.
- Research and dissemination of business, market and sector knowledge.
- Promotion of social enterprise as an effective business model.

We recognise the importance of working with social enterprises at different stages of their development while remaining financially accessible to our clients. We are a key partner in delivering Scottish Government's *Aspire to Enterprise* programme supporting aspiring social enterprises and we have secured funding for our *Investing in Enterprise* programme aimed at growing the sector through matching sustainable market opportunities with sustainable social enterprises.

Experienced in working with local, national and international organisations, CEiS has the largest team of social enterprise business advisers in Scotland who have real understanding of our client's needs – from service development to income generation; crisis management to long-term sustainability – as well as specialist knowledge in areas such as business replication, impact measurement, funding, legal structures and public sector procurement.

Enterprise Support ensures that the turnover of the social economy in Scotland is annually increased as a result of the trading activities of sustainable social enterprises.

Partnership Agreement

The Partnership Agreement requires each party to sign up to the values that we seek and to assist in achieving delivery of the requirements. The Agreement will include the

- aims;
- approach;
- Partners:
- Principles; and
- Declaration.

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By establishing this Partnership, it will allow the Project to reach into many areas through other agencies that each “head” has/will introduce during the process.

Supply Chain “buy in”

Our key Supply Chain partners, Astins Ltd, Dunne Group, Structal Ltd and Mercury Engineering are fully committed to this strategy and have assisted in the preparation for this bid submission together with meeting the above agencies/partners. They also bring with them their experiences of community benefits and valuable lessons learnt. To support their commitments we include in this submission their completed forms CB1 and CB2. (**Appendix A**) These will be included in their subcontracts to ensure their commitments are backed up by contractual obligations. Notwithstanding the statements made in each supply chain’s response the implementation of this strategy will be through the structured approach and channelled through our Community Engagement Lead Partner GSWRA.

In order to ensure “buy in” from other *direct* Supply Chain partners who have yet to be engaged in this Project Brookfield will explain to them in detail the Community Benefit requirements and finalise their agreements with contractual obligations to deliver. They will be signed up with similar terms to ensure consistency throughout the Project.

With regards *indirect* Supply Chain partners Brookfield will promote awareness of the community benefit requirements and where possible include an obligation for them to ensure they deliver obligations by cascading them down the supply chain.

SME/SE Involvement

Brookfield understand the *barriers* that a Project of this size and complexity may represent to SME/SE’s. We will seek to break down those *barriers*. We have already identified the work packages. Within these packages there will also be opportunities for non construction activities eg catering, office welfare, couriers, printing. Our commitment is:

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- We will advertise supply chain contracts through the website, marketing, meet the buyer events, eg South Glasgow Business Club, Chamber of Commerce Events, Sunny Govan radio etc
- We will promote within our supply chain to also advertise opportunities where applicable; and
- We will use our Community Engagement Partners assess and develop the capacity of SME/ Social Enterprises to undertake work and where appropriate seek their inclusion in the Project.
- We will promote with the help of our Community Engagement Partners the up-skilling of SME's to develop their confidence to grow in a safe controlled manner through training such that it gives them the ability to bid for other projects longer term

Within our bid submission (Volume 15) we discuss the option of a "caf_ in the park". This is just one example where we could create a new Social Enterprise from start up and leave a lasting legacy created by and for the New South Glasgow Hospitals Project. We think that would be an excellent feature which we would be keen to discuss further should we be successful.

Key Performance Indicators

Brookfield commits to KPI's that are SMART, ie

- Specific
- Measurable
- Achievable
- Realistic
- Timely

As we will be judged on these KPI's it is important that we can promote throughout the team a set of KPI's that are believable and not just "words".

The KPI's were set out in the ITPD document Appendix V and explained in more detail to Brookfield during the dialogue stage. Specifically, the Board have requested responses to questions raised in Appendix CB1 and CB2 of the ITPD Appendix V.

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In summary they are:

- Targeted Recruitment and Training
  - Target 10% of total labour on project delivered by “New Entrants”
  - Training and up-skilling existing employees
  - Regular monitoring
  - Case studies
  - Stakeholder Evaluation

- SME/Social Enterprise development
  - Provide access to opportunities for SME’s
  - Engage with Social Enterprises/demonstrate successful collaboration

Monitoring

In order to ensure that Brookfield is meeting the requirements we propose the following:

- Monthly meetings with NHS GG&C, Brookfield and the Lead Partner (GSWRA).
- Provide quarterly monitoring information to NHS GG&C
- Develop Case Studies (at least quarterly)
- Participate in Stakeholder Evaluation
- Analyse the Social and Environmental impact of SMEs/ Social Enterprises
- Provide any other feedback which is relevant
- Following completion of Project provide an overall report detailing the achievements, statistics and long term impact which this Hospital Project will leave as a legacy.

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Summary

Brookfield and its team are fully committed to the Community Engagement/Benefit requirements of the New South Glasgow Hospitals Project and have invested considerable time and resource to really get amongst the local area and its vibrant culture. We are confident that we know what this Project means to Glasgow and its people.

Brookfield aim is to deliver the Community Benefits it has set out to achieve.

Collectively, we have a real chance to make a lasting difference to:

- Individuals;
- Businesses; and
- Glasgow

With a robust strategy, a Partner Agreement and a committed Lead Partner, key supply chain partners, SMART KPI's, we believe Brookfield are well placed to deliver on the requirements and create a lasting legacy, sustainable employment and set a benchmark for future projects to aspire to.

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COMMUNITY BENEFITS: IT'S ABOUT PEOPLE

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APPENDIX A

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APPENDIX A

We set out below some extracts from the ITPD Appendix V for the benefit of the reader. This is then followed by completed forms as requested in the bid deliverables document as follows:

- Brookfield Response
- Astins Response
- Dunne Group Response
- Structal Group Response
- Mercury Engineering Response

Targeted Recruitment and Training (appendix CB1 Table 1, Table 2)

For clarity we re-emphasis the definition of a “New Entrant” being

“*a person who is trained or employed to do a specific job and is leaving an educational establishment or a training provider, or a person that has been non-employed with no experience or a person with construction experience who has been unemployed for at least six months and is seeking employment*.”

“*A New Entrant is defined at section 13.2.1.*
An Apprentice is a person defined as a New Entrant to the industry, both youth and adult, who is undertaking a recognised skill qualification and will operate under the Terms of the Scottish Building Apprenticeship and Training Council (SBATC) or an equivalent apprenticeship scheme.”

Other Definitions:

Work Experience Place is defined as *a person undertaking a short term (1 – 4 weeks) overview of the industry through a related training programme with on site instruction and supervision provided.*

Lifelong Learning Opportunities is defined as *an opportunity and support given to an existing employee to access further training opportunities*

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Direct indicates that the New Entrant will be employed *or* trained by the main contractor

Indirect indicates that the New Entrant will be employed or trained through a specialist contractor or sub contractor as a result of work procured through the main contractor

Qualifications to be sought: please complete Table 2

NHS Greater Glasgow and Clyde aims to demonstrate the additional benefits that this investment will bring. Therefore to show additionally, tenderers should provide information to show expected qualifications including levels and total numbers for New Entrants.

When tenderers are reviewing the new entrant opportunities required for this contract, consideration should be given to:

- Recruitment of Apprentices

In the majority of all construction trades the minimum training period is four years for 16-18 year olds. Adult apprentices, 19 years + should also be considered, the training period lasts between two and a half to four years depending on trade. In Scotland, a Modern Apprenticeship will be a minimum of a Level 3 Vocational Qualification:

- Recruitment of Semi Skilled Operatives

There are two categories

➢ Skill-seekers, for 16-18 year olds, Level 2 Vocational Qualification in construction frameworks where a Level 3 Vocational Qualification does not exist. Examples of these include Ames Taping and Ceiling Fixing.

➢ Skill to Build or other trainees, bespoke training designed to meet employer specifications. This training is delivered over an agreed period combining both on and off site learning for people aged 19+.

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BROOKFIELD RESPONSE

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APPENDIX CB1

TRAINING OPPORTUNITIES – METHOD STATEMENT

1. Opportunities to be provided: please complete Table 1

NHS Greater Glasgow and Clyde aims to demonstrate the additional benefits that this investment will bring to Greater Glasgow and Clyde. Therefore to show additionality, tenderers are required to provide the information in the table below setting out minimum targets of achievement under targeted recruitment and training.

Table 1

Indicator	Direct	Indirect	Total
How many people do you expect to employ in the delivery of this contract?* Refer Appendix B Labour Histogram estimate.	72	2433	2,505
1. How many of those do you anticipate being New Entrants recruits? * See Supply Chain commitments already engaged.	7	243*	250
2. Please detail the disciplines from which you will need to recruit and the associated numbers Brookfield will employ a mixture of site office and site based staff to assist in the management of the Project. This will include section managers, contract administrators, engineers etc			
3. How many qualifications do you expect New Entrants to achieve as a result of this contract? (Details in Table 2)	3	247	250
4. How many Apprentices do you expect to recruit as a result of this contract?	0	88	88
5. How many Work Experience Places do you intend to offer as a result of this contract?	2	182	184
6. How many Lifelong Learning Opportunities will you offer to existing employees as a result of this contract? (Details in Question 8)	10	492	502

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Table 2: Qualifications to be Achieved

Occupation	New Entrant Trainees	Existing Personnel	Qualifications being sought	Nos. completing the qualification

Please also provide the following information.

1. Does the company have a policy on training and upskilling? If so, what are the main elements?

   Brookfield is committed to training and development. The programmes we run include education sponsorship and training assistance, a three year Graduate development programme, leadership training for senior staff. We assist employees, who are taking responsibility for their personal and occupational development, to maintain an active interest in professional activities related to their job by supporting them through our professional development programmes with RICS and CIOB. We also offer support to employees wishing to undertake NVQs. We also provide training to fill skill gaps identified through our Performance Appraisal systems

   We complete annual training plans as an output from staff appraisals which comprise of site service specific courses. The training will include,

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but will not be limited to:

- Customer CARE
- Manual Handling
- Infection Control
- Fire
- Health & Safety
- COSHH Training
- Equipment Training
- Incident and Accident Reporting

.

2.	What relevant training has the company been involved in during the last 12 months?	In the last 12 months Brookfield has been involved in the following programmes education sponsorship and training assistance, a three year Graduate development programme, leadership training for senior staff. We assist employees through our professional development programmes with RICS and CIOB. We also offer support to employees wishing to undertake NVQs. The table below are all training programmes that Brookfield have been

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involved in the last 12 months. All staff will be trained in the following:

	Electricians	Mechanical Engineers	Carpenter/ Handyman
Recognised Apprenticeship	√		
Passed 17th Edition Electrical Regulations	√		
Passed Testing Certificate	√		
City & Guilds 2	√		
NVQ 2	√		
Employment Record	√		
CSCS or Equivalent	√		
Recognised Apprenticeship		√	
City & Guilds 2		√	
NVQ 2		√	
ACS – National Accredited Certificate		√	
Scheme for Gas Fitting Operatives – Pass		√	
Employment Record		√	
CSCS or Equivalent		√	
City & Guilds 3 NVQ 3		√	
City & Guilds 3 NVQ 3			√

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3. Demonstrate how the figures identified in tables 1 and 2 are over and above your normal recruitment pattern of New Entrants over the past three years detailing the annual intake of Apprentices and Semi Skilled Operatives.

Apprentices	Average Semi – Skilled Employed

4. Describe the steps you will take to ensure specialist or subcontractor co-operation where this is necessary to fulfil the training requirements.

- Brookfield will ensure that all training requirements are achieved,

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through implementing them in partnership agreement. This requires all parties to sign up to the values that we seek and to assist in achieving of the delivery.

- Glasgow South West Regeneration Agency (GSWRA) will be our lead partner if we become the successful bidder. They lead in recruiting and training. GSWRA services provide employability support to local residents with the aim of either (a) moving them into training, education or employment or (b) progressing them within their current job.

- The specialist or sub-contract training will be reviewed and monitored on a regular monthly basis allowing improvements to be made where necessary.

5. Describe the steps you will take to ensure that all vacancies are notified to Local Regeneration Agency Network and any other relevant agencies.

Glasgow South West Regeneration Agency will be our direct recruiting and training agency. They will advertise all vacancies in the local area and aim to employ within these local communities.

We have also proposed to use a website to advertise for employment opportunities (long and short term). Where applicable advertisement will also be within our supply chain.

Our main supply chain partners have also agreed to ‘’buy in’’ to our strategies and therefore will be informing Local Regeneration Agency Networks of their vacancies available.

6. How will you ensure that subcontractors comply with this requirement?

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Our key sub-contractors have grasped our concept of a ‘’buy in’’ ethic. This idea is based on Brookfield and all the main sub-contractors agreeing to be fully committed to the strategy set out in this submission. A strategy based on the development of all employees through training and new employment.

There will be regular reviewing and monitoring of the specialist or sub-contractors training policy to ensure they are achieving the training requirements as set out in the contract.

7. How will you collect data on the numbers of vacancies offered to the named agencies, and the number filled by candidates from these agencies?

Monthly reviews and reports will be produced, which will register the number of vacancies offered by agencies and the number of vacancies that are filled. The reports will include the same data from all specialists or sub-contractors.

8 Describe the steps you will take to ensure continued staff development and retention

The continued development of staff will remain the same as during the job, as a result of the Glasgow South West Regeneration Agency strategy.

Our main supply chain partners have also agreed and will be contractually bound into continued staff development and retention as a part of Brookfield’s strategy.

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9. Who will be responsible for the achievement of the employment and training requirements? What previous experience/qualifications do they have in relation to the delivery of targeted recruitment and training in construction?

Glasgow South West Regeneration Agency (GSWRA) will be responsible for the employment and training requirements as our Lead Partner. We also have firm commitments from Glasgow City Council and Community Enterprises in Strathclyde who will head up Small and medium enterprises and Social Enterprises. Each section will be headed up by the relevant agency specific to the needs and requirements of that section. Each Agency will report to the Lead Partner to ensure all requirements are being achieved.

GSWRA are a prestigious employment agency that aims to provide a range of employability support to local residents. Under the 'People' Objective, the Inclusion service with GSWRA seeks to address the worklessness within the area by breaking the barriers faced by specific communities and getting them in to employment.

GSWRA has a specific Skills Training Team which offers a range of programmes, each designed to maximise the training and employment in the South West.

10. How will the monitoring information be collected and be made readily available to NHS Greater Glasgow and Clyde and their agents, in

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order to provide:

a) evidence of performance against KPI's and for

GSWRA will collate all information required and make it readily available for NHS Greater Glasgow and Clyde. This information will be provided from Glasgow City Council who will head up the Small/Medium Enterprise and Community Enterprise in Strathclyde who will head up Social enterprises.

These two companies have confirmed their commitment to Brookfield and will assist in these areas through out the project.

b) contract monitoring purposes

Brookfield and GSWRA will meet on a regular basis (at least once a month) to ensure we are monitoring the delivery of our commitments.

c) examples of reports produced

In discussion with GSWRA they had made us aware of similar reports produced for other projects which we will adapt to suit this Project.

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Brookfield

11. Describe the approach and actions you intend to take to ensure the delivery of the employment.

Brookfield managing the process will utilise the skills that GSWRA, Glasgow City Council and Community Enterprise in Strathclyde bring to the Project. Initial discussions held with each will enable the delivery of employment throughout the project. Monthly meetings and regular feedback sessions are key to ensuring we are meeting the targets and making use of lessons learnt where appropriate.

12 What has the turnover of New Entrants and Apprentices in your organisation been in the past three years?

	Apprentices

	New Entrant

13. Please provide any other relevant information about the approach you intend to take to fulfil the employment and training requirements.

We believe the approach we have taken to set up a core Community Engagement team will help us reach out to resources that we may not have direct access to or know about. The Partner Agreement will ensure 'buy in' and we know those agencies we have met with are keen to work with us and achieve the targets. Our enthusiasm and key supply chain input thus far has laid a foundation that we can develop.

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Brookfield

APPENDIX CB2

SME/ SE METHOD STATEMENT

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Brookfield

1. Describe the activities that you will undertake to identify SMEs / Social Enterprises and assess their capacity to deliver works, services or supplies that are required for all contracts in relation to this project;

We have firm commitments with Glasgow City Council who will be heading up the SME's and through their Supplier Development Programme 2006 are keen to engage with Brookfield on this Project as they like us see the opportunities that this can bring. This programme gives local businesses greater awareness of the tender process and opportunities available. As result it gives them confidence to tender for jobs such as the New South Glasgow Hospital Project. The relationship we will form with Glasgow City Council will ensure that we have tenders submitted from Small/ Medium local businesses.

Community Enterprises in Strathclyde (CEiS) will head up the Social Enterprises through assisting existing emerging and aspiring social enterprises to become, and remain sustainable businesses that fulfil a social purpose. CEiS will ensure that any enterprise used will have the relevant support and guidance needed for them to remain sustainable and develeping.

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Brookfield

2.	Describe any actions you propose to take to assist SMEs / Social Enterprises to obtain contracts in relation to the construction of this project Brookfield understands the barriers that SME/ SE face will seek to break down those *barriers*. We have already identified the work packages. Within these packages there will also be opportunities for non construction activities eg catering, office welfare, couriers, printing. We discussed during the dialogue stage about breaking down work packages. By way of example painting and decorating could be let on three distinct areas being Adult wards, podium level, Children's. This would allow three companies to be engaged on the Project avoiding potential imbalance in the local workforce if one subcontractor was to secure the whole package.
3.	How will you ensure that your sub-contractors make all opportunities available to SMEs / Social Enterprises? To ensure that all subcontractors follow the same strategies as Brookfield, we have devised a supply chain ''buy in''. This ''buy in'' will be contractually binding for them to deliver the agreed promises as set out in our strategy.
4.	How you would measure the social and economic impact of your engagement with SMEs and Social Enterprises? One example will be to record the impact by the number of SME's engaged in the Project and the amount of turnover it represents against their annual turnover.
5.	Outline any support you or your subcontractors would provide to SMEs and Social Enterprises to assist them to work in partnership

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with you.

- We will advertise supply chain contracts through the website, marketing, meet the buyer events, eg South Glasgow Business Club, Chamber of Commerce Events, Sunny Govan radio etc
- We will promote within our supply chain to also advertise opportunities where applicable; and
- We will use our Community Engagement Partners assess and develop the capacity of SME/ Social Enterprises to undertake work and where appropriate seek their inclusion in the Project.
- We will promote with the help of our Community Engagement Partners the up-skilling of SME's to develop their confidence to grow in a safe controlled manner through training such that it gives them the ability to bid for other projects longer term

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Brookfield

ASTINS RESPONSE

APPENDIX CB1

TRAINING OPPORTUNITIES – METHOD STATEMENT

1. Opportunities to be provided: please complete Table 1

NHS Greater Glasgow and Clyde aims to demonstrate the additional benefits that this investment will bring to Greater Glasgow and Clyde. Therefore to show additionality, tenderers are required to provide the information in the table below setting out minimum targets of achievement under targeted recruitment and training.

Table 1

Indicator	Direct	Indirect	Total
How many people do you expect to employ in the delivery of this contract?	140	60	200
1. How many of those do you anticipate being New Entrants recruits?	50		50
2. Please detail the disciplines from which you will need to recruit and the associated numbers DRY LINING & CEILINGS			

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Brookfield

3. How many qualifications do you expect New Entrants to achieve as a result of this contract? (Details in Table 2)	210		210
4. How many Apprentices do you expect to recruit as a result of this contract?	10		10
5. How many Work Experience Places do you intend to offer as a result of this contract?	20		20
6. How many Lifelong Learning Opportunities will you offer to existing employees as a result of this contract? (Details in Question 8)	240	120	360

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Brookfield

Table 2: Qualifications to be Achieved

Occupation	New Entrant Trainees	Existing Personnel	Qualifications being sought	Nos. completing the qualification
Dry Lining	10		SVQ Level 3	10
Dry Lining	50		CSCS	50
Dry Lining		60	EWPA	60
Dry Lining	50	150	Health & Safety	200
Dry Lining	50		Skills & Techniques	50
Dry Lining	50	150	Environmental	200

Please also provide the following information.

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Brookfield

1. Does the company have a policy on training and upskilling? If so, what are the main elements?

Astins has four core values. One of these is continuous improvement. It sits at the heart of what we do. All Astins people are encouraged and supported through organised programmes of professional and personal development.

The programme is organised through the Astins Institute, a £1m facility set up at the company's expense to fulfil its stated training and development needs. Course and pathways offered include:

- Construction Skills Certification Scheme courses
- Health & Safety Best Practice courses
- Environmental Best Practice courses
- Dry Lining Basic Skills and Techniques courses
- Existing Worker Practical Assessment
- On-Site Assessment and Training
- Dry Lining/Ceilings NVQ/SVQ at Level 2
- Dry Lining/Ceilings NVQ/SVQ at Level 3
- Skills Development and Upskilling courses
- Management and Personal Development courses

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2. What relevant training has the company been involved in during the last 12 months?

As listed above and specific courses include:

- QUC710 – Interior Systems NVQ Level 2 – Dry Lining – Fixing
- QUD710 – Interior Systems NVQ Level 2 – Dry Lining – Finishing
- DIP015 – Diploma in Interior Systems Level 2
- SAP (Special Apprenticeship Programme) Interior Systems
- SAP (Special Apprenticeship Programme)Cold Form Steel Frame Apprenticeship (Pilot)
- Project Planning Workshops
- PASMA Training
- Manual Handling Training
- Abrasive Wheels Training
- Hilti GX & DX Training
- IPAF Licensing in International Powered Access Federation)
- CSCS Testing (Construction Skills Certification Scheme)
- Health & Safety Best Practice courses including:
    - Tool Box Talks
    - MAD Training
    - IIF Incident and injury Free Training
    - SMSTS (Site Management Safety Training Scheme) & SSTS (Site Supervisor Safety Training Scheme)

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Brookfield

3.	Demonstrate how the figures identified in tables 1 and 2 are over and above your normal recruitment pattern of New Entrants over the past three years detailing the annual intake of Apprentices and Semi Skilled Operatives.

Our planned annual intake of apprentices is 20 a year (10 male and 10 female). This is run independent of any projects that the company is involved in. Our apprentice programme was initiated in February 2009. Apprentice figures in table 1 above would be in addition to these figures.

2007 – 0 Apprentices

2008 – 0 Apprentices

2009 – 12 Apprentices

2010 – 20 Apprentices

2011 – 20 Apprentices

2012 – 20 Apprentices

The annual intake of Semi Skilled Operatives over the last three years is as follows:

The total number of semi skilled operatives as at 30 June each year was –

2007 – 114

2008 – 104

2009 - 124

Astins would estimate a continued level of recruitment at this level over the years 2010-2012. The 20 new entrants and twenty young people identified in table 1 above would be in addition to those figures.

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4. Describe the steps you will take to ensure specialist or subcontractor co-operation where this is necessary to fulfil the training requirements.

Where Astins is employing sub contractors, a commitment to training and development for the staff employed would be insisted upon as part of the terms and conditions of any contract. Sub- contracted staff would be given the same access to personal and professional development courses as directly employed Astins staff.

5. Describe the steps you will take to ensure that all vacancies are notified to Local Regeneration Agency Network and any other relevant agencies.

Two months before the starting on-site, Astins would confirm its recruitment needs. It will aim to fill up to 30% of vacancies at a local level through both direct employment and through sub-contracting to local companies. We will approach additional local government agencies such as Job Seekers and Connexions, and host Career Fairs in to attract local talent

The firm will compile a list of all vacancies for distribution to all local agencies engaged in training, reskilling and employment. All vacancies and sub contracting opportunities will also be advertised in the local media.

6. How will you ensure that subcontractors comply with this requirement?

The same requirement will be part of the terms and conditions of sub contractor contracts

7. How will you collect data on the numbers of vacancies offered to the named agencies, and the number filled by candidates from these agencies?

A Recruitment Register will be kept of all vacancies offered to local agencies. The register will record the number nature and date of the vacancies as they become available. It will also record the dates when the vacancies were filled and from what source the vacancy was filled, whether agency, through media advertising or through other channels.

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Brookfield

8 Describe the steps you will take to ensure continued staff development and retention.

The Astins Institute aim is to improve the skills and talents of Astins people, the construction sector and society in general by opening opportunities in construction for all and by developing untapped potential.

Its core values are:

- Unlimited opportunities for all
- Continuous improvement
- Play hard, work hard: which means training will be challenging but fun
- Passionate about the ability of students, training and training delivery

The Institute, in conjunction with Astins Human Resources will develop detailed job descriptions to formulate a comprehensive training plan, competency training matrix and detailed schedule of courses to meet the skills and knowledge requirements of all its people working in our businesses. Included in our standard offering of programs will be the delivery of induction and comprehensive safety training programmes.

Astins has a comprehensive Performance Management system in place, setting challenging objectives for each individual and formally reviewing the achievement of these objectives on a six monthly basis. To assist our staff in achieving set objectives, we enable our people to create development plans, equipping them with the skills and knowhow needed for them to achieve each of their set objectives.

One of Astins' core values is to provide unlimited opportunities for all, thus enabling our people to apply for positions elsewhere in the organisation.

Other tools used to measure suitability and fit include:

- A comprehensive Corporate and Site Induction process including Health & Safety

- Succession planning & Talent Management

- Training needs analysis

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Brookfield

9. Who will be responsible for the achievement of the employment and training requirements? What previous experience/qualifications do they have in relation to the delivery of targeted recruitment and training in construction?

Astins' Learning & Development Manager and the Site Project Director will have joint responsibility for all matters relating to training and employment requirements. The required experience and qualifications stated in the job specification for Astins' Head of Training include:

- Experience of managing learning content, processes and learning management systems
- Broad knowledge of learning curriculum within construction industry specifically dry lining
- Knowledge of vocational education (NVQ) frameworks
- Functional expertise in learning methodologies and adult learning techniques
- Client engagement and stakeholder management
- Excellent presentation skills, facilitation and training delivery experience
- Relationship management of vendors
- Commercial skills and ability to manage and forecast budgets
- Ability to manage and supervise others, team leadership
- Demonstrable success of building organisational capability
- Appreciation of the construction or related industry
- Enjoys working with people from different professional and trade backgrounds
- Network of suppliers

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Brookfield

10. How will the monitoring information be collected and be made readily available to NHS Greater Glasgow and Clyde and their agents, in order to provide:

a) evidence of performance against KPI's

b) contract monitoring purposes

c) examples of reports produced

Astin's Community Engagement Officer will be responsible for keeping all records relating to the above and producing a monthly report for submission the client and their agents

11. Describe the approach and actions you intend to take to ensure the delivery of the employment and training requirements.

Astins employ a dedicated Learning and Development team, led by our Head of People and Organisational Development Manager. This business unit ensures the training needs of the organisation are relevant, timely, and fit for the current and future strategic requirements of the organisation. Through our performance management system, we undertake training needs analysis to ascertain the short term requirements of the business. Strategy meetings with Senior Management determine the future direction of the business and the skill-set and competencies needed, which include workforce planning.

Brookfield

12	What has the turnover of New Entrants and Apprentices in your organisation been in the past three years? The turnover of new entrants and apprentices each year on average is 9%
13.	Please provide any other relevant information about the approach you intend to take to fulfil the employment and training requirements Astins is an equal opportunity employer and will engage in all efforts possible to ensure that it fulfils it responsibilities in that regard. To that end it has set its own targets on the employment of women in the Astins workforce. Astins nationwide target is for 8% of its workforce to be women by 2020. To that end, it will endeavour to recruit a 50/50 mix of men and women for all Apprentices taken on through the project.

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Brookfield

APPENDIX CB2

SME / SE METHOD STATEMENT

1. Describe the activities that you will undertake to identify SMEs / Social Enterprises and assess their capacity to deliver works, services or supplies that are required for all contracts in relation to this project;

Astins target is to source at least 30% of its project resourcing requirements from locally based small and medium sized (SME) businesses

- £3m of contract labour from local SME businesses
- £1m of materials and purchasing from local SME businesses
- £50k of training support required from local social enterprises and educational establishments

The Astins Community Engagement Officer will work closely with The Glasgow Chamber of Commerce, Federation of Small Businesses and Supplier Development Programme to ensure that all their channels of communications are fully employed in this regard. Full use will also be made of local advertising media.

The Project Director will be responsible for assessing the capacity and capabilities of SME's and Social Enterprises that are interested in contracting to help Astins meet its project resource requirements.

2. Describe any actions you propose to take to assist SMEs / Social Enterprises to obtain contracts in relation to the construction of this project

Astins is committed to running regular supplier support events for all SMEs and social enterprises who are interested in partnering with Astins on its dry lining projects. The events will run as workshops and will provide support and advice from the Project Director on the exact nature of contract requirements and how they can be met.

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3.	How will you ensure that your sub-contractors make all opportunities available to SMEs / Social Enterprises? Astins undertakings as outlined in 1. and 2 above will also be part of the term and conditions of sub contractor contracts
4.	How you would measure the social and economic impact of your engagement with SMEs and Social Enterprises? Astins is not an expert in social or economic regeneration. It would aim to work together with Scottish Enterprise to determine the best way to record and measure these impacts as part of an overall assessment of the impact of the project on the local economy.
5.	Outline any support you or your subcontractors would provide to SMEs and Social Enterprises to assist them to work in partnership with you. In addition to the regular supplier events outlined in 2 above, Astins would look at the possibility of setting up bespoke training where an identified lack of skills had been identified as an obstacle to an effective partnership. This would be assessed on an individual case by case basis.

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Brookfield

DUNNE GROUP RESPONSE

APPENDIX CB1

TRAINING OPPORTUNITIES – METHOD STATEMENT

1. Opportunities to be provided: please complete Table 1

NHS Greater Glasgow and Clyde aims to demonstrate the additional benefits that this investment will bring to Greater Glasgow and Clyde. Therefore to show additionality, tenderers are required to provide the information in the table below setting out minimum targets of achievement under targeted recruitment and training.

Table 1

Indicator	Direct	Indirect	Total
How many people do you expect to employ in the delivery of this contract?	300		300
1. How many of those do you anticipate being New Entrants recruits?	30		30
2. Please detail the disciplines from which you will need to recruit and the associated numbers	Groundworker 64		64
	Steelfixer 64		64
	Formworker 120		120
	Engineer 18		18
	Office 8		8
	Q.S. 6		6
	Supervision 20		20

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Brookfield

3. How many qualifications do you expect New Entrants to achieve as a result of this contract? (Details in Table 2)	1		1
4. How many Apprentices do you expect to recruit as a result of this contract?	12		12
5. How many Work Experience Places do you intend to offer as a result of this contract?	72		72
6. How many Lifelong Learning Opportunities will you offer to existing employees as a result of this contract? (Details in Question 8)	Minimum of 2		2

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Brookfield

Table 2: Qualifications to be Achieved

Occupation	New Entrant Trainees	Existing Personnel	Qualifications being sought	Nos. completing the qualification
GCO	8	15	SVQ L2	23
Steelfixer	6	15	SVQ L2	21
Formworker	5	15	SVQ L2	20
Supervision	4	10	SVQ L3 or 4	14
Office based	3	2	SVQ L3	5
Engineers	4	8	SVQ L3 or 4	12

Please also provide the following information.

1. Does the company have a policy on training and upskilling? If so, what are the main elements?

   - To ensure all persons employed are competent to carry out their required duties – Policy attached.
   - Monitored via a training development plan which is reviewed as ongoing / new requirements occur.
   - Upskilling is normally identified through observation , recommendation and opportunity and implemented thereafter.

2. What relevant training has the company been involved in during the last 12 months?

   - New and ongoing apprenticeships.

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Brookfield

- SVQ L2 – Formworking, Steelfixing, General Construction Operations.
- SVQ L3 & 4 – Construction Site Supervision.
- All disicplines of Construction Plant Training.
- Various Health and Safety Courses ranging from – 5 day SMSTS, 1st Aid, Scaffold Safety Inspection, LOLER, IPAF, Confined Spaces , Roads & Streetworks etc.

3. Demonstrate how the figures identified in tables 1 and 2 are over and above your normal recruitment pattern of New Entrants over the past three years detailing the annual intake of Apprentices and Semi Skilled Operatives.

Apprentices	Average Semi – Skilled Employed
2006 - 3	2006 - 100
2007 - 5	2007 - 150
2008 - 6	2008 - 150

4. Describe the steps you will take to ensure specialist or subcontractor co-operation where this is necessary to fulfil the training requirements.

- Once requirements have been fully agreed and confirmed, briefings and workshops will be conducted with all parties prior to tender to ensure full awareness is provided to permit all necessary allowances to be made to ensure full compliance and projected targets are achieved.
- All parties will be further informed that they will be contractually bound to ensure all further resources , in terms of finance, time and manpower are provided and allocated to fully support their commitment.

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Brookfield

5. Describe the steps you will take to ensure that all vacancies are notified to Local Regeneration Agency Network and any other relevant agencies.

- Appoint Community Engagement Team Leader who will liaise directly with LRAN and other relevant parties re. specific requirements.
- Other mediums will include –
  - Local & National Press
  - Job Centre(s)
  - Various websites – Brookfield, NHS , GCC, Dunne , Site Specific Recruitment Website.

6. How will you ensure that subcontractors comply with this requirement?

- As per Q4 and through supply chain agreements.

7. How will you collect data on the numbers of vacancies offered to the named agencies, and the number filled by candidates from these agencies?

- Our Community Engagement Team Leader will co-ordinate directly with Site Management to establish employment opportunities and subsequently with LRAN to maximise the promotion and advertising of these opportunities within the local community and surrounding areas.
- All data will be collated by our Community Engagement Team Leader and forwarded to our HR Dept for retention.

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Brookfield

8 Describe the steps you will take to ensure continued staff development and retention

- Continual improvement philosophy.
- Implementation of training development plan.
- Individual training & development appraisal.

9. Who will be responsible for the achievement of the employment and training requirements? What previous experience/qualifications do they have in relation to the delivery of targeted recruitment and training in construction?

- Campbell McGregor – Production Director (20 years experience)
- Robert Morrison – Group Safety Manager (20 years experience)
- Most recent Community Engagement experience was with Bovis Lend lease at Silverburn Project where both worked with Local Regeneration Agency – Greater Pollok Working.

10. How will the monitoring information be collected and be made readily available to NHS Greater Glasgow and Clyde and their agents, in order to provide:

a) evidence of performance against KPI's

b) contract monitoring purposes

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Brookfield

c) examples of reports produced

- All information will ultimately be collated by Community Engagement team Leader and formulated into a report on an agreed basis ie. Monthly. This information will then be forwarded to NHS & all other relevant parties as required.

11. Describe the approach and actions you intend to take to ensure the delivery of the employment and training requirements.

- Continual and ongoing liason with LRAN.
- Formal monthly review meetings between all parties.
- Traing centre established on site to minimise disruption of construction activities.
- Continual review and improvement of systems / procedures being adopted.

12 What has the turnover of New Entrants and Apprentices in your organisation been in the past three years?

	Apprentices
2006	3
2007	3
2008	3

	New Entrant
	5
	7
	11

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Brookfield

13. Please provide any other relevant information about the approach you intend to take to fulfil the employment and training requirements

- Conduct presentations to local establishments, schools, colleges etc.
- Provide “open day” scenarios to enable potential recruits to view live construction situations prior to employment.
- Host work experience placements.
- Permit colleges to utilise areas of site to construct classroom designed Projects.
- Live web cam for interest parties to view ongoing construction.
- Specific site employment website.

APPENDIX CB2

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Brookfield

SME/ SE METHOD STATEMENT

1. Describe the activities that you will undertake to identify SMEs / Social Enterprises and assess their capacity to deliver works, services or supplies that are required for all contracts in relation to this project;

- Pre – selection / vetting process
- Previous working relationships – formal interviews
- Pre-start meeting to firm up scope
- Establish local supply / procurement network
- Advertise opportunities to supply locally

2. Describe any actions you propose to take to assist SMEs / Social Enterprises to obtain contracts in relation to the construction of this project

- Briefings / workshops to ensure understanding that work packages can be made “achievable” to smaller contractors
- Open book procurement strategy
- Provide assistance with all necessary resources ie H&S, supply documentation, IT support, Office Admin, financial.
- Ensure consistency & regularity of payment cycles

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Brookfield

3. How will you ensure that your sub-contractors make all opportunities available to SMEs / Social Enterprises?

- All potential sub contractors will be informed at tender stage to permit necessary allowances to be made.
- All necessary assistance will be provided to sub contractors to enable them to fully comply with requirements.

4. How you would measure the social and economic impact of your engagement with SMEs and Social Enterprises?

- Continual liaison with relevant parties
- Collate feedback
- Improvement plans established

5. Outline any support you or your subcontractors would provide to SMEs and Social Enterprises to assist them to work in partnership with you.

- Briefings / workshops to ensure understanding that work packages can be made “achievable” to smaller contractors
- Open book procurement strategy
- Provide assistance with all necessary resources ie H&S, supply documentation, IT support, Office Admin, financial.
- Ensure consistency & regularity of payment cycles

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Brookfield

STRUCTAL RESPONSE

APPENDIX CB1

TRAINING OPPORTUNITIES – METHOD STATEMENT

1. Opportunities to be provided: please complete Table 1

NHS Greater Glasgow and Clyde aims to demonstrate the additional benefits that this investment will bring to Greater Glasgow and Clyde. Therefore to show aditionality, tenderers are required to provide the information in the table below setting out minimum targets of achievement under targeted recruitment and training.

Table 1

Indicator	Direct / On Site	Indirect / Off Site	Total
How many people do you expect to employ in the delivery of this contract?	0	30	30
1. How many of those do you anticipate being New Entrants recruits?	0	3	3
2. Please detail the disciplines from which you will need to recruit and the associated numbers	0	Labourer 3	3

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Brookfield

3. How many qualifications do you expect New Entrants to achieve as a result of this contract? (Details in Table 2)	0	0	0
4. How many Apprentices do you expect to recruit as a result of this contract?	0	0	0
5. How many Work Experience Places do you intend to offer as a result of this contract	0	0	0
6. How many Lifelong Learning Opportunities will you offer to existing employees as a result of this contract? (Details in Question 8)	0	0	0

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Brookfield

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Table 2: Qualifications to be Achieved

Occupation	New Entrant Trainees	Existing Personnel	Qualifications being sought	Nos. completing the qualification
Labourer	3		To be Discussed	

Please also provide the following information.

1. Does the company have a policy on training and up skilling? If so, what are the main elements?

   - Yes
   - Legal requirements
   - Employees Competence
   - Training needs
   - Methods of Training
   - Training requirements
   - Refresher training

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Brookfield

2. What relevant training has the company been involved in during the last 12 months?

- IOSH Managing Safely
- Appointed Persons Lifting Operations
- First Aid
- IPAF Plant Operations
- PASMA
- CWCT CTOL
- CWCT MSC Fa_ade Engineering

3. Demonstrate how the figures identified in tables 1 and 2 are over and above your normal recruitment pattern of New Entrants over the past three years detailing the annual intake of Apprentices and Semi Skilled Operatives.

Apprentices	Average Semi- Skilled Employed
2006- 1	2006- 0
2007- 0	2007- 1
2008- 0	2008- 0

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Brookfield

4. Describe the steps you will take to ensure specialist or subcontractor co-operation where this is necessary to fulfil the training requirements.

- Prior to the engagement of the specialist or sub-contractors, in depth discussions and agreement to training requirements.
- Continual review and monitoring of specialist or subcontractors training policy and training arrangements.
- Continual review and monitoring of specialist or sub-contractors safety information.
- Engaging specialist or subcontractors in Structal (UK) Ltd training programmes as appropriate.

5. Describe the steps you will take to ensure that all vacancies are notified to Local Regeneration Agency Network and any other relevant agencies.

- Where a requirement to employ either directly or indirectly “New Entrants” for the duration of Structal (UK) Ltd works Local Regeneration Agency Network and any other relevant agencies, will be notified through previously agreed and notified channels.

6. How will you ensure that subcontractors comply with this requirement?

- Continual review, dialogue and monitoring of specialist or subcontractors training policy and training arrangements through there engagement of the works.

7. How will you collect data on the numbers of vacancies offered to the named agencies, and the number filled by candidates from these agencies?

- Monthly review/report as appropriate/required with the Brookfield, to enable them to formulate Data/targets with the Local Regeneration Agency Network and any other relevant agencies.

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Brookfield

8 Describe the steps you will take to ensure continued staff development and retention

- Continual review and monitoring of training requirements
- Continuing consultation with the employees.

9. Who will be responsible for the achievement of the employment and training requirements? What previous experience/qualifications do they have in relation to the delivery of targeted recruitment and training in construction?

- Nigel Richards- Senior Contracts Manager through continual consultation with Brookfield.
- Nigel Richards has no formal qualification in recruitment and training however through experience and in-house training seminars/workshops during his career; Nigel Richards carries out his role and consults with specialists as the need arises.

10. How will the monitoring information be collected and be made readily available to NHS Greater Glasgow and Clyde and their agents, in order to provide:

a) evidence of performance against KPI's and for

- Brookfield to co-ordinate.

b) contract monitoring purposes

- Brookfield to co-ordinate.

c) examples of reports produced

- Brookfield to co-ordinate.

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Brookfield

11. Describe the approach and actions you intend to take to ensure the delivery of the employment and training requirements.

- Prior to the engagement of specialist or sub-contractors, depth discussions and agreement to training requirements.
- Continual review and monitoring of specialist or subcontractors training policy and training arrangements.
- Continual review and monitoring of specialists or subcontractors safety information
- Engaging specialist or subcontractors in Structal (UK) Ltd training programmes as appropriate.

12 What has the turnover of New Entrants and Apprentices in your organisation been in the past three years?

- 2 Persons directly employed

13. Please provide any other relevant information about the approach you intend to take to fulfil the employment and training requirements

- Continual monitoring and implementation of Structal (UK) Ltd training policy.
- Continual dialogue with Brookfield.
- Continual dialogue with the Local Regeneration Agency Network and any other relevant agencies, as appropriate.

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Brookfield

APPENDIX CB2

SME / SE METHOD STATEMENT

1. Describe the activities that you will undertake to identify SMEs / Social Enterprises and assess their capacity to deliver works, services or supplies that are required for all contracts in relation to this project;

- Structal (UK) Ltd has already nationwide agreements with UK manufacturers and suppliers.
- Structal (UK) Ltd will evaluate non-specific materials and plant requirements, and carry out investigations/negotiations with the local suppliers and manufacturers (SMEs / Social Enterprises) where practical.

2. Describe any actions you propose to take to assist SMEs / Social Enterprises to obtain contracts in relation to the construction of this project

- Structal (UK) Ltd will give an equal opportunity to local suppliers and manufacturers (SMEs / Social Enterprises); enter into dialogue/ negotiations to enable them to provide fully compliant bids prior to the placing of orders, where practical and appropriate.

3. How will you ensure that your sub-contractors make all opportunities available to SMEs / Social Enterprises?

- Structal (UK) Ltd will where practical and appropriate ensure sub-contractors are in partnership with Structal (UK) Ltd, working closely to make all opportunities available to SMEs / Social Enterprises.

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Brookfield

4. How you would measure the social and economic impact of your engagement with SMEs and Social Enterprises?

- Structal (UK) Ltd will provide as appropriate regular updates/ reports etc to Brookfield to enable a fully structured database for evaluation by all relevant parties.
- Make part of Sub-contractors and suppliers order conditions.

5. Outline any support you or your subcontractors would provide to SMEs and Social Enterprises to assist them to work in partnership with you.

- Continual dialogue and communication.
- Involvements were practical/ appropriate with training schemes.
- Building of relationships, leading to the possible future works and ongoing supply chain requirements.

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Brookfield

MERCURY ENGINEERING RESPONSE

APPENDIX CB1

TRAINING OPPORTUNITIES – METHOD STATEMENT

1. Opportunities to be provided: please complete Table 1

NHS Greater Glasgow and Clyde aims to demonstrate the additional benefits that this investment will bring to Greater Glasgow and Clyde. Therefore to show additionality value, tenderers are required to provide the information in the table below setting out minimum targets of achievement under targeted recruitment and training.

Table 1

Indicator	Direct / On Site	Indirect / Off Site	Total
How many people do you expect to employ in the delivery of this contract?	640	240	880
1. How many of those do you anticipate being New Entrants recruits?	105	30	135
2. Please detail the disciplines from which you will need to recruit and the associated numbers • Plumbing • Pipefitter • Day Erector • Electrical • Administration • Engineering • Supervision	 22 21 20 23 8 6 5		

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Brookfield

3. How many qualifications do you expect New Entrants to achieve as a result of this contract? (Details in Table 2)	66	6	72
4. How many Apprentices do you expect to recruit as a result of this contract?	60	6	66
5. How many Work Experience Places do you intend to offer as a result of this contract	80	10	90
6. How many Lifelong Learning Opportunities will you offer to existing employees as a result of this contract? (Details in Question 8)	100	30	130

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Brookfield

Table 2: Qualifications to be Achieved

Occupation	New Entrant Trainees	Existing Personnel	Qualifications being sought	Nos. completing the qualification
Trade / Discipline	72		NVQ /HND	
Engineering	6		Diploma in Engineering	
Administration	8		SAP, ECDL	

Please also provide the following information.

1. Does the company have a policy on training and up skilling? If so, what are the main elements?

   - Training Policy Exist with the organisation to cover the following.
   - Apprenticeship training programme to train, Plumbing, Pipefitting, Electrical installation, welding.
   - Graduate schemes for Engineering and Management
   - Internal training policy to cover but not limited to IOSH, PSCS, Health and Safety to include HV, Manual Handling, Working at Height, Alloy Tower erection, MEWP. IOSH,CSCS, Contract

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Brookfield

2. What relevant training has the company been involved in during the last 12 months?

- All elements for Apprenticeship training including , NVQ, HND,
- ECDL,
- SAP
- Directors Governing Scheme
- Leadership Training

3. Demonstrate how the figures identified in tables 1 and 2 are over and above your normal recruitment pattern of New Entrants over the past three years detailing the annual intake of Apprentices and Semi Skilled Operatives.

- We have had 462 New Apprenticeship (New Entrant's) in to the company since 2006.
- New Entrant (Apprentices) in 2006= 184
- New Entrant (Apprentices) 2007 = 271
- New Entrant (Apprentices) 2008 = 05

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Brookfield

4. Describe the steps you will take to ensure specialist or subcontractor co-operation where this is necessary to fulfil the training requirements.

- The requirements will be set out in and form part of all Sub and Subcontract terms and conditions.
- The terms will include but not limited to regular management meeting's to discuss and prove compliance with the local Training Authorities and Colleges.

5. Describe the steps you will take to ensure that all vacancies are notified to Local Regeneration Agency Network and any other relevant agencies.

- Through our appointed training partner our company liaison officer will issue a pre –list plan that includes time table for hire and listing the relevant positions available within the organisation.

6. How will you ensure that subcontractors comply with this requirement?

- Form of Subcontract including KPI return's on a quarterly basis.
- Monitor through our induction and training centre.
- Monitor through our Training Plan.
- Working matrix explaining, Names, Roles, Positing and state of training, Examination results and progress.

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Brookfield

7. How will you collect data on the numbers of vacancies offered to the named agencies, and the number filled by candidates from these agencies?

- The data information will be generated by a time table for hire and roles and positions.
- The nominated partnership Agency / Training source will provide a selection process and screening prior to interview.
- Matrix of employment is produced and monitored between our Liaison office and our training partners.

8 Describe the steps you will take to ensure continued staff development and retention

- All staff avail of the internal staff and training policy to include,
- PDRS – Appraisal, Bonus scheme based on achievement, Promotion opportunity's with in the scheme.
- Social and Sports Club.
- Flexibility

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Brookfield

9. Who will be responsible for the achievement of the employment and training requirements? What previous experience/qualifications do they have in relation to the delivery of targeted recruitment and training in construction?

- The basis of success will remain with the member's of staff through the appraisal scheme the line managers and Snr Management will assist on achieve with the monitoring of our HR dept.

10. How will the monitoring information be collected and be made readily available to NHS Greater Glasgow and Clyde and their agents, in order to provide:

a) evidence of performance against KPI's and for

- KPI management is monitored by our HR and dedicated QA/QC / KPI Management team.

b) contract monitoring purposes

- Training Matrix
- Monthly Feed back reports

c) examples of reports produced

- Headcounts
- Staff Training
- Equal Opportunity Employment matrix

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Brookfield

11. Describe the approach and actions you intend to take to ensure the delivery of the employment and training requirements.

- The training agency and college's programmes will meet on a quarterly basis to provide evidence of training programmes and the development and progress of each employee.
- This will be reviewed in conjunction with our Company training policy.

12 What has the turnover of New Entrants and Apprentices in your organisation been in the past three years?

- Retention of employees over the pass 3 yrs has been 95%.
- The Turn over for 2007 was 5%
- The Turn over for 2008 was 3.4%
- The Turn over for 2009* is 4.9%

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Brookfield

13. Please provide any other relevant information about the approach you intend to take to fulfil the employment and training requirements

- Strict Compliance to company policy.
- Investors in people.
- Apprentice Development Programme
- Training lead analaysis
- Development Training Plan
- Technical Training
- Health and Safety training.
- Graduate Scheme.
- Education assistance policy.

APPENDIX CB2

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Brookfield

SME / SE METHOD STATEMENT

1. Describe the activities that you will undertake to identify SMEs / Social Enterprises and assess their capacity to deliver works, services or supplies that are required for all contracts in relation to this project;

- Through our Local partnerships and City councils we will identify the contractors that we can associate with the different construction packages, these will form part of our sub and subcontractor supply chain data base.
- Review through company presentation to identify size, scale, turn over, Safety Records, Training compliance.

2. Describe any actions you propose to take to assist SMEs / Social Enterprises to obtain contracts in relation to the construction of this project

- By packaging various elements of the project into manageable scopes this will broaden the supply chain and introduce company's that might not have been considered due to the magnitude of the project.
- We will assist the contractor vendors through our safety and training policy to make them equipped to carry out work for us on the project.

3. How will you ensure that your sub-contractors make all opportunities available to SMEs / Social Enterprises?

- Guidelines through our subcontract policy and terms and conditions will stipulate the interaction with the company's that fall within the SME data base.
- Regular meetings through the award of the packages and vendor packages with our Community liaison and nominated community and city partners.

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Brookfield

4. How you would measure the social and economic impact of your engagement with SMEs and Social Enterprises?

- Through the supply chain and data matrix of contract and vendor awards we will measure and record each of the awarded package secured by the sub and sub contractors by how their turn over has increased, their staff numbers, craft numbers, apprenticeship numbers,

5. Outline any support you or your subcontractors would provide to SMEs and Social Enterprises to assist them to work in partnership with you.

- By working in partnership with the local employment agency's we will identify the individual requirements with each of the contractors and subcontractors by advancing their
- Training and knowledge of construction policies.
- Safety
- Creativity
- Leadership,

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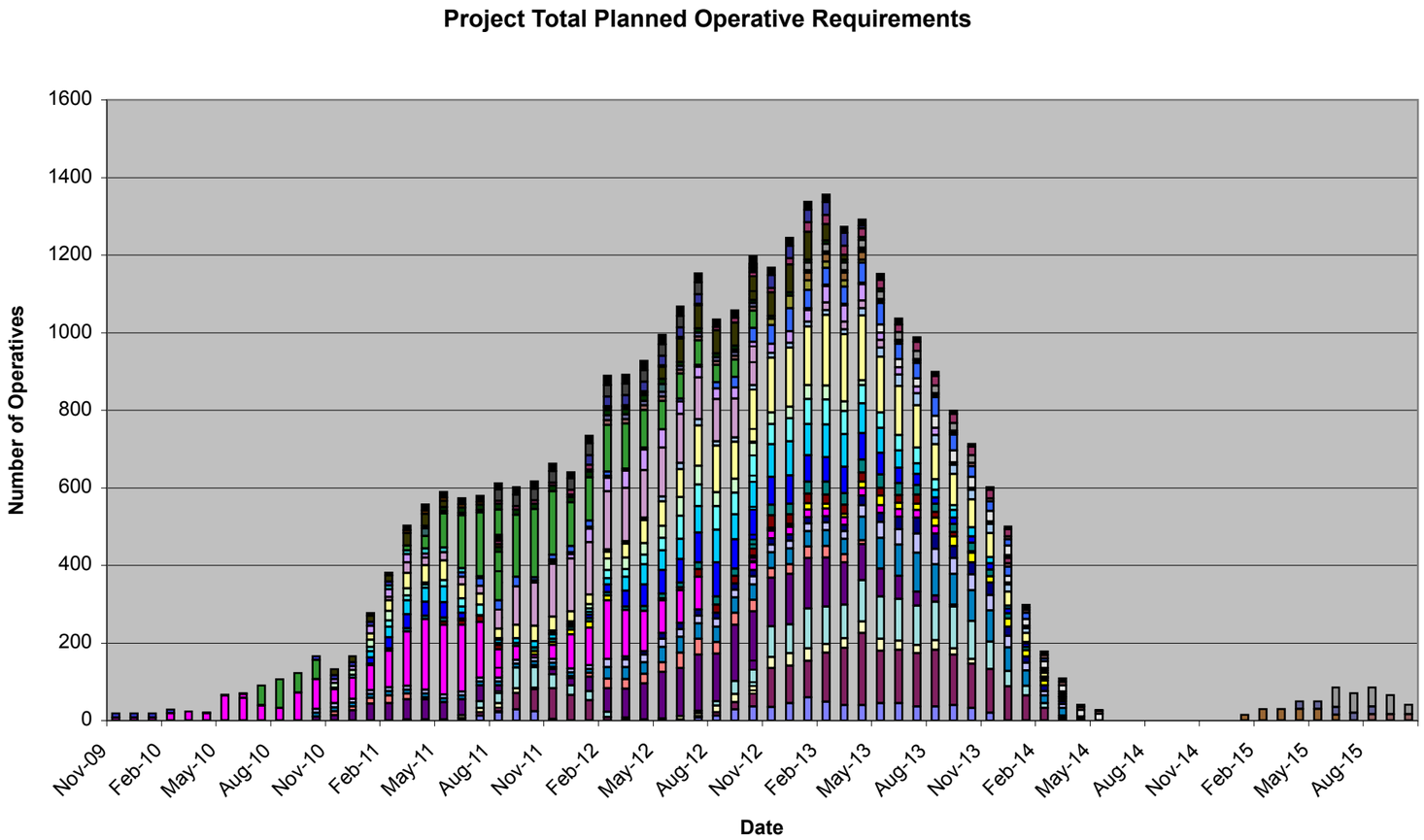
Brookfield



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Brookfield

Project Histogram data

Date-Time	- Soft Floor Finishes	- Painter & Decorator	- Sign Off	- Joinery	- Plasterboard Partitions	- Ductwork	- Electricians
16-Nov-09							
14-Dec-09							
11-Jan-10							
8-Feb-10							
9-Mar-10							
6-Apr-10							
4-May-10							
2-Jun-10							
30-Jun-10							
28-Jul-10							
26-Aug-10							
23-Sep-10							
21-Oct-10					10		10
19-Nov-10					14	10	10
17-Dec-10					26	10	10
14-Jan-11					43	15	10
14-Feb-11					45	20	10
14-Mar-11			2		52	15	10
11-Apr-11			2		52	5	10
9-May-11			3		44		10
7-Jun-11		6	8		40		10
5-Jul-11	12	9	11	18	40		10
2-Aug-11	20	12	12	30	16		10
31-Aug-11	24	29	16	46			10
28-Sep-11	28	43	12	53			10
26-Oct-11	24	56	4	53	5		10
24-Nov-11	4	79		36	14	5	10
22-Dec-11		66		25	18	5	10
19-Jan-12		52		24	37	10	10
17-Feb-12		9		13	61	25	30
16-Mar-12		3	1	3	75	25	30
13-Apr-12			2		93	25	30
14-May-12			5		120	25	40
11-Jun-12		3	8		124	40	40
9-Jul-12	8	3	8	6	145	40	40
6-Aug-12	12	9	17	12	122	30	40
4-Sep-12	28	19	21	34	145	30	40
2-Oct-12	36	32	20	42	154	30	40
30-Oct-12	36	41	21	55	128	30	40
28-Nov-12	35	100	29	79	125	25	40
26-Dec-12	44	97	32	75	130	25	40
23-Jan-13	60	94	32	102	130	30	40
21-Feb-13	48	127	22	96	127	30	40
21-Mar-13	40	147	25	86	110	20	40
18-Apr-13	40	186	29	107	93	10	60
17-May-13	44	136	30	109	72		80

Project Histogram data

- Fitters	- Ductworkers	- Substructure gang	- Cleaner	Pendants, Op.Lights and Connections	- Theatre Panel Installtion	- Thin Screed	- Low current systems
		8					
		8					
		8					
		18					
		24					
		18					
		64					
		68					
		58					
		38					
		32					
		72					
10		76					
10		36					
10		54					
10		64					4
10		94					7
10		140					9
10		182					9
10		180				8	10
10		172				12	4
10		144				16	1
10		80				16	3
10		48				12	5
10		36					8
10		8	8				10
10		36	8				8
10		88	12				7
10		96	16				9
20		152	12				9
20	8	120					9
20	8	104					13
20	16	84				4	13
20	16	84				8	13
20	16	84				20	18
20	16					20	22
20	16					20	18
20	16	20			12	20	24
20	16	20	4	8	6	28	25
20	16	20	4	4		32	27
20	16	20	4	4		24	28
20	16	20	16			24	32
20	16	20	12			24	33
20	16	20	8			24	30
30	24	20	16			24	34
40	24	20	24			20	35

Project Histogram data

- Medical Gas Pipework	- Plumber	- Lagging	- Service Modules	- Electrical	- Heating Pipework	- Cladder	- Roofer
		4	12				10
		8	12				10
16	16	12	18	16			20
28	28	16	24	28		8	20
36	36	12	18	40		28	20
36	36	8	6	44		20	10
40	40	16		52		20	
16	16	20		36		20	
		28		28		20	
	4	24		28		20	
	8	4		24		120	
	12			34		100	
	16			40		112	
	12	4	6	36		136	6
	4	4	6	26		136	12
8	8	8	12	24		136	34
20	16	20	30	18	6	150	34
40	36	20	30	36	6	138	44
56	52	24	30	60	6	122	54
60	52	32	30	64	12	126	48
60	52	60	48	72	16	126	32
76	68	56	48	104	16	108	28
88	84	60	36	120	12	108	28
76	64	56	36	95	12	100	28
76	72	68	36	134	12	100	12
72	80	84	36	160	12	100	24
72	84	52	30	141	12		24
72	88	60	30	152	12		30
68	80	64	36	152	12		30
64	84	64	36	182	12	20	42
68	84	60	24	174	12	20	42
68	76	48	12	167	18	20	42
56	64	40		143	24	20	18

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Brookfield

- Commissioning Eng	- Suspended ceiling	- Piling rig	- Superstructure gang	- Plasterboard ceiling	- Demolition	- Soft Landscape	- Hard Landscape	- Civils Groundworker	- Site Office Erectors	- Tower crane gang	- Tower Crane Driver	- Unitised Cladding Gang	- Insulated Render System Gang	- Lift Installers	- Steel erectors	- Bricklayer	- General Operatives	Month Total
									10									18
									10									18
									10									18
									10									28
																		24
		3																21
		3																67
		3																71
		2																60
		2	50															90
			75															107
			50															122
			50						10									166
									10			16						132
									10			16						166
									10			16					8	278
		10							10			16					8	382
		11	12									32	8				12	503
		13	32							20	6	32	8				16	557
		13	88							6	10	16	8				16	590
	12	11	136							6	14		8				16	573
	20	5	164							6	14		8				16	580
	24		124								14		8	8			16	479
	28		160								14			8		30	16	612
	24		160								14			8		30	20	602
5	8		176								14			8		30	20	617
5	12		164								14			8		30	20	663
5	16		112								14		6	12		30	16	640
5	16		112								14		6	12	25	30	20	734
5	12		120				12	12			14		6	4	25	30	24	889
5			116				12	12			14		6	4	25	30	24	892
5			96				12	12			14		6	4	25	30	24	927
			72				12	12		20	14	30		4	25	30	24	994
	8		64				10	10			10	60		4	25	30	24	1067
	4		64				10	10			10	60		4	25	30	24	1153
	16		44				10	10			10	60		8			20	1034
	28		44				10	10		6	10	60		12			20	1058
	36		44				10	10			8	60		12			20	1176
	32						10	10			8	60		12			20	1198
	48			16							8	60		12	33		20	1168
	60			32							8	72		16	33		20	1244
4	48			24	20	6		20			8	72		24	33		20	1337
4	44			16	20	6		20			8	42		24	33		20	1356
4	44			16	20	6		20			8	12		24	33		16	1273
4	52			8	20	6	4	20			8			22	8		16	1292
21	56					6	4	20			8			22			16	1152

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Brookfield

Project Histogram data

Date-Time	- Soft Floor Finishes	- Painter & Decorator	- Sign Off	- Joinery	- Plasterboard Partitions	- Ductwork	- Electricians
14-Jun-13	44	138	24	107	60		80
12-Jul-13	36	137	22	101	36		100
12-Aug-13	36	146	25	99	16		80
9-Sep-13	40	130	16	108	4		80
7-Oct-13	32	114	12	98			80
4-Nov-13	20	112		71			80
3-Dec-13	8	115		57			60
31-Dec-13		88		40			60
28-Jan-14		65		24			40
26-Feb-14		32		13			20
26-Mar-14		6		6			20
23-Apr-14							
22-May-14							
19-Jun-14							
17-Jul-14							
15-Aug-14							
12-Sep-14							
10-Oct-14							
10-Nov-14							
8-Dec-14							
5-Jan-15							
2-Feb-15							
3-Mar-15							
31-Mar-15							
28-Apr-15							
27-May-15							
24-Jun-15							
22-Jul-15							
20-Aug-15							
17-Sep-15							
15-Oct-15							
13-Nov-15							

Project Histogram data

- Fitters	- Ductworkers	- Substructure gang	- Cleaner	Pendants, Op.Lights and Connections	- Theatre Panel Installtion	- Thin Screed	- Low current systems
40	32	20	16			20	31
50	40	20	16			24	25
40	40	20	20			16	20
40	32		24			12	21
40	32		24			4	22
40	32		16				18
30	24		12				15
30	24		20				14
20	16		16				9
10	16		12				6
10	8		4				2
							2

Project Histogram data

- Medical Gas Pipework	- Plumber	- Lagging	- Service Modules	- Electrical	- Heating Pipework	- Cladder	- Roofer
40	44	40		126	30		18
28	28	40		110	30		18
16	20	28		90	24		18
16	20	12		80	24		6
16	24			72	24		6
16	16			62	24		6
12	12			54	18		6
12	8			36	18		6
8	4			24	12		6
4				10	6		6
4				2	6		6
				2			6

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Brookfield

- Commissioning Eng	- Suspended ceiling	- Piling rig	- Superstructure gang	- Plasterboard ceiling	- Demolition	- Soft Landscape	- Hard Landscape	- Civils Groundworker	- Site Office Erectors	- Tower crane gang	- Tower Crane Driver	- Unitised Cladding Gang	- Insulated Render System Gang	- Lift Installers	- Steel erectors	- Bricklayer	- General Operatives	Month Total
21	40					6	4	20						20			16	1037
21	40					6	4	20						24			12	988
31	48					6	4	20						24			12	899
31	40					6	4	20						24			8	798
27	28					8		20						22			8	713
27	24					8								22			8	602
27	16					8								18			8	500
17	24					8								14			8	427
17	16					8								6			8	299
17	8					8								2			8	178
17						8								2			8	109
17						8								2			4	41
17						8								2				27
					15													15
					30													30
					30													30
					30													30
					30		20											50
					30		20											50
					15		20	50										85
							20	50										70
						16	20	50										86
						16		50										66
						16		25										41

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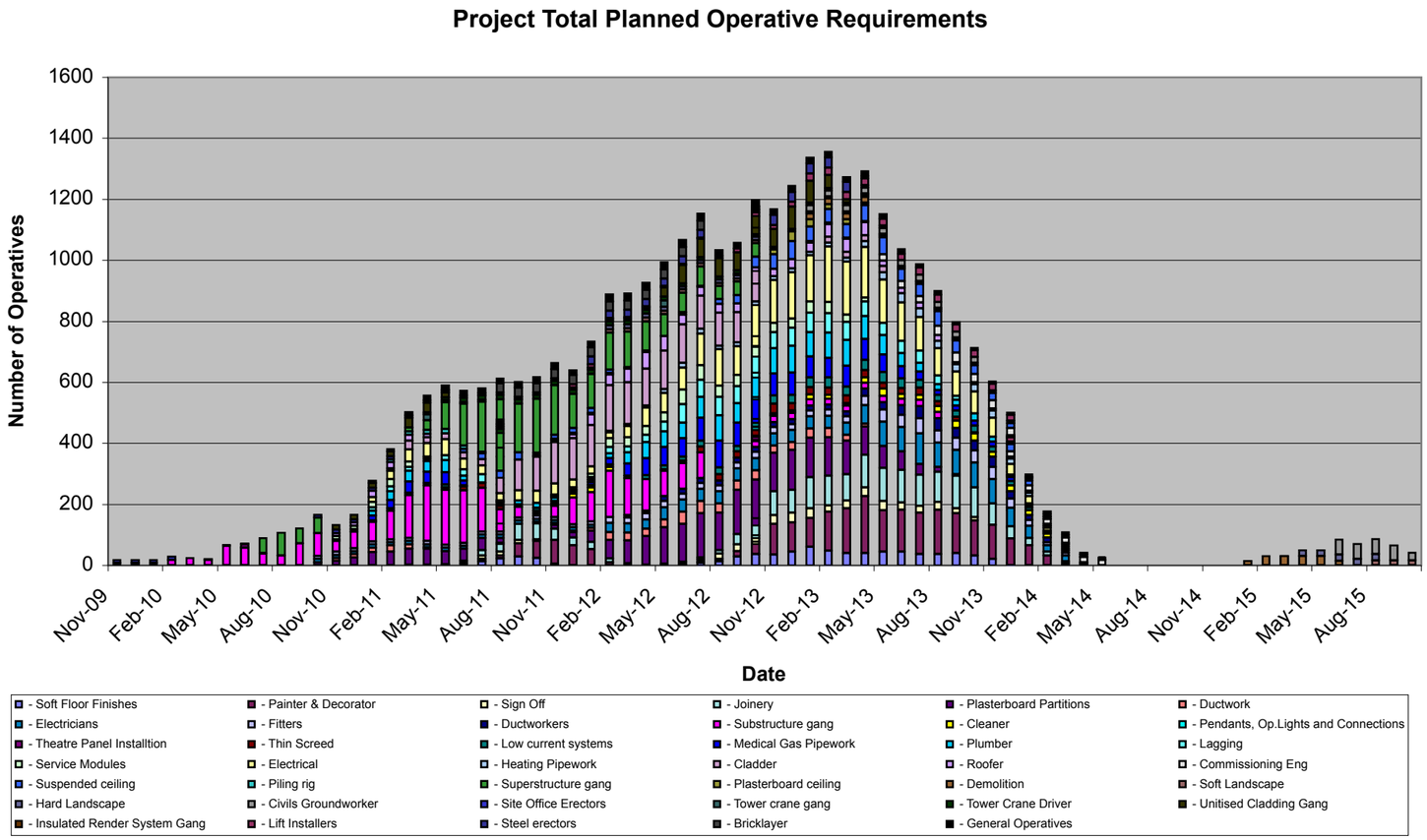
Brookfield



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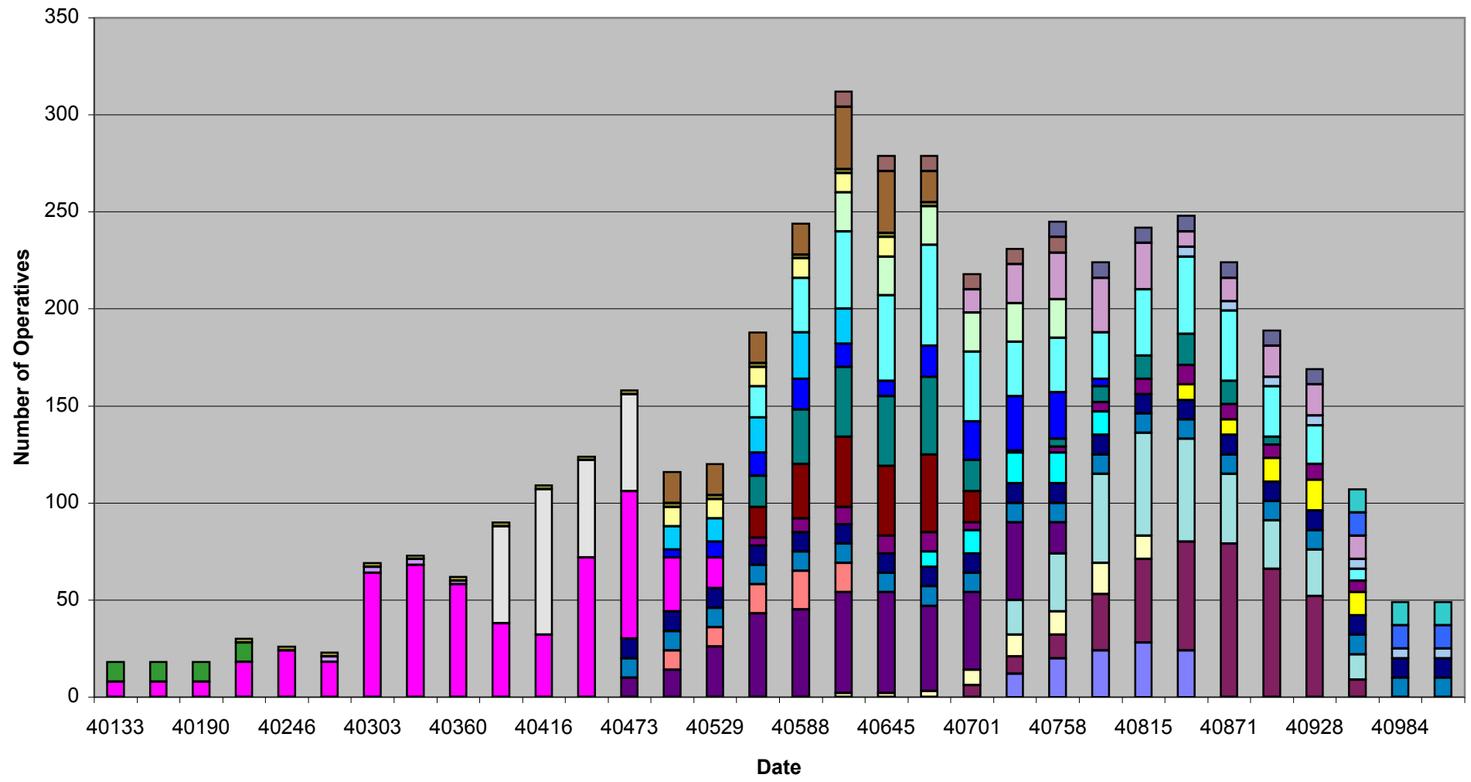
Brookfield

Stage 1 Laboratories and Energy Centre Planned Operative Requirements



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Brookfield

Stage 1 Histogram data

Date-Time	- Soft Floor Finishes	- Painter & Decorator	- Sign Off	- Joinery	- Plasterboard Partitions	- Ductwork	- Electricians	- Plumbers	- Fitters	- Substructure gang	- Cleaner	- Thin Screed	- Low current systems	- Medical Gas Pipework	- Plumber	- Lagging
16-Nov-09										8						
14-Dec-09										8						
11-Jan-10										8						
8-Feb-10										18						
9-Mar-10										24						
6-Apr-10										18						
4-May-10										64						
2-Jun-10										68						
30-Jun-10										58						
28-Jul-10										38						
26-Aug-10										32						
23-Sep-10										72						
21-Oct-10					10		10		10	76						
19-Nov-10					14	10	10		10	28						4
17-Dec-10					26	10	10		10	16						8
14-Jan-11					43	15	10		10				4	16	16	12
14-Feb-11					45	20	10		10				7	28	28	16
14-Mar-11			2		52	15	10		10				9	36	36	12
11-Apr-11			2		52		10		10				9	36	36	8
9-May-11			3		44		10		10			8	10	40	40	16
7-Jun-11		6	8		40		10		10			12	4	16	16	20
5-Jul-11	12	9	11	18	40		10		10			16	1			28
2-Aug-11	20	12	12	30	16		10		10			16	3		4	24
31-Aug-11	24	29	16	46			10		10			12	5		8	4
28-Sep-11	28	43	12	53			10		10				8		12	
26-Oct-11	24	56		53			10		10		8		10		16	
24-Nov-11		79		36			10		10		8		8		12	
22-Dec-11		66		25			10		10		12		7		4	
19-Jan-12		52		24			10		10		16		8			
17-Feb-12		9		13			10		10		12		6			
16-Mar-12							10		10							
13-Apr-12							10		10							

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Brookfield

- Service Modules	- Electrical	- Cladder	- Roofer	- Commissioning Eng	- Suspended ceiling	- Piling rig	- Superstructure gang	- Soft Landscape	- Hard Landscape	- Site Office Erectors	- Tower Crane Driver	Unitised Cladding Gang	- Insulated Render System Gang	- Lift Installers	Month Total
										10					18
										10					18
										10					18
										10	2				30
											2				26
						3					2				23
						3					2				69
						3					2				73
						2					2				62
							50				2				90
							75				2				109
							50				2				124
							50				2				158
12			10								2	16			116
12			10								2	16			120
18	16		10								2	16			188
24	28		10								2	16			244
18	40	20	10								2	32	8		312
	44	20	10								2	32	8		279
	52	20									2	16	8		279
	36	20			12								8		218
	28	20			20								8		231
	28	20			24								8	8	245
	24				28									8	224
	34				24									8	242
	40			5	8									8	248
	36			5	12									8	224
	26			5	16									8	189
	20			5	16									8	169
	6			5	12			12	12						107
				5				12	12						49
				5				12	12						49

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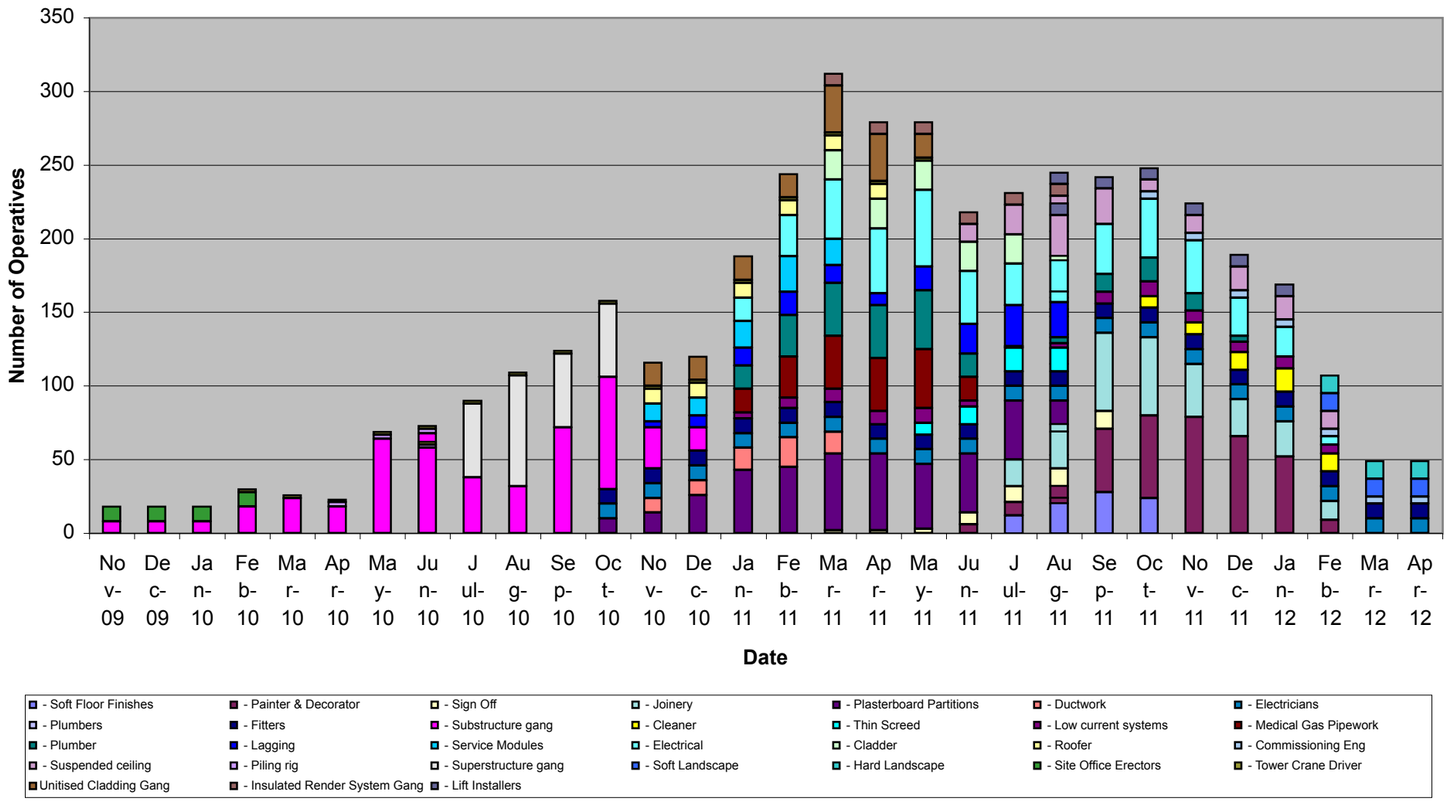
Brookfield

Stage 1 Planned Operative Requirements



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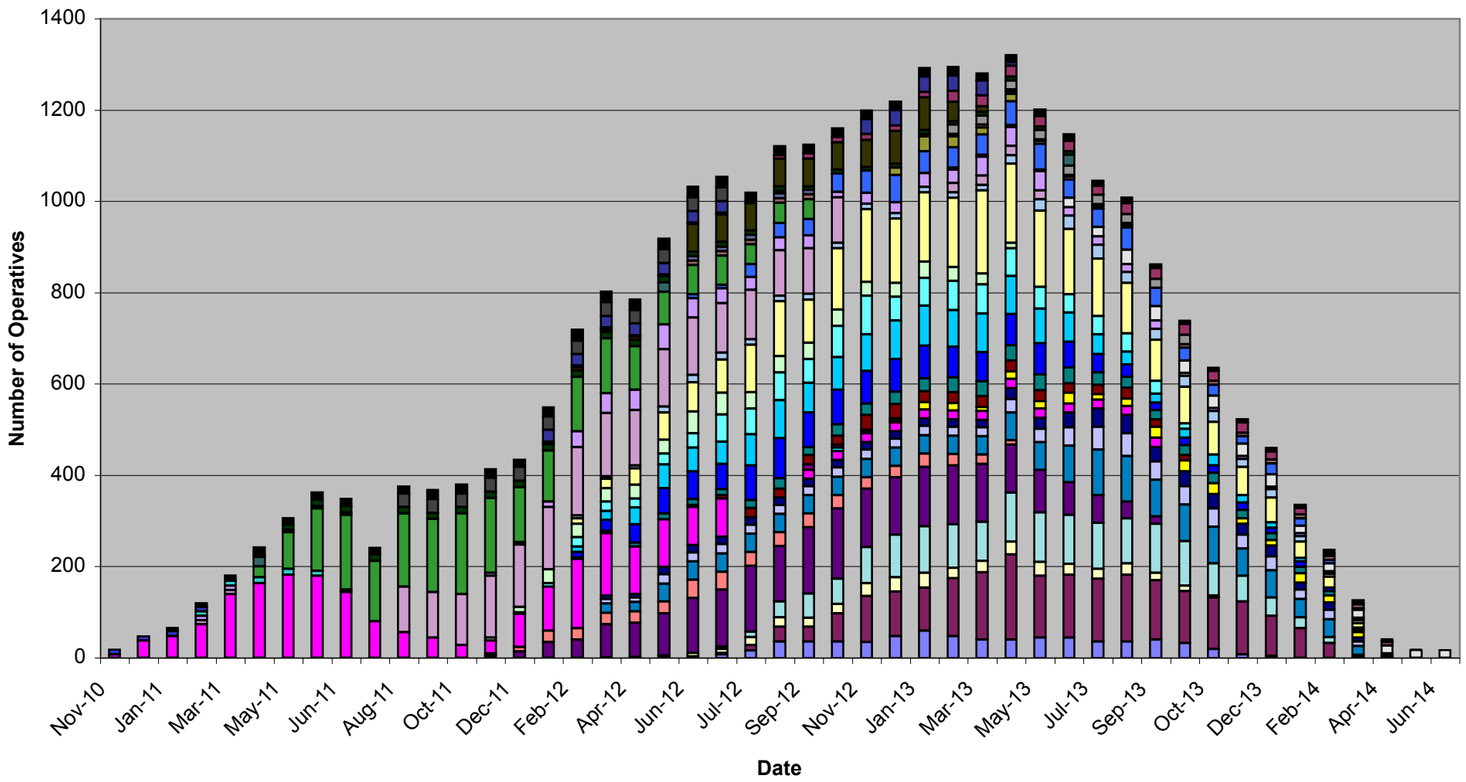
Brookfield

Stage 3 Planned Operative Requirements



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Brookfield

Stage 3 Data

Date-Time	- Soft Floor Finishes	- Painter & Decorator	- Sign Off	- Joinery	- Plasterboard Partitions	- Ductwork	- Electricians	- Fitters	- Ductworkers	- Substructure gang	- Cleaner	Pendants, Op.Lights and Connections	- Theatre Panel Installtion	- Thin Screed	- Low current systems	- Medical Gas Pipework	- Plumber	- Lagging	- Service Modules	- Electrical	- Heating Pipework	- Cladder	- Roofer
15-Nov-10										8													
13-Dec-10										38													
10-Jan-11										48													
7-Feb-11										74												8	10
8-Mar-11										140												8	10
5-Apr-11										164													
3-May-11										182													
1-Jun-11										180													
29-Jun-11										144													
27-Jul-11										80													
25-Aug-11										56												100	
22-Sep-11										44												100	
20-Oct-11										28												112	
18-Nov-11					5	5				28									6			136	6
16-Dec-11					14	10				72								4	12			136	6
13-Jan-12					35	25				96								8	30			136	12
13-Feb-12					40	25				152					3	12	12	20	30	12	6	150	34
12-Mar-12			1		73	25	20	10	8	136					5	24	20	20	30	20	6	138	44
9-Apr-12			2		75	25	20	10	8	104					9	40	36	20	30	36	6	122	44
7-May-12			5		93	25	40	20	16	104					13	56	52	24	30	60	12	126	54
5-Jun-12		3	8		120	40	40	20	16	84				4	13	60	52	32	48	64	16	126	42
3-Jul-12	8	3	8	6	124	40	40	20	16	84				8	12	56	48	60	48	72	16	108	32
31-Jul-12	16	12	17	12	145	30	40	20	16					20	18	76	68	56	36	104	12	108	28
29-Aug-12	36	32	21	34	122	30	40	20	16					20	22	88	84	60	36	120	12	100	28
26-Sep-12	36	32	20	53	145	30	40	20	16	20			12	20	18	76	64	52	36	95	12	100	28
24-Oct-12	36	61	21	55	154	30	40	20	16	20		8	6	20	24	76	72	68	36	134	12	100	12
22-Nov-12	35	100	29	79	128	25	40	20	16	20	4	4		32	25	72	80	84	30	160	12		24
20-Dec-12	48	97	32	93	125	25	40	20	16	20	4	4		32	27	72	84	52	30	141	12		24
17-Jan-13	60	94	32	102	130	30	40	20	16	20	16			24	28	72	88	60	36	152	12		30
15-Feb-13	48	127	22	96	128	25	40	20	16	20	16			24	32	68	80	64	30	152	12	20	30
15-Mar-13	40	147	25	86	127	20	40	20	16	20	8			24	33	64	84	64	24	182	12	20	42
12-Apr-13	40	186	29	107	105	10	60	30	24	20	16			24	34	68	84	60	12	174	18	20	42
13-May-13	44	136	30	109	93		60	30	24	20	16			24	35	68	76	48		167	24	20	42
10-Jun-13	44	138	24	107	72		80	40	32	20	24			20	35	56	64	40		143	30		18
8-Jul-13	36	137	22	101	60		100	50	40	20	12			20	27	40	44	40		126	30		18
5-Aug-13	36	146	25	99	36		100	50	40	20	16			24	23	28	28	40		110	24		18
3-Sep-13	40	130	16	108	16		80	40	32	20	24			16	21	16	20	28		90	24		18
1-Oct-13	32	114	12	98			80	40	32		24			12	22	16	20	12		80	24		6
29-Oct-13	20	112	4	71			80	40	32		24				22	16	24			72	24		6
27-Nov-13	8	115		57			60	30	24		12				18	16	16			62	18		6
25-Dec-13	4	88		40			60	30	24		12				15	12	12			54	18		6
22-Jan-14		65		24			40	20	16		20				14	12	8			36	12		6
20-Feb-14		32		13			40	20	16		16				9	8				24	6		6
20-Mar-14		3		3			20	10	8		12				6	4				10	6		6
17-Apr-14															2					2			6
16-May-14																							
13-Jun-14																							

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Brookfield

- Commissioning Eng	- Suspended ceiling	- Piling rig	- Superstructure gang	- Plasterboard ceiling	- Demolition	- Soft Landscape	- Hard Landscape	- Civils Groundworker	- Site Office Erectors	- Tower crane gang	- Tower Crane Driver	- Unitised Cladding Gang	- Insulated Render System Gang	- Lift Installers	- Steel erectors	- Bricklayer	- General Operatives	Month Total
									10									18
									10									48
									10								8	66
		10							10								8	120
		11															12	181
		13	24							20	6						16	243
		13	80							6	10						16	307
		11	136							6	14						16	363
		5	164							6	14						16	349
			132								14						16	242
			160								14					30	16	376
			160								14					30	20	368
			176								14					30	20	380
			164								14					30	20	414
			120								14					30	16	434
			112								14		6		25	30	20	549
			120								14		6	4	25	30	24	719
			120								14		6	4	25	30	24	803
			96								14		6	4	25	30	24	786
			72							20	14			4	25	30	24	919
	8		64			10	10				10	60		4	25	30	24	1033
	8		64			10	10				10	60		4	25	30	24	1054
	28		44			10	10				10	60		4			20	1020
	32		44			10	10			6	10	60		8			20	1121
	36		44			10	10				8	60		12			20	1125
	40										8	60		12			20	1161
	48										8	60		12	33		20	1200
	60			16							8	72		12	33		20	1219
	48			32		6					8	72		12	33		20	1293
4	44			24		6		20			8	42		24	33		20	1295
4	44			16		6		20			8	12		24	33		16	1281
4	52			16		6	4	20			8			24	8		16	1321
4	56					6	4	20			8			22			16	1202
21	40					6	4	20		24	8			22			16	1148
21	40					6	4	20						20			12	1046
31	48					6	4	20						24			12	1008
31	40							20						24			8	862
27	28					8		20						24			8	739
27	24					8								22			8	636
27	16					8								22			8	523
27	24					8								18			8	460
17	16					8								14			8	336
17	8					8								6			8	237
17	4					8								2			8	127
17						8								2			4	41
17														2				19
17																		17

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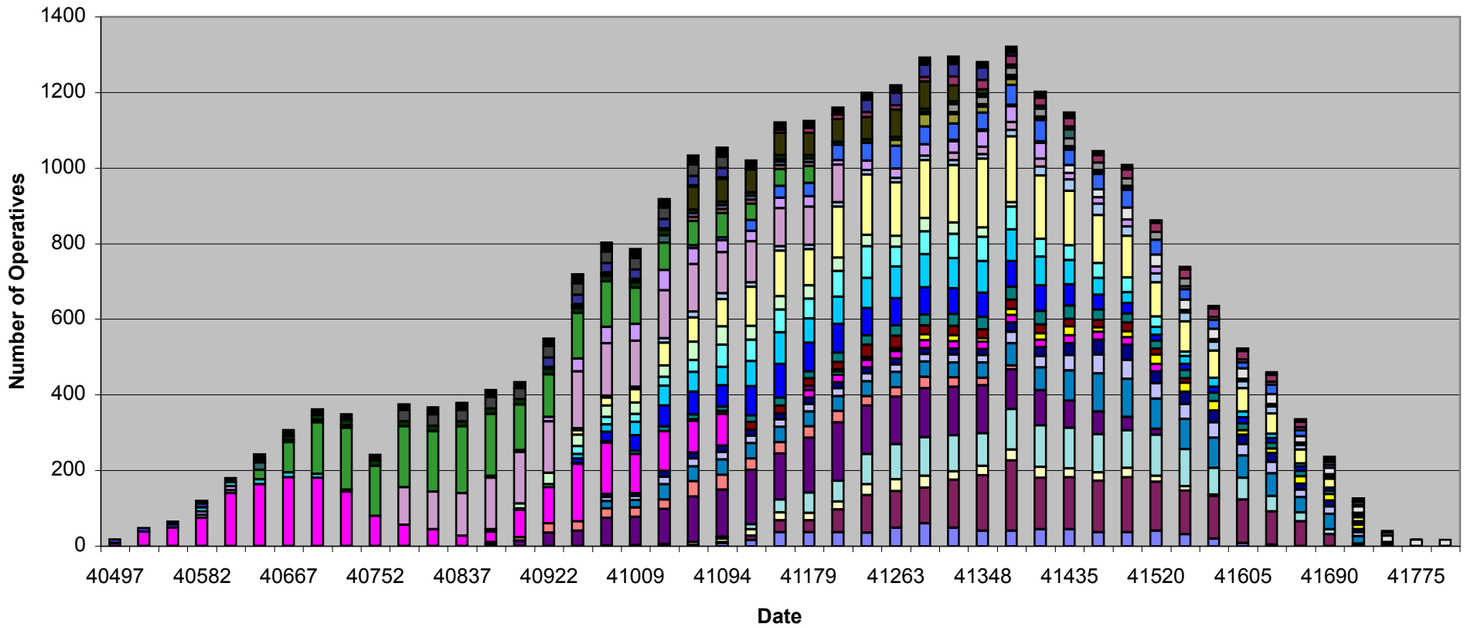
Brookfield

Stage 3 Planned Operative Requirements



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Brookfield

APPENDIX CB4

Community benefit certificate

Name of Organisation: BROOKFIELD

Contract Title NEW SOUTH GLASGOW HOSPITALS PROJECT

Name of Company. BROOKFIELD CONSTRUCTION (UK) LIMITED

Address of the Company 40 BERKELEY SQUARE

LONDON, W1J 5AL

Contact Name: ROSS BALLINGALL.

Position: DIRECTOR (Brookfield Construction (UK) Ltd)

Telephone numbers [redacted]

E-mail address [redacted]

I confirm that Appendices CB1, CB2 set out the actions that will be undertaken to ensure the achievement of NHS Greater Glasgow and Clyde's community benefits objectives. It is recognised that these appendices will be evaluated as part of the tender assessment and contract award procedure, and that delivery of the NHS Greater Glasgow and Clyde's community benefits objectives will be a contract condition.

Signed……

(Print Name) ROSS BALLINGALL

Date……

This document must be submitted as part of each valid tender.

Note: please ensure that you enter the company name in the page header.

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Brookfield

10.1.13 Initiation of NEC working practices and cascade of this through supply chain

One of the key requirements in order to ensure the commercial success of the project is the rigorous application of the NEC contract conditions. It is important that all appropriate team members and supply chain members are fully conversant with the components of the NEC suite of contracts and understand how they will be applied and stepped down throughout the project.

A series of NEC workshops would be held with team members and supply chain members as soon as they become involved with the project. This would commence at contract award of the Stage 1 and Stage 2 works and continue throughout the project. Workshops would comprise:

NEC Workshop	Change Control Workshop	Target Cost Workshop
• Overview of NEC Suite of Contracts • Attended by all appropriate team members and all supply chain members • Ensures all team members and supply chain members understand the NEC suite of contracts and their components	• Detailed explanation of the change control process • Attended by all appropriate team members and all supply chain members • Ensures all team members and supply chain members understand change control requirements and how this will be operated during the project	• Detailed analysis of the operation of a target contract • Attended by all appropriate team members and those supply chain members who will be contracted under a target contract • Ensures the team and supply chain understand how a target contract operates and how this will be operated during the project

NEC Workshop

This would provide an overview of the NEC suite of contracts and would include:

- Reasoning behind using the NEC suite of contracts

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- Main differences between more traditional forms of contract and the NEC suite of contracts
- Main aims of the NEC contract

- NEC as a management tool
- Identification of key players identified within the NEC contract
- Analysis of key components of the NEC contract including main and secondary options
- Consideration of the appropriate option for each Works Package
- Analysis of core clauses of the NEC contract
- Resources required to efficiently and effectively operate the NEC contract

Change Control Workshop

This would provide a detailed working knowledge of the operation of the change control process to be adopted on the project from submission of bid to project completion and would include:

- Reasons for the need to control change
- Contractual complexities and relationships (Brookfield with the Board and Brookfield with supply chain)
- Reasons for change and accountability
- Benefits of change control
- Contractual obligations for change control
- Detailed explanation and analysis of the change control process to be adopted on the project
    - Early Warnings

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- Project Managers Instructions
- Compensation Events

- Use of Schedule of Cost Components

Target Cost Workshop

This workshop would be specific to those supply chain members engaged under Option C Target Cost and would include explanation and analysis of:

- Open book working to determine target cost (as appropriate depending upon Option used)
- Payment process
- Audit process to determine actual costs
- Pain /Gain share mechanism (as appropriate)
- Disallowable costs

Brookfield

SUBMISSION REFERENCE: Volume 10.0 Section 10.1.14 Handover Process
Note: Handover process identified as part of the qualitative scoring schedule in the ITPD Volume 3 Appendix B

SUBMISSION RESPONSE

Definition

Handover is the stage where responsibility for the Works is passed from Brookfield to NHS GG&C Health Board. Handover is not commissioning, which takes place during the construction of the Works and before Completion and is described in detail in Section 3.24. Handover and Commissioning are separate but related stages of a construction project. The activity °∞Handover°±, which is linked to commissioning, is recognised as being a key output from the successful commissioning of systems.

Handover is the provision of the As Built Asset Register / Operation and Maintenance Manuals / As-Built Drawings / Health and Safety Files (including residual risks). As part of the final handover procedure the documentation that would traditionally populate the O&M°ŕs will be updated into the digital web based asset management system described in Section 3.24. Handover will also include the provision of suitable client training manuals including attendance schedules and training feedback questionnaires in order to operate and maintain the new facility as intended. There may be minor snags or omissions in the Works but these do not prevent the Works from being reasonably capable of being used for the intended purpose, and can be corrected without prejudicing the convenient use of the Works.

Handover Plan

Brookfield will develop a fully integrated Final Commissioning and Handover Plan in accordance with Volume 2 Section 6.8 of the Employer°ŕs Requirements °Ĺ Commissioning and Handover°ŕ to ensure that all Commissioning and Handover requirements are addressed. The Commissioning Plan is described in Section 3.24. An outline Handover Plan is detailed below. The Handover Plan will be developed alongside the Commissioning Plan during Stage 2 Detailed Design Development and finalised during the construction stage.

The Handover Plan will be further developed and include all documentation associated with Tests on Completion and provide Test Documentation as listed in Volume 2 Section 6.8.7. Notwithstanding the documentation listed in Volume 2 Section 6.8 a typical Handover Plan would included but not limited to the following:

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- Staff Training Carried Out °© In accordance with Table 1 of Volume 2 Section 6.8.
- Witnessing of Commissioning by Board Approved Parties listed in Vol 2 Section 6.8.3.1
- Demonstrations of plant, equipment and systems °© a log of record of witnessing certificates.
- Presentation of draft O&M manuals
- Presentation of draft As-Installed drawings
- Presentation of draft H&S File
- Draft O&M manuals returned with comments
- Draft As-Installed drawings returned with comments
- Draft H&S File returned with comments
- Final O&M manuals issued
- Final As-Installed drawings issued
- Final H&S File issued
- Works Inspection schedules issued in accordance with Volume 2 Section 6.8.7.1
- List of required Commissioning and Inspection Certificates issued
- Fire extinguishers installed
- Loose furniture installed (see attached list)
- Fixtures and fittings installed (see attached list)
- Confirmation that relevant approvals given by Building Warrant Completion Certificates
- Evidence of Discharge of Planning Consent Conditions
- Installation of IT cabinets
- Installation of IT active equipment
- Installation of telephone handsets

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- Project Handover Review completed (Duty Holders)
- Confirm date of formal handover meeting to Client/End User
- Suited Locks fitted and key storage cabinet available
- Undertake Formal Handover Meeting
- Record of Handover form completed

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New South Glasgow Hospitals Project
Bid Submission Clarifications
Bidder: 1 (Brookfield)
Technical Clarification: 1 (issued 23 September 2009)

PRIVATE & CONFIDENTIAL

Item	Topic/Bid Reference	Board Clarification	Bidder Response
General			
0.0			
Logistics			
1.0	Site Parking	You have options but no firm plans for site parking, please confirm that the provision for site parking (incl any delivery area/holding area/lay-down areas off site) for all phases are included in your priced bid.	Brookfield have considered a number of options with regards to temporary parking/holding areas etc during the construction period and should we be selected would wish to discuss with the Board and other interested parties these arrangements to develop a strategy for the benefit of the Project. In the meantime, we confirm our prelims identify pricing allowances for the relevant Stages and refer you to the logistics section. In addition, our procurement strategy with regards the supply chain will include for the provision of temp parking spaces and this will be identified in the cost when packages are let accordingly. Ie the amounts in the Prelims will be supplemented by amounts in the trade cost plan. We also recognise that using local labour will enable us to encourage the use of public transport to mitigate the requirement for extensive on site/off site temporary parking. Finally whilst we identified on the risk register temporary parking as being an issue to resolve, we felt a combination of the above will be sufficient to deal temporary parking and this reduced the risk element to acceptable.
2.0	Delivery Team	Several of your proposed delivery team appear to have commitments to another healthcare scheme (i.e. Peterborough). Please confirm how your delivery team will be deployed in line with the NSGH timescales and your programme requirements.	We reaffirm our commitment that the proposed delivery team will be deployed in accordance with the NSGH timescales and our programme requirements. Taking each stage: <u>- Labs Construction Team:</u> The individuals noted are available now, and no longer have commitments on Peterborough.

			- FBC/Core team: The individuals are available now, and have already been working on the NSGH project. - Adult/Children's Team: The individuals identified will be available before November 2010. At Peterborough, the Mental Health Unit and City Care Centre have already been completed on programme and handed over to the Trust earlier this year. This has released some of the individuals who have since being involved in the bid submission. The main Acute facility is 3 months ahead of programme and notice will be given shortly to confirm the end of September 2010 date for handover. Many departments are being closed off progressively (as some of the Board's team will have witnessed during the recent site visit). By the end of 2009, the Acute facility will be into testing and commissioning phase and we are confident that a September 2010 completion is likely and the individuals will be available as scheduled.
Design/HP			
3.0	Entrances	Confirm your proposals for significant entrances to the site per ER requirement in this regard.	The NSGH campus masterplan has been configured to provide clear entrances which lead directly to the primary arrival space at the heart of the campus. Entrances have been designed in plan form to provide the necessary function and capacity to respond to highway requirements associated with the various modes of transport. Significant entrances are to be delivered as features within the context of both the wayfinding and public art strategies. The entrances are important as part of the legibility and identity of the rejuvenated hospital campus. To achieve this it will be necessary for the design team to work with the Board to determine the correct balance between an innovative and unique site-specific response (informed by public art) and the guidance for standardised signage contained within the NHS Scotland guidance for signage and branding for use within NHS sites (which we have reviewed). For this reason our designs have not been developed beyond the concept stage in advance of Stage 2 engagement. The attached concept images illustrate the general potential for an entrance feature sign at the primary Govan Road entrance to

			the site, but should not be considered a firm design proposal at this point. We can confirm that the commercial proposal includes provision for this approach. Our drawing GIL-WS-00-PL-502 illustrates the signage hierarchy and proposed locations for the various sign types. This includes the proposed location of campus gateway signage features at the key entrances to the campus. It is intended that the main entrances should include feature lighting as part of the significant entrance features. It should be noted that the entrances need to be considered in parallel with the design and quality of the main arrival square, as this forms an important part of the entrance and arrival sequence and experience. The point of entrance and the route to the arrival square should therefore be considered as part of the entrance arrangement.
4.0	Specification	Confirm your proposals for electronic information points per ER requirement (7.15.4) in this regard.	In response to the ER requirement (7.15.4) we have made provision for 1x 'Real Time Public Transport System' electronic Information Point externally at the Bus Drop-Off Area. Additionally, in response to ER requirement (7.2.19), as part of our Wayfinding Strategy we have proposed electronic/interactive 'You Are Here' maps in the Main Entrance Foyers to both the Adult and Children's Hospitals. Please refer to our Wayfinding Strategy contained within **Volume 3.0; Section 3.2** for further details of our proposals and imagery.
5.0	Interstitial Blinds	Confirm your strategy for interstitial blinds to external windows/façade and internal observation screens (this to include a cross-section detail of your proposal(s)).	Interstitial Blinds have been included in our priced bid to **internal** glazed screens generally to all Bedrooms, including those within Critical Care (Adult Hospital and Children's PICU), AAU and all Inpatient Wards (Adult and Children's Hospitals). In addition, interstitial blinds have been included to internal door vision panels as part of our Internal Door detailed proposals. Our Internal Door Strategy is contained within the Introduction to **Volume 2.0; Section 2.21** - Door & Ironmongery Schedules. Where a door is noted in the Schedule as being **'obscurable'**, this equates to a vistamatic type vision panel with interstitial

			blinds. Please note that our priced bid does not currently have a provision for internal blinds or curtains which are not integral to the internal fabric of the building. In our past experience these items would be included in the Equipment List. We have priced this List accordingly as requested by the Board, and would be pleased to debate with the Board further whether these items should be included within the Equipment List. With respect to **external** windows, we have included for interstitial blinds to all external windows in patient areas within Critical Care (Adult Hospital and Children's PICU). Again, please note that our priced bid does not currently have a provision for internal blinds or curtains which are not integral to the internal fabric of the building. Please refer our separate attachments for the requested detailed section drawings, our Internal Glazed Screen Strategy Document and External Windows Privacy Strategy Document.
M&E Services			
6.0			
Renewables/Sustainability/BREEAM			
7.0	Carbon	You noted at the presentation of 21 September you're your variant 2 for Laboratories will achieve the 80Kg CO2m2 – can you confirm that your compliant bid achieves this target also.	Achieving the 80kg CO2 m2 for both the compliant and Variant Option 1 Laboratory bid will be dependant on the construction of the Energy Centre, with which the overall solution is integrated. **RFI 144** refers and is attached for ease of reference. As noted in **RFI 147** (attached) the Energy Centre is dependant on FBC and commencement of Stage 3. Variant Option 2 offers an integrated M&E plant solution and the early construction of the Energy Centre shell and core to house it. This may be achieved through an advanced design and planning process and cash flow solution indicated in Volume 16 of our bid submission.

8.0	BREEAM	Clarify BREEAM Ene 1 score – 8 and 11 referred to in different sections.	Please note the correct score is 8 and we apologise for the confusion.
9.0	Renewables	Confirm which LZC and renewables are included in the bid.	LZC – 3MW Combined Heat and Power units. High efficient friction less bearing chillers providing COP 9. 1000kW Absorption chiller unit. Active chilled beams. Variable speed pumps. Natural daylighting. Natural ventilation . Renewables. 12no Vertical axis wind turbines.
10.0	Energy Model	Confirm that the energy model is fully compatible with the servicing strategies set out in volume 3 in particular the use of a sealed building with chilled beams.	Brookfield confirm the energy model is fully compatible with the requirements as set out in Volume 3 in particular the use of sealed building with chilled beams.
11.0	Energy Monitoring	Confirm that the energy monitoring system illustrated is included in the bid.	Brookfield confirm the energy monitoring system is included in the bid.
12.0	Energy Management	Has active energy management been included for by BE post construction as per clarification?	Brookfield confirm we will provide active monitoring, reporting and fine tuning during the 24 months DLP period. Please refer to our Volume 3 Sec 3.24 Item 1 Building Services Commissioning Strategy, Post Occupancy DLP Period for further information.

New South Glasgow Hospitals & Labs Project Executive Board

22nd October 2009
Tender Submission Workshop

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Update from Outline Business Case

NHS Greater Glasgow and Clyde

- New Technical Advisors Team Appointed September 2008
- Completed Gateway 2 Review on Procurement Method
- Completed Pre-Qualifying Questionnaire Process and Selected 3 Bidders.
    - Brookfield Europe LP
    - Laing O'Rourke Construction Ltd
    - Balfour Beatty Group Ltd

  Bidders were selected on the basis of their demonstrative ability to deliver large complex acute hospital schemes
- Completed an Exemplar – 1:500s – 1:200s – 1:50 (with user groups)
- Developed Hospitals Exemplar to RIBA Stage C - Laboratory to RIBA Stage D
- Submitted new Draft Master Plan for SGH to Glasgow City Council
- Obtained Outline Planning Approval and Concluded Section 75 Agreement

Tender Documents

- Completed tender documents and issued to Bidders on 30th April 2009 to start procurement process:
  - Volume 1 – Project Scope and Documentation
  - Volume 2 – Work Information/Employer's Requirements
  - Volume 3 – Bid Deliverables and Evaluation

Competitive Dialogue

NHS Greater Glasgow and Clyde

- Market Sounding validated procurement approach
- Advise bidders of our requirements and clarify issues raised and enable detailed discussion with the bidders to take place
- Commenced dialogue on the 11th May 2009
- Met each bidder on 16 occasions
- Sub-groups – Design – Logistics – Laboratories - Commercial

Competitive Dialogue

NHS Greater Glasgow and Clyde

- Operated a Request for Information (RFI) Process
- Gave clear direction on Board needs through the interaction with the bid teams
- Ended with Bidder presentations and gave final feedback and direction from Board Team
- Concluded Competitive Dialogue on 14th August 2009
- Tenders Returned 11th September 2009

Project Stages

NHS Greater Glasgow and Clyde

Stage 1 -	Construct New Laboratories Facility
Stage 2 -	Detailed Design of New Adult Acute Hospital and New Children's Hospitals (Submit FBC for Hospitals for approval) Concurrent with Stage 1
Stage 3 -	Construct New Adult Acute and Children's Hospitals Concurrent with Stage 2
Stage 3A -	Demolition of current Surgical Blocks and Biochemistry and Complete Landscaping of Site

Board Requirements

NHS Greater Glasgow and Clyde

- An innovative, iconic modern facility based on a high level specification providing:
  - World class patient focussed flexible facilities
  - Optimal functionality (appropriate adjacencies and travel distances between departments and functions)
  - High Quality Materials
  - Iconic External Design
  - Inspiring Internal Design
  - Master plan aspiring to Local Authority requirements
  - Minimal disruption to current hospital service
  - Provides value for money solution within the affordability threshold
  - Sustainable, low carbon solution

Bidders Approach

NHS Greater Glasgow and Clyde

Brookfield Europe

- To provide a quality design and build to achieve maximum efficiency in programme and iconic external construction (removed transfer floor)
- Reduced uncertainty and risk through developing the design to detailed level (i.e. 1:200 for whole hospitals)
- No pre-conceived ideas

Laing O'Rourke

- To completely re-design the exemplar
- To provide a low capital cost solution for the new facilities

Balfour Beatty

- To provide a quality design and build to achieve maximum efficiency in programme and construction (separate components)
- To produce iconic external design

Labs Design Specification

NHS Greater Glasgow and Clyde

- Completed design to RIBA Stage D
- Fully signed-off by Users and Laboratory Project Board
- Includes Facilities Management Complex within the building
- Includes Biochemistry, Haematology, Mortuary Services (including City Morgue), Pathology, West of Scotland Medical Genetics and Microbiology
- Full Business Case will be completed

Southern General Hospital Redevelopment Incorporating New Adult & Childrens Hospitals.

Outline Design Proposals for New Laboratory Development.

3D Concept Visual

Laboratory Building Proposals

View

bmj architects
Boswell Mitchell & Johnston

Currie & Brown
Wallace Whittle
URS
HLM Architects
h

© Boswell Mitchell & Johnston Architects, 2 Central Quay, 89 Hydepark Street, Glasgow, G3 8BW. 72-82 Rosebery Avenue, London, EC1R 4RW. Te: 020 7833 9974. Fax: 020 7833 8255

2475 AF(Vis)04 17/07/2009

Southern General Hospital Redevelopment Incorporating New Adult & Childrens Hospitals.

Outline Design Proposals for New Laboratory Development.

3D Concept Visual

Laboratory Building Proposals

View

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Existing Site Plan

NHS Greater Glasgow and Clyde

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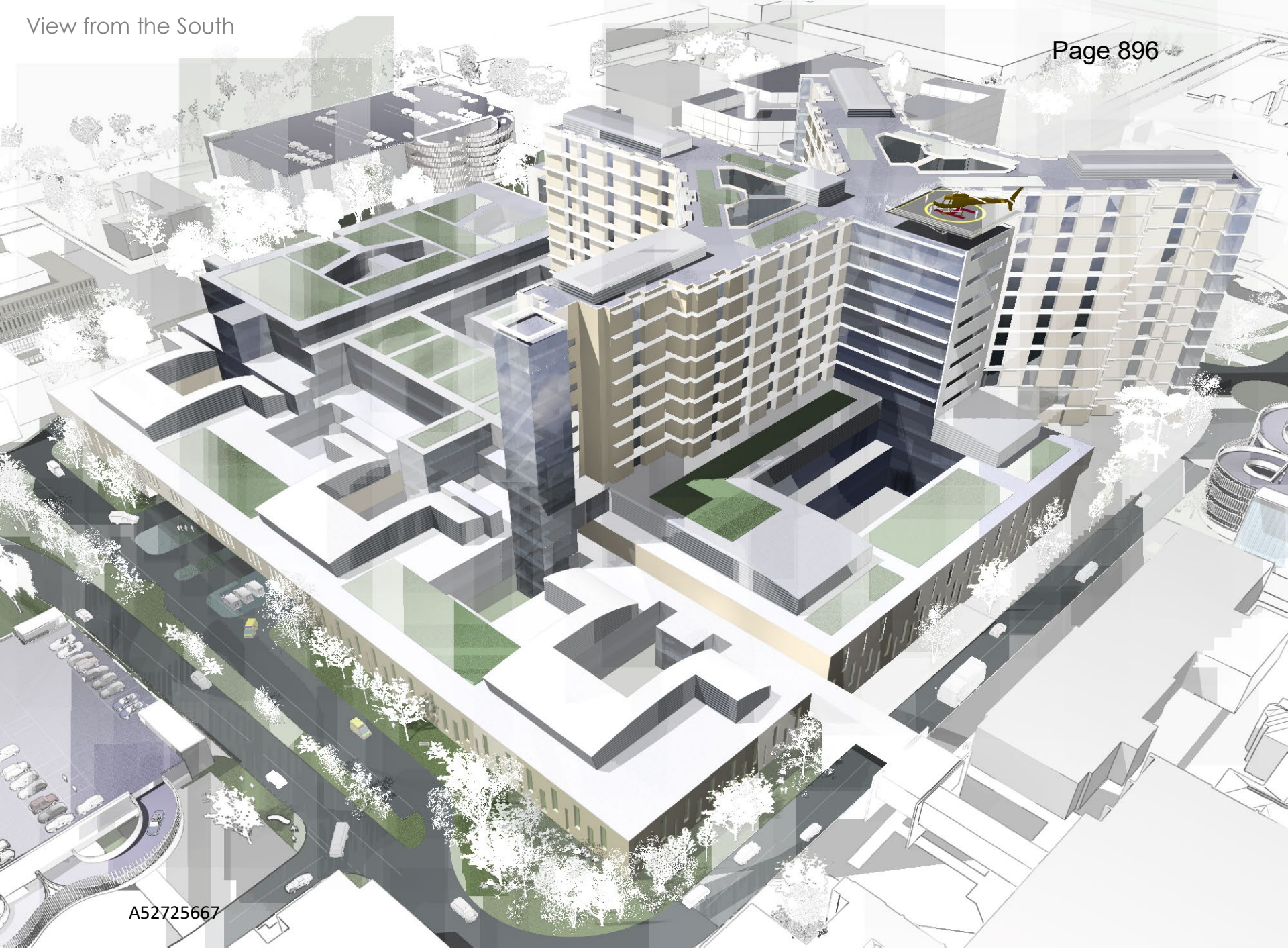
View from the South



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NHS Greater Glasgow and Clyde

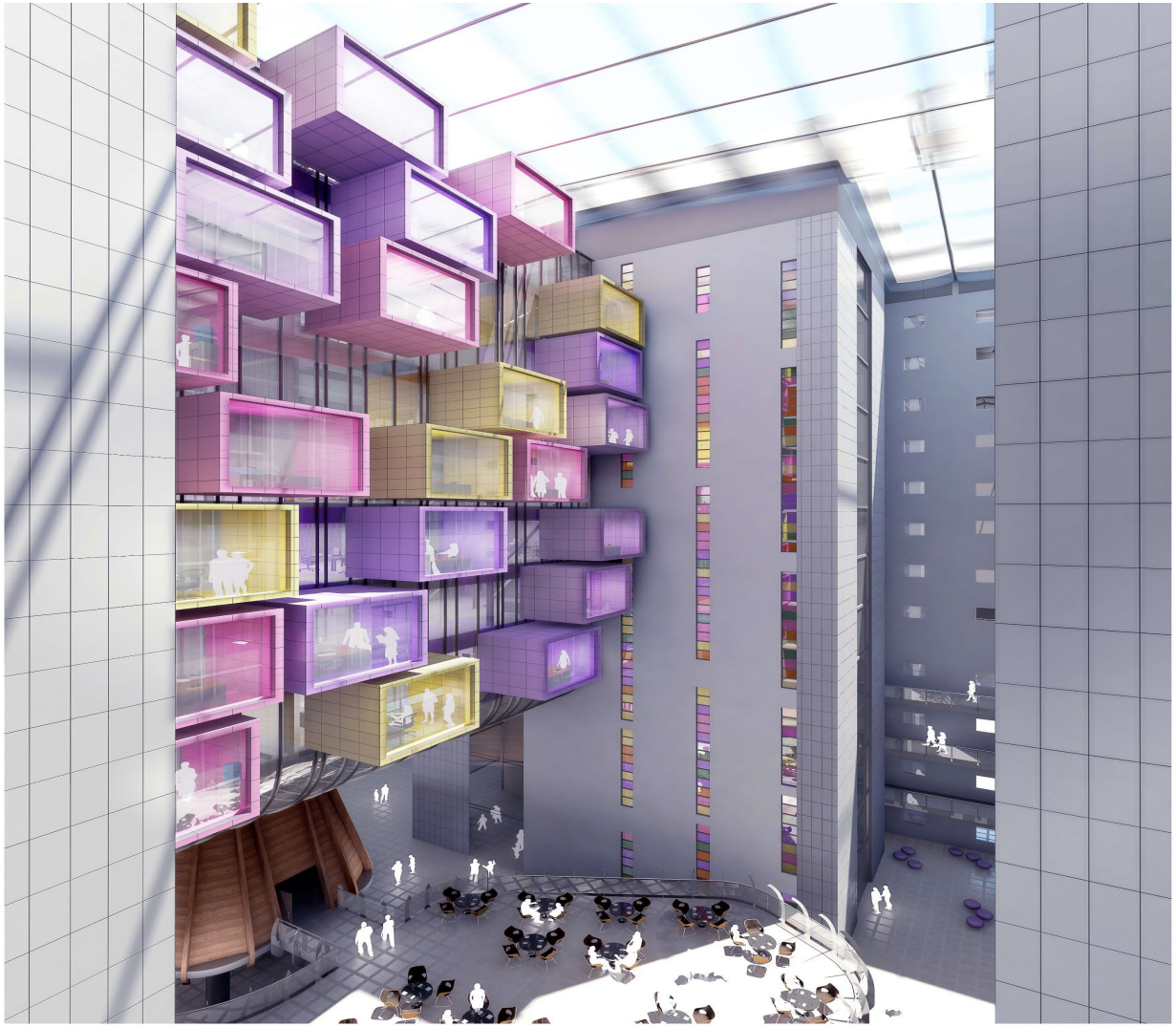
Brookfield Europe LP

- P Parking
- Disabled Parking
- Car drop off
- Taxi rank
- Bus stop

1. Turf Mound
2. Bike Shelter
3. Canopy Walkway
4. Potential Park Cafe
5. Potential Community Garden
6. Potential 5-a-side Football Pitch
7. Play Area
8. Informal Sport / Play Area
9. Trim Trail/ Running Track
10. Formal Garden
11. Children's Discovery Area
12. Fast Link Stop
13. Arrival Square
14. Children's Park
15. Central Park
16. Ambulance & Emergency Entrance Area
17. Children's DCFP Roof Garden
18. Children's Roof Garden
19. Reed Beds

10 30 50 70 90
0 20 40 60 80 100

H



VIEW FROM SEVENTH FLOOR

NHS
Greater Glasgow and Clyde

Laing O'Rourke Construction Ltd

DB
DAY SURGERY
BM N.R.P.B.
SPECIAL CARE BABY NURSERY
OBSTETRICS MATERNITY OUTPATIENTS
NEW NEO-NATAL UNIT
BL
DEPT. OF MED. FOR THE ELDERLY
DJ
DE
P.D.R.U.
WARDS 67-68
NEUROLOGY RESEARCH & LABS
BW
WARDS 51-57 DAY HOSPITAL
BC
NEUROSURGICAL THEATRES OUTPATIENTS NEUROPATHOLOGY M.R.I. WARDS51-66 NEURO X-RAY
BB
PHARMACY DEPT.
OCCUPATIONAL THERAPY
DRUG ABUSE PYSCHOLOGICAL MED.
BA
WARDS 30 - 32
SPINAL INJURY PHILLIPSHILL & EDENHALL WARDS
DA
CENTRAL MEDICAL WDS 20-26
AS
NUCLEAR MED.
BACTERIOLOGY
AT
AO
UROLOGY
DERMATOLOGY O.P. & WD 7
MAIN X-RAY
LASERCARE
AP
HAEMATOLOGY
WD8/8A
EYE ASSESS
EYE TH.
WDS 9-11
AQ
OPHTHALMIC OP
DH
ORTHO-PAEDIC
AK
ACCIDENT+ EMERGENCY
THERAPY CENTRE
AI
DAY HOSP
GENERAL OUTPATIENTS
AG
RECORDS DIABETES AUDIOLOGY ECG
AE
Trust Headquarters
G.U. MED.
AD
CHEST & G.I.CLINIC
DD
PODIATRY
WESTMARC
DI
Laboratory
Mortuary
Energy Centre
Sewage Works
Depot
Sub-Station
Car park 1028 spaces
Car park 312 spaces
Car park 1A 698 spaces
Car park 1B 696 spaces
Adults Hospital Entrance
Childrens Hospital Entrance
Fast Link Bus Stance
Bus Service stance
Taxi/Taxi stance
Fire Service Access point
Ambulance lane
Traffic light controlled junction
HARDGATE ROAD
RESPREW ROAD
GOVAN ROAD
MOSS ROAD
LANGCROFT ROAD
CARLETH QUADRANT
LANSDOWNE DRIVE
United Free Church

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New South Glasgow Hospitals

Aerial view from North East

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NHS Greater Glasgow and Clyde

LAING O'ROURKE

keppie

3d Images - Exterior View 11
Aerial view from North East
Bid Deliverable Ref. 2.14
Drawing No. KEP-G(00)X-XX-990
Scale ● N/A Date ● 28/08/09
Created ● AS Checked ● FL

View towards Accident & Emergency Entrances. Structured planting helps break up and define parking areas that lead to the covered entrances. The tower is set further back from this elevation and the scale of the podium is broken down to respond directly to the adjacent residential area.

New South Glasgow Hospitals

CAD model view to A & E Entrance

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NHS Greater Glasgow and Clyde

LAING O'ROURKE

keppie

3d Images - Exterior View 8
CAD model view to A & E Entrance
Bid Deliverable Ref. 2.14
Drawing No. KEP-G(00)X-XX-987
Scale ● N/A Date ● 28/08/09
Created ● AS Checked ● FL

View at Adult's Entrance looking towards the Children's Hospital. The Main Entrance is clearly identified at the base of the ward tower

New South Glasgow Hospitals

CAD model view to NSGH Main Entrance from East

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NHS Greater Glasgow and Clyde

LAING O'ROURKE

keppie

3d Images - Exterior View 6
CAD model view to NSGH from East
Bid Deliverable Ref. 2.14
Drawing No. KEP-G(00)X-XX-985
Scale ● N/A Date ● 28/08/09
Created ● AS Checked ● FL

On entering the hospital the visitor is immediately welcomed by the main reception desk and atrium. From here the onward journey to ward or outpatient departments can be clearly identified with the main lift core to the ward tower immediately beyond and outpatient departments accessed via bridges and galleries from the reception atrium.

New South Glasgow Hospitals

NSGH Main Entrance Reception

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NHS Greater Glasgow and Clyde

LAING O'ROURKE

keppie

3d Images - Interior View 1
NSGH Main Entrance Reception
Bid Deliverable Ref. 2.14
Drawing No. KEP-G(00)X-XX-950
Scale ● N/A Date ● 28/08/09
Created ● AS Checked ● FL

NHS Greater Glasgow and Clyde

Balfour Beatty Group Ltd

5	20	40	1:200
10	50	100	1:50 / 1:500
	100	200	1:1250

DRAWING TITLE MASTERPLAN WITHIN SITE CONTEXT

SCALE 1:1250@A1

DRAWING No. 02.01.01

DRAWING SUBJECT TO CONTINUED DESIGN DEVELOPMENT

Balfour Beatty

A52725667

New South Glasgow Hospitals

5	20	40 1:200
10	50	100 1:50 / 1:500
100	200	1:1250

DRAWING TITLE	3D VISUALISATION BIRDSEYE VIEW	SCALE NTS@A1
DRAWING No.	02.14.03	

DRAWING SUBJECT TO CONTINUED DESIGN DEVELOPMENT

Balfour Beatty

A52725667

New South Glasgow Hospitals

5	20	40 1:200
10	50	100 1:50 / 1:500
	100 200	1:1250
DRAWING TITLE	3D VISUALISATION MAIN ENTRANCE	SCALE NTS@A1
DRAWING No.	02.14.04	
DRAWING SUBJECT TO CONTINUED DESIGN DEVELOPMENT		

Balfour Beatty

A52725667

New South Glasgow Hospitals

5		10			20		1:200
	10					50	1:50 / 1:500
		50		100			1:1250

DRAWING TITLE	3D VISUALISATION WINTER GARDEN	SCALE NTS@A3
DRAWING No.	2.15.01	

DRAWING SUBJECT TO CONTINUED DESIGN DEVELOPMENT

Balfour Beatty

A52725667

New South Glasgow Hospitals

	5		10			20	1:200
	10					50	1:50 / 1:500
		50			100		1:1250

DRAWING TITLE	3D VISUALISATION NCH ATRIUM	SCALE NTS@A3
DRAWING No.	02.15.02	
DRAWING SUBJECT TO CONTINUED DESIGN DEVELOPMENT		

Balfour Beatty

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New South Glasgow Hospitals

Greater Glasgow and Clyde
New South Glasgow Hospitals (NSGH) Project

Evaluation

Evaluation Programme

NHS Greater Glasgow and Clyde

- Following receipt of the tenders for the works on September 11th 2009, the evaluation groups commenced the initial evaluation process.
- The whole evaluation process took approximately 5 weeks and concluded on the 19th October 2009.
- A multi disciplinary evaluation team including:
    - Clinical
    - Technical
    - Financial
    - Legal
    - Senior Managers
    - FM and Infection Control Representatives

Evaluation Programme

NHS Greater Glasgow and Clyde

- The main parts of the evaluation process were:
  - Checking all information was complete (requesting missing information if required);
  - Individuals reading of relevant sections and identification of clarifications required
  - Bidders attending evaluation meeting to present their proposals and answer any clarifications from evaluation groups
  - The evaluation sub-groups carrying out an initial evaluation of their respective sections of the tenders and completing an initial scoring in line with Volume 3, appendix A of the ITPD
  - Formal and informal reviews by each group including ‘challenge’ meetings
  - Compliance checking and governance exercise on Design, Logistics and Labs completed by Commercial Group
  - Commercial Group activities overseen by Board’s Head of Procurement
  - Commercial Group agreed final recommendation of successful bidder

Agreed Qualitative Scoring

- The Bid Submissions were scored against Compliance with Employers Requirements
- Scoring matrix

Scores	Value	Description
Excellent	9 - 10	Performs significantly well on all key factors and offers substantial additional benefits
Good	7 - 8	Performs well on all key factors and offers some additional benefits
Adequate	5 - 6	Passes thresholds on all key factors but offers few additional benefits
Poor	3 - 4	Fails to meet threshold on some key factors
Very Poor	2	Fails to meet threshold on majority of key factors
Unacceptable	1	Fails to meet threshold on all key factors

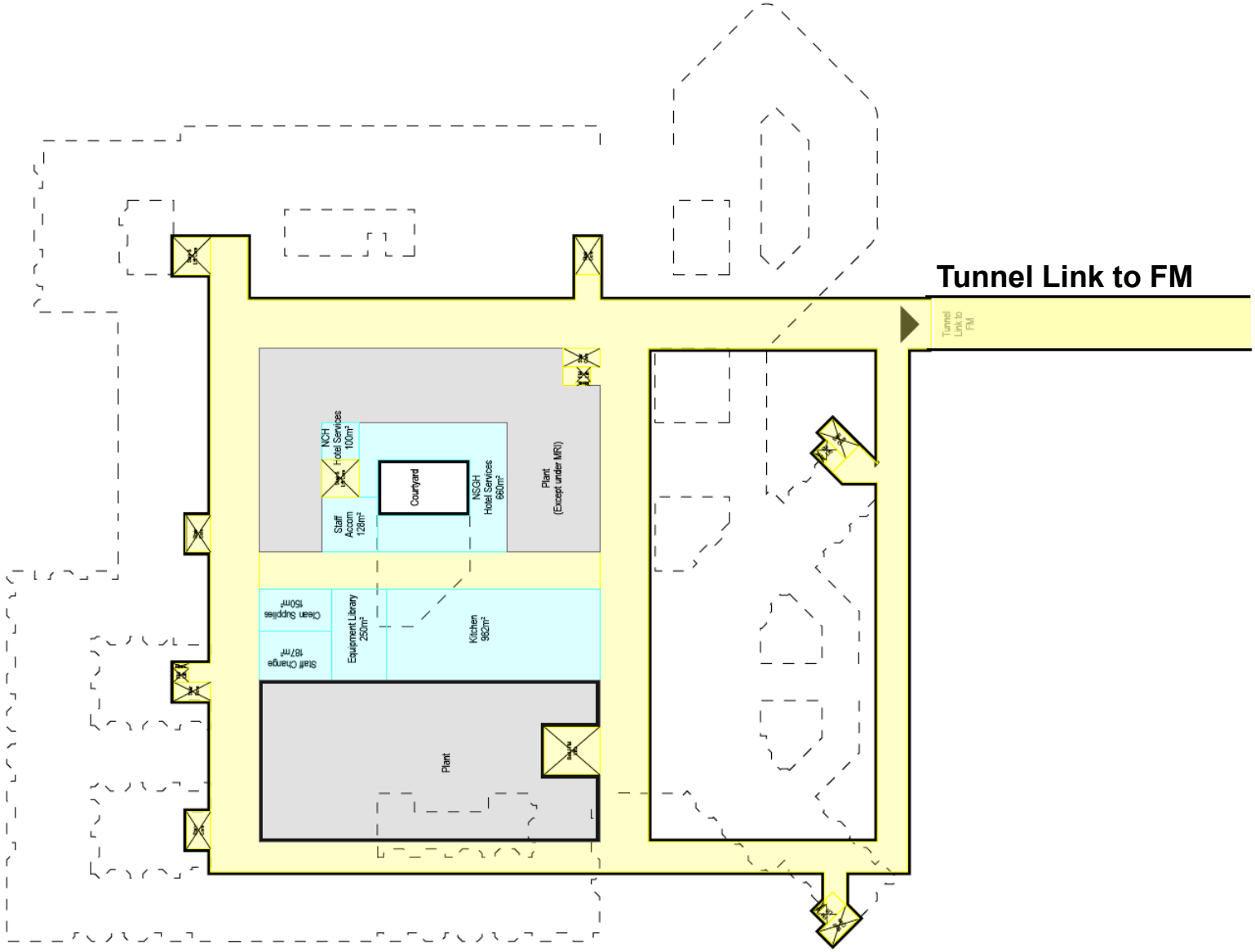
- The scoring was by Consensus and not individual with averages

Net Areas

Scheduled	Brookfield	Laing O'Rourke	Balfour Beatty
81,884m^2	88,909m^2	78,125m^2	88,102m^2
% Difference	+ 9%	- 5%	+ 8%

1:500 FLOOR PLANS
EXEMPLAR DESIGN

1:500 LEVEL -01 (BASEMENT) AS PROPOSED



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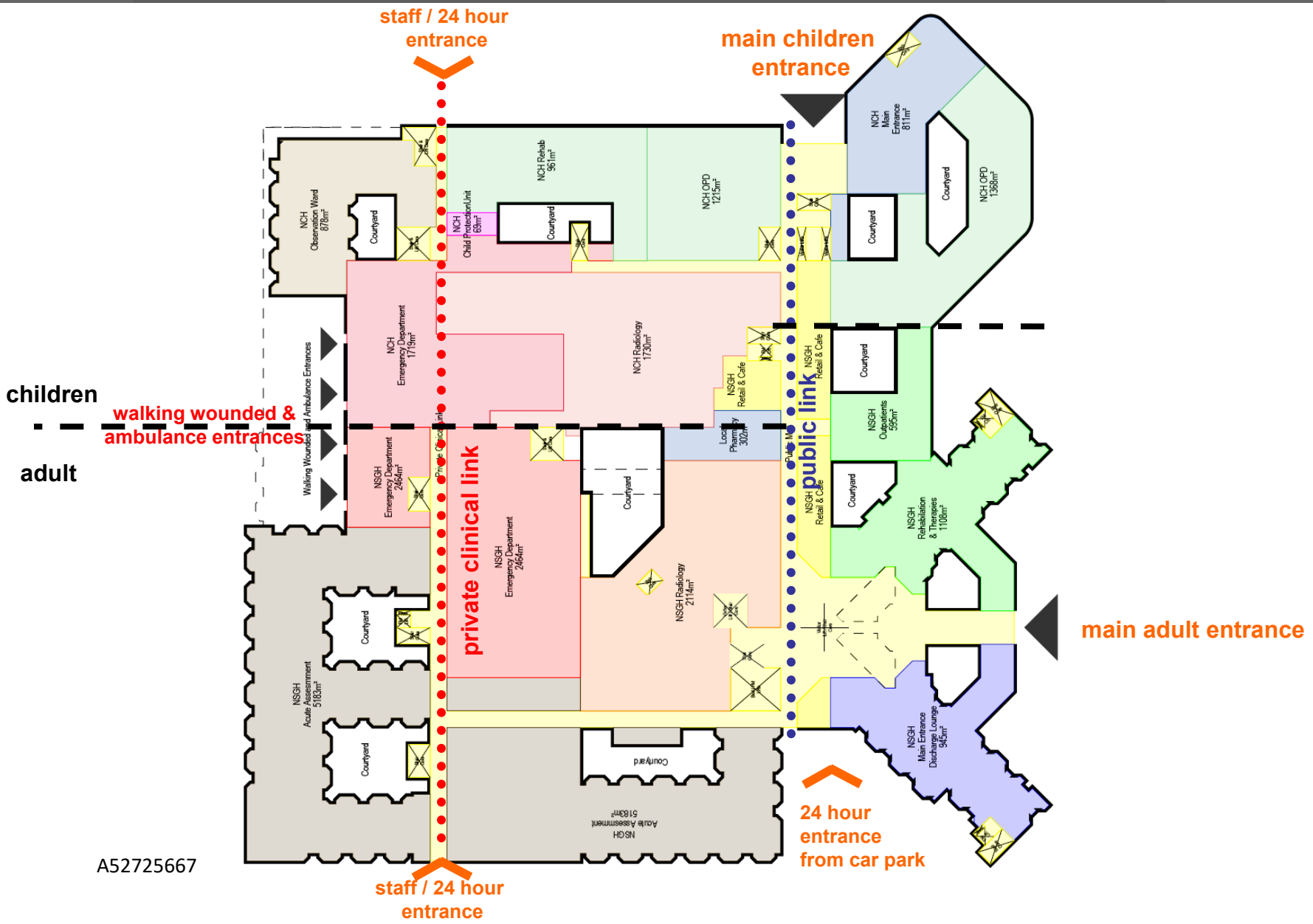
1:500 LEVEL 00 (GROUND) AS PROPOSED



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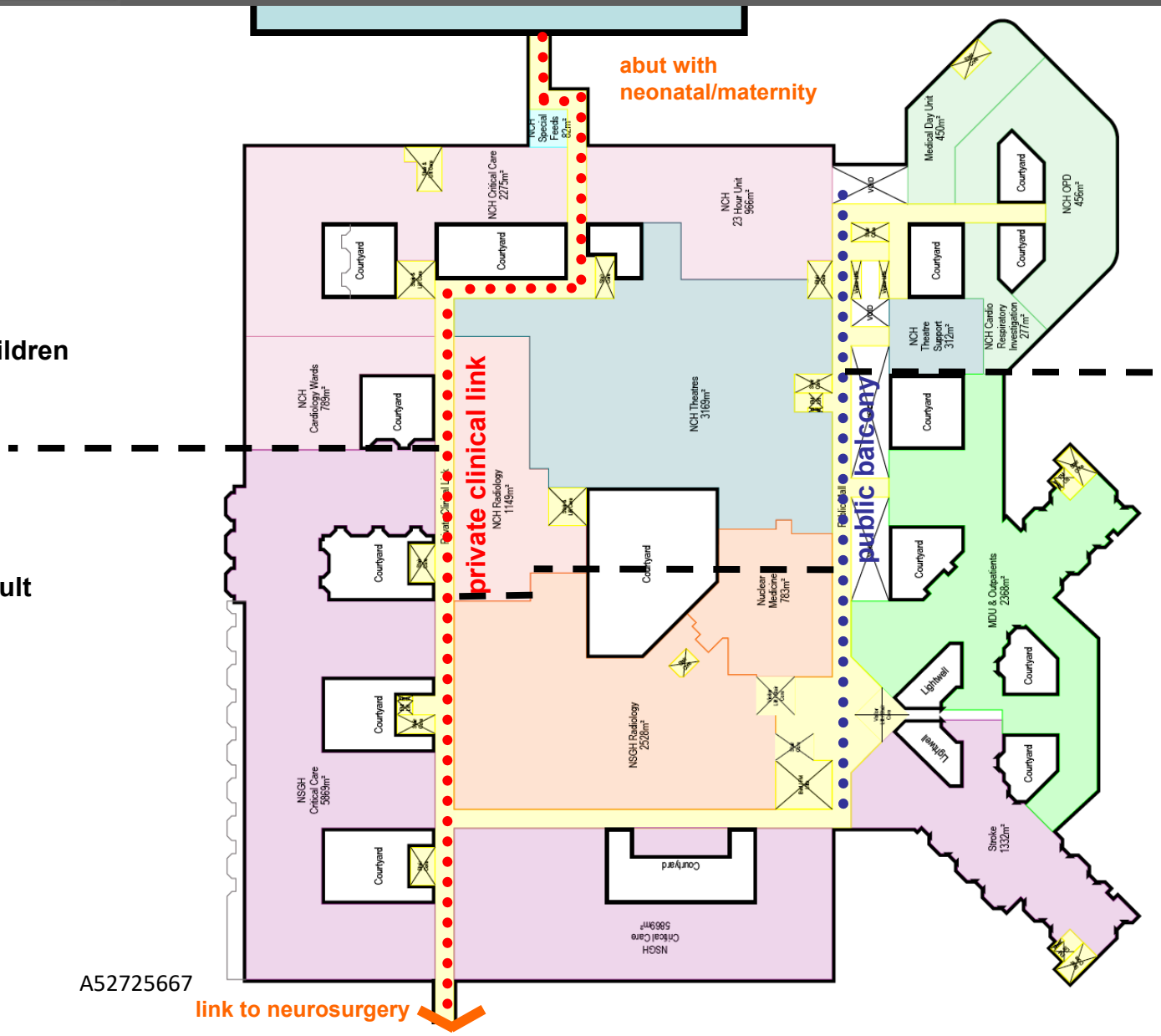
1:500 LEVEL 01 AS PROPOSED



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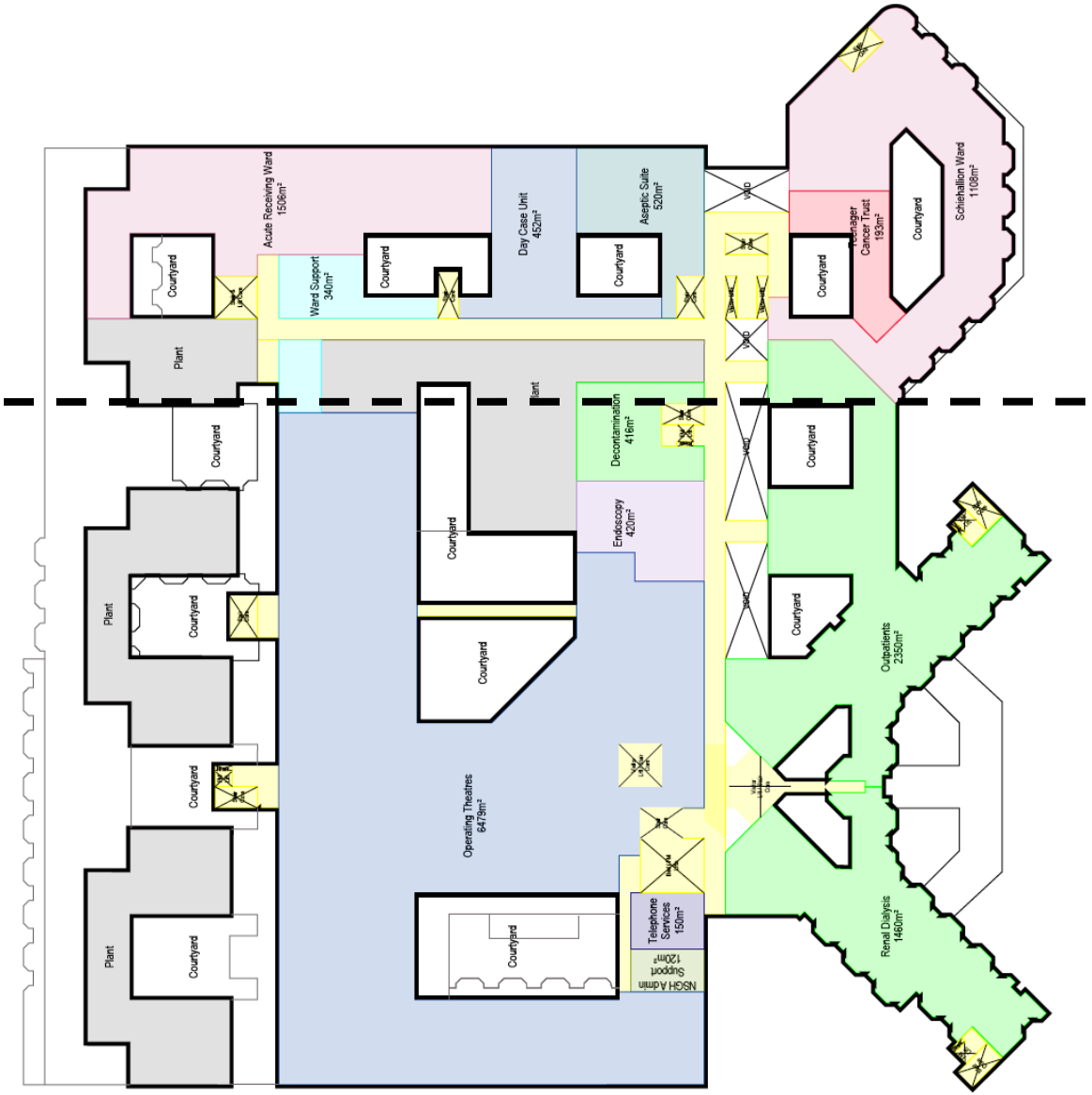
1:500 LEVEL 02 AS PROPOSED

children

adult



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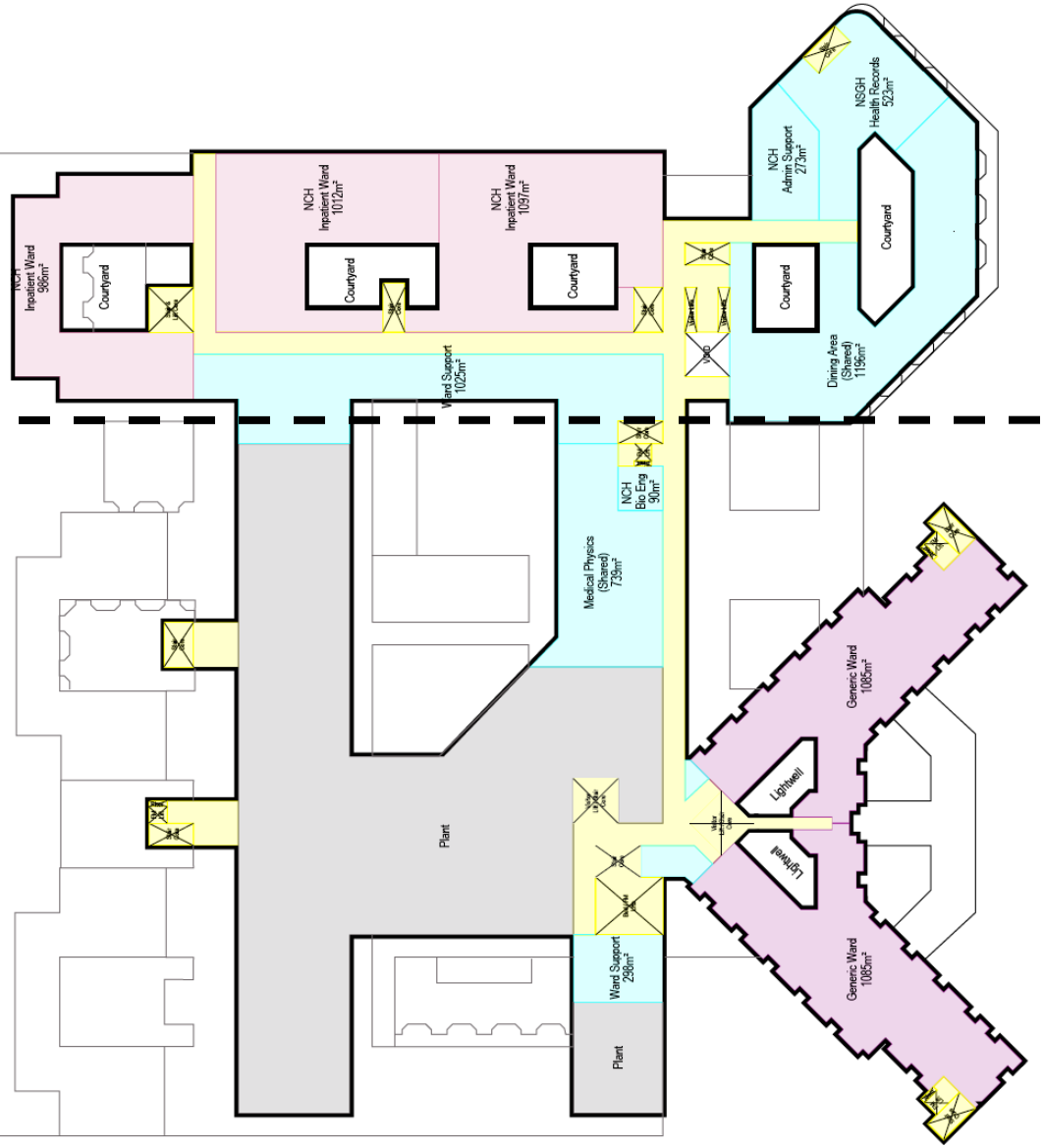
1:500 LEVEL 03 AS PROPOSED

children

adult

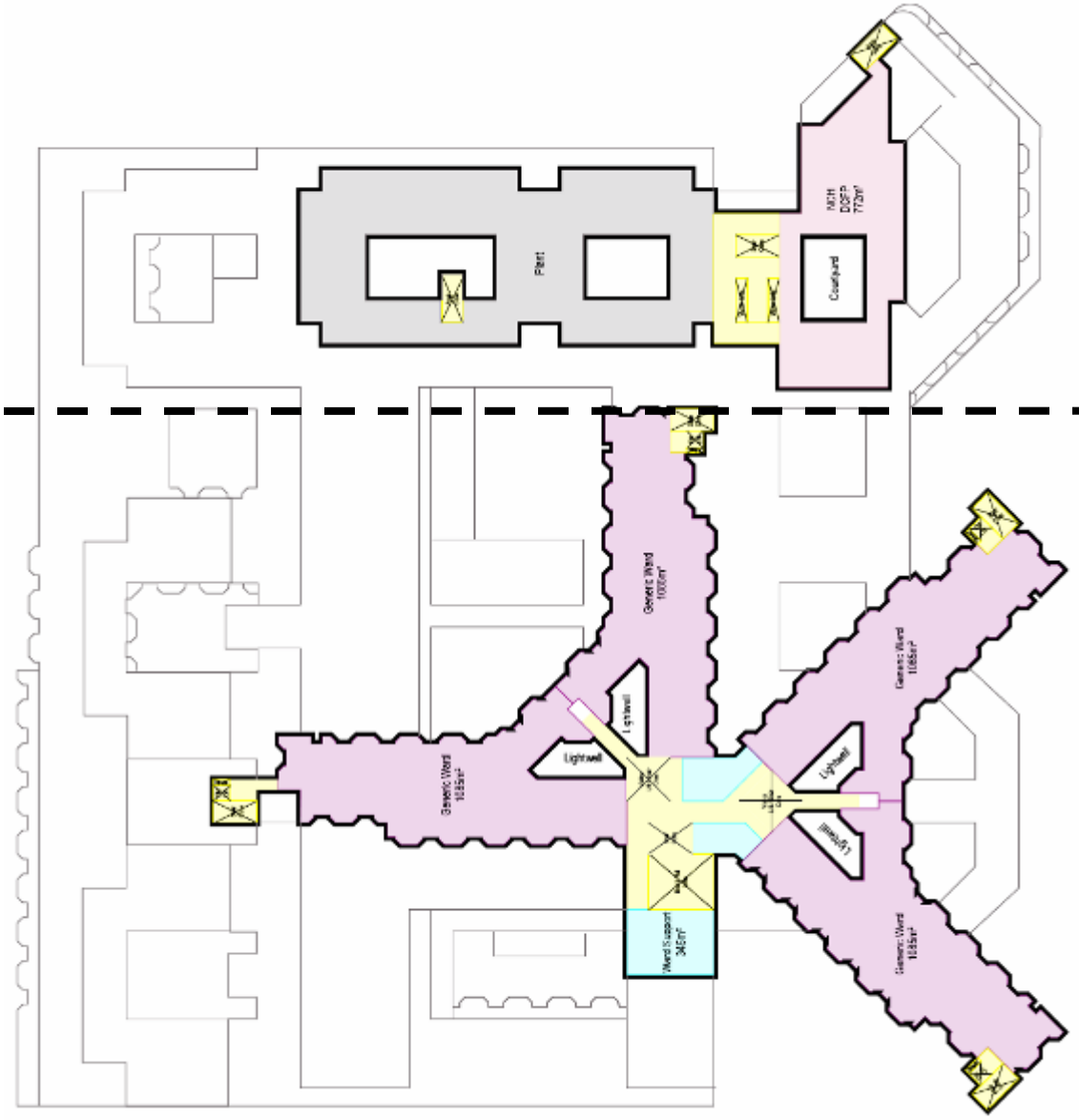


A52725667

1:500 LEVEL 04 AS PROPOSED

children

adult



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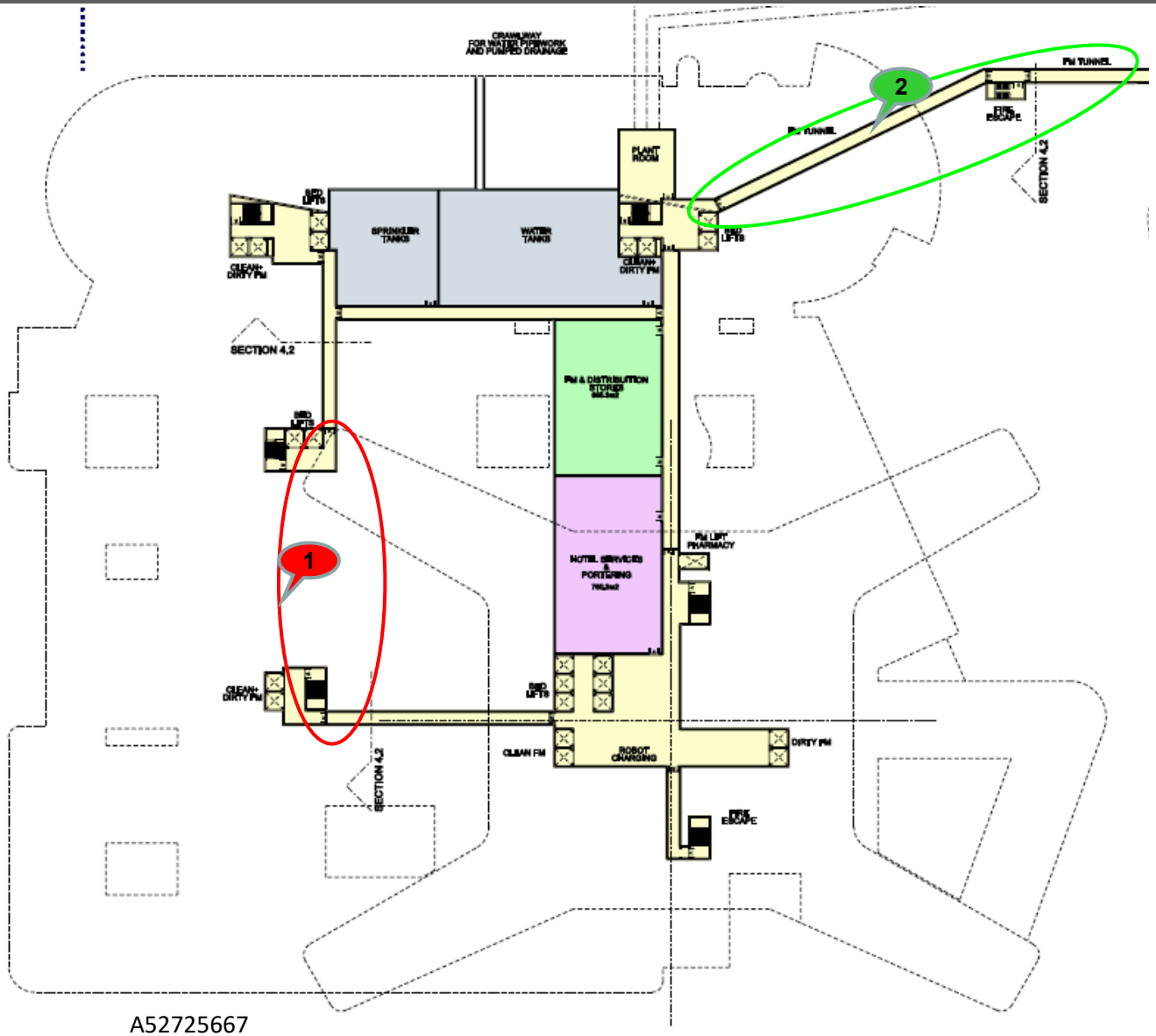
1:500 FLOOR PLANS

Reviewed against:

Adjacency Matrix
Exemplar 1:500 Drawings
Inter-departmental Flows & Travel Distances
Clinical Output Specifications

BIDDER 1 – BROOKFIELD

NCH – 1:500 LEVEL -01 (BASEMENT) – REVIEW



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Positives

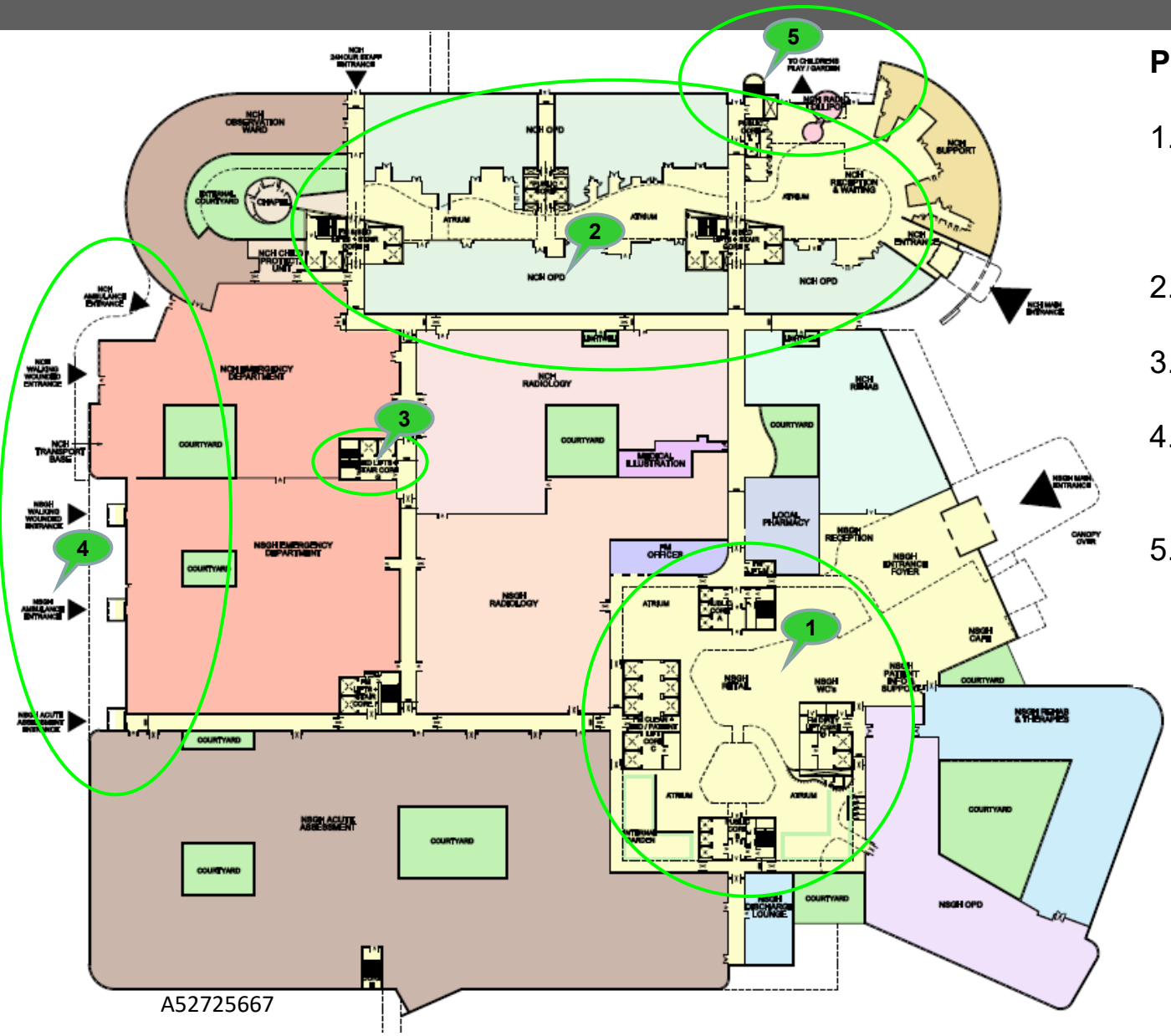
1. Generally as per Exemplar
2. Separation of Services and pedestrian movement in tunnel

Negatives

1. Resilience partially compromised by removal of complete ‘loop’

BIDDER 1 – BROOKFIELD

NCH – 1:500 LEVEL 00 (GROUND) – REVIEW



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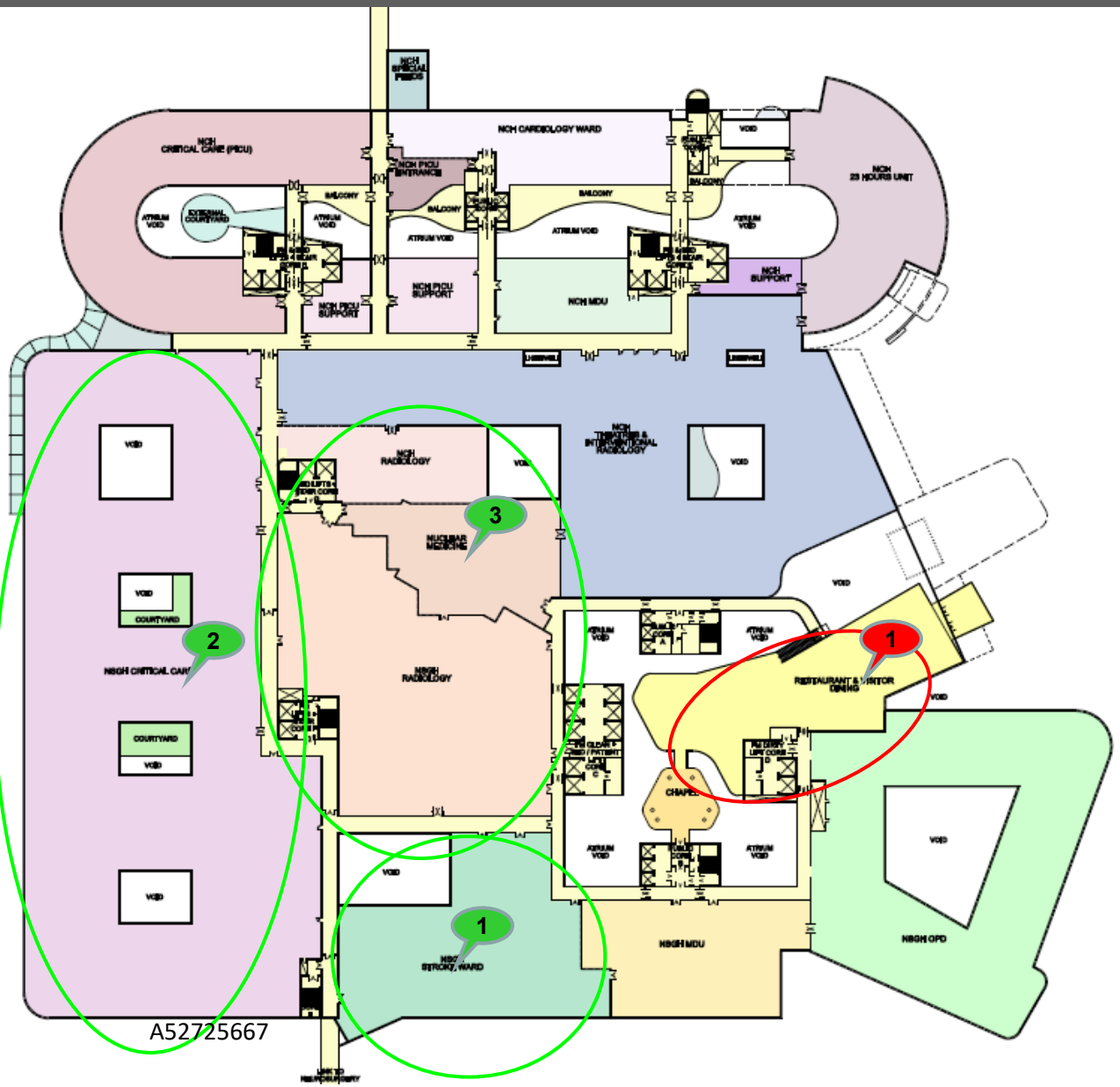
Positives

1. Adult Entrance Atrium Area assists way-finding and gives clear & direct access to departments at all levels
2. Children's OPD all on one floor
3. Direct helipad link to resus via lift
4. Coherent Emergency & Ambulance Entrance/drop off
5. Effective design of Children's play adjacent to main children entrance

Negatives

BIDDER 1 – BROOKFIELD

NCH – 1:500 LEVEL 01 – REVIEW



Positives

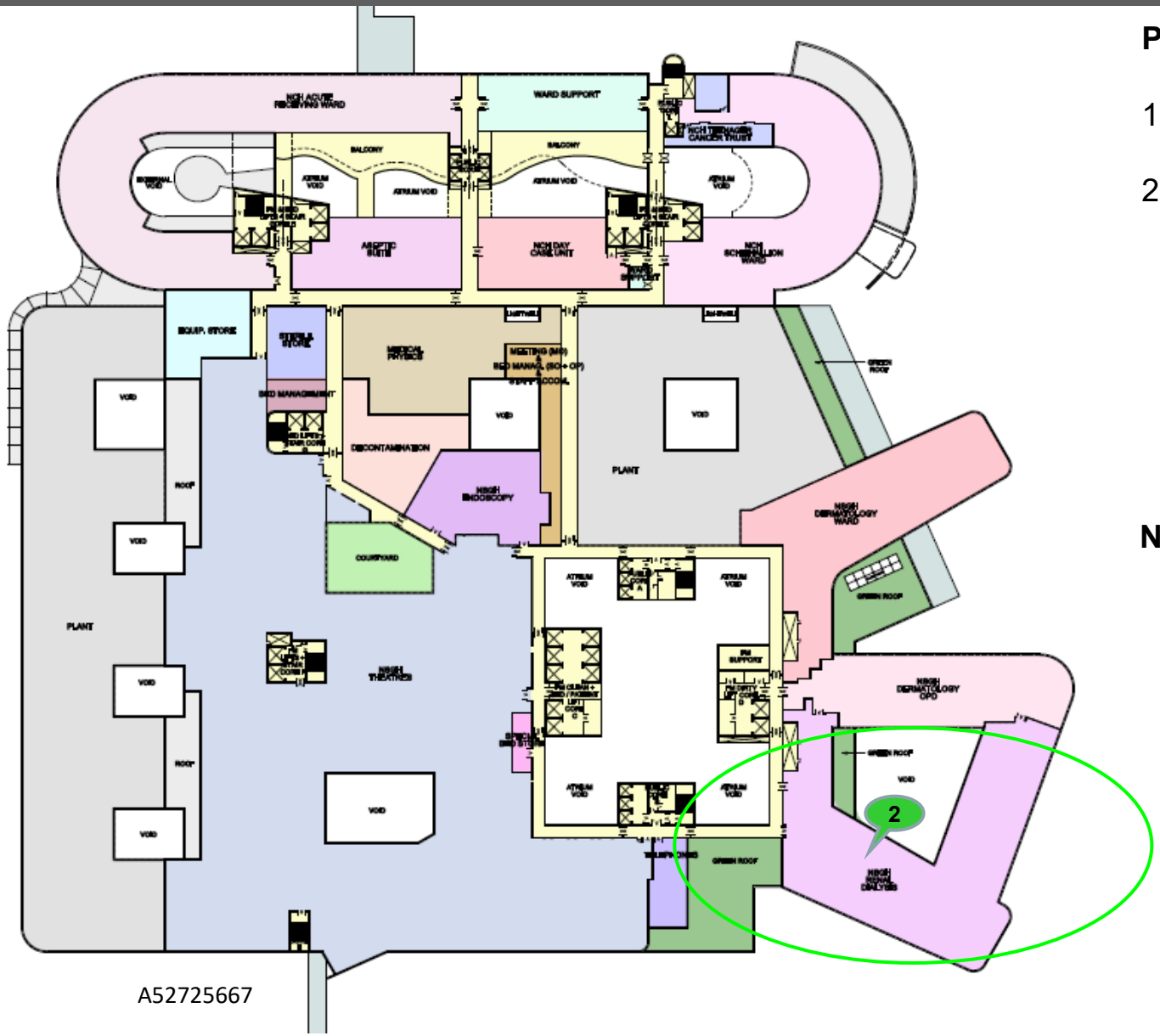
1. Stroke Ward is immediately adjacent to 1st floor Neuro Link and Critical Care
2. Critical Care Department is contiguous
3. Good adjacencies between Nuclear Medicine, Children's & Adult Radiology

Negatives

1. Route to Dining room from Children's is longer than Exemplar

BIDDER 1 – BROOKFIELD

NCH – 1:500 LEVEL 02 – REVIEW



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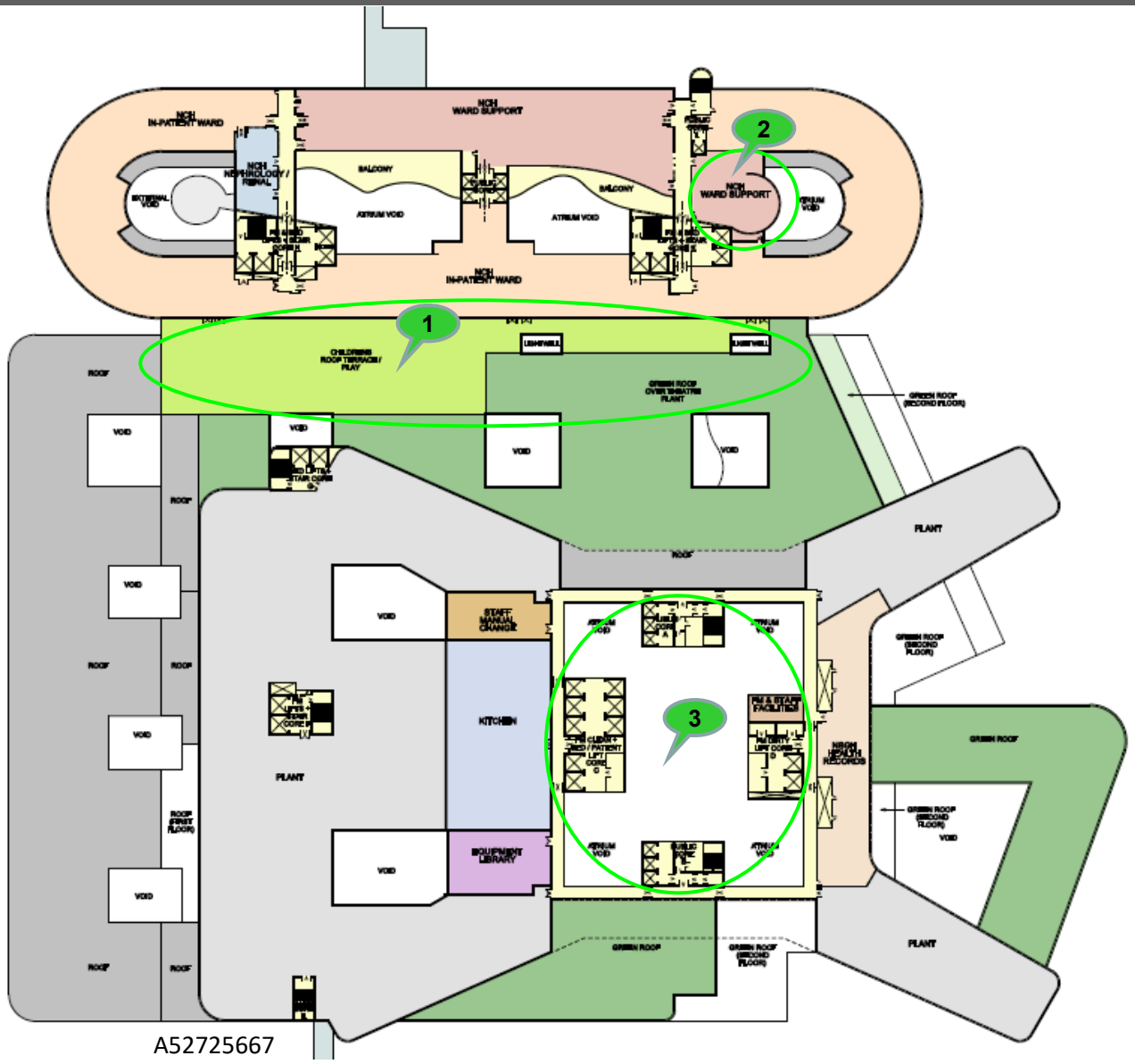
Positives

1. Generally as per Exemplar Layout
2. Renal Dialysis has good views over park and potential access to roof garden space

Negatives

BIDDER 1 – BROOKFIELD

NCH – 1:500 LEVEL 03 – REVIEW



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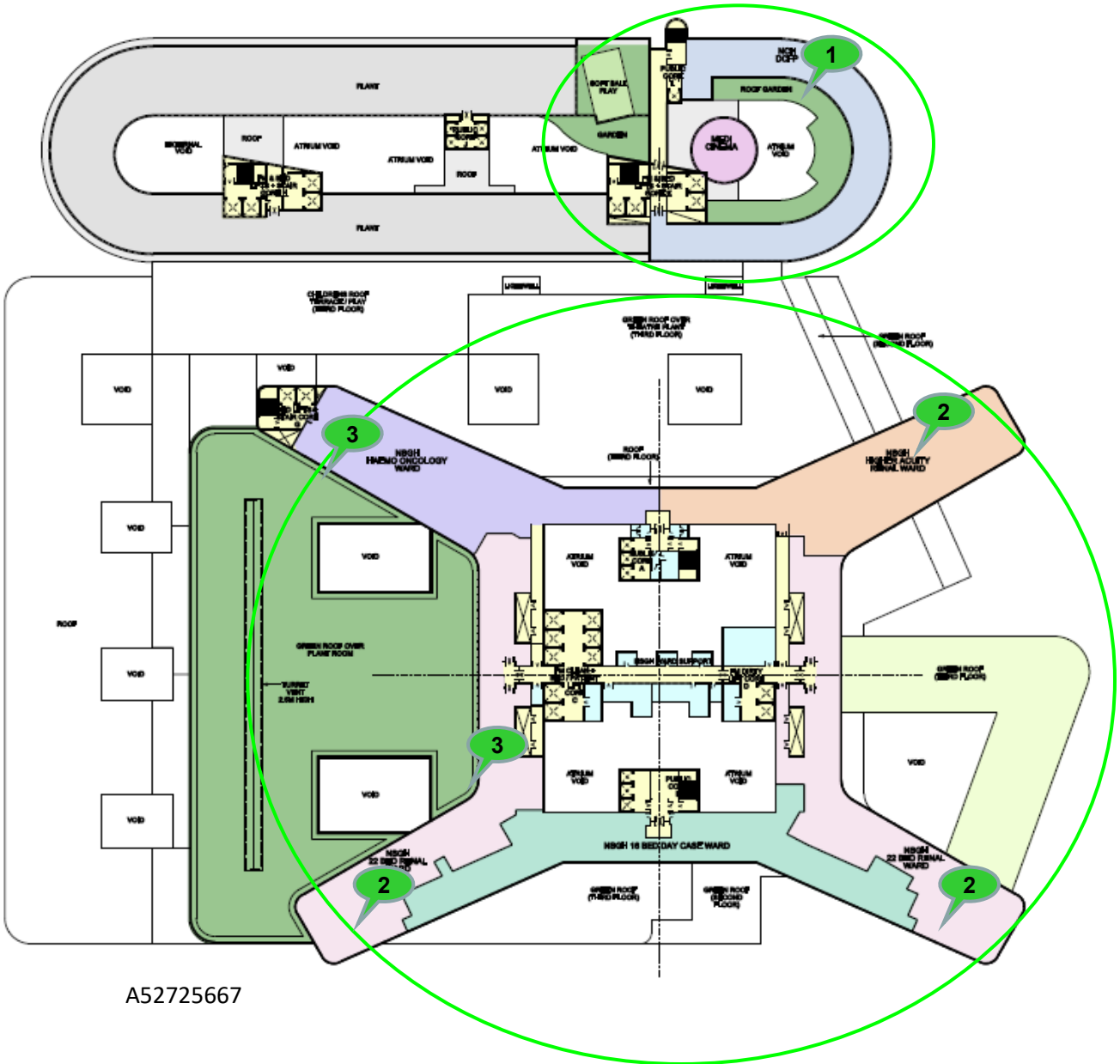
Positives

1. Significant opportunity for Children to access Roof Terrace / Play Area
2. Innovative Medi-Cinema Design
3. Attractive atrium

Negatives

BIDDER 1 – BROOKFIELD

NCH – 1:500 LEVEL 04 – REVIEW



Positives

1. Improved privacy of DCFP outdoor space
2. Bed flexibility over floor-plate demonstrated (Adult Renal Speciality)
3. Good outlook for long term renal & H/O patients

Negatives

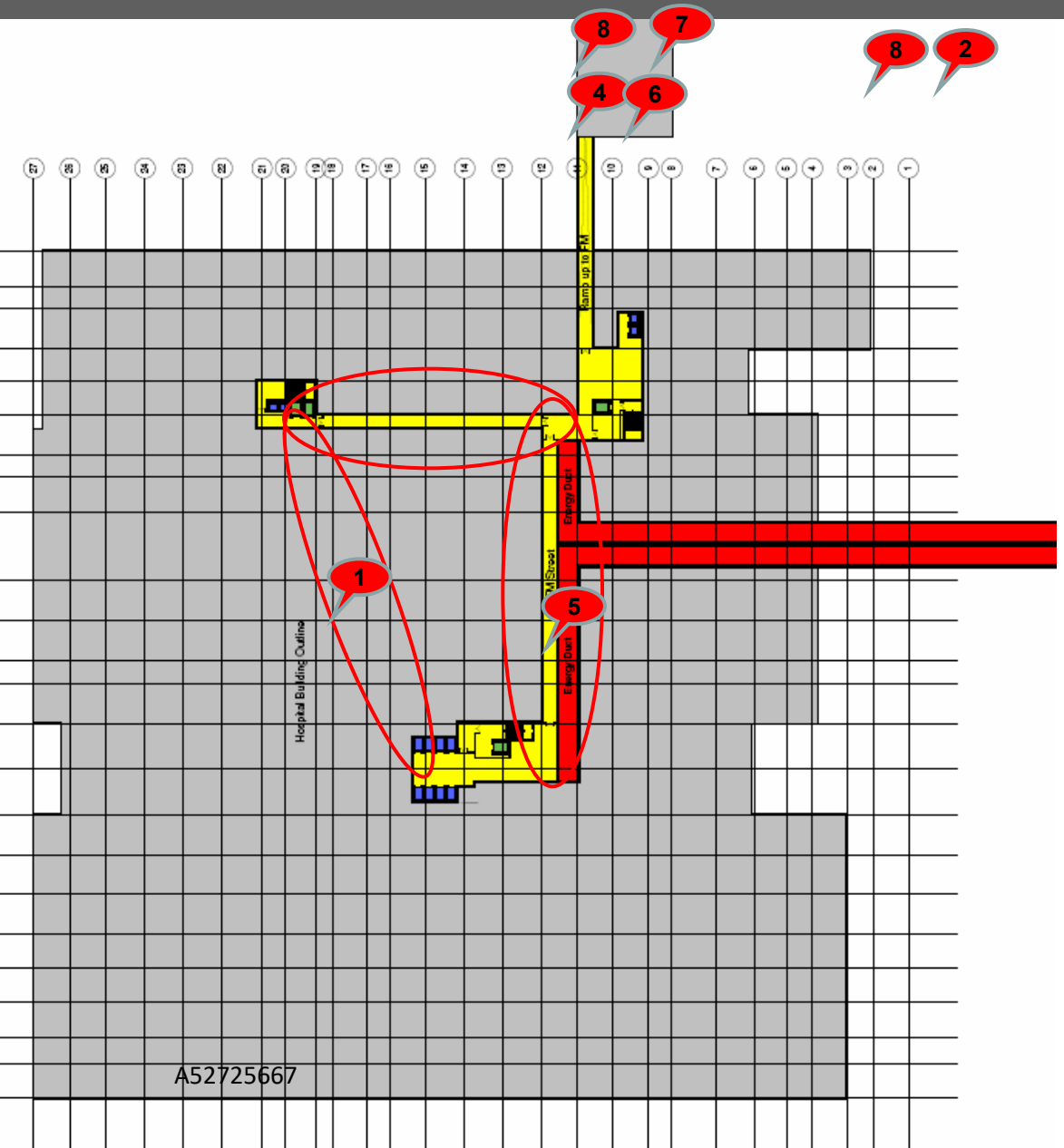
1:500 FLOOR PLANS

Reviewed against:

Adjacency Matrix
Exemplar 1:500 Drawings
Inter-departmental Flows & Travel Distances
Clinical Output Specifications

BIDDER 2 – LAING O'ROURKE

NCH – 1:500 LEVEL -01 (BASEMENT) – REVIEW



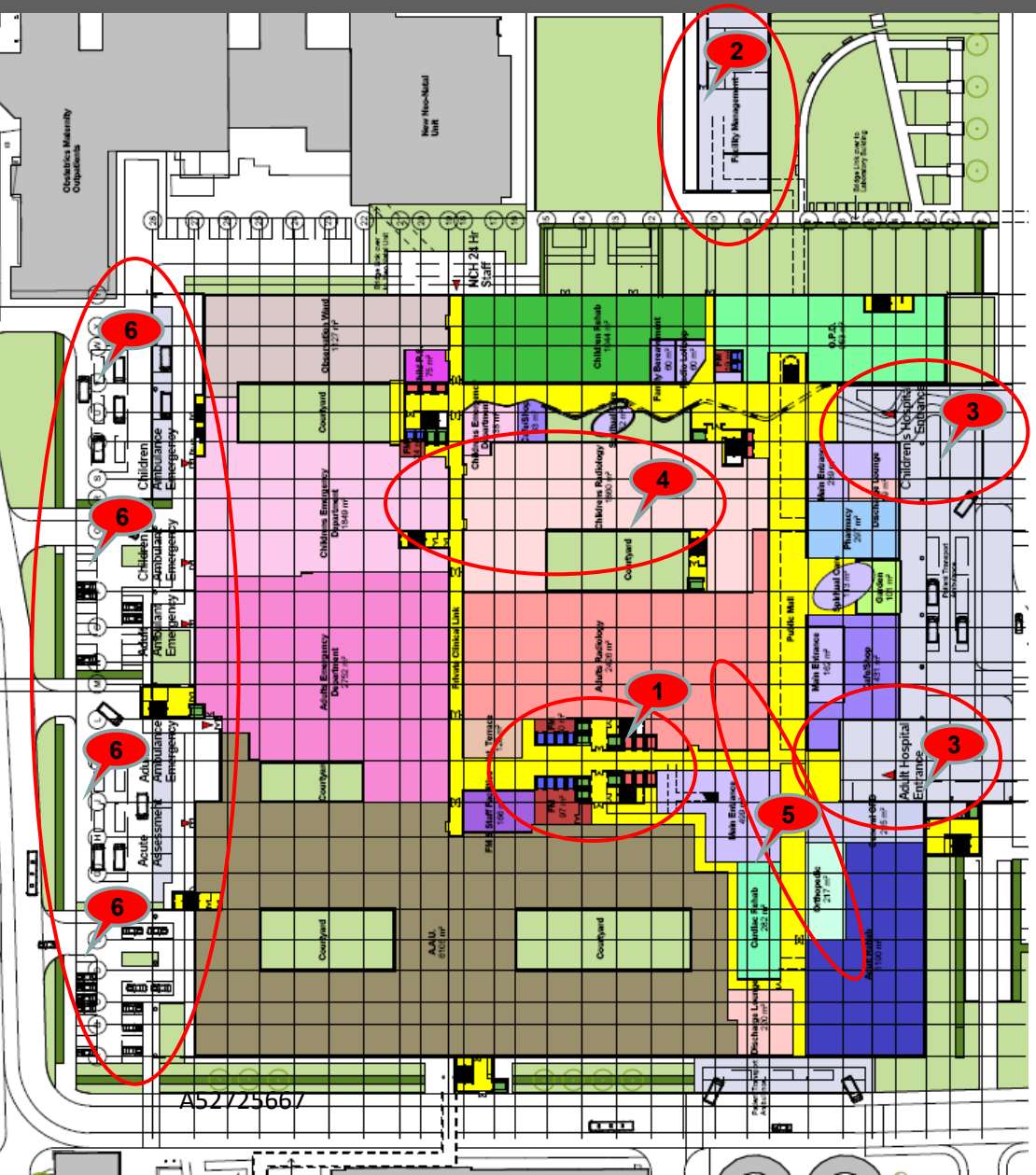
Positives

Negatives

1. Resilience compromised by removal of complete 'loop'
2. No Direct FM Route to Labs Building
3. Lack of clarity of Exemplar specified FM accommodation
4. FM Building Service yard does not provide required area
5. No separation of Clean & Dirty FM Routes
6. No Private Area for Mortuary Vehicles
7. Inadequate turning circles for HGVs into FM Service Yard
8. Security implication over split Service Yard (increased revenue cost)

BIDDER 2 – LAING O'ROURKE

NCH – 1:500 LEVEL 00 (GROUND) – REVIEW



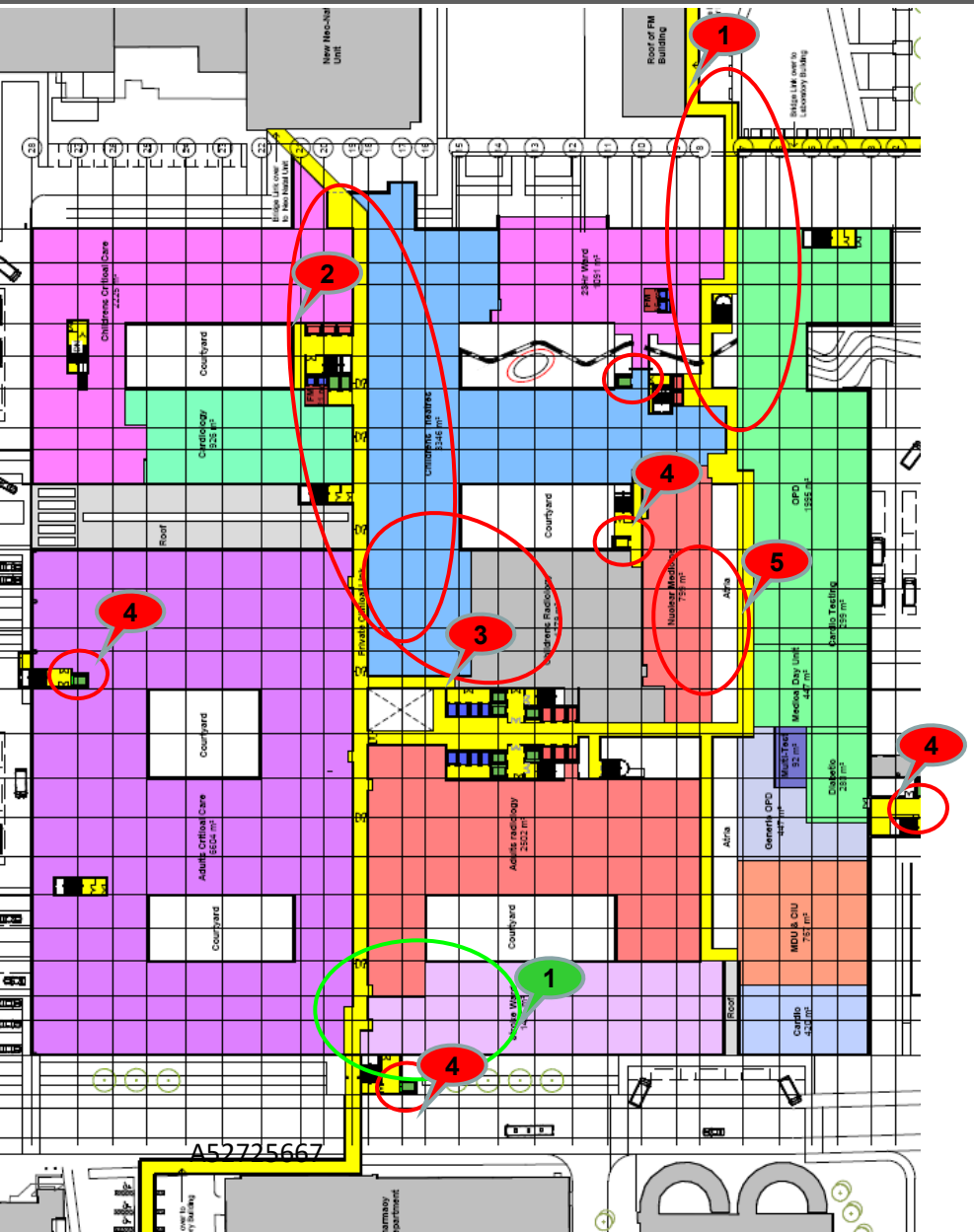
Positives

Negatives

1. Single Lift Core Strategy (Adult) creates longer travel distances for visitors, patients & staff
2. Proximity of FM Building to Children's Hospital is inappropriate
3. Lack of definition of Adult & Children's Entrances
4. Zoning of Ground Floor Children's Hospital (Out of Hours e.g. ED to Plain Film)
5. OPD to Imaging (Adult) has a significant cross flows across main public 'mall'.
6. Fragmented drop off areas present way-finding issues

BIDDER 2 – LAING O'ROURKE

NCH – 1:500 LEVEL 01 – REVIEW



Positives

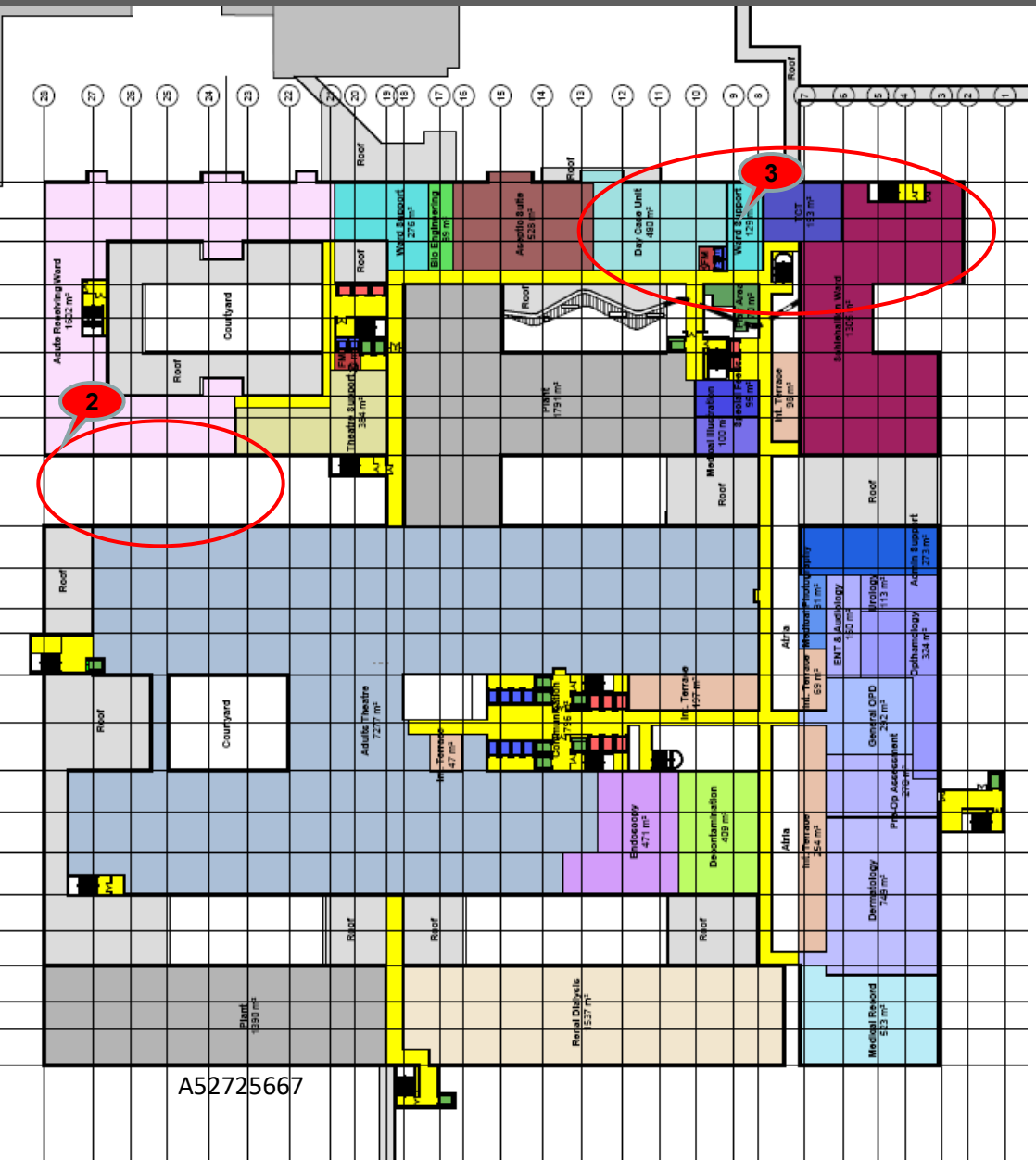
1. Stroke Ward is immediately adjacent to 1st floor Neuro Link and Critical Care

Negatives

1. Main Public Circulation Route from Car Park 2 traverses Level 01 Children's Hospital
   - Child Protection Issues
   - Zoning Out of Hours (23 Hr Ward)
   - Security
   - Wayfinding (No Reception)
2. Children's Theatres adjacency to PICU sub-optimal
3. PICU to Radiology adjacency is sub-optimal
4. Lack of clarity of Lift Functions (differing functions at different levels) eg
   - Adult Bed Lifts are inappropriately allocated for FM use at levels 01-04. Additionally these lifts do not go to basement
5. Nuclear Medicine above MRI

BIDDER 2 – LAING O'ROURKE

NCH – 1:500 LEVEL 02 – REVIEW



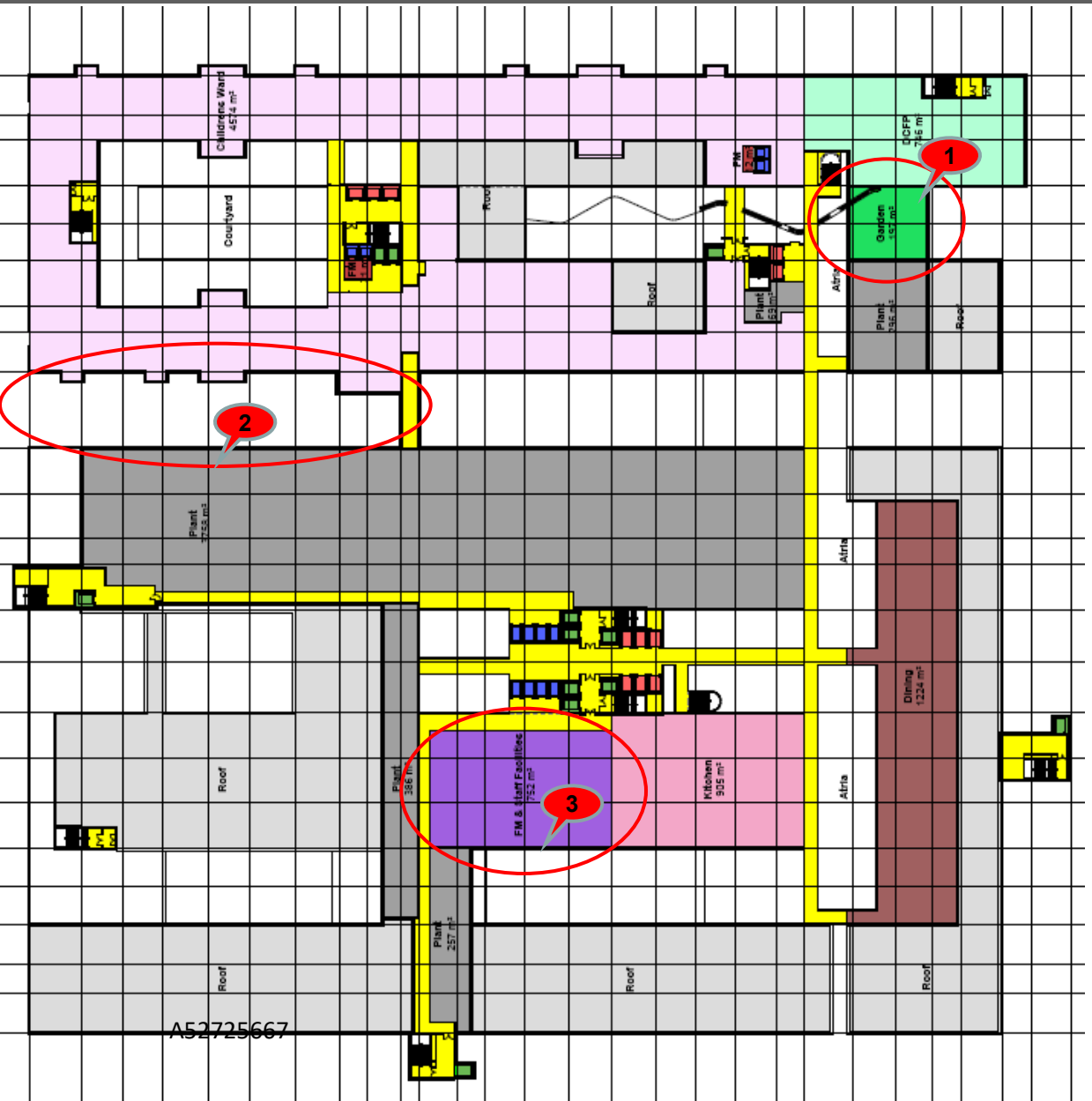
Positives

Negatives

1. Unacceptable Bereavement Pathway (**Hospitals Wide**)
   - Route involves FM service yard and vehicle to Mortuary
2. Poor views from Children's Acute Receiving Ward (to theatres)
3. Schiehallion separated from Daycase Unit

BIDDER 2 – LAING O'ROURKE

NCH – 1:500 LEVEL 03 – REVIEW



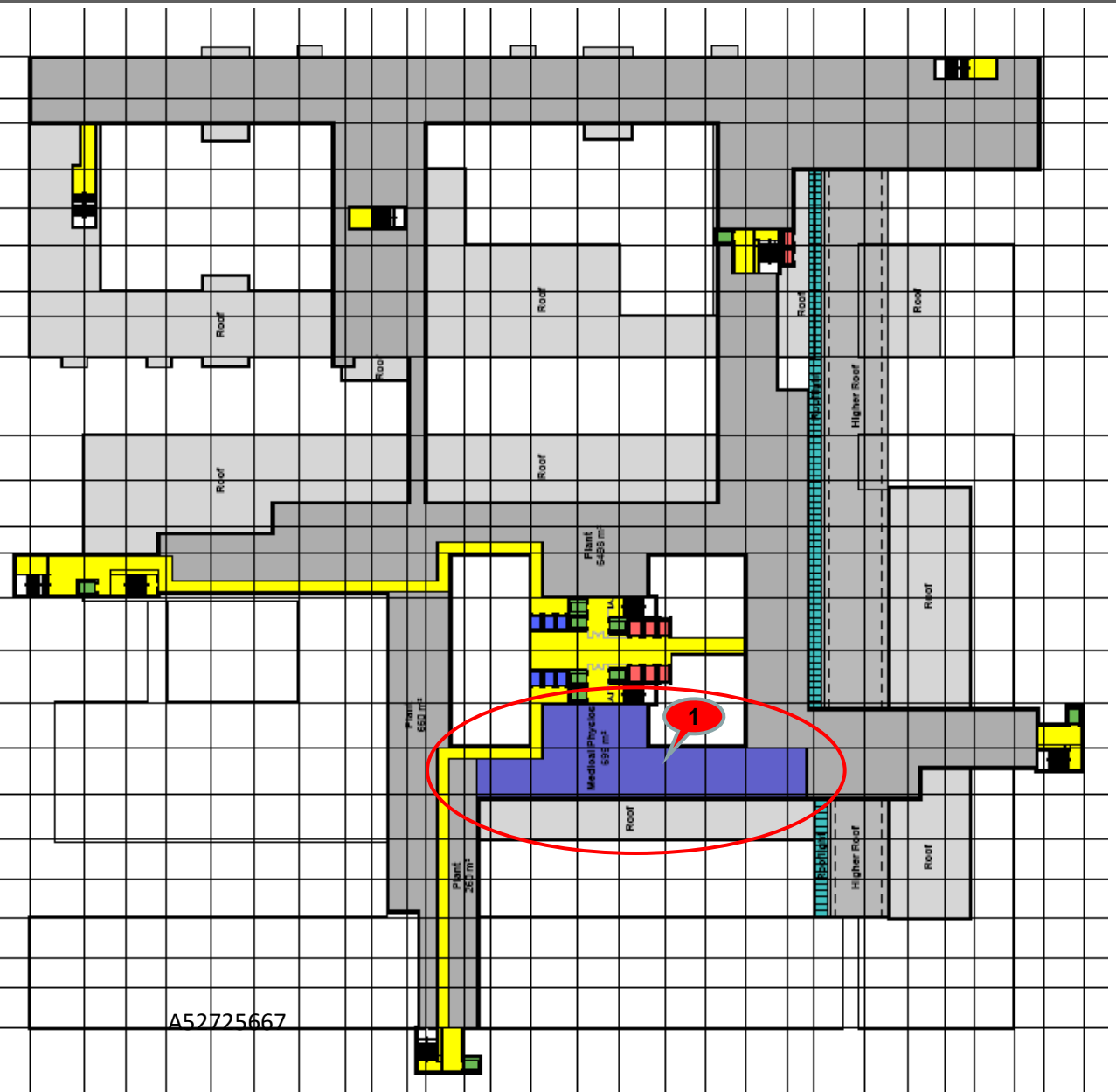
Positives

Negatives

1. DCFP outdoor space is significantly smaller than exemplar
2. Views from Children's Ward to Plant Space
3. Inappropriate location for Help Desk & Security Room

BIDDER 2 – LAING O'ROURKE

NCH – 1:500 LEVEL 04 – REVIEW



Positives

Negatives

1. Isolated location for Medical Physics – use of core lifts only

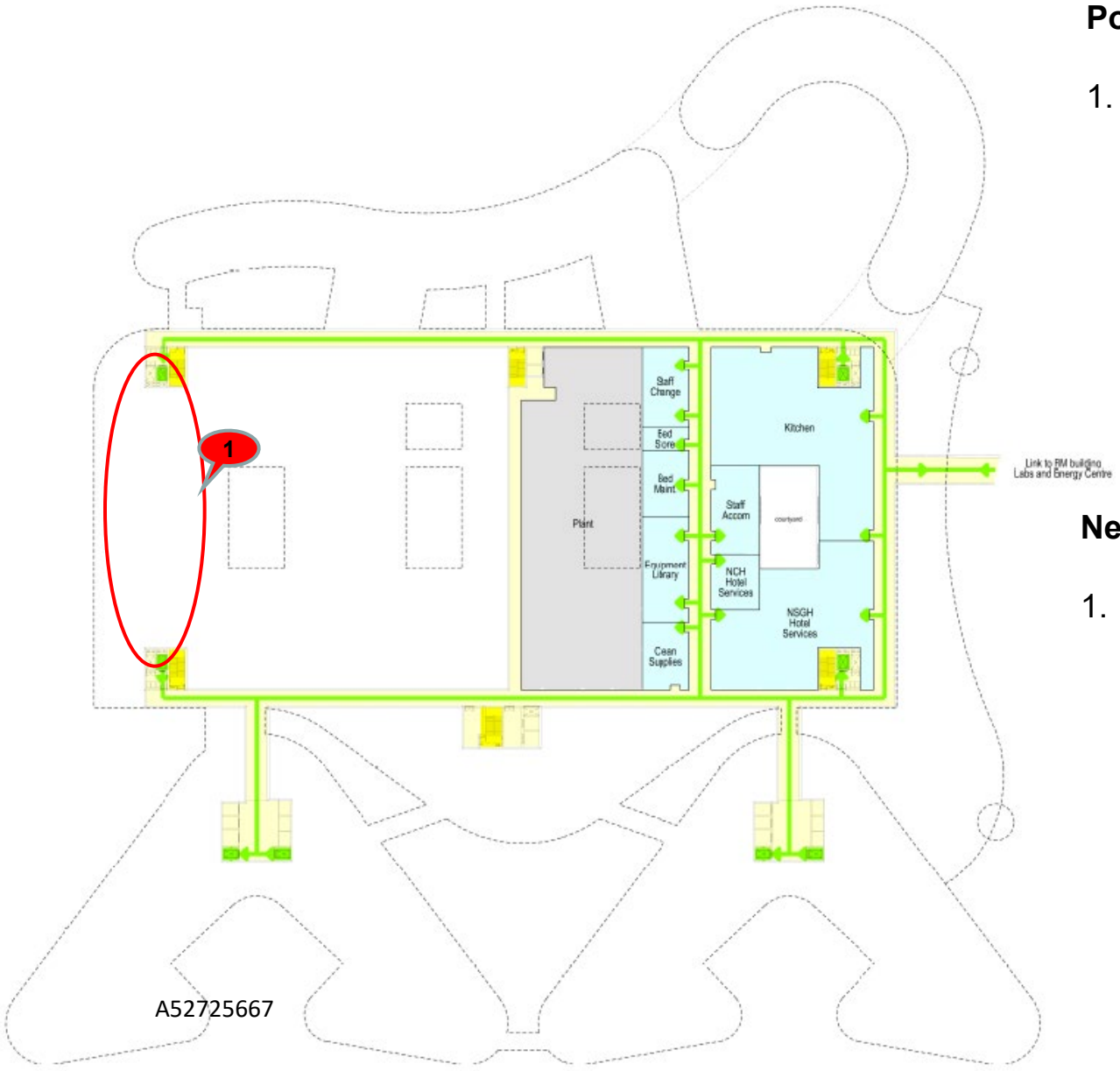
1:500 FLOOR PLANS

Reviewed against:

Adjacency Matrix
Exemplar 1:500 Drawings
Inter-departmental Flows & Travel Distances
Clinical Output Specifications

BIDDER 3 – BALFOUR BEATTY

NCH – 1:500 LEVEL -01 (BASEMENT) – REVIEW



Positives

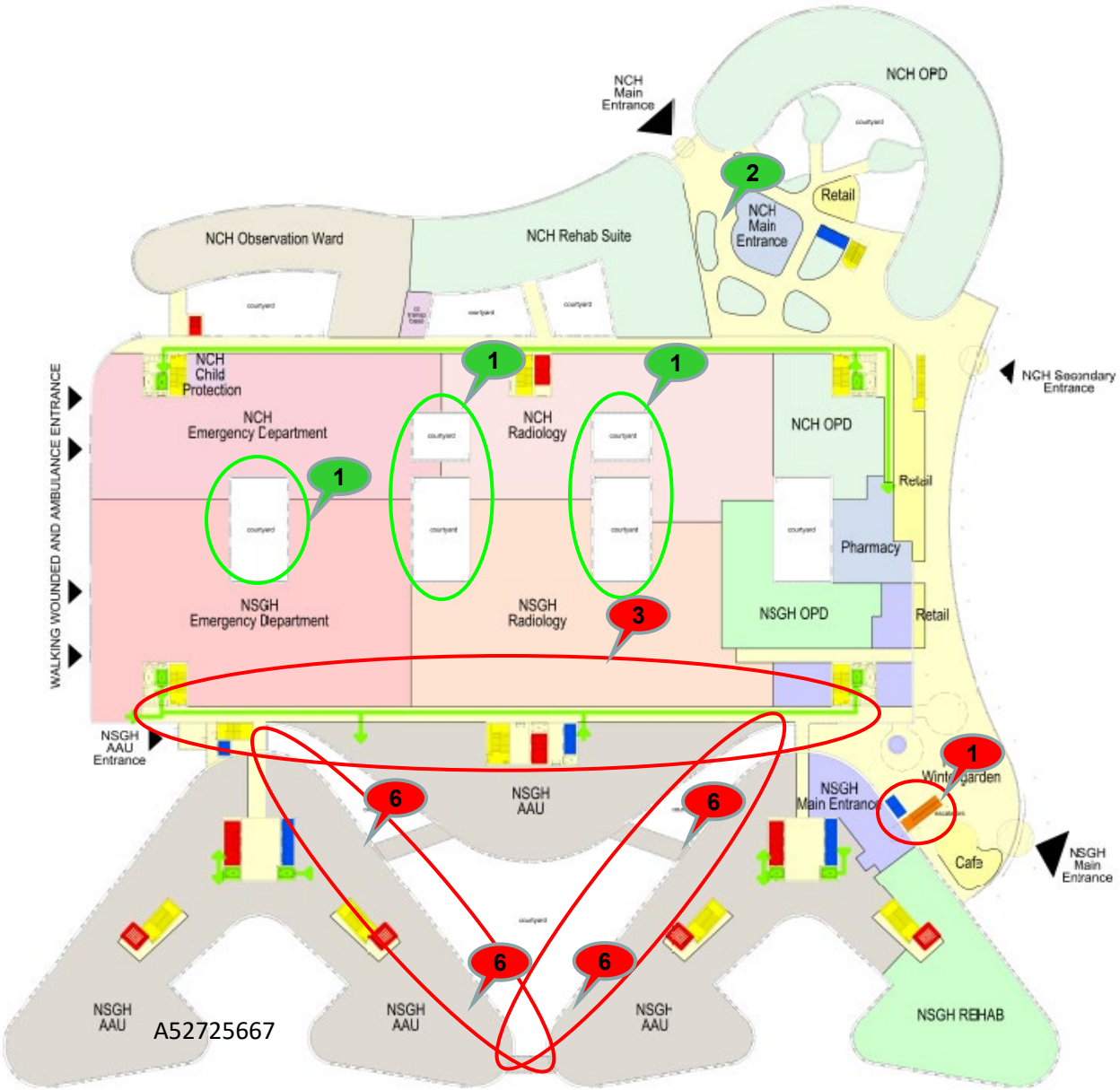
1. Generally as per exemplar

Negatives

1. Resilience partially compromised by removal of complete ‘loop’

BIDDER 3 – BALFOUR BEATTY

NCH – 1:500 LEVEL 00 (GROUND) – REVIEW



Positives

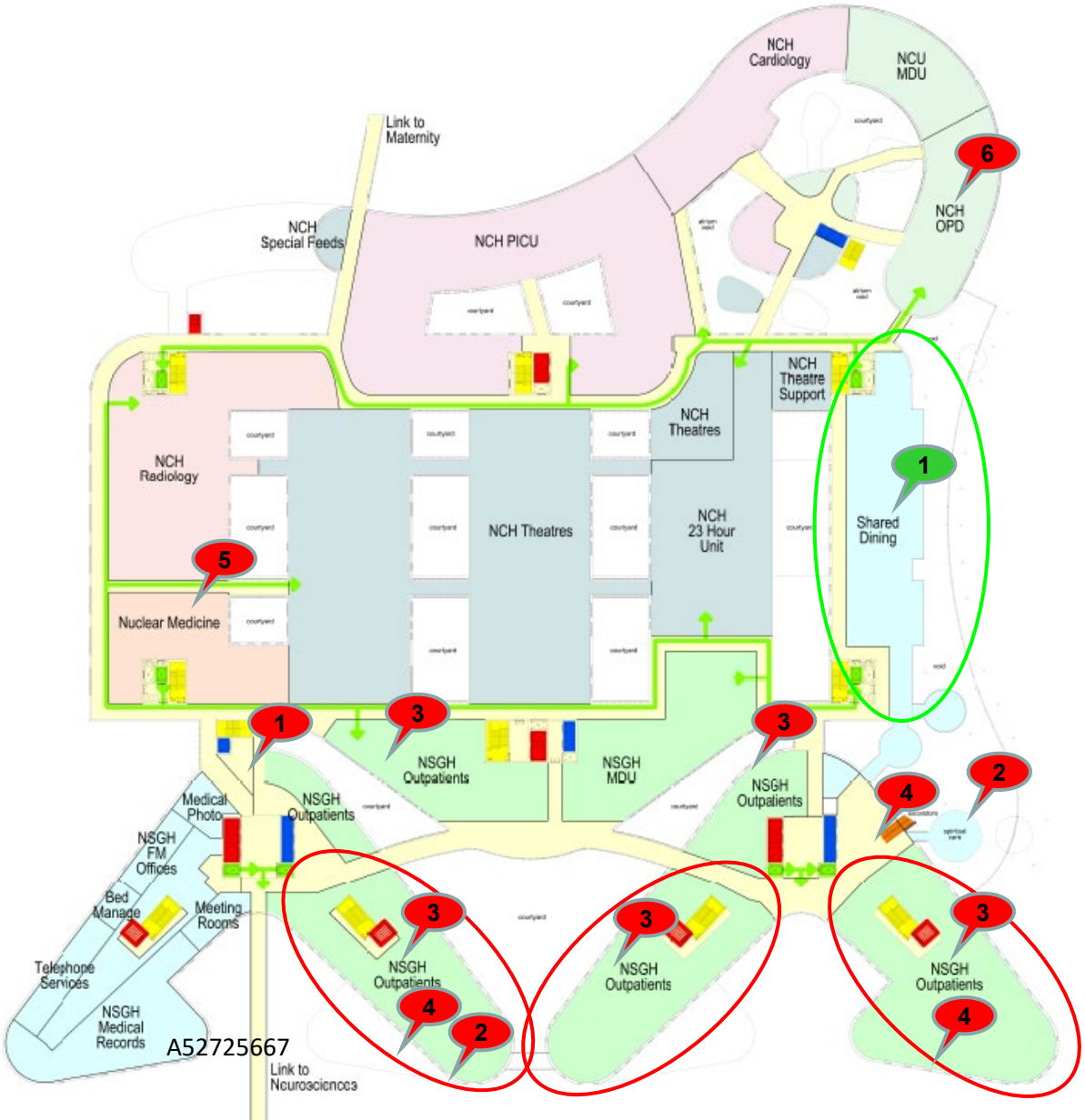
1. Better natural light in to ‘Hot Block’
2. Main Children’s Atrium is attractive

Negatives

1. Resilience of escalators and lifts at main entrance (no stairs)
2. Separation of Ward Tower from Podium ‘Hot Block’ results in increased travel distances
3. Wayfinding & travel distance from Main Entrance to AAU (for visitors)
4. Wayfinding from Imaging to some OPD is convoluted
5. FM Accommodation relocated from main entrance to 3rd floor
6. Poor views from AAU bedrooms in tower facing podium

BIDDER 3 – BALFOUR BEATTY

NCH – 1:500 LEVEL 01 – REVIEW



Positives

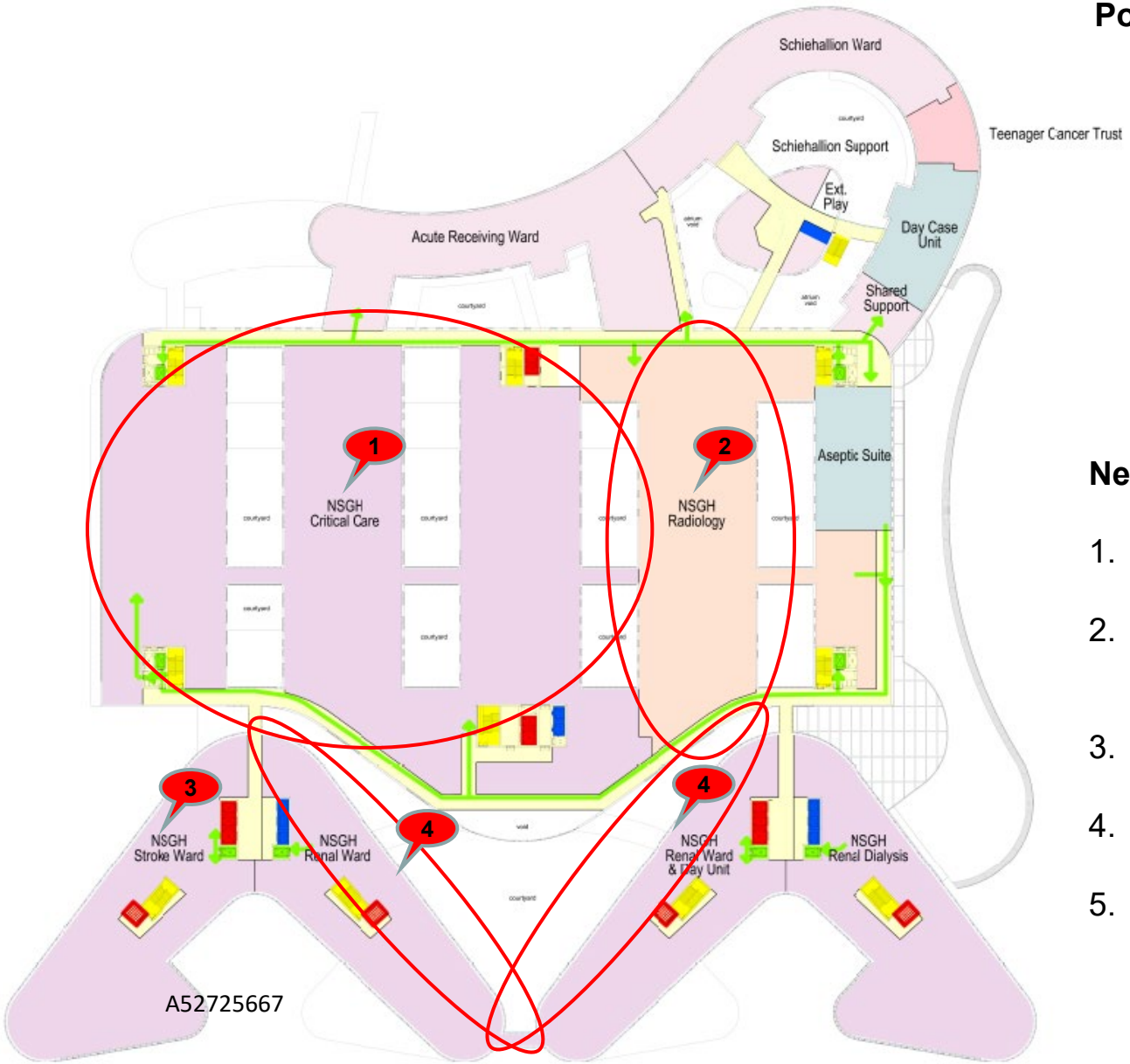
1. Dining located centrally between Adult & Children Hospitals

Negatives

1. Link to Neuro is via OPD (cross flows with visitors and Out-Patients)
2. Travel Distance
   - Main Entrance to furthest OPD Cluster
3. OPD flexibility (specialist/generic) is compromised by separation of clusters
4. Wayfinding challenge between Imaging and some OPD clinics
5. Nuclear Medicine is remote from Adult Imaging
6. Children's Cardiac testing not located adjacent to Generic OPD on same floor

BIDDER 3 – BALFOUR BEATTY

NCH – 1:500 LEVEL 02 – REVIEW



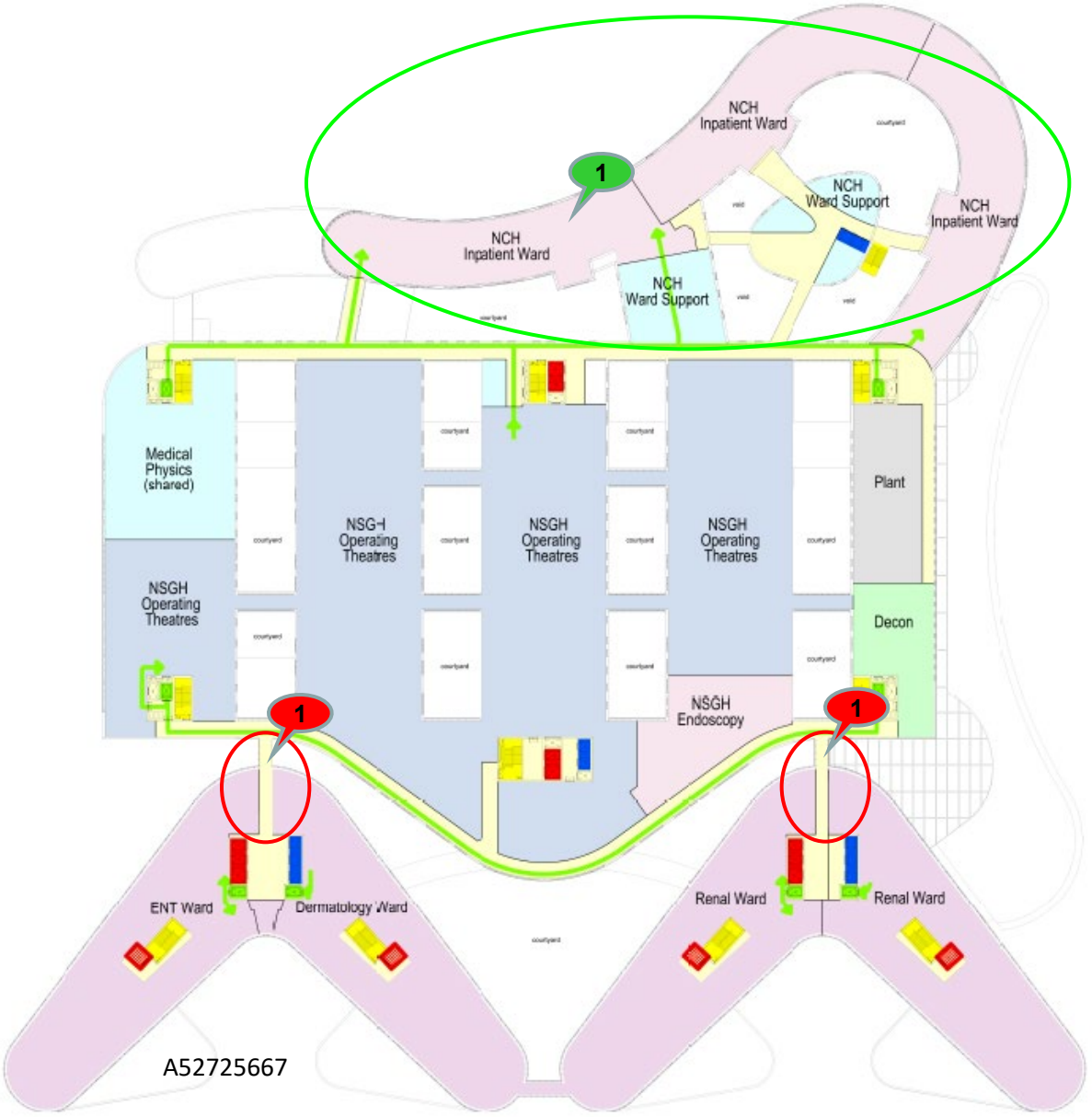
Positives

Negatives

1. Critical Care to Neuro link not at same Level
2. Adult Imaging is configured over 3 floors – potential revenue consequences
3. Stroke Ward is not on same level to as link to Neuro
4. Poor views from bedrooms in tower facing podium
5. Split regen ward kitchens

BIDDER 3 – BALFOUR BEATTY

NCH – 1:500 LEVEL 03 – REVIEW



Positives

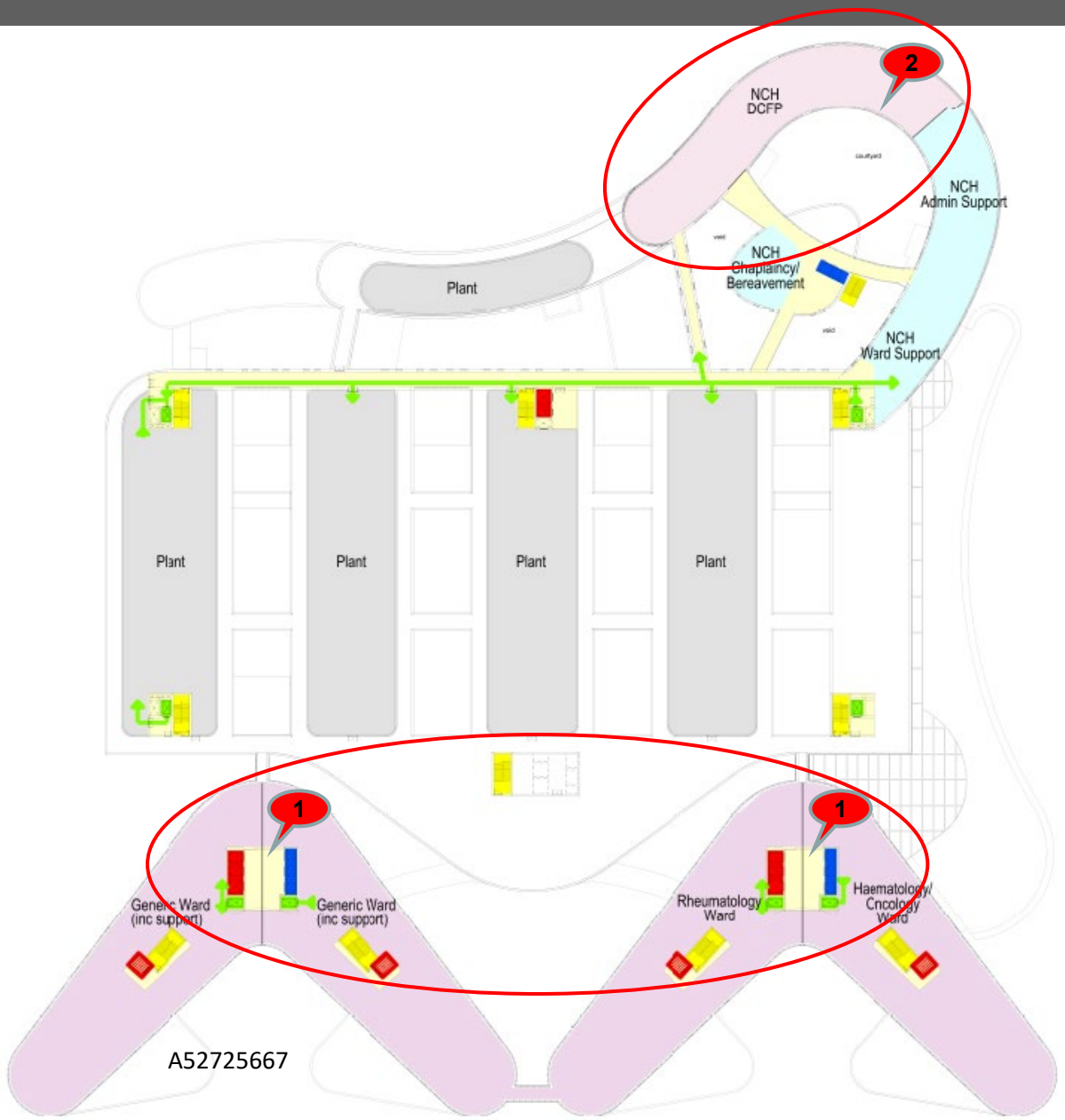
1. Attractive Children's Ward Layout – 'Bright & Airy'

Negatives

1. Potential access 'pinch-point' at Level 3 lift lobbies/Theatre (to/from all tower levels)

BIDDER 3 – BALFOUR BEATTY

NCH – 1:500 LEVEL 04 – REVIEW



Positives

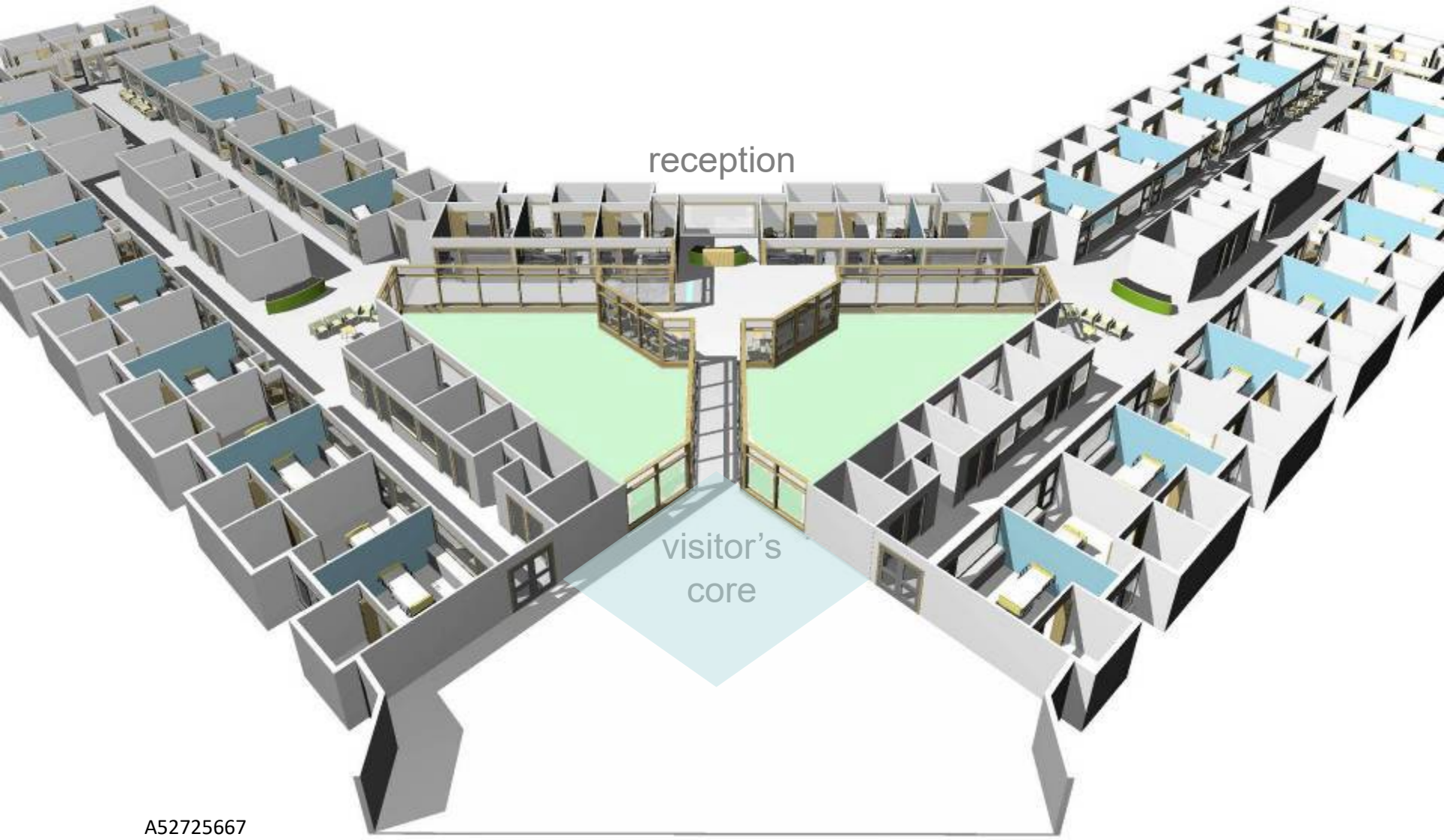
Negatives

1. Split Cores compromise flexibility across floor plate
2. No outdoor space identified for DCFP

1:200 FLOOR PLANS

APPROVED : 27 April 2009

GENERIC IN-PATIENT WARD


reception
visitor's
core

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Approach to Wards

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Waiting Area and Ward Entrance

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Entrance Corridor into Ward

A52725667

Nurse Touch-Down Space

A52725667

Socialisation Space gives open feel to centre of Ward

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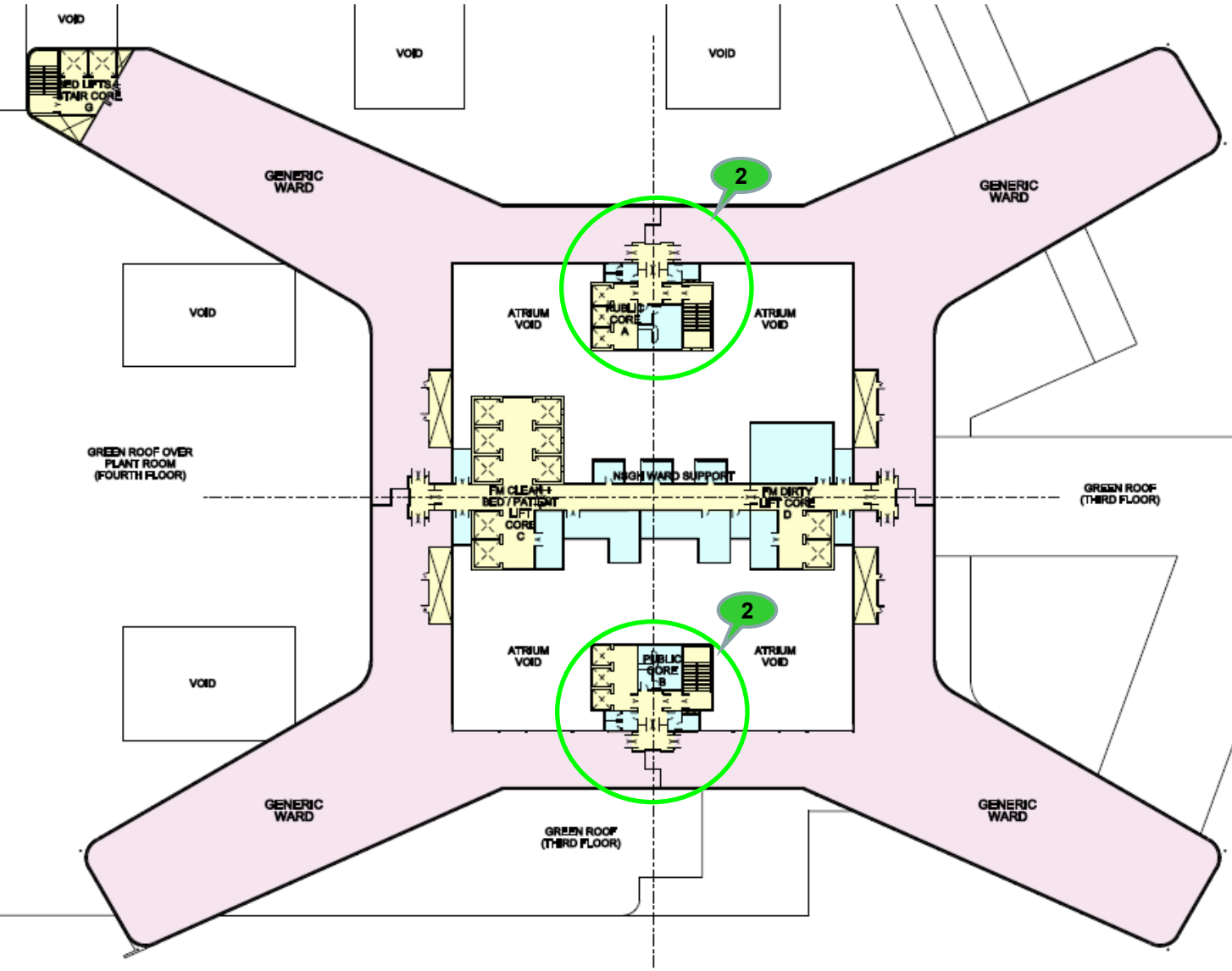
End of Ward – wide corridor and integrated socialisation space

BIDDER 1 – BROOKFIELD

NSGH – GENERIC IN-PATIENT WARD – REVIEW

Scored: 9



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Positives

1. Ward layout enables efficient and effective service functionality
2. Offers significant opportunity to provide flexibility over 4 wards
3. Every room looks outwards providing more daylight and better views / privacy

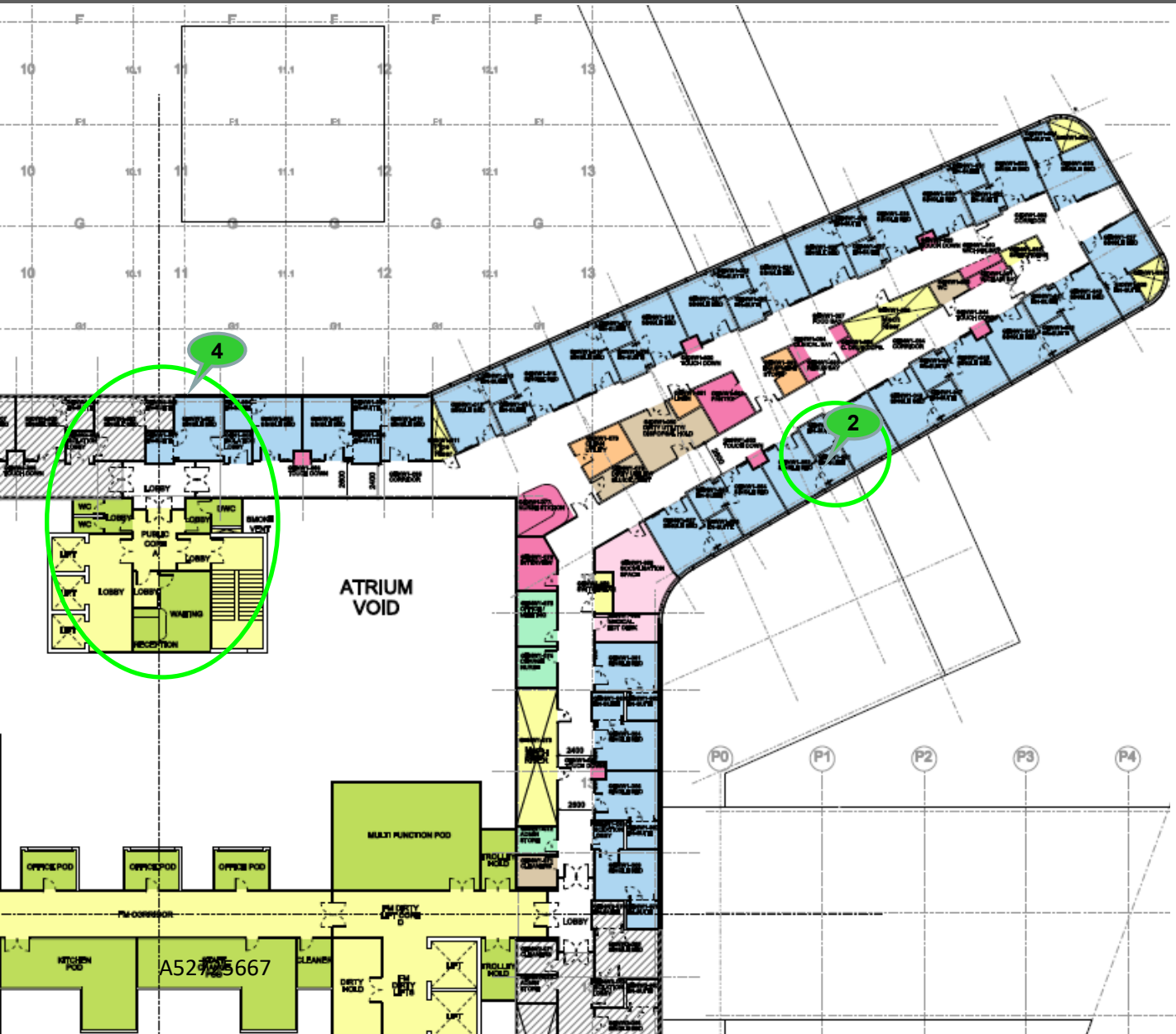
Negatives

1. None Identified

BIDDER 1 – BROOKFIELD

NSGH – GENERIC IN-PATIENT WARD – REVIEW

Scored: 9



Positives

1. Large Observation Screen
2. Improved daylight (interlocking en-suites)
3. Potentially more efficient staffing
4. Improved security & control of access to ward

Negatives

1. None Identified

BIDDER 2 – LAING O'ROURKE

NSGH – GENERIC IN-PATIENT WARD – REVIEW

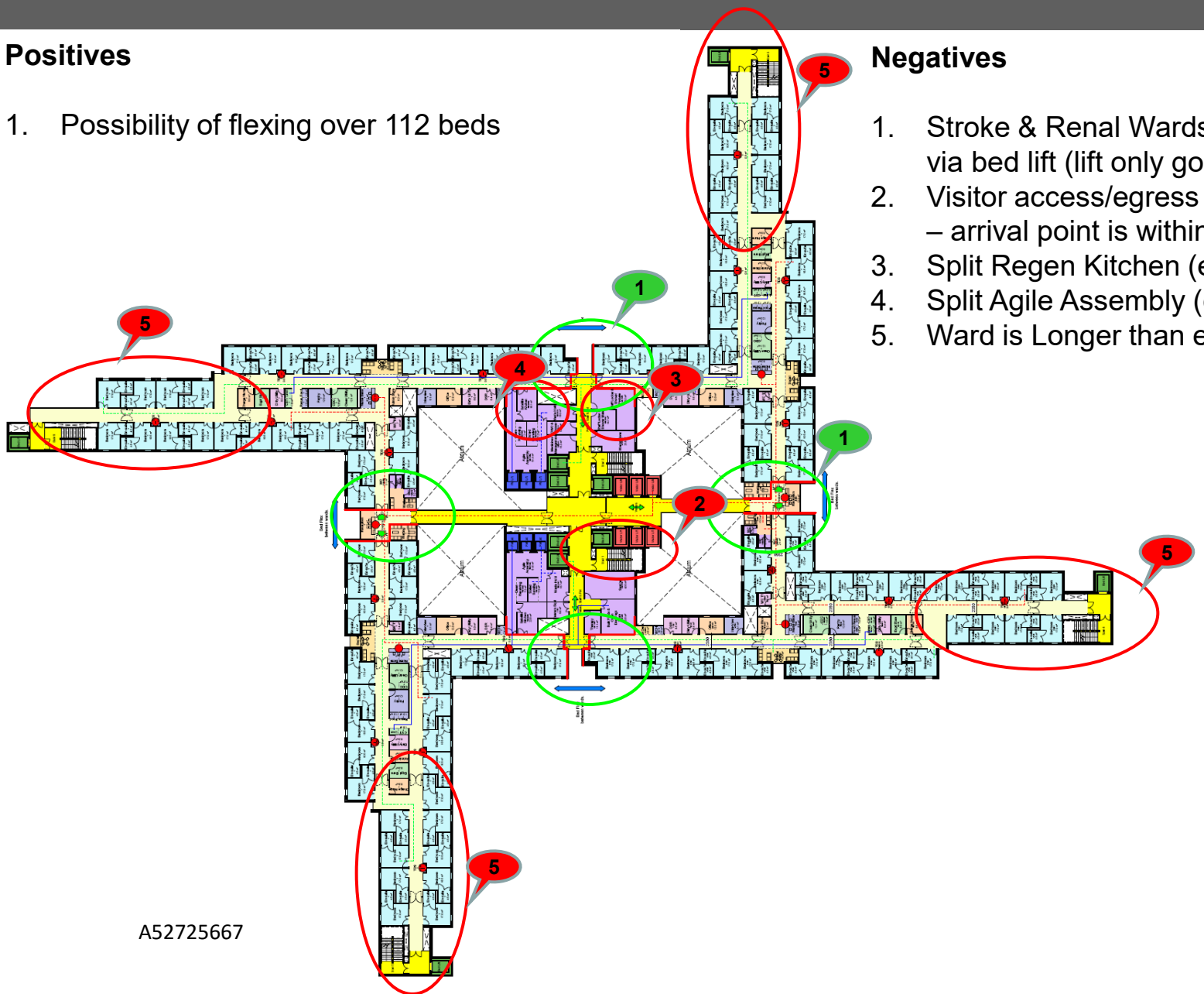
Scored: 4

Positives

1. Possibility of flexing over 112 beds

Negatives

1. Stroke & Renal Wards dirty FM transfer via bed lift (lift only goes down to GF)
2. Visitor access/egress by stair unresolved – arrival point is within patient/staff area
3. Split Regen Kitchen (efficiency/revenue)
4. Split Agile Assembly (efficiency/revenue)
5. Ward is Longer than exemplar by 30m



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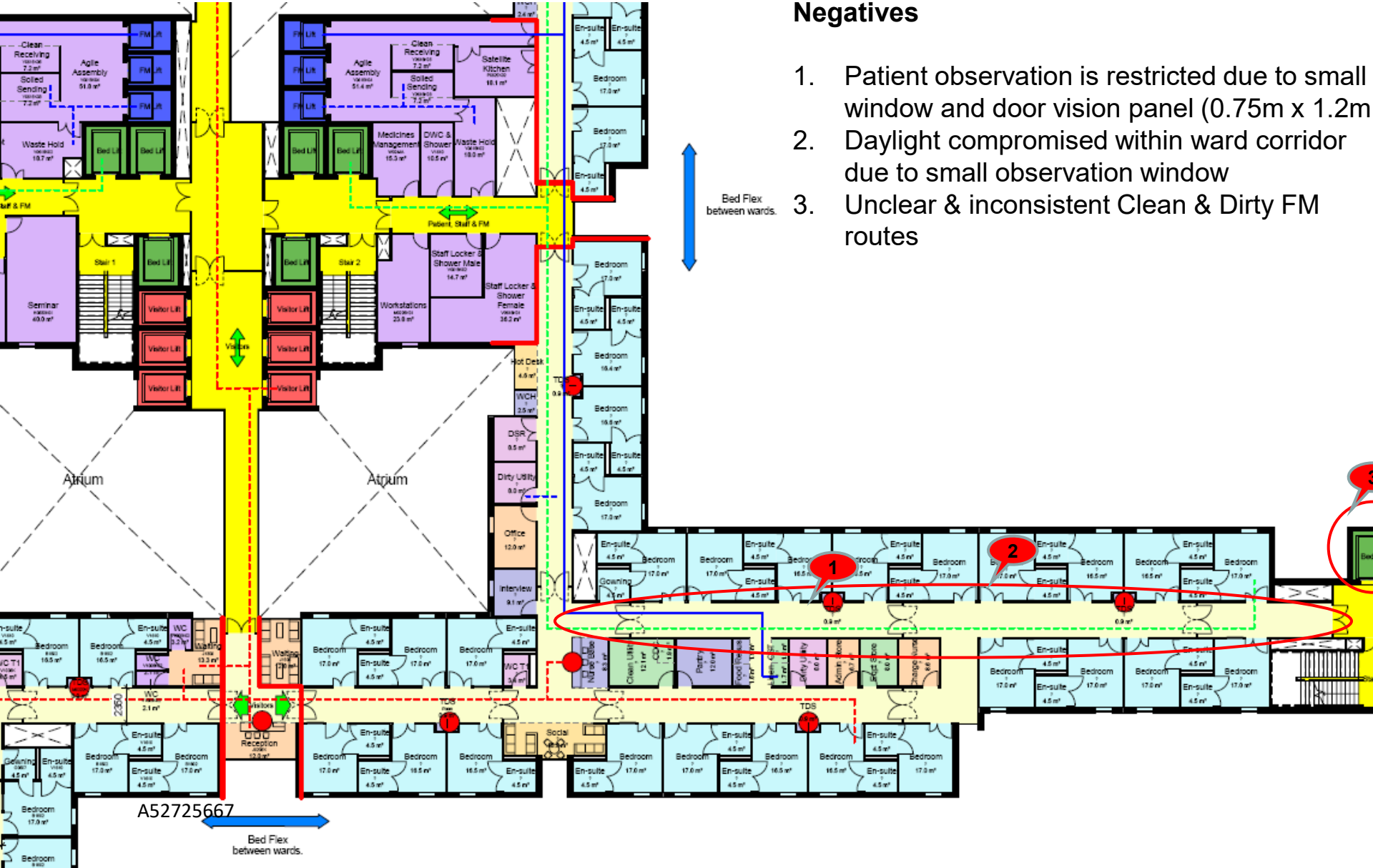
BIDDER 2 – LAING O'ROURKE

NSGH – GENERIC IN-PATIENT WARD – REVIEW

Scored: 4



Negatives

1. Patient observation is restricted due to small window and door vision panel (0.75m x 1.2m
2. Daylight compromised within ward corridor due to small observation window
3. Unclear & inconsistent Clean & Dirty FM routes

BIDDER 3 – BALFOUR BEATTY

NSGH – GENERIC IN-PATIENT WARD – REVIEW

Scored: 3

Positives

Negatives

1. Split Cores limit flexibility across floor plate
2. No Visitor/Staff access by stair
   - Hospital at Night
   - Resus Team
3. Splitting of support accommodation adds complexity in staff/patient access eg
   - Therapy space
   - Staff Changing
4. Lack of Privacy/Dignity - end bedroom 8m apart
5. Clean & Dirty FM cross-over (use same route)
6. Resilience is poor due to ward tower layout eg Single Dirty FM Lift per 2 wards
7. Ward is Longer than exemplar by 23m

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BIDDER 3 – BALFOUR BEATTY

NSGH – GENERIC IN-PATIENT WARD – REVIEW

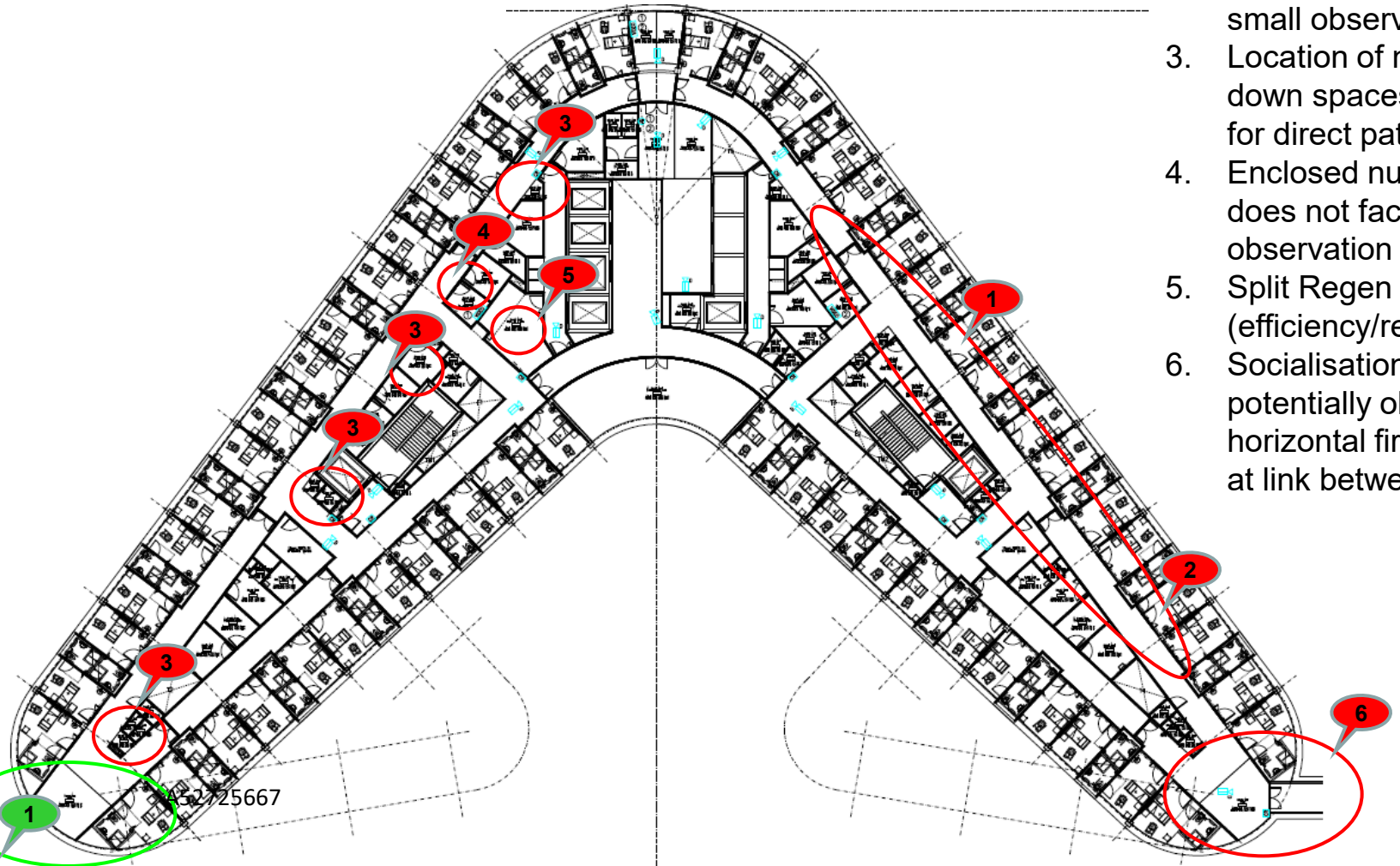
Scored: 3

Positives

1. Good views out from socialisation space

Negatives

1. Observation is restricted due to small window
2. Daylight compromised within ward corridor due to small observation window
3. Location of nurse touch down spaces do not allow for direct patient observation
4. Enclosed nurses station does not facilitate observation
5. Split Regen Kitchen (efficiency/revenue)
6. Socialisation space potentially obstructs horizontal fire escape route at link between wards

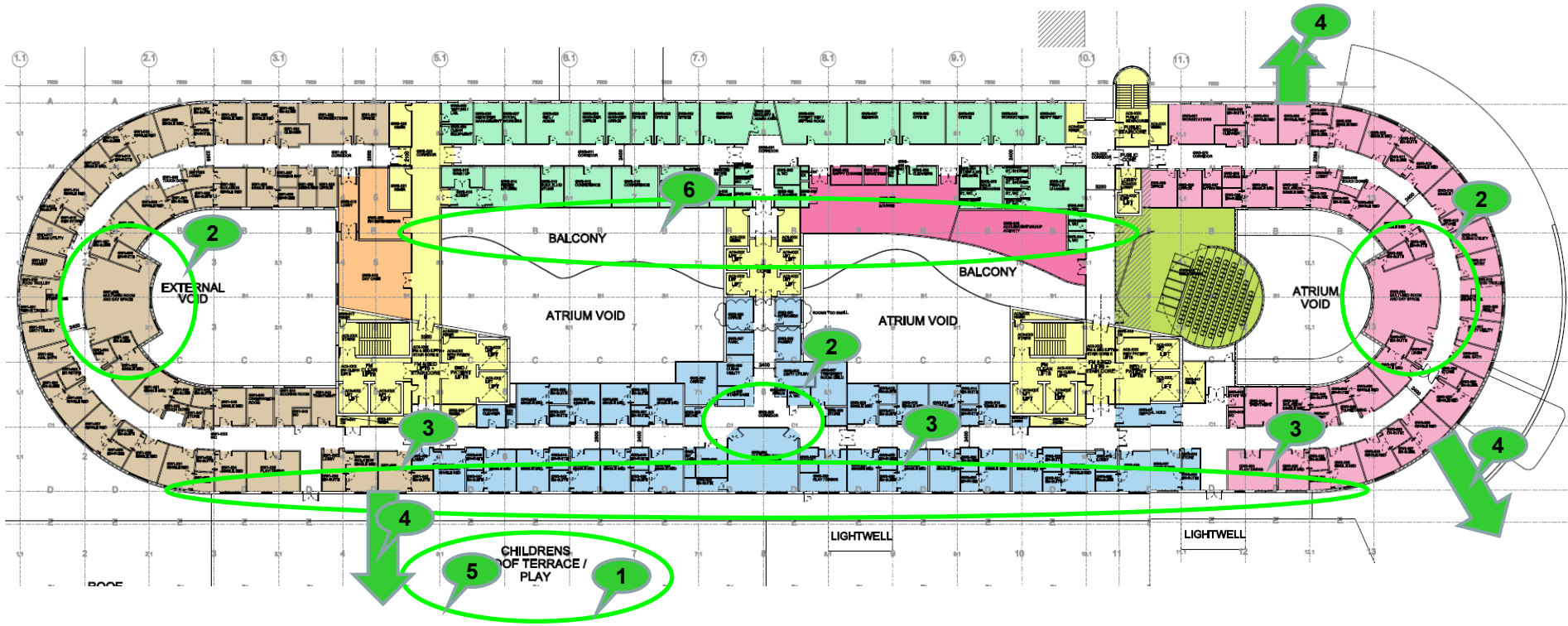


NCH GENERIC WARDS

BIDDER 1 – BROOKFIELD

NSGH – NCH GENERIC WARD – REVIEW

Scored: 9



Positives

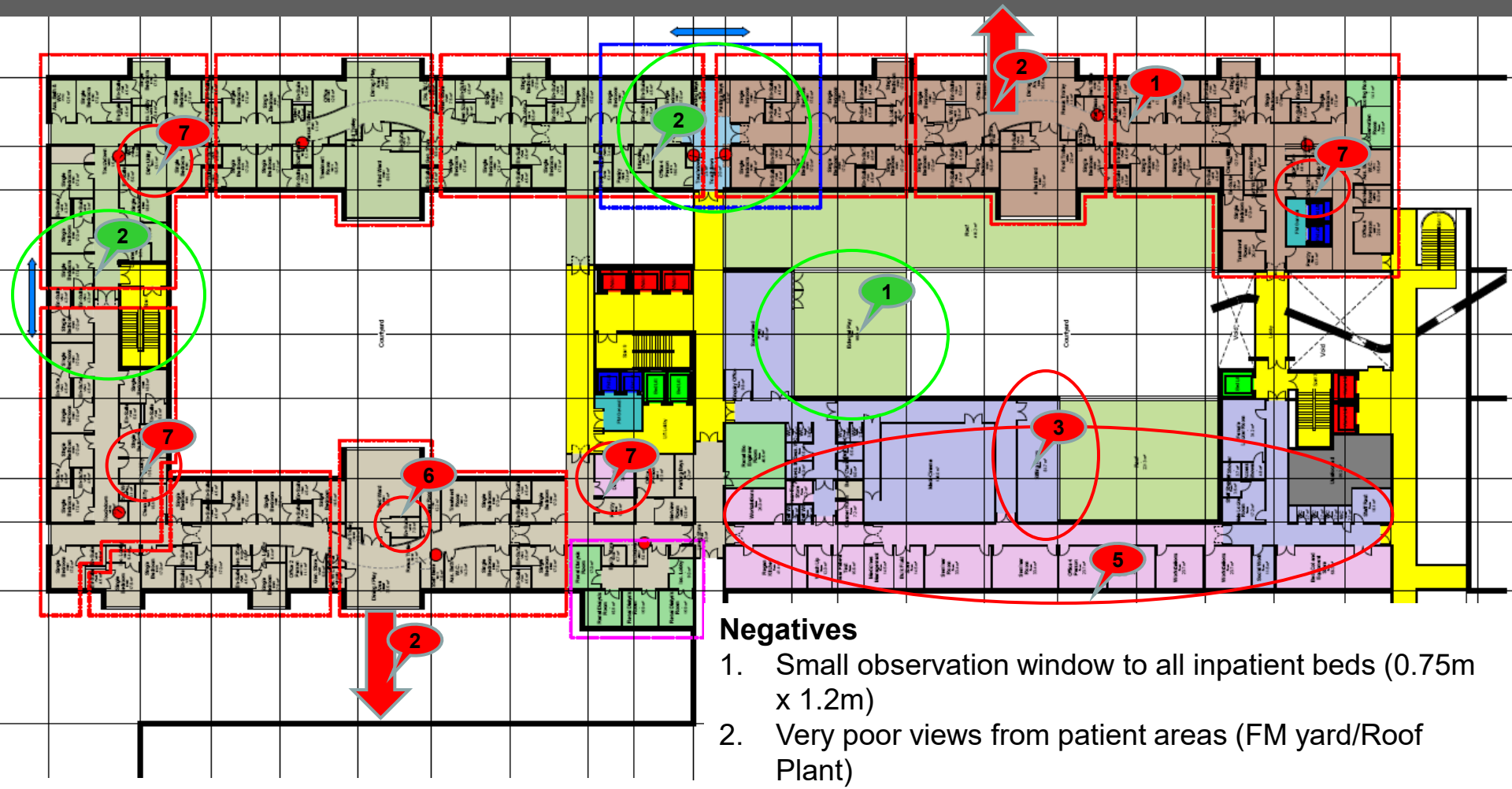
1. Access to Roof Terrace/Play
2. Configuration of 4 bed wards
   - Enhances Privacy & Dignity
   - Maximises Bed Spacing (Infection Control)
3. Provides good flexibility over wards
4. Provides good views out of bedrooms
5. Canopy over roof terrace enhances privacy
6. Balcony provides good socialisation areas

Negatives

BIDDER 2 – LAING O'ROURKE

NSGH – NCH GENERIC WARD – REVIEW

Scored: 4



Positives

1. External Play Area adjacent to Discharge Lounge
2. Provides good flexibility over wards

Negatives

1. Small observation window to all inpatient beds (0.75m x 1.2m)
2. Very poor views from patient areas (FM yard/Roof Plant)
3. Adolescent area not readily accessible to wards
4. Ward shape compromises overall observation
5. Ward support areas are remote from wards
6. En-suite to 4 bed bays compromises observation
7. Dirty FM routes are sub-optimal (Disposal Hold/Dirty Utility Positioning)

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BIDDER 3 – BALFOUR BEATTY

NSGH – NCH GENERIC WARD – REVIEW

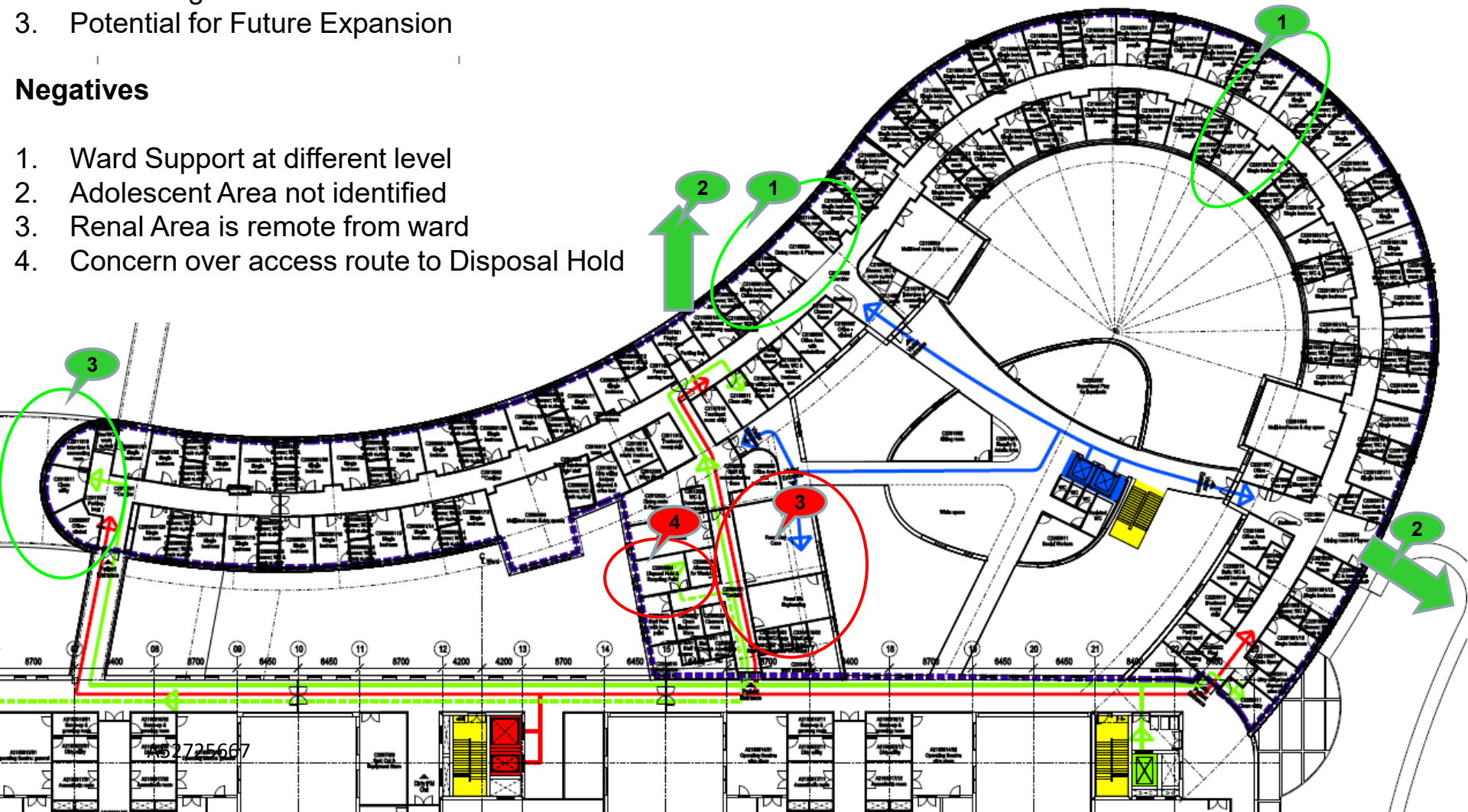
Scored: 5

Positives

1. Provides some flexibility over Wards
2. Provides good views from bedrooms
3. Potential for Future Expansion

Negatives

1. Ward Support at different level
2. Adolescent Area not identified
3. Renal Area is remote from ward
4. Concern over access route to Disposal Hold

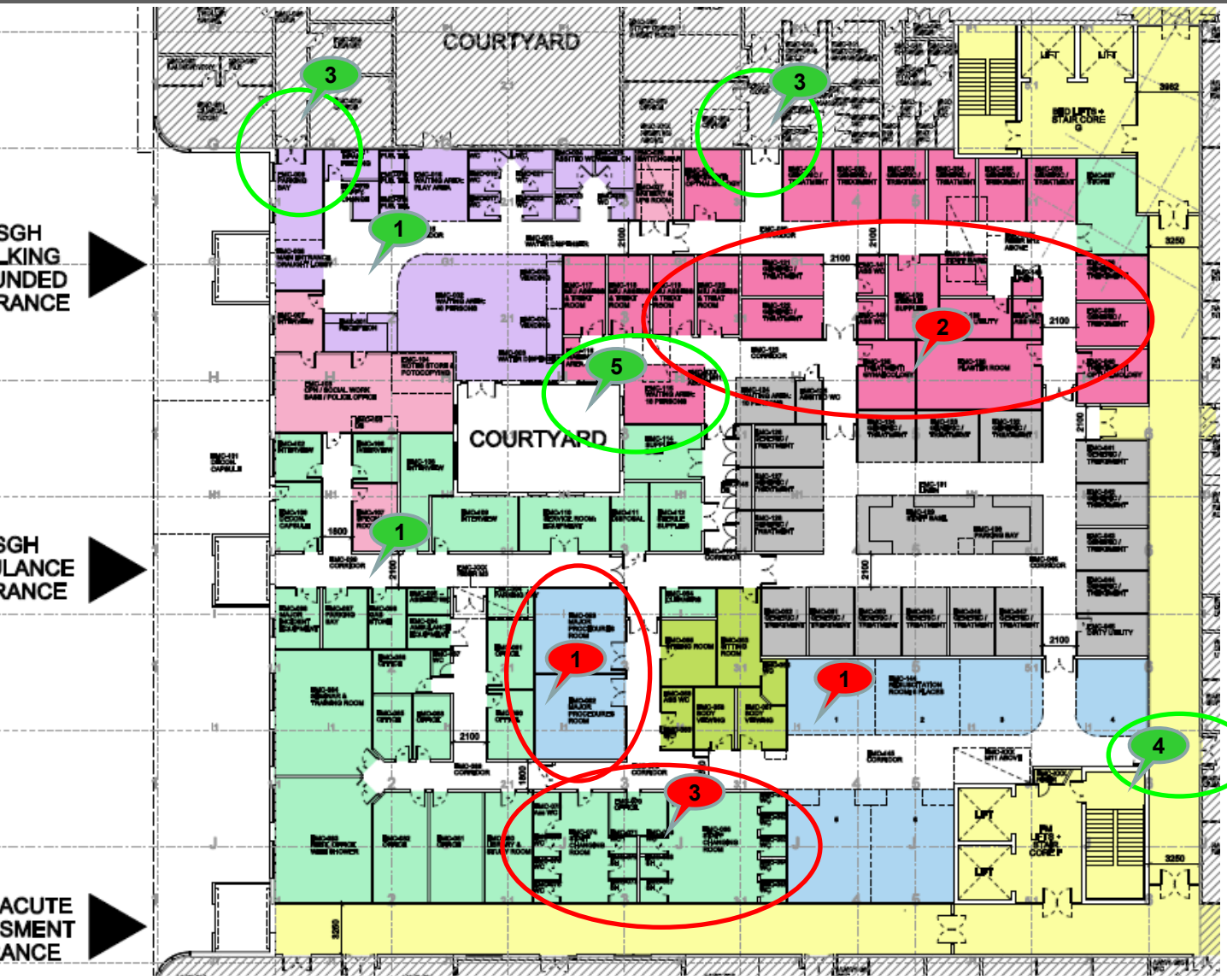


ADULT EMERGENCY DEPARTMENT

BIDDER 1 – BROOKFIELD

NSGH – EMERGENCY DEPARTMENT – REVIEW

Scored: 5



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Positives

1. Separation of Minors & Majors well defined
2. Good Security Strategy
3. Good Links to Children's ED
4. Good Links to CT & MRI
5. Daylight to secondary waiting area

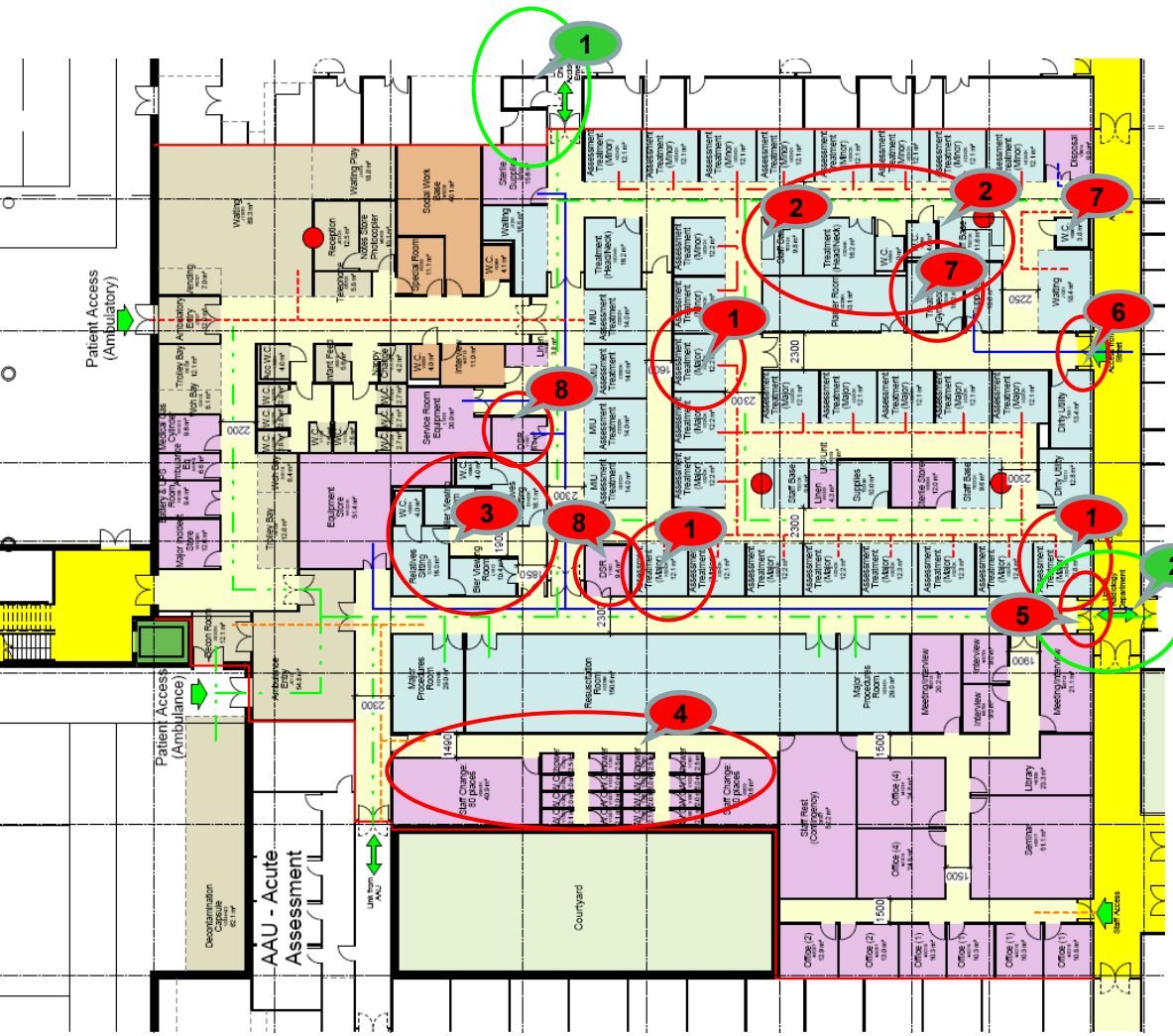
Negatives

1. Major Procedure rooms are not contiguous to Resus
2. Minors not arranged round central staff base
3. Access to staff change through main department

BIDDER 2 – LAING O'ROURKE

NSGH – EMERGENCY DEPARTMENT – REVIEW

Scored: 4



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Positives

1. Good Link to Children's ED
2. Good Links to CT & MRI

Negatives

1. ED Majors – observation to 3 cubicles not orientated to face onto a central hub
2. Split Staff Bases & configuration of ED Minors compromises observation
3. Trolley access to Bier Viewing Rooms
4. Staff changing – unisex WCs and access from corridor (Security Issues)
5. No auto door opening from imaging to resus corridor
6. No auto door opening from imaging to plaster room
7. WC not adjacent to Gynae room
8. 2 DSRs provided in close proximity

BIDDER 3 – BALFOUR BEATTY

NSGH – EMERGENCY DEPARTMENT – REVIEW

Scored: 7

Positives

1. Direct route to Resus
2. Good Links to CT & MRI
3. Separation of Minors & Majors well defined
4. Good Links to Children's ED

Negatives

1. Access to staff change through main department

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NCH EMERGENCY DEPARTMENT

BIDDER 1 – BROOKFIELD

NSGH – NCH EMERGENCY DEPARTMENT – REVIEW

Scored: 9

Positives

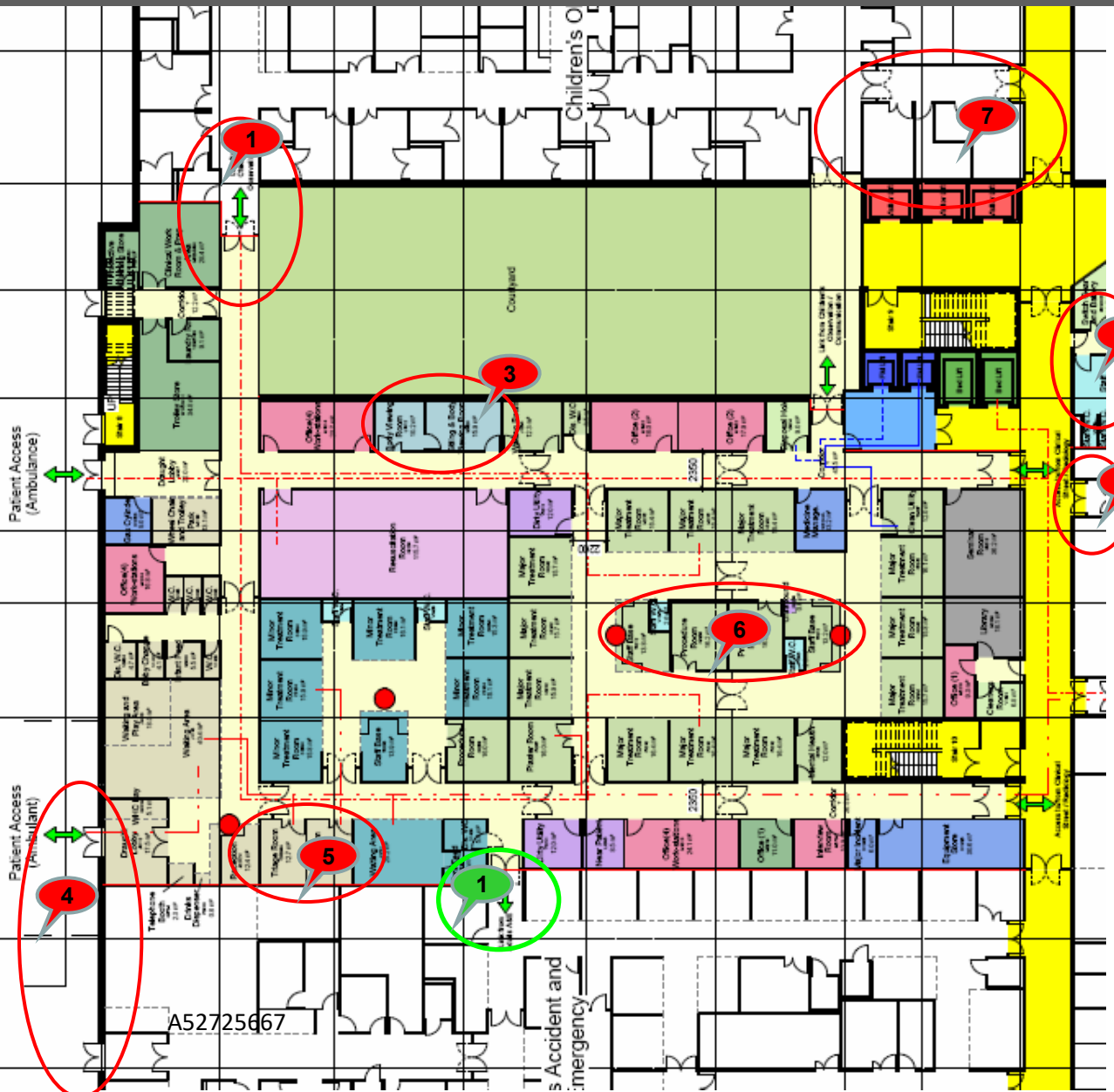
1. Excellent adjacency to Observation Ward
2. Front Door to Triage & Resus is well resolved
3. Routes to Imaging are optimal
4. Efficient & Flexible Design for staffing
5. Child Protection well located and has discrete access
6. Bier Viewing Rooms located well
7. Natural daylight to all offices
8. Good connectivity to Adult ED
9. Staff areas are central to department

Negatives

BIDDER 2 – LAING O'ROURKE

NSGH – NCH EMERGENCY DEPARTMENT – REVIEW

Scored: 4



Positives

1. Good connectivity to Adult ED

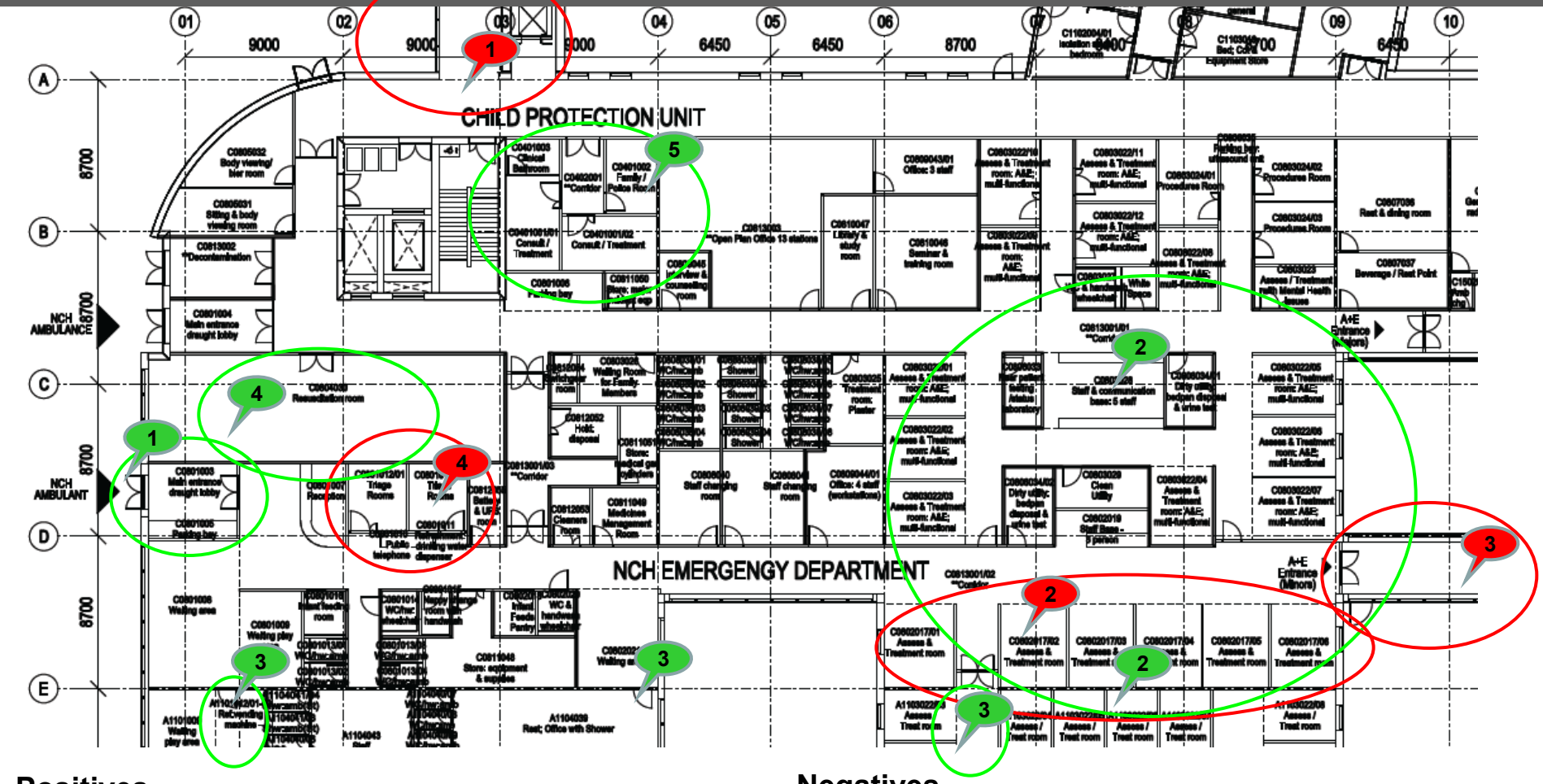
Negatives

1. Sub-optimal link to Observation Ward
2. Travel distance to plain film rooms are greater than exemplar
3. Bier Viewing Rooms & Bereavement pathway inappropriate
4. Shared drop-off with Adult Ambulant ED
5. Triage is not 'thru and thru'
6. Split Staff Bases in Majors
7. Child Protection not well located
8. Staff rest area remote from department

BIDDER 3 – BALFOUR BEATTY

NSGH – NCH EMERGENCY DEPARTMENT – REVIEW

Scored: 6



Positives

1. Good separation from Ambulant ED Entrance
2. Good separation of Majors & Minors
3. Good connectivity to Adult ED
4. Front Door to Triage & Resus is well resolved
5. Child Protection well located

Negatives

1. Sub-optimal link to Observation Ward
2. Observation of Minors Cubicles sub-optimal
3. Ultrasound pathway is longer than exemplar
4. No ‘thru and thru’ Triage Rooms

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Qualitative Scoring –

NHS Greater Glasgow and Clyde

Headline Issues Brookfield Europe

Pros

- Strong separate identities of adults and children's hospitals
- Additional benefit of enlarged children's park and rooftop gardens
- Adult ward footplate flexible across all 4 wards
- Excellent adults and children's ward layouts with good views
- Excellent children's A&E layout
- All 1:200 layouts drawn
- Strong architectural concept providing iconic solution
- Good sense of arrival

Cons

- Increased internal rooms in AAU
- Elements of M&E to be resolved

Qualitative Scoring –
Headline Issues Laing O'Rourke

NHS Greater Glasgow and Clyde

Pros

- Inclusion of integrated transport hub

Cons

- Deficiencies in accommodation
- Inappropriate links to children's hospital from car park and labs
- No separation of adults and children's hospitals
- Deficient FM yard and FM flows throughout the building
- Significant failures to meet clinical adjacencies
- Inappropriate bereavement pathways
- Poor layouts for majority of key departments
- Monolithic design character
- Excessive travel distances

Qualitative Scoring –
Headline Issues Balfour Beatty

NHS Greater Glasgow and Clyde

Pros

- Strong separate identities adult and children's hospitals
- Good A&E layout
- Increased daylights to podium departments

Cons

- Increased travel distances from wards to all podium departments
- Loss of direct link between critical care and neurosciences
- No public stair access to wards
- Imaging spread over 3 floors with no direct vertical links
- Inflexible ward support
- Long ward layout with significant observation issues
- Inefficient design in terms of circulation
- Lack of resilience in FM flows

Agreed Qualitative Scoring

- The Bid Submissions were scored against Compliance with Employers Requirements
- Scoring matrix

Scores	Value	Description
Excellent	9 - 10	Performs significantly well on all key factors and offers substantial additional benefits
Good	7 - 8	Performs well on all key factors and offers some additional benefits
Adequate	5 - 6	Passes thresholds on all key factors but offers few additional benefits
Poor	3 - 4	Fails to meet threshold on some key factors
Very Poor	2	Fails to meet threshold on majority of key factors
Unacceptable	1	Fails to meet threshold on all key factors

- The scoring was by Consensus and not individual with averages

Bidders Outcomes

NHS Greater Glasgow and Clyde

Brookfield Europe

- An Iconic design satisfying the Employer's Requirements in the vast majority of areas achieving maximum efficiency in programme and construction (Removed Transfer floor)
- Reduced uncertainty and risk through developing the design to detailed level (i.e. 1:200 for whole development)

Laing O'Rourke

- Detrimental impact on quality, clinical and operational functionality and design outlook
- High level of unknowns hence uncertainty about final design and cost
    - Area
    - Design Change

Balfour Beatty

- An Iconic external design
- Compromised internal arrangements regarding clinical adjacencies, patient flows and functionality

New South Glasgow Hospitals & Labs Project Executive Board

Lunch Break

Qualitative Scoring

NHS Greater Glasgow and Clyde

Workgroup	Benchmark Score	Brookfield	Laing O'Rourke	Balfour Beatty
Design (weighting x 50)	165,000 pts	169,000 pts	122,250 pts	149,000 pts
Logistics (weighting x 30)	49,500 pts	49,200 pts	51,900 pts	51,750 pts
Sub-Totals	**214,500 pts**	**218,200 pts**	**174,150 pts**	**200,750 pts**

Most Economically Advantageous Tender (MEAT)

Competitive Dialogue requires the appointment of the successful candidate to be made on the basis of MEAT

In this process it has been determined that the MEAT is the offer that provides the highest number of quality points per pound.

The evaluation process issued to bidders requires the board to base MEAT upon the expected outturn cost for the board

Pricing Structure

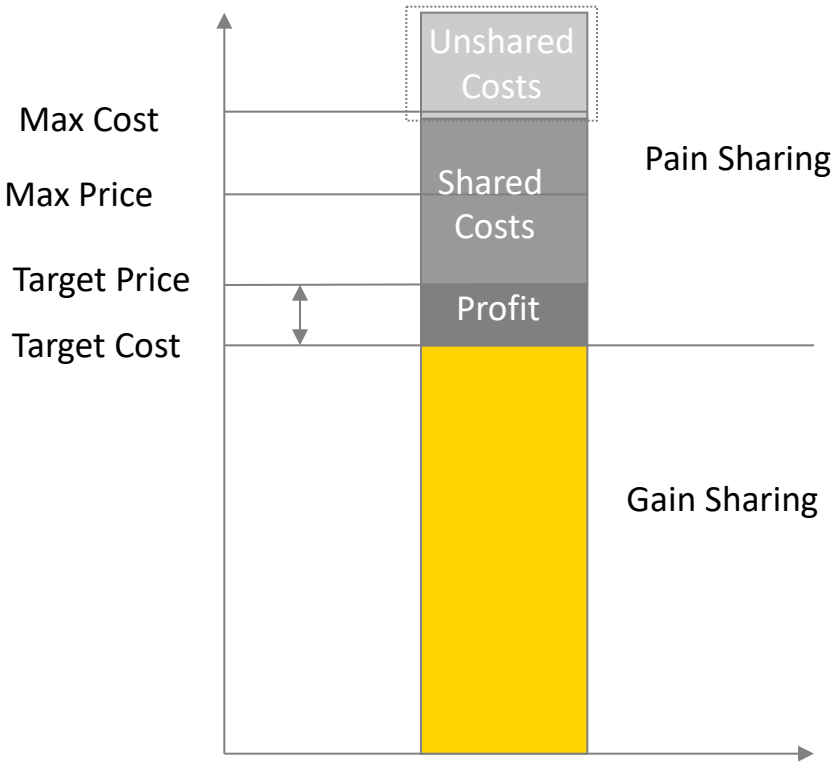
The pricing structure developed as part of the process was based upon NEC 3. The objectives of the pricing structure are

- To provide incentives for the contractor to achieve their bid price
- To recognise the spirit of partnership and co developed solution through the sharing of pain and gain
- To protect the ultimate financial position of the board by setting a maximum price payable in the event of increased costs – maintains affordability

Graphical Representation of Pricing Structure

The key elements of the price structure are

- **Target Cost – The cost bidders are confident they will be able to construct the facilities**
- **Target Profit – Initially a defined as a % of the Target cost and thereafter treated a fixed lump sum**
- **Target Price – Sum of Target cost and Target Profit**
- **Maximum Cost – The point at which the board will no longer make a contribution to cost over runs**
- **Pain % - Proportion of costs born by the board should actual costs exceed target costs**
- **Gain % - Proportion of savings retained by the board should actual costs be less than Target Costs**



ERNST & YOUNG
Quality In Everything We Do

Possible Bidding Strategies

There are a number of possible pricing strategies available to bidders

- A robust approach to risk producing a relatively certain target with limited scope for pain sharing before max price and strong gain share
- Setting a relatively large max price relative to the target price to allow for substantial pain share
- Setting a relatively small target and max price and based on a very tight specification and reliance on subsequent compensation events

Consequences of Pricing Structure

Bidders are required to provide not only a target price but also a range of cost outcomes that through the action of pain/gain will result in a final price for the project. This creates a need to assess the following

- The initial target cost, profit and therefore price
- The potential for variation from target cost/price – Risk
- The degree to which bidders seek to share pain and gain – a measure of their confidence in pricing
- Overall Affordability given the range of possible outcomes

Legal Considerations

Procurement process

- Competitive Dialogue Procedure
- Evaluation Process included in the tender documents
- Process has been followed
- Process overseen by Board's procurement team

Legal Considerations

Legal Submission

- Basis of Board's requirement (NEC3)
  - Contract Terms
  - Insurance arrangements
  - Performance Bonds
  - Collateral Warranties
- Dialogue engagement – produced the final tender documents
- Clarifications from bidders to ensure that there is no misunderstanding
- Outcome of evaluation

Brookfield Europe LP

- Brookfield Europe LP is a fully integrated property, funds management and infrastructure business with activities in construction, commercial, retail, and residential property, property management services, and infrastructure.

- Brookfield Asset Management, the Parent Company which is Toronto based has over $80 Billion Dollars of Capital Value Real Estate and Renewable Power Infrastructure Assets under Management, Construction or Development Globally.

Healthcare Experience

Peterborough District Hospital

• Main Contractor and Joint Equity partner with McQuarrie Bank in the £335m PFI Project for a 612 bed Acute Hospital & 102 bed Mental Health unit.

• Financial Completion was achieved in June 2007 and the Hospital is due to open in 2010 with Commissioning currently underway.

• Reference from NHS Project Director, Miss A. Broekhuzian –

"members of team worked in partnership which maximised quality of design and resulted in exceptional building finishes"

• Reference from OGC Gateway Review team:

"in their experience they had never reviewed a project which had the strength of relationships seen in this project"

Other Healthcare Experience

Fiona Stanley Hospital ,WA

• AUD $1.76 Billion, 643 bed General Hospital Currently under Construction with Completion planned for 2014.

• The Main Hospital comprises two major elements;

• The Podium which is the larger footprint from Ground to Level 3 (also Lower Ground including Service Tunnel from Central Plant) and the Wards which are the tower elements that rise from Level 3 to Level 7 with a total area of 115,000 m2.

• The hospital is traversed by a central spine (double height space), running east west, which provides the primary pedestrian access way through the hospital. It is also links the Hospital to the associated buildings – Block A (Education and Pathology) at the western end to the Block D (Mental Health) & public parking at the eastern end.

Project Team

Brookfield Project Team have over 2bn of completed Hospital Experience spanning 25 years

The Staff included in the Bidding Team will be retained for the duration of the Project

Project Director	Ross Ballingall	
Project Experience:	Peterborough Hospital PFI	£350m
	Oxford Churchill	£130m
	Stoke Mandeville hospital	£56m
	Addenbrookes Hospital	£80m
	Middlesex Hospital BeCAD	£70m
	Newham Hospital	£27m
	Newcastle Hospitals	£300m
	Norfolk & Norwich Hospital	£220m
Commercial Director	Paul Serkis	
Project Experience	Peterborough Hospital PFI	£350m
	Chelsea & Westminster Hospital	£200
	National Physical Laboratories	£87m
Construction Director	Alan Keeley	
Project Experience	Peterborough Hospital PFI	£350m
	Norfolk & Norwich Hospital	£220m
	Medical training school	£100m
Planning Director	David Bower	
Project Experience	Peterborough Hospital PFI	£350m
	NHS Hospital bid	£180m
	NHS Mental Health Bid	£80m

Design Team

Nightingale Associates	Architect & Lead Consultant
Company Profile	An Award winning Health Care Architect, the largest in Europe specialising in Healthcare
Recently Completed Project Awards	Edinburgh New Children's Hospital Building Better Health Care Awards 2008 Best Project Team for the Essex Cardiothoraic Centre, Basildon Hospital. 2007 Best Hospital Design for the Cardiothoracic Centre, Broadgreen Hospital 2006 Outstanding Contribution to Health Environment for the NHS Walk in Centre, Milton Keynes
Tribal	Healthcare Planner
ZBP	Mechanical & Electrical Engineers
WSP	Civil & Structural engineers, Traffic, Fire & Sustainability
Acoustic Logic	Acoustic Engineers
Gillespies	Landscape Architects and Masterplanners
Doig Smith	Cost Planners

Nightingale Associates' philosophy, is to partner with their preferred design team to design buildings that create a positive contribution to the environment and a sense of well-being, community, social interaction and inclusion.

Specialist Sub Contractors

Dunne Civil Engineering	Substructures and Superstructures
Company Profile	Annual turnover in excess of over £60m, Projects have included Tritax Eurocentral £11.2m, Edinburgh academy, Ferry Village

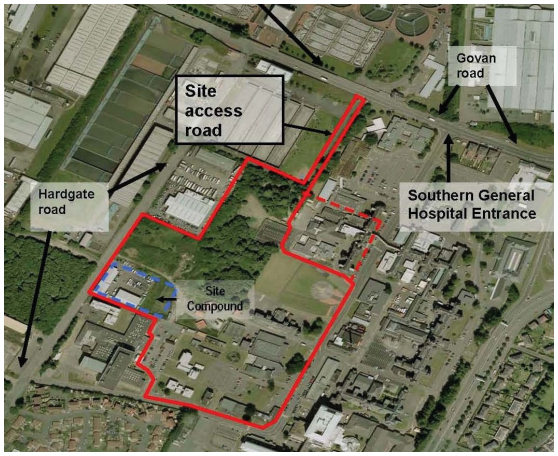
2ND LARGEST GROUND CONTRACTOR IN SCOTLAND WILL COMMENCE GROUNDWORKS AND ESTABLISH SITE COMPOUND FOR BROOKFIELD MOBILISATION

Mercury	Mechanical &Electrical Design and Installation
Company Profile	Annual turnover in excess of over €150m and approx 1,100 direct headcount. Projects have included Peterborough Hospital, Dublin Port Tunnel, Spencer Dock Development.
Astins	Plasterboard partitions and drylining
Company Profile	Annual turnover (approx) £25m. Projects have included Peterborough Hospital PFI, Walsall Manor Hospital, Pembury Hospital.
Structal UK	Unitised Curtain Walling
Company Profile	Part of the Coralu group

Chosen for their stability, market position and their Experience of Large Scale projects in Healthcare and in Scotland

Mobilisation

Office and Welfare accommodation will be provided on what will become the Children's Park (as shown on RFI's 071 and 132). This will not require planning permission nor involve any 3rd party negotiations on Land Acquisition.



The accommodation is provided off Hardgate Road which allows safe segregation from construction site activities and deliveries and has close adjacencies to the works. Office facilities for NHS GG&C staff will be provided with 31No parking spaces and covered cycle sheds.

A hoarding will be erected around the perimeter of the Development site to prevent unauthorised access, provide public protection and provide the safety of site operatives. The Hoarding will be branded as NHS guidelines with the required site signage.

A traffic management plan is in place to reduce the risk of injury, with Construction vehicles access the site via Renfrew Road and Site Operatives via a separate access from Hardgate Road. Along with appropriate signage, Security Huts and Road barriers will be installed (shown on drawing BE-DJ-LOG-101).

New South Glasgow Hospitals

Presentation to Directorate

6 November 2009

A52725667

NHS Greater Glasgow and Clyde

Brookfield Europe LP

Brookfield Europe LP

NHS Greater Glasgow and Clyde

- **Brookfield Europe was formed following the acquisition of Multiplex, the Australian international construction company, in 2006**
- **Parent company employs over 10,000 people, with over 600 presently employed in Scotland**
- **Have strong supply chain to support mobilisation to commence Stage 1 construction – including Bathgate based Dunne Group – a leading civil engineering contractor specialising in reinforced concrete substructure and superstructure construction**

Brookfield Europe LP

NHS Greater Glasgow and Clyde

- Major construction entity only attracted to world class construction projects (i.e. not a volume constructor)
- Selected Southern General scheme as UK bid focus and priority
- Construction and support team with significant demonstrable track record in the delivery of major healthcare schemes
- Project Director is from Glasgow and has managed the team through the £335m Peterborough City Hospital (on programme and on budget) and has previously successfully managed, amongst other schemes, the £220m Norfolk & Norwich Hospital

Healthcare Experience

NHS Greater Glasgow and Clyde

Peterborough City Hospital

- Main Contractor in the £335m PFI Project for a 612 bed Acute Hospital & 102 bed Mental Health unit (on programme and on budget).

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Southern General Project Team

NHS Greater Glasgow and Clyde

Brookfield Project Team have extensive experience of delivering Hospital projects spanning 25 years

Project Director **Ross Ballingall**

Project Experience:

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Oxford Churchill		**£130m**
Stoke Mandeville hospital		**£56m**
Addenbrookes Hospital		**£80m**
Middlesex Hospital BeCAD	**£70m**	
Newham Hospital	**£27m**	
Newcastle Hospitals		**£300m**
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Project Experience:

Peterborough Hospital PFI	**£350m**
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National Physical Laboratories	**£87m**

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Norfolk & Norwich Hospital	**£220m**
Medical training school	**£100m**

NHS Greater Glasgow and Clyde

Brookfield

ITPD Reference: A52725667

VOLUME 2
Section 2.1

Masterplan Roof Render

New South Glasgow Hospitals (NSGH) Project ITPD

Date: 02.09.09

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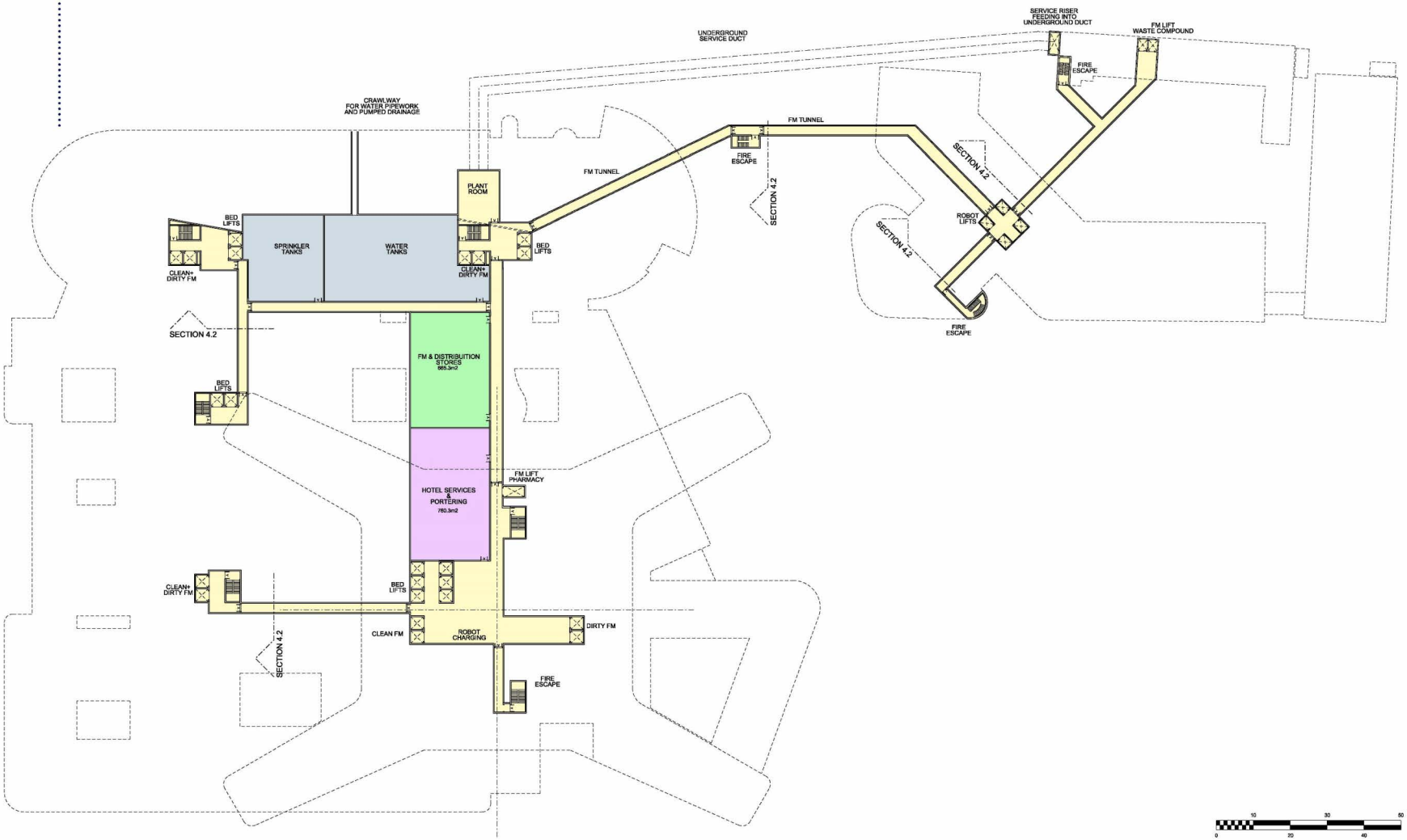
Drawing Number: GIL-WS-00-PL-100

Revision: TENDER



ITPD Reference:
VOLUME 2.0
Section 2.2

BASEMENT FLOOR PLAN - DEPARTMENTAL ADJACENCIES

New South Glasgow Hospitals (NSGH) Project ITPD

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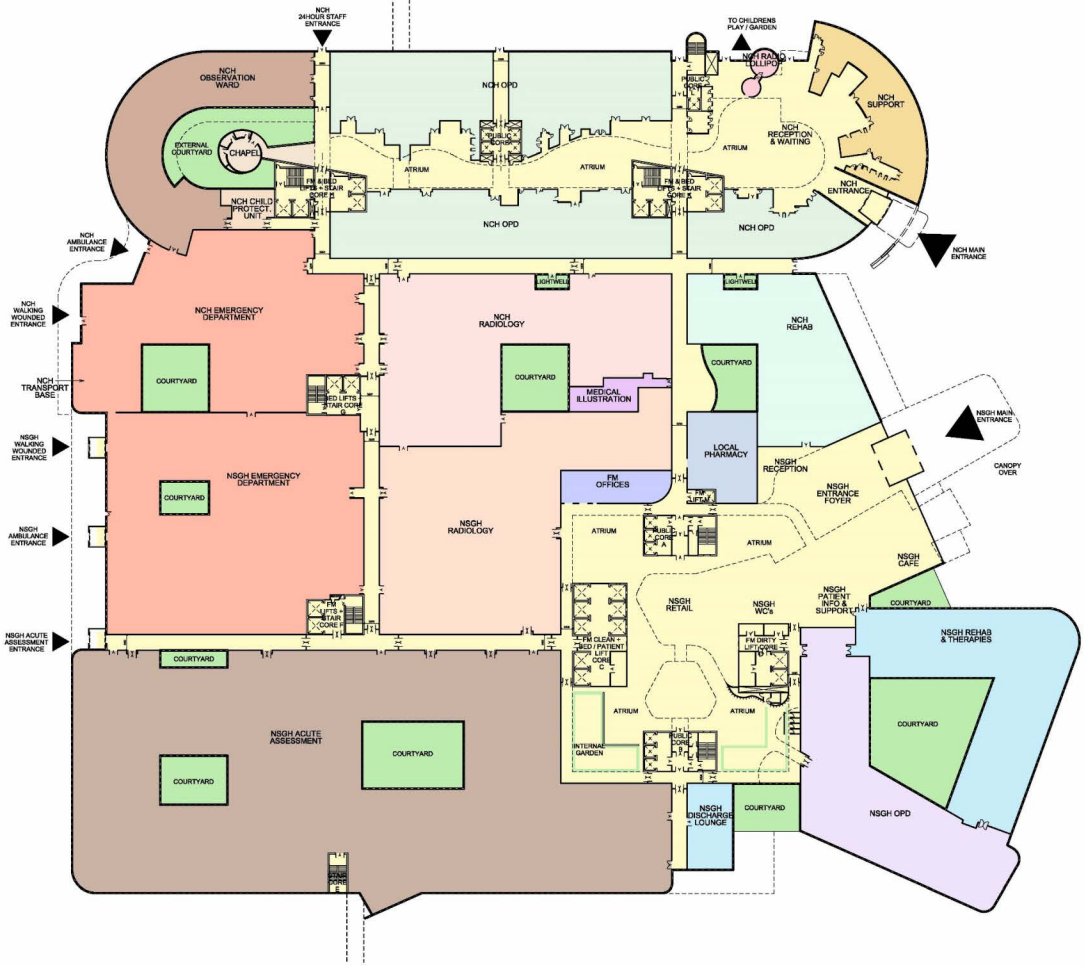
Revision: Tender

NHS Greater Glasgow and Clyde

Brookfield



ITPD Reference:
VOLUME 2.0
Section 2.2

GROUND FLOOR PLAN - DEPARTMENTAL ADJACENCIES

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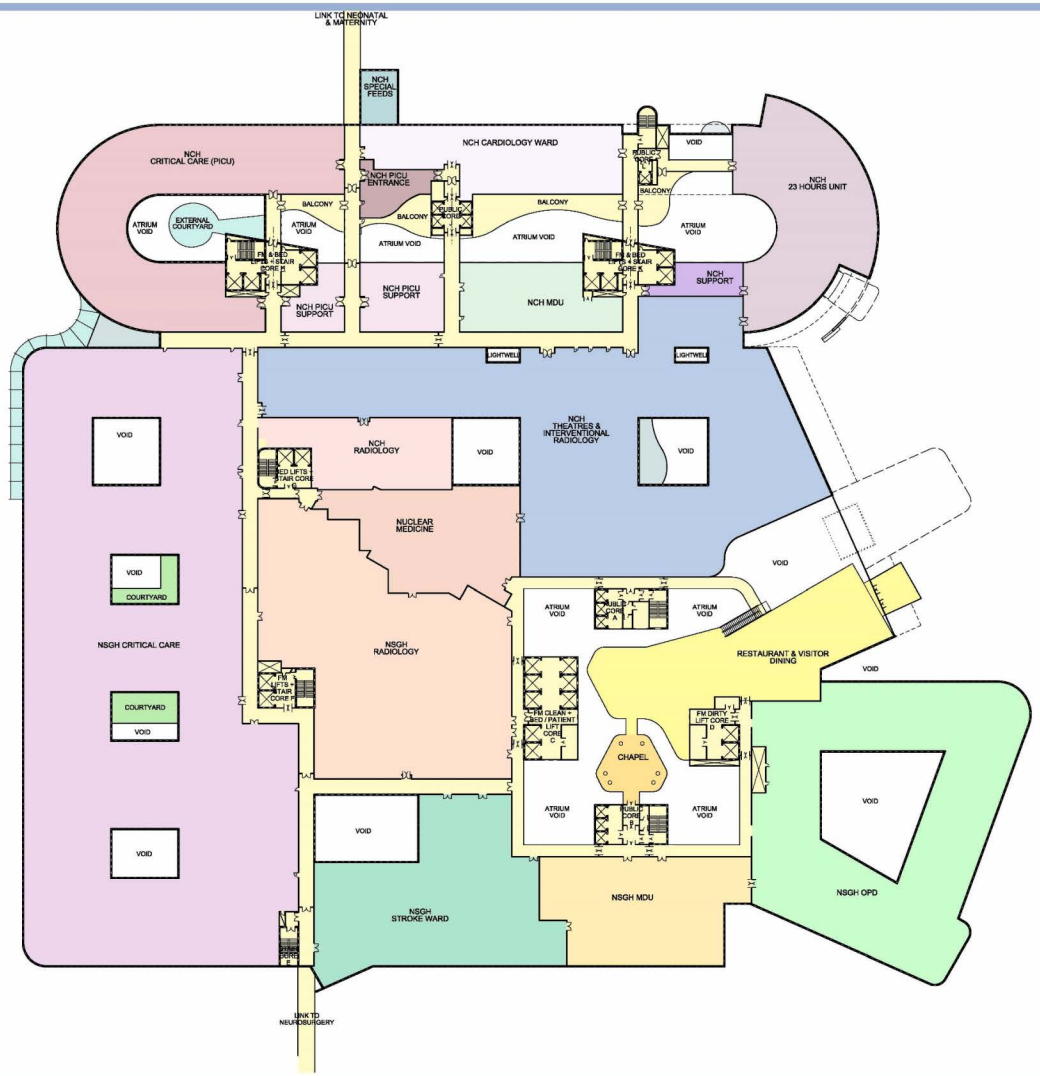

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FIRST FLOOR PLAN - DEPARTMENTAL ADJACENCIES

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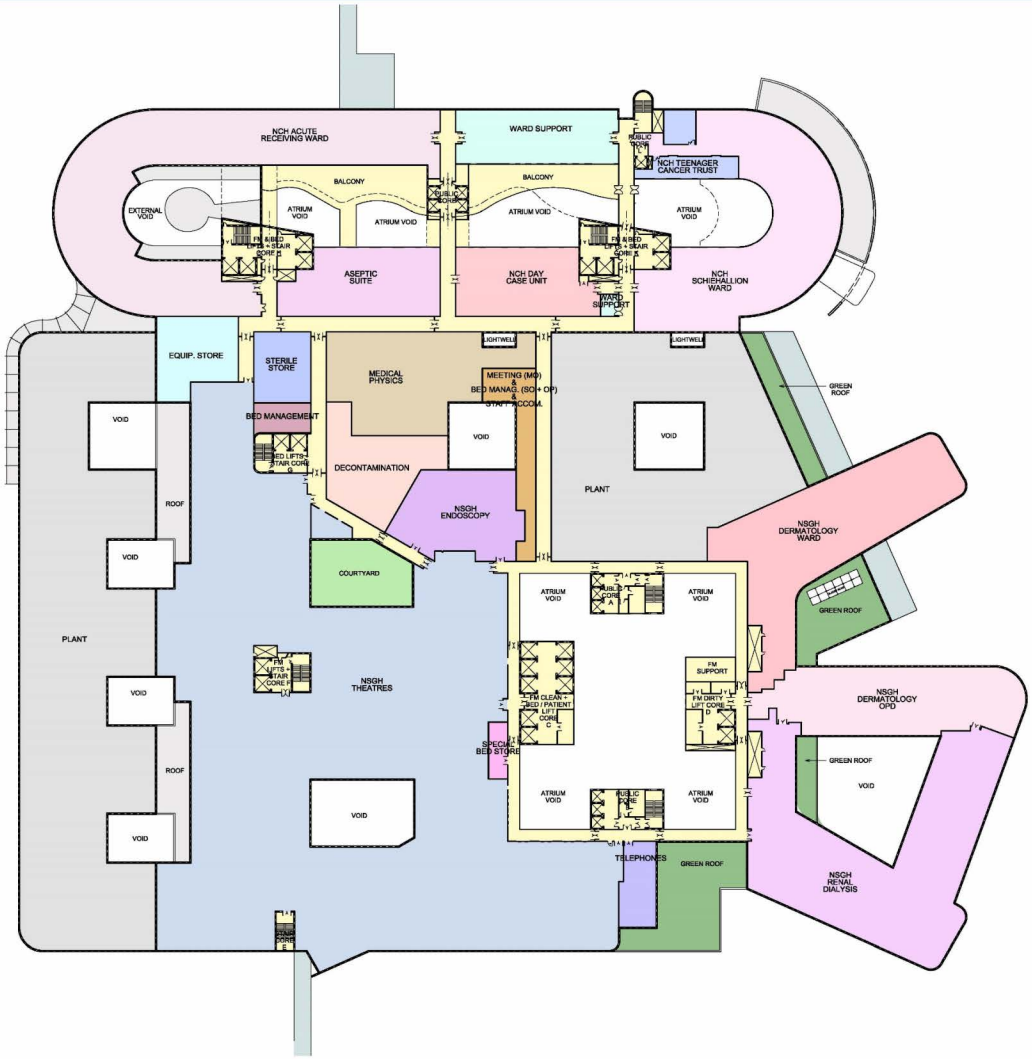
NCH ACUTE RECEIVING WARD
WARD SUPPORT
NCH TEENAGER CANCER TRUST
BALCONY
BALCONY
EXTERNAL VOID
ATRIUM VOID
ATRIUM VOID
ATRIUM VOID
ATRIUM VOID
ASEPTIC SUITE
NCH DAY CASE UNIT
NCH SCHIEHALLION WARD
WARD SUPPORT
EQUIP. STORE
STERILE STORE
MEDICAL PHYSICS
MEETING (MO) & BED MANAG. (SO) + OP) & STAFF ACCOM.
LIGHTWELL
LIGHTWELL
GREEN ROOF
VOID
BED MANAGEMENT
VOID
VOID
DECONTAMINATION
PLANT
ROOF
NSGH ENDOSCOPY
NSGH DERMATOLOGY WARD
VOID
COURTYARD
ATRIUM VOID
ATRIUM VOID
GREEN ROOF
PLANT
NSGH THEATRES
FM SUPPORT
NSGH DERMATOLOGY OPD
SPECIAL BED STORE
GREEN ROOF
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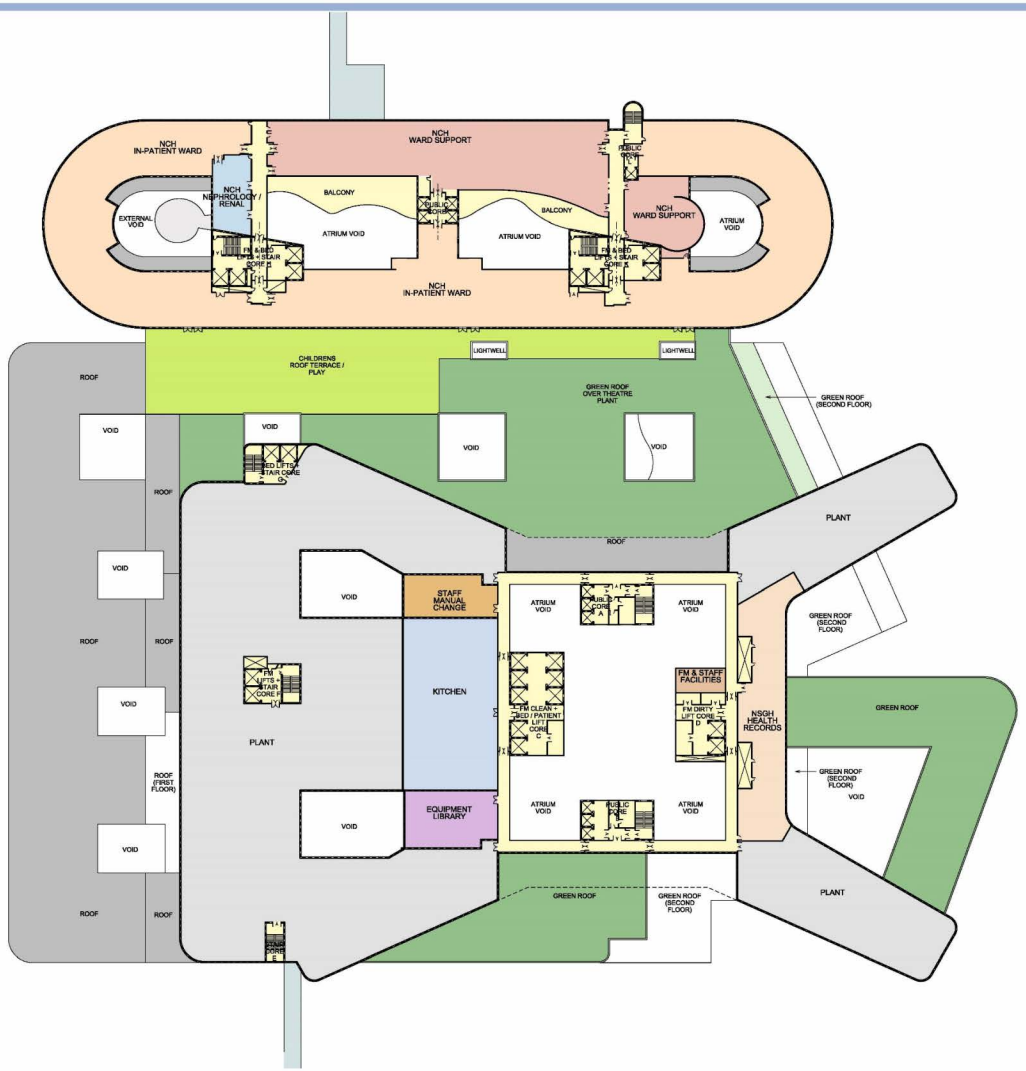
ATRIUM VOID
ATRIUM VOID
TELEPHONES
GREEN ROOF
NSGH RENAL DIALYSIS



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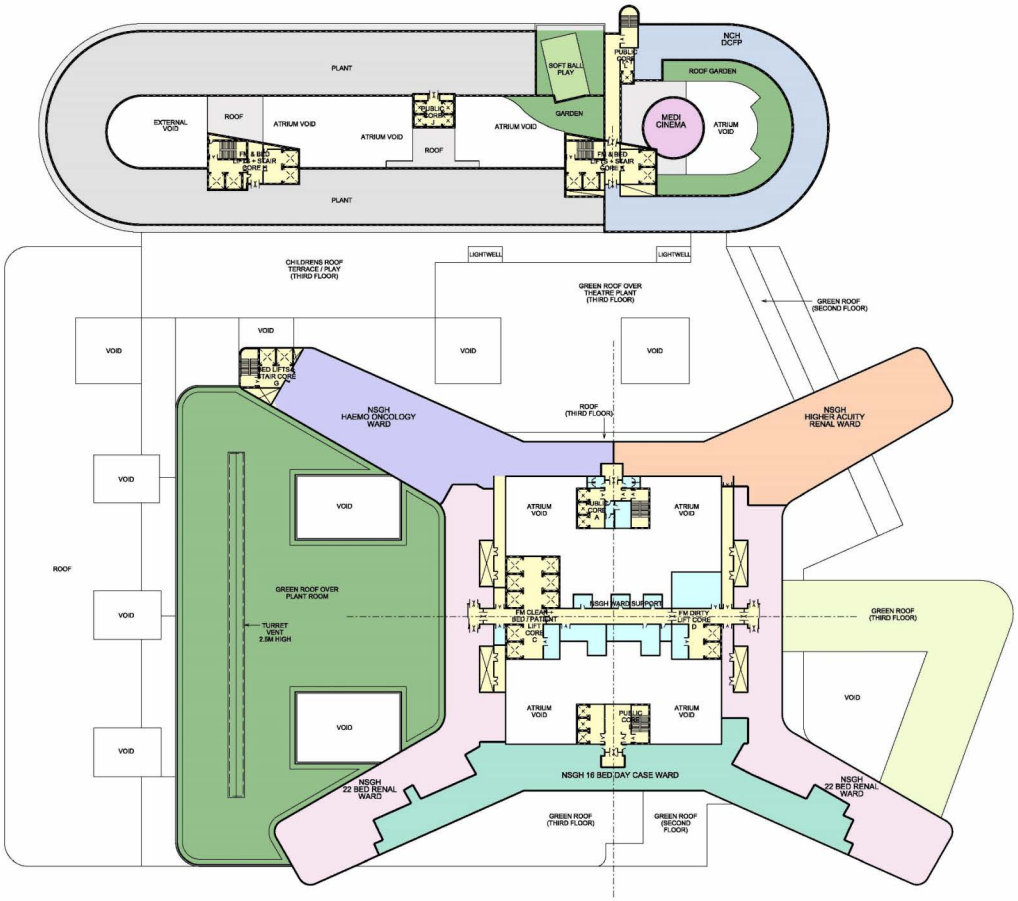
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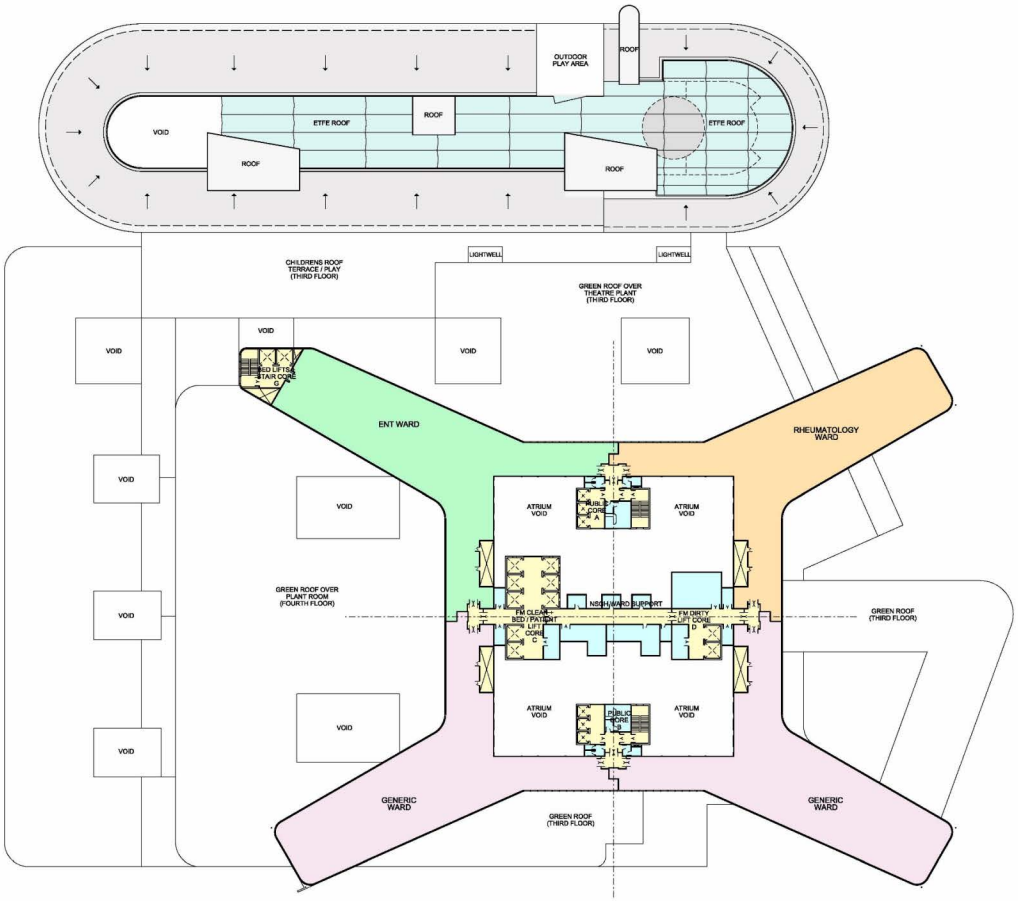
SOFT BALL PLAY
PUBLIC CORE
NCH DCFP
ROOF GARDEN
EXTERNAL VOID
ROOF
ATRIUM VOID
ATRIUM VOID
GARDEN
ATRIUM VOID
MEDI CINEMA
ATRIUM VOID
ROOF
PLANT
CHILDRENS ROOF TERRACE / PLAY (THIRD FLOOR)
LIGHTWELL
LIGHTWELL
GREEN ROOF OVER THEATRE PLANT (THIRD FLOOR)
GREEN ROOF (SECOND FLOOR)
VOID
VOID
VOID
VOID
NSGH HAEMO ONCOLOGY WARD
ROOF (THIRD FLOOR)
NSGH HIGHER ACUITY RENAL WARD
VOID
VOID
ATRIUM VOID
ATRIUM VOID
ROOF
GREEN ROOF OVER PLANT ROOM
TURRET VENT 2.8M HIGH
NSGH WARD SUPPORT
GREEN ROOF (THIRD FLOOR)
VOID
VOID
VOID
ATRIUM VOID
ATRIUM VOID
VOID
NSGH 22 BED RENAL WARD
NSGH 16 BED DAY CASE WARD
NSGH 22 BED RENAL WARD
GREEN ROOF (THIRD FLOOR)
GREEN ROOF (SECOND FLOOR)


OUTDOOR PLAY AREA
ROOF
VOID
ETFE ROOF
ROOF
ROOF
ETFE ROOF
CHILDRENS ROOF TERRACE / PLAY (THIRD FLOOR)
LIGHTWELL
LIGHTWELL
GREEN ROOF OVER THEATRE PLANT (THIRD FLOOR)
VOID
VOID
VOID
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VOID
VOID
ENT WARD
RHEUMATOLOGY WARD
ATRIUM VOID
ATRIUM VOID
GREEN ROOF OVER PLANT ROOM (FOURTH FLOOR)
NSGH WARD SUPPORT
GREEN ROOF (THIRD FLOOR)
ATRIUM VOID
ATRIUM VOID
GENERIC WARD
GREEN ROOF (THIRD FLOOR)
GENERIC WARD

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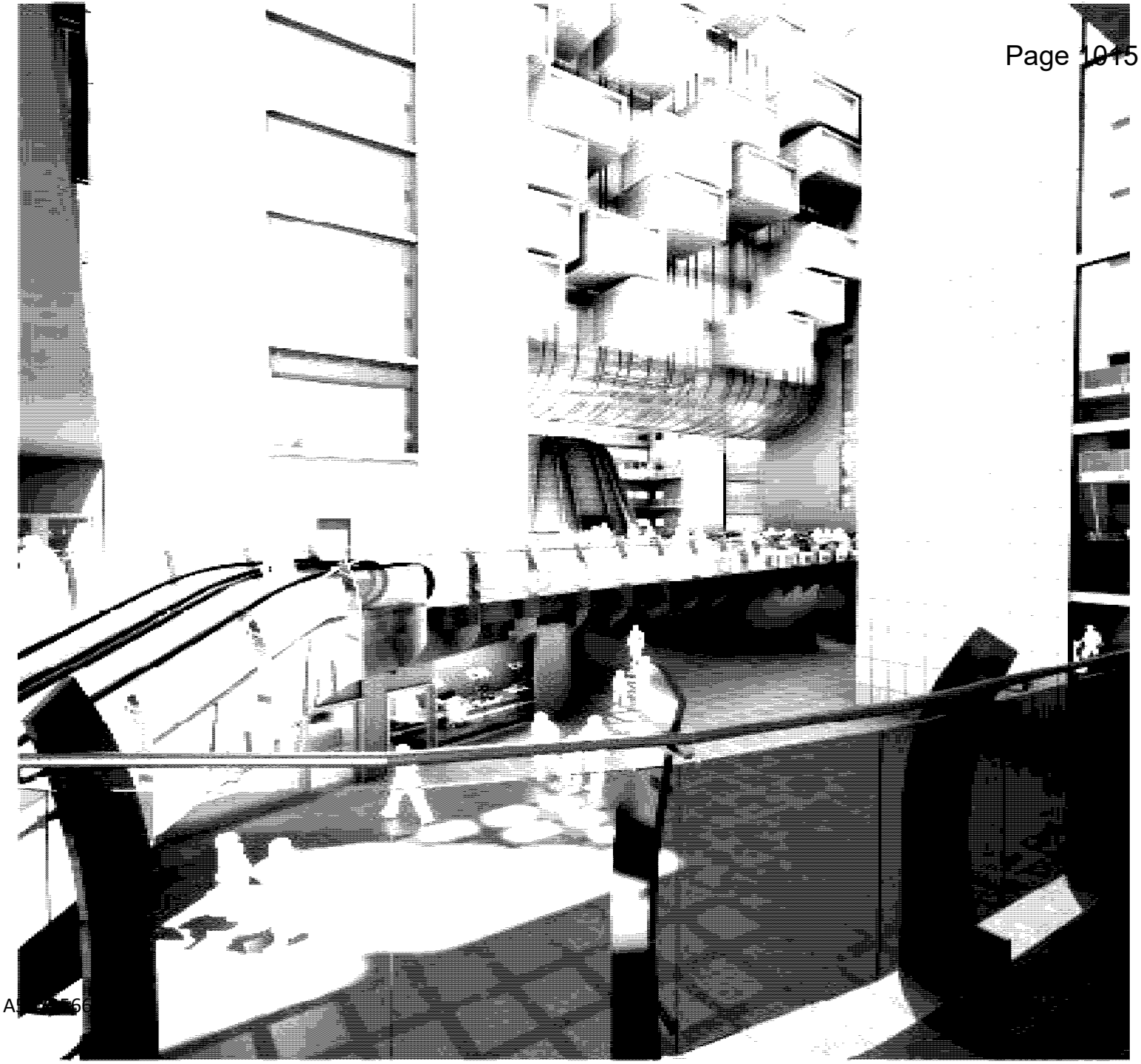

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New South Glasgow Hospitals - Fly Through

New South Glasgow Hospitals

Presentation to NSGHLP - Systems Redesign Group

13 November 2009

A52725667

NHS Greater Glasgow and Clyde

Brookfield Europe LP

Southern General Project Team

NHS Greater Glasgow and Clyde

Brookfield Project Team have extensive experience of delivering Hospital projects spanning 25 years

Project Director **Ross Ballingall**

Project Experience:

Peterborough Hospital PFI	£350m
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Medical training school	£100m

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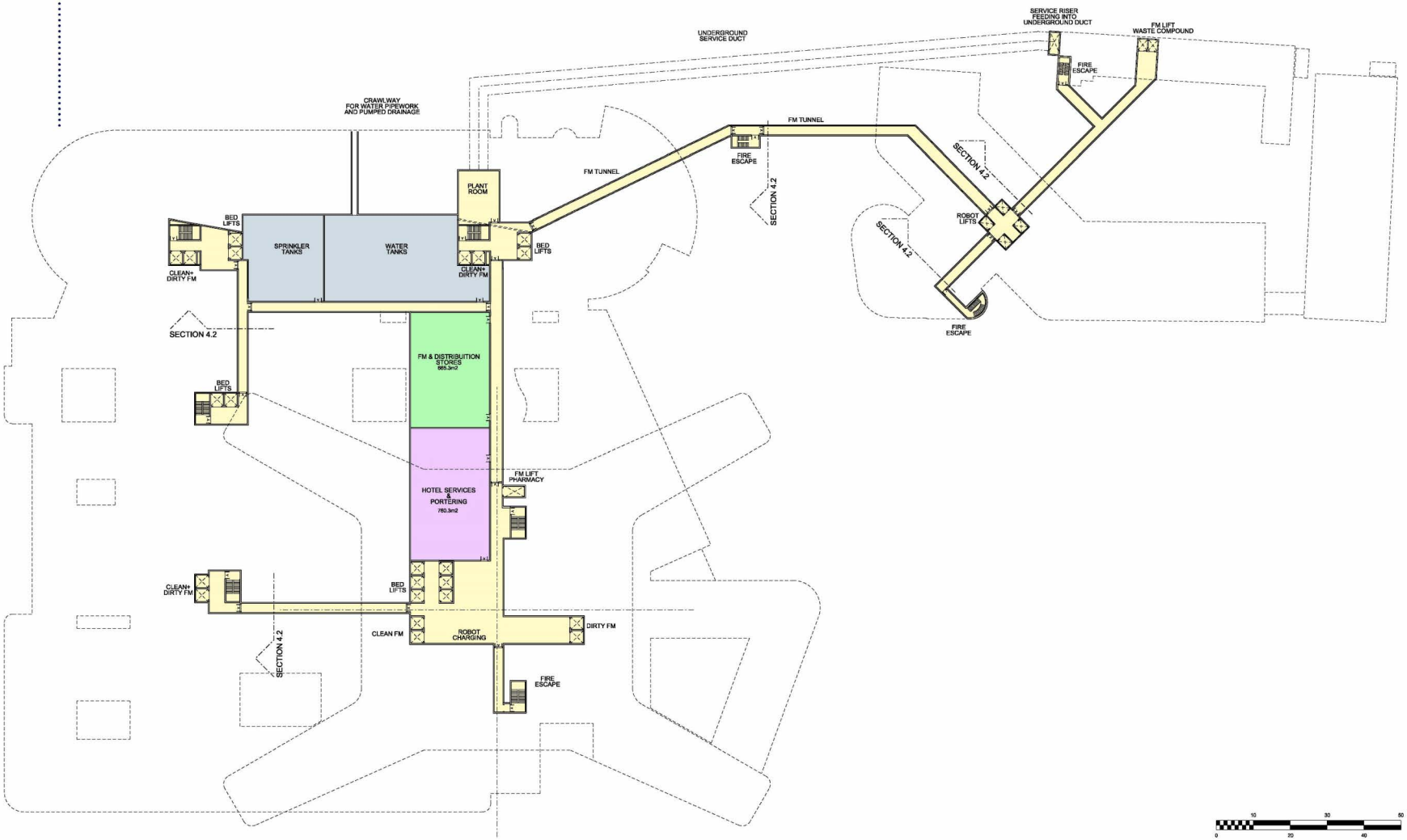
- P Parking
- Disabled Parking
- Car drop off
- Taxi rank
- Bus stop

1. Turf Mound
2. Bike Shelter
3. Canopy Walkway
4. Potential Park Cafe
5. Potential Community Garden
6. Potential 5-a-side Football Pitch
7. Play Area
8. Informal Sport / Play Area
9. Trim Trail/ Running Track
10. Formal Garden
11. Children's Discovery Area
12. Fast Link Stop
13. Arrival Square
14. Children's Park
15. Central Park
16. Ambulance & Emergency Entrance Area
17. Children's DCFP Roof Garden
18. Children's Roof Garden
19. Reed Beds

10 30 50 70 90
0 20 40 60 80 100



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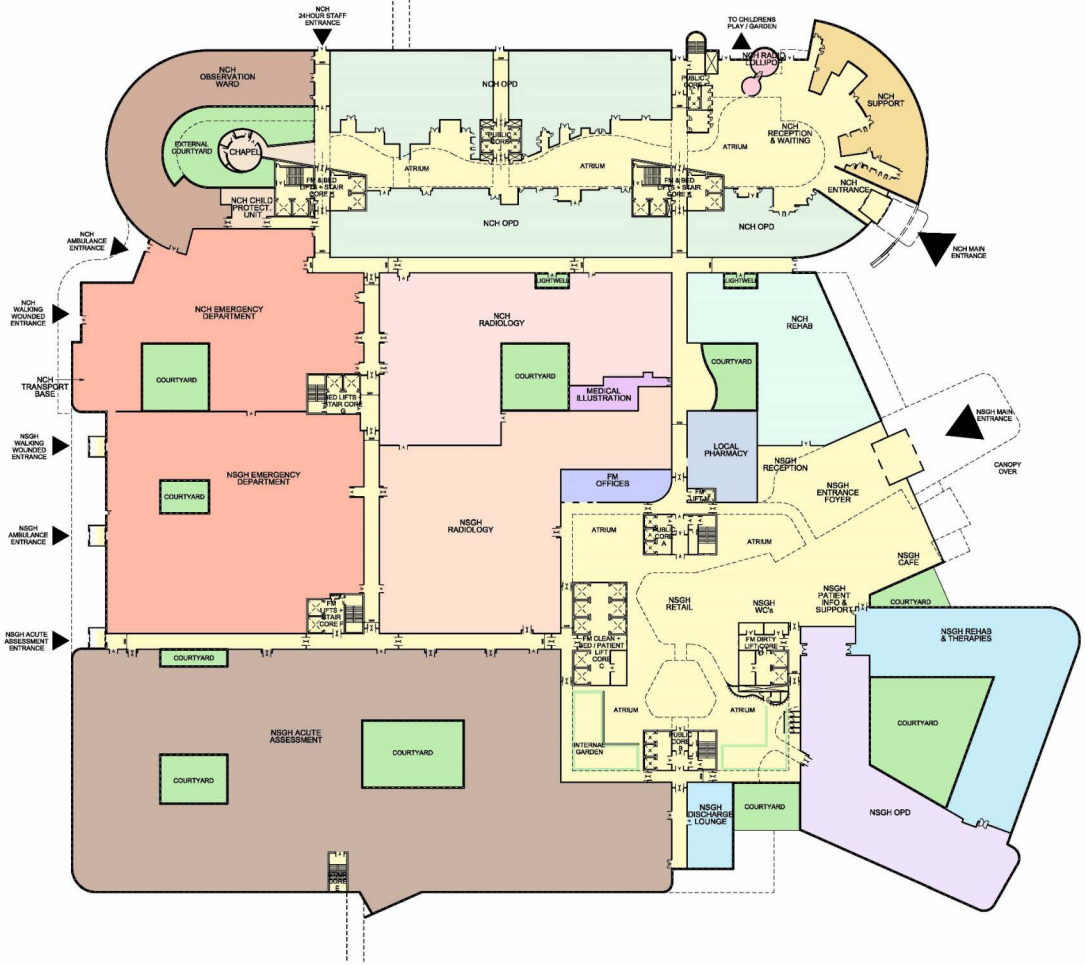
NHS Greater Glasgow and Clyde

Brookfield



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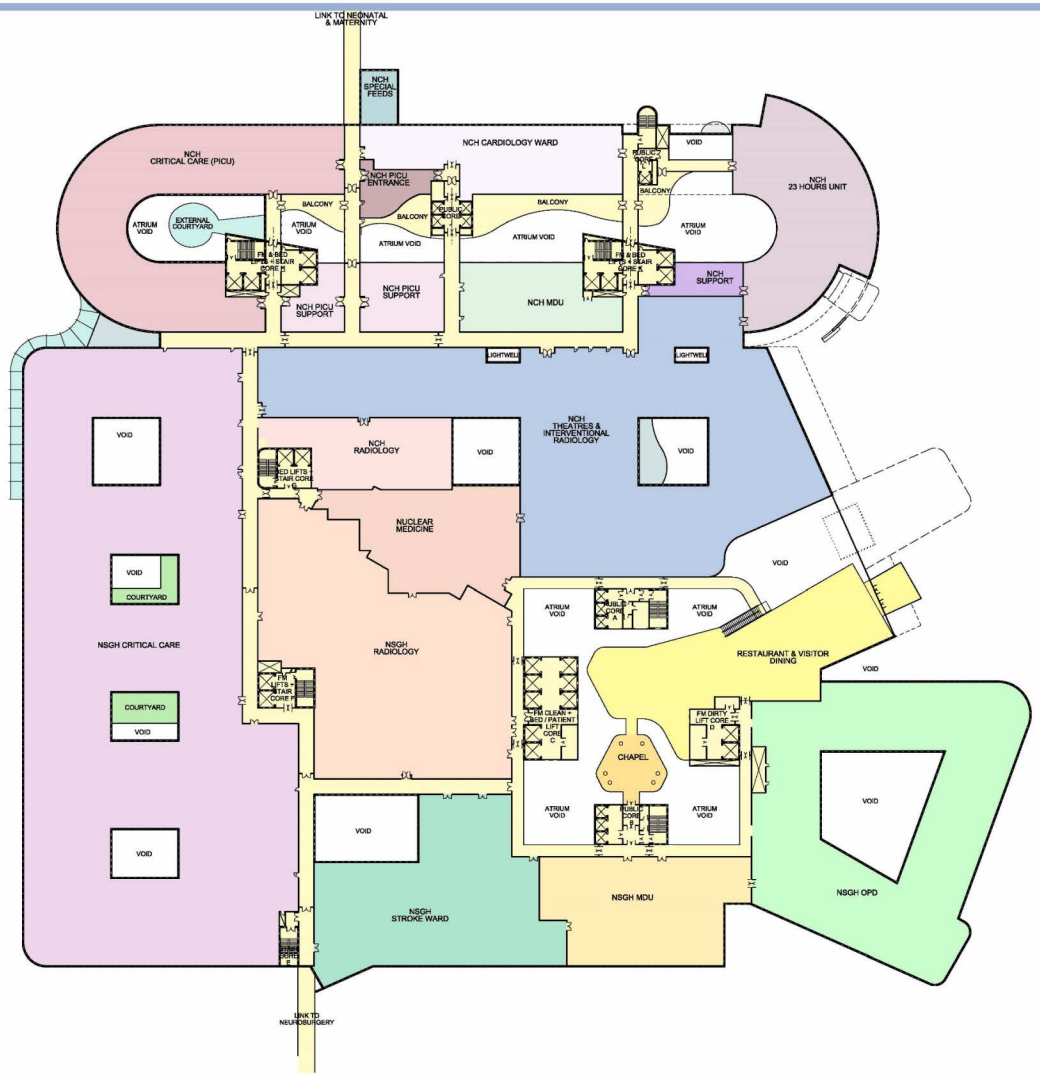

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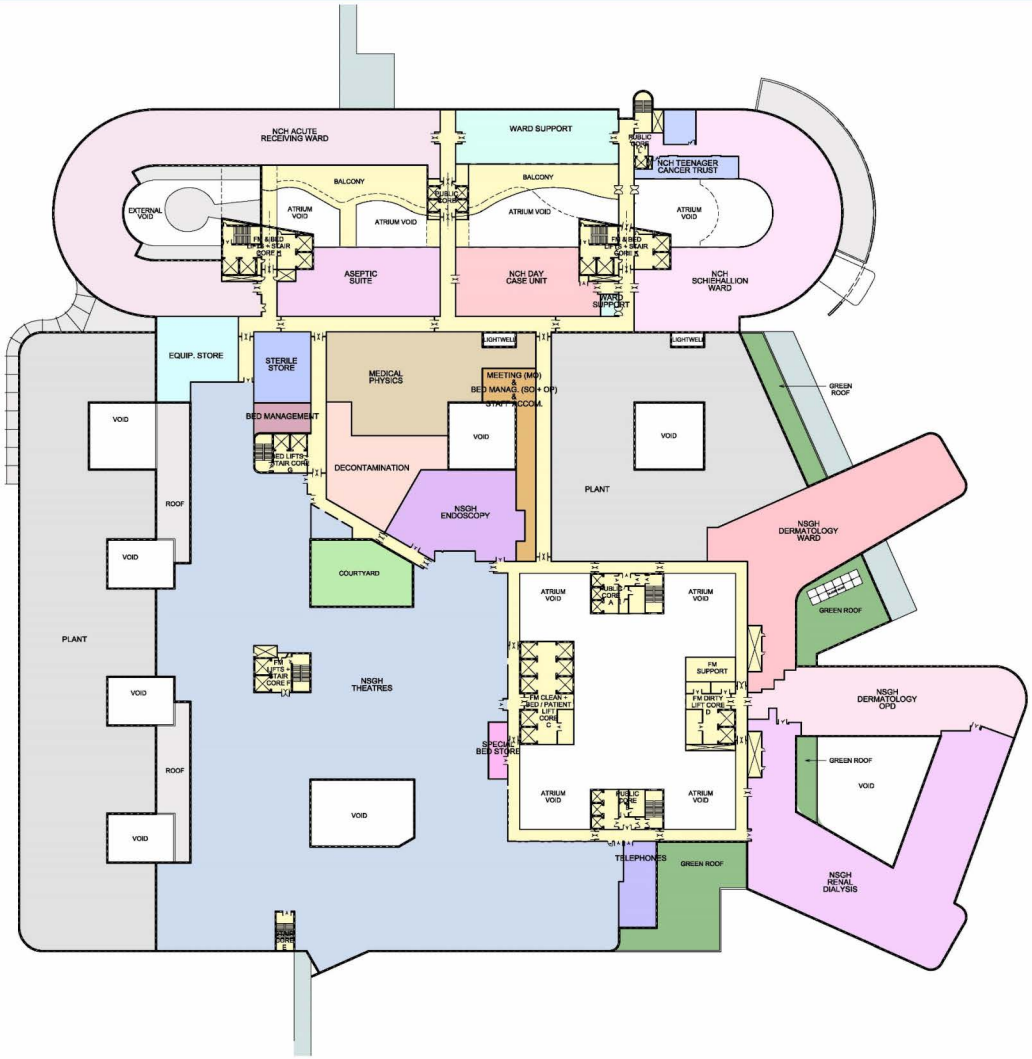
NCH ACUTE RECEIVING WARD
WARD SUPPORT
NCH TEENAGER CANCER TRUST
BALCONY
BALCONY
EXTERNAL VOID
ATRIUM VOID
ATRIUM VOID
ATRIUM VOID
ATRIUM VOID
ASEPTIC SUITE
NCH DAY CASE UNIT
NCH SCHIEHALLION WARD
WARD SUPPORT
EQUIP. STORE
STERILE STORE
MEDICAL PHYSICS
MEETING (MO) & BED MANAG. (SCN + OP) & STAFF ACCOM.
LIGHTWELL
LIGHTWELL
GREEN ROOF
VOID
BED MANAGEMENT
VOID
VOID
DECONTAMINATION
PLANT
ROOF
NSGH ENDOSCOPY
NSGH DERMATOLOGY WARD
VOID
COURTYARD
ATRIUM VOID
ATRIUM VOID
GREEN ROOF
PLANT
NSGH THEATRES
FM SUPPORT
NSGH DERMATOLOGY OPD
SPECIAL BED STORE
GREEN ROOF
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ROOF
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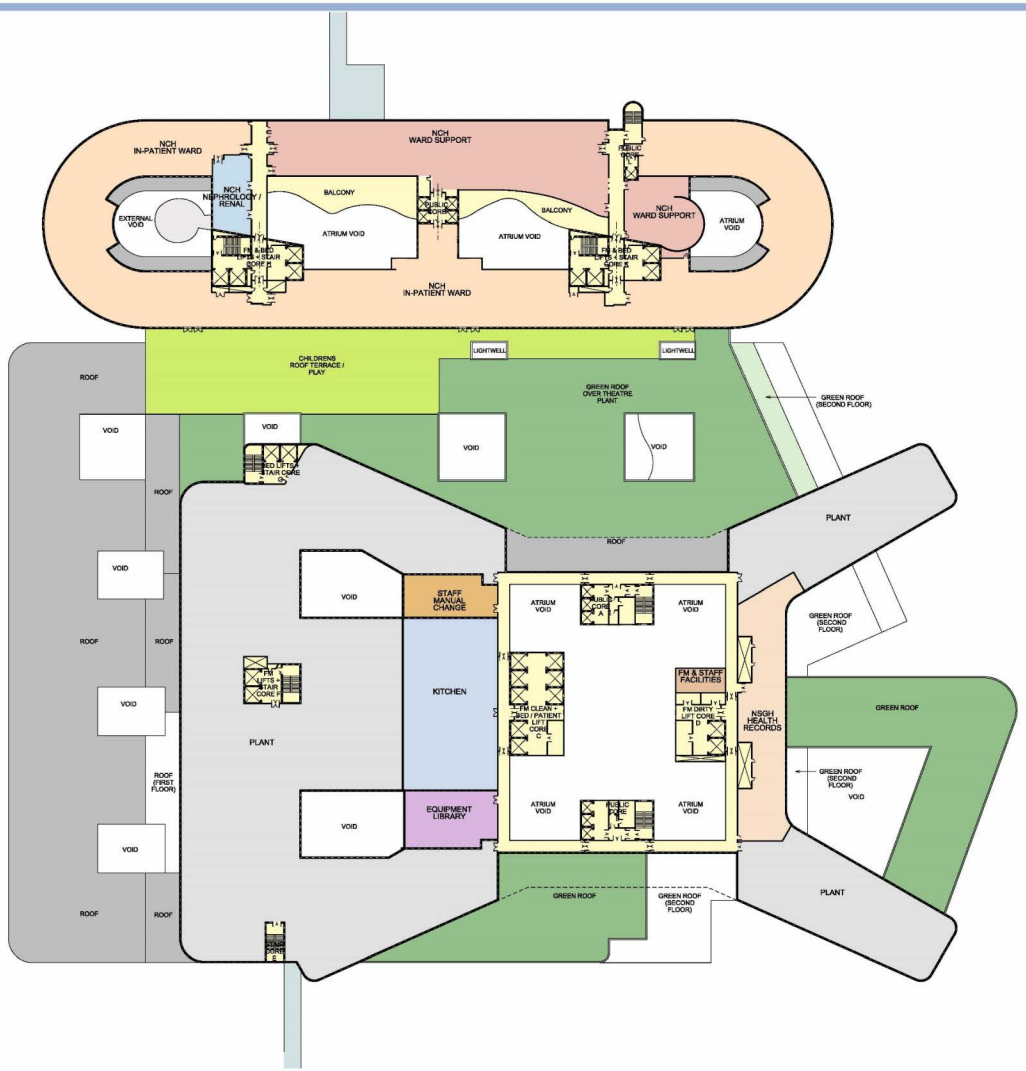
ATRIUM VOID
ATRIUM VOID
TELEPHONES
GREEN ROOF
NSGH RENAL DIALYSIS



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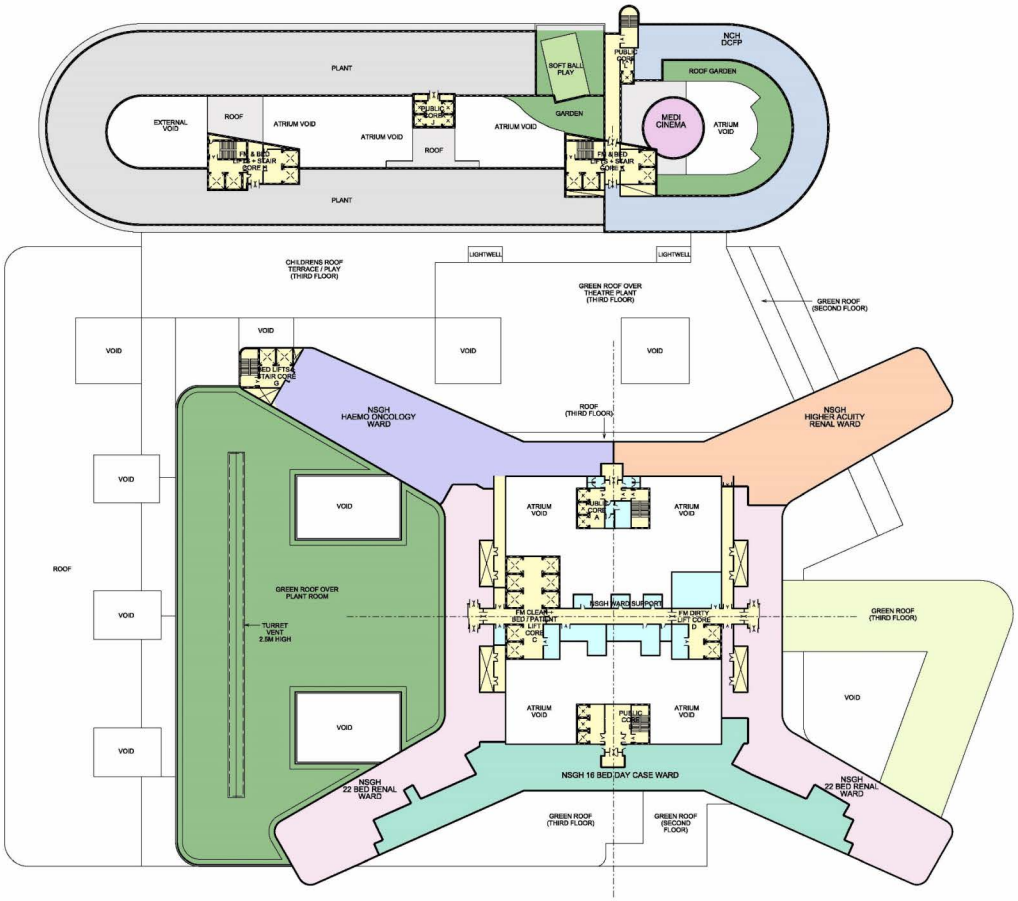

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FOURTH FLOOR PLAN - DEPARTMENTAL ADJACENCIES

New South Glasgow Hospitals (NSGH) Project ITPD

Date: 06.07.09
Scale @A1: 1:500
Drawing Number: NA-xx-04-PL-252-010
Revision: Tender

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New South Glasgow Hospitals - Fly Through

Timetable

3 November 2009	Evaluation outcome presented to NHS Board for consideration and approval and to Scottish Government
November 2009	Anticipated appointment of successful Bidder (contractor)
November 2010	Submission of Full Business Case
Jan 2010	Anticipated start of Labs construction
Jan 2011	Anticipated commencement of new hospital builds
Jan 2012	Anticipated completion of Labs build
Jan 2015	Anticipated completion of hospital builds, commissioning thereafter

Next Steps- Detailed Design

Meetings will be co-ordinated and attended by the Board's Project Team

1:200

- Detailed design departmental layouts – June 2009
- 2 or 3 iterations of drawings
- 2 weeks to respond to changes
- Role of Users critical – must represent their speciality and take decisions

1:50s

- Room layouts to be complete by September 2009

Customer Advice Line 0800 085 2005
www.carbontrust.co.uk/energy

RESTRICTED – COMMERCIAL

Progress Report on New Southern General Hospital Carbon Trust Support

Prepared for	Peter Moir and Hugh McDerment Major Projects / PPP Projects Manager NHS Greater Glasgow & Clyde Project Office NHS Projects Offices, Ground Floor, St. Andrews House, 80 Queen Elizabeth Avenue Hillington, Glasgow G52 4NQ	Prepared by	Susan Logan Ecoteric Ltd Churchill House Hagley Street Halesowen B63 3AX
Tel Email	Tel - [redacted] Email: peter.moir[redacted]	Tel Email	[redacted] mail@ecoteric.co.uk
Account manager	Renate Powell	Tel Email	[redacted] Mobile: Renate.Powell[redacted]

Product ID	**P-0134622**
Survey Reference	**PO24132**
Country	**Scotland**
Date	**15/3/10**
Report Status	**Final**

IMPORTANT NOTICE

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CARBON
TRUST

1. Progress report

Date of Meetings: 10/12/09, 23/11/09

Reference: PO24132

Consultant; Susan Logan Ecoteric Ltd Churchill House, Hagley Street, Halesowen B63 3BU

Client Details

Peter Moir assisted by Hugh McDerment
Major Projects / PPP Projects Manager
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Scope of work – as attached

Client Representatives (with position) who attended;
See attached minutes for meeting 10/12/09

Summary of Discussions / Action Plan
See attached minutes for proposed actions.

Progress Report

Since the completion of the previous order, the preferred bidder has been appointed. The bid was evaluated in detail as per the attached "main low carbon features bidder 1 only" and the "executive summary of scoring and risks NSGH sustainability and energy with costs rev C dated 21/10/09" produced. This latter document identified clearly that Bidder 1, who has been appointed offered the most advantageous tender in terms of low carbon design. The evaluation was extensive and complex as illustrated by the attached and included a detailed comparison of both demand and supply side energy. As there was no exemplar energy prediction, fair and comprehensive matrices were developed to enable comparison between the bidders. The summary matrices are included in the executive summary, but much more detailed sub matrices were used to derive these scores.

There were however some shortcomings in the submission primarily due to lack of detail and work has been ongoing to set up a method and systems of working, of reporting intervals, of auditing requirement and scheduled meetings.

One meeting has so far taken place and it is hoped in the near future to have a confirmed forward set of dates for monthly meetings. The form of the meeting will be as follows:

Meeting A:

This will take the form of a detailed meeting with the contractor's design managers, M&E manager, sustainability representative, client senior project manager and Carbon Trust representative.

The agenda in each case will be outstanding matters from the previous meeting starting with the issues from the meeting of 10/12/09, which reflected issues identified in the executive summary and tender, but primarily to discuss progress against the low carbon tracker.

This has been agreed as the project management tool for ensuring major aspects of low carbon design are captured, incorporated and audited through the process. Versions of this have been used with the client team and as a bid requirement, but it has now been extended from early design through to the operational phase of the building, a period spanning 8 years, and revised as a contract version. This is now attached and has been issued to the client project manager for approval and onward transmission to the contract team.

Each meeting will review the tracker through the current phase and it is intended that the documents produced will form a full audit trail of action. More importantly, it will drive the design to achieve the targets set for the scheme and ensure that opportunities for carbon reductions are not missed.

Meeting B:

To follow meeting A on the same day wherever possible will be a briefing to the overall project manager on the progress made and to highlight any areas of concern which require high level action.

Next Steps

1. Meeting dates to be confirmed and implemented
2. Low carbon tracker to be put into active use and documentation to be received as required
3. Ecoteric to be added to the project extranet and to receive notifications of all relevant issued documents.

Type of Report given to Client/AE : Documentation listed below

Documentation attached :

1. Scope of work
2. Contract Issue version 1 Low Carbon Design Tracker
3. "executive summary of scoring and risks NSGH sustainability and energy with costs rev C"
4. Minutes of meeting 10/12/09

Signed; . Name (please print); Susan Logan

On behalf of; Ecoteric Ltd date 12/3/10

Perceived Client Commitment to Energy Savings; Medium/high

Barriers to implementation

- Complexity of managing a project of this magnitude and balancing energy along with all other performance requirements
- Procurement method with design devolved to contractor

Further Assistance Required;

As identified above- ongoing presence at key sustainability group meetings and auditing role of emergent design and energy models

2. Minutes of Meeting

First Meeting Sustainability and Low Carbon Issues		
12.10.2009		WSP Birmingham
Attendees	David Bowless WSP sustainability adviser to Brookfield	
	Chris Lovejoy Brookfield Europe, Main Contractor	
	Gareth Sammons WSP	
	Rebecca Hyde WSP	
	Susan Logan Ecoteric	

Roles and communications		
Direct communications acceptable. Use circulation list which will be issued by BE which will include P.Moir & D.Hall.		
Agreed to use BREEAM evidence tracker, BREEAM action plan and low carbon tracker as project management tools		
BE to advise protocols for use of extranet and other document management issues subject to agreement with Board.		
Monthly sustainability meetings proposed in Glasgow encompassing labs and main scheme BREEAM and low carbon issues with attendance approved by Project Team.		
Action Items	**Person Responsible**	**Deadline**
Issue circulation list for BREEAM and low carbon issues	CL	
Issue document management rules and protocols	CL	
Formulate low carbon tracker picking up all ER/clarification and bid commitment items	RH/SL	

Carbon Trust Role/reporting		
SL confirmed that funding at least until March 2010 from Carbon Trust for her role in monitoring carbon issues had been secured.		
Reporting on progress and on actions taken would be required which may be made available up to Scottish Government through the Project Team.Agreed that key stage reporting which must be clear and transparent was required. Early stage reporting should include façade development, option appraisal for daylighting, thermal loads and where applicable natural ventilation, combined with WLC would be required early next year for the main scheme followed by the first main operational and design models early summer to allow time for adjustment before FBC. Other milestones and reporting stages to be developed.		
Action Items	**Person Responsible**	**Deadline**
Agree milestone dates and detailed content of each report stage	DB	Agree with Project Team

Laboratory Energy	
Discussion	
It was acknowledged that the energy prediction in the ER documents did not meet the overall target of 80kgCO2/m2/annum. An IES model has been prepared by Wallace Whittle but this had not been seen by any of the meeting attendees. Agreed that further discussion needed with WW to look at current model and investigate any carbon saving opportunities. SL to be invited to any such discussions. It was agreed that a detailed operational and design model would be developed at stage E	

Action Items	Person Responsible	Deadline
CL to liaise with WW to set up process.	CL	Agree with Project Team

Clarifications – scope of energy target	
Discussion	

It was agreed that the overriding target was and operational energy target of 80kgCO2/m2/annum. The other targets referenced in the ERs were less stringent and although checks would be undertaken, would be met provided that the overriding target was met The area on which the target was based at tender stage needed to be recorded as a baseline.It was acknowledged that the areas may change in detailed development but the target would remain unchanged

The scope of the target above is agreed to be the main hospital and children's hospital. BE have made a firm commitment to this target. BE commit to working with the novated team to achieve the same performance on the laboratory building. The fossil/electrical split may vary and would not be part of the contractual commitment.

Action Items	Person Responsible	Deadline
CL to confirm baseline area	CL	Agree with Project Team

Clarifications – openable windows

Discussion	

There remained some doubt on whether openable windows were part of the offer. BE clarified that the internal temperatures did not depend on the use of openable windows and that there was concern regarding condensation on chilled beams should windows be opened on hot humid days. SL pointed out that energy costs and climatic conditions could change dramatically over the life of the building and that having windows which could open, even if this facility is not used in the short term, would provide future risk reduction.

Action Items	Person Responsible	Deadline
CL to clarify what has been included in offer	CL	Agree with Project Team

Clarifications – discrepancy with range of energy costs in bid and the operational energy target

Discussion	

A range of energy costs of 15% had been stated in the tender returns. DB to clarify that the upper of the range stated was still within the overriding operational energy target

Action Items	Person Responsible	Deadline
DB to clarify and confirm	DB	11/12/09

Clarifications –future fuel flexibility

Discussion	

Should a clean source of biogas become available during the contract period, BE have committed to using it.

Action Items	Person Responsible	Deadline
information		

Clarifications – discrepancy with range of energy costs in bid and the operational energy target

Discussion	

Action Items	Person Responsible	Deadline

Clarifications – Active energy management	
Discussion	
A clarification was issues during competitive dialogue stage requiring a joint process of energy monitoring, reporting, diagnosis and remedial action. Responsibilities and processes were defined in this clarification, and required the involvement of a suitable experienced energy manager to work alongside the Board energy manager during the DLP. Whilst BE had included the fine tuning of the systems, the role as described in the clarification does not appear to have been included. SL stated that this role is crucial to establishing good active energy management in the first years of operation. BE to review clarification urgently and respond.	

Action Items	Person Responsible	Deadline
CL to clarify and confirm	CL	11/12/09

Clarifications –whole site energy study	
Discussion	
A study was required to determine the most carbon efficient manner of supplying the existing retained estate. BE confirmed that this had not been included in the bid. SL to refer to board	

Action Items	Person Responsible	Deadline
SL to refer to board	SL	11/12/09

Clarifications –individual room controls	
Discussion	
The provision of individual adjustable room controls is unclear	

Action Items	Person Responsible	Deadline
DB to clarify and confirm	DB	11/12/09

3. Executive Summary Bid Evaluation

Executive Summary re: Southern General Hospital Bidder bid evaluation stage 8/10/09
Scores

The scores submitted to the main contract score sheet were as follows

	Bidder 1	Bidder 2	Bidder 3
Sustainability statement	6	5	5
BREEAM	6	6	6
Energy and approach to renewables	6	4	5

Methodology

1. Three bids were evaluated primarily section 3.20, 3.21 and 8.2.
2. Where possible, such as the BREEAM, the comparison was made between the exemplar score and the bidders submission.
3. This was not possible for the energy score as no exemplar energy model had been developed and a full renewables feasibility study had not been undertaken. The score was therefore based on comparison with the employer's requirements.
4. The scoring was developed in response to the bid information as information was generally not submitted in the format requested (the low carbon tracker) or to the level of detail requested. The scoring therefore endeavoured to normalise the bids as far as possible to enable a comparison against the employer's requirements to be made. This meant that the scoring matrix issued with the ER's was not used.
5. Due to the complexity and ambiguity of the bid submissions, detailed matrices were developed to assess each as fairly as possible and provide a cross check on whether the figures submitted were reasonable and supported by other parts of the documents. These matrices are not intended to provide usable estimates of future energy consumption or cost, and are not intended to be published to the bidders.
6. The energy scoring considered the two issues of building demand and carbon impact of the energy supply. These were equally weighted. Within these headlines, other topics were considered such as heating demand. These were roughly weighted according to the carbon impact. Qualifications and unsupported figures were also taken into account.
7. The BREEAM scoring considered the overall score and any qualifications made.
8. The sustainability statement score looked at the overall approach to sustainability across a broad range of issues including BREEAM and energy, but also at the construction process and social and economic issues. Scoring was based on a broad understanding of the issues and commitments made.
9. There were three scores out of 10 available for each of the headings listed above 4-6, each weighted at 25 which were fed into the main tender scoring.

10. The sub heading scores and main scores were discussed and agreed at the scoring meeting on 6/10/09. Subheading energy scores were further evaluated and agreed at breakout meetings with Hugh McDerment of NHS GGC and John Bushfield of Wallace Whittle

Comments on bids

1. Sustainability statement
   This was essentially a qualitative judgement. Bidder 1 had addressed the topic comprehensively and gone beyond employer's requirements in a number of instances, bidder 2 had excelled in some areas such as waste and recycling, but provided a minimal response in others, bidder 3 did not excel in any area or go beyond employer's requirements and some areas were not well addressed.
2. BREEAM
   All bidders asserted with not too much qualification that their design would achieve BREEAM excellent. There were minor variances from the exemplar, and not all the credits requested to be achieved were achieved, however there was little variance between the bids and all bids were scored equally
3. Energy and approach to renewables
   All bids require clarification and present risks as identified in the following matrix.

   All bids asserted that they would better the NHS mandatory targets, achieve SPP6/PAN84 compliance with respect to renewables and heat recovery, meet the mandatory credits for BREEAM and achieve Building Regulation Compliance.

   The figures submitted in support were in many cases inconsistent, very approximate and were qualified, particularly bidders 2 and 3.

   Bidder 2 had a particularly high estimated building energy demand. Bidder 2's figures had also used a gross floor area which when corrected increased the declared figure for CO_2/m^2 The offset from renewables was low and the bid did not include the requested 5% visible renewables. As a result the energy costs given in appendix 1 are high. The score reflects these issues.

   Only bidder 1 appeared to be able to meet the operational energy target, although again some risks and uncertainties were identified as listed in the following table.

   Although bidder 3 had included a range of significant renewable energy sources, the building demand was moderately high. This bid had included a biofuel or biogas solution which did not appear to be supported by the costed bid and which used a zero carbon figure to calculate the input to one of the CHPs. As a zero carbon fuel source has not been definitively established, this was felt to be unreasonable for inclusion in the operational target figures and this was removed for comparison purposes. This matter, the extent of qualification and the higher building energy demand figures contributed to the score given.

   On this basis, the approximate figures would be
   Bidder 1 $80kgCO_2/annum/m^2$
   Bidder 2 $95kgCO_2/annum/m^2$
   Bidder 3 $106kgCO_2/annum/m^2$

   The potential variance in carbon emissions between the three bids (based on a treated area of approximately 136,000m2) would therefore be:

Bidder 1 10,880 tonnesCO_2/annum
Bidder 2 12,920 tonnesCO_2/annum
Bidder 3 14,416 tonnesCO_2/annum

Over a 25 year life to a major refit, this would equate to
Bidder 1 272000 tonnesCO_2
Bidder 2 323,000 tonnesCO_2
Bidder 3 360,400tonnesCO_2

These figures do not include the laboratories, and the carbon figures for these and retained estate would be significantly higher. Increased carbon also directly relates to energy costs

Should bidder 3 be able to demonstrate that the bid includes all plant and infrastructure for biofuel/biogas AND a biofuel/biogas source that will be available when the hospital is nearing completion, then it would be reasonable to revise the above figures to parity with bidder 1. Any such fuel source should however be viable economically, available in the long term and from a truly sustainable source such as indigenous crops, waste, industrial by-product etc Some imported liquid biofuels rely on crops such as palm oil which are associated with Rain Forest depletion.
The scoring recognised however the approximation and uncertainty in the bids and did not over penalise any bidder for failure to meet the operational energy targets, leading to a small range in the scoring.

Risk and clarification identification

Item No.	Topic	Issue	Bidder 1	Bidder 2	Bidder 3
1.	Defects and contract provision	No Contract provision for excess energy use. Clarification attempted to address this but bidders have not acknowledged or expressly accepted it. Will need commercial and legal reinforcement in any case.	Develop robust remedy for excess energy use and ensure bidder signs up to it	Develop robust remedy for excess energy use and ensure bidder signs up to it	Develop robust remedy for excess energy use and ensure bidder signs up to it
2.	Operational energy target - basis	The bids received were estimates of operational energy only. There needs to be a clear process – as contained in the ER's - for continual refinement and reporting of estimated consumption and a clear contractual provision that designs cannot proceed to the next stage without sufficiently accurate energy predictions that demonstrate that the operational energy targeted is being met.	Applies to this bidder	Applies to this bidder	Applies to this bidder
3.	Operational energy target- areas	Declared figures and areas	used reasonable area, but would need to clarify exact area as a benchmark for ongoing calculation	Used gross area, seriously compromising headline figure stated. Actual carbon figure believed to be significantly higher when compared to treated area.	used reasonable area, but would need to clarify exact area as a benchmark for ongoing calculation
4.	Operational energy target- content	What figures for carbon were used and what was assumed. All bidders need to state clearly in Mwh per annum and CO2 for fossil and electrical energy, the building demand, gross energy	Some inconsistencies but generally supported figures, Would need to get bidder to sign up to target with no ambiguity.	Bidder used figures for renewables offset which were not supported by the detail breakdown. Many	Bidder used zero carbon fuel input to a proportion of the CHP consumption on the basis that either biogas or bio fuel would be available. This was not substantiated in the

Item No.	Topic	Issue	Bidder 1	Bidder 2	Bidder 3
		supply and carbon offset by renewables contained in a simple summary as a firm commitment of what their costed proposal will achieve.		inconsistencies identified. All figures would need to be resolved before any contract entered into and unlikely to be able to meet carbon target on current design.	bid and it was unclear whether a biofuel or biogas CHP had been included in the costs, along with the associated fuel storage and infrastructure. It is also debatable whether a sustainable and uncompromised liquid or gas biofuel supply would be available. On this basis the carbon supply figures for this bid are seriously compromised and no contract should be entered into until this bidder confirms that they can meet the target without reliance on uncertain fuel supplies and has included all necessary plant and equipment to do so. Unlikely to be able to meet carbon target given current proposals
5.	Operational and design energy target	Bidder was requested to propose a normalisation method that is equitable, and applies to both increases and decreases in occupancy, hours of operation, changes of use, weather etc.	Did not address. Method was given to bidders in a clarification to ERs' -bidder would need to sign up to this before contract entered into	Heavily qualified and passes risk significantly back to Board. Need to withdraw and propose more equitable arrangement involving active energy management and engagement with maintenance staff in first three years and beyond if consumption fails to meet	Heavily qualified and passes risk significantly back to Board. Need to withdraw and propose more equitable arrangement involving active energy management and engagement with maintenance staff in first three years and beyond if consumption fails to meet targets

Item No.	Topic	Issue	Bidder 1	Bidder 2	Bidder 3
				targets	
6.	Operational and design energy target	Bidder to state and quantify impact of climate change within structural life of building. State why data used is believed competent.	Not quantified – bidder would need to address	Not quantified – bidder would need to address	Not quantified – bidder would need to address
7.	Operational energy target, energy costs	Ranges of values declared in some bids	Range of 15% given on energy cost. Need to clarify how this relates to operational energy target	Not applicable	Range of figures given for NHS target. Need clarity on actual figures to be used for contract targets.
8.	Laboratories	Board gave energy estimate which was significantly higher than target set in ERs. Operational energy target scope in ERs included labs, but was excluded by bidders.	Lack of clarity here and complicated by variant bid. Need to establish what this bidder will sign up to when the built form and content of the labs is established.	Bid stated target excludes labs – possibly accept this and set separate target for labs	Bid stated target excludes labs- possibly accept this and set separate target for labs
9.	Future proofing for alternative fuels	Lack of clarity on provision for future biogas, biomass and/or bio fuel provision. Each bidder needs to provide a comprehensive solution which assures board that there is future fuel flexibility without compromise on plant access space, delivery space, structural strength, impact on adjacent buildings and maintenance access	Bidder needs to clarify	Bidder needs to clarify	Bidder needs to clarify
10	Energy sub-metering – management of data	Clarity on provision of a fully integrated easy to manage system which manages and reports consumption such that remedial action can readily be taken for excess consumption and which does not require complex user interface.	Appears to have included a suitable system.	Very unclear – needs clarification before contract entered into	Unclear - needs clarification before contract entered into
11	High efficacy internal	Controls arrangements – confirm that all	needs clarification before contract	needs clarification before	needs clarification before contract entered into

Item No.	Topic	Issue	Bidder 1	Bidder 2	Bidder 3
	lighting	settings, control arrangements, and software will be fully documented before handover, to a level that another experienced contractor will be able to immediately make control changes, clarify extent of automatic controls	entered into	contract entered into	
12	Thermal insulation and air permeability	Unclear on values committed to.	Air permeability confirmed as meeting ERs. Wall, roof and glazing U values confirmed in technical clarification 5 Needs final confirmation before contract entered into and must be maintained through rounds of value engineering – contract fundamental	needs clarification before contract entered into and must be maintained through rounds of value engineering – contract fundamental	needs clarification before contract entered into and must be maintained through rounds of value engineering – contract fundamental – bidder suggested savings may be made here is more renewables included – this is poor in terms of overall carbon strategy and should be resisted.
13	Renewables	Clarify exactly what has been included	Clarify output of proposed wind turbines	Clarify size and output of absorption cooling	Clarify size and output of absorption cooling, clarify how many CHPs included in the cost plan and what the fuel supply arrangements are (see above)
14	Active energy management	Need firm commitment in terms of hours on site, deliverables and expertise	Applies to this bidder	Hours given , but expertise and deliverables not stated	Applies to this bidder
15	Natural ventilation	What areas if any have openable windows or vents	Not clear – bidder must clarify in detail where provision has been made	Sealed building stated	Relies on natural ventilation to meet energy targets – bidder to clarify how wind effects on upper floors will be dealt with
16	Energy saving measures	Need firm commitment to various lists of “suggested” “appropriate” “considered” energy	System by system, zone by zone list needed stating heat recovery, motor type and	System by system, zone by zone list needed stating heat recovery, motor	System by system, zone by zone list needed stating heat recovery, motor type and controls method

Item No.	Topic	Issue	Bidder 1	Bidder 2	Bidder 3
		savings measures such as High efficiency motors and chillers, type of heat recovery applied to each system, heat recovery efficiencies, room controls, zoning	controls method as a firm commitment	type and controls method as a firm commitment	as a firm commitment
17	Whole site energy supply	It is not clear what part of the retained estate can or will be served from the plant, and what the economic viability of doing so will be. This should have been established pre bid, but at this stage, the bidders need to commit to a full whole site feasibility study which looks at the economics and carbon impact of serving retained estate from CHP thermally, electrically or decentralising.	Ask bidder to commit to full study	Ask bidder to commit to full study	Ask bidder to commit to full study
18	Individual room control	Not completely clear how controllable each room is – BREEAM credit claimed by 2 bidders	Has not committed to individual occupant control – need to determine operational implications	Has committed but unclear whether this covers air and heating control	Has committed – need to ensure this covers air and water systems

Appendix 1 estimated energy costs

The bids were evaluated in terms of energy costs using the consumption figures given in the bids, the CHP outputs and the energy costs given by the Employer's requirements. These were then compared with the declared utilities figures in volume 12.8.

A number of assumptions were made on plant efficiencies and losses which will account for the variance between the estimate and the declared figures, but the table below illustrates that the bidders declared figures are in proportion to the consumption. The **higher** of the two grand totals should be used for any high level reporting.

Note that bidder 3 has used gas equivalent costs for biofuel although no substantiation has been given for this. At present crop derived biodiesel is significantly more expensive than conventional diesel. Projected biofuel costs are given in the table following. Long term costs of biodiesel are uncertain and could be higher than conventional fuels for some time.

Estimated energy costs	Bidder 1	Bidder 2	Bidder 3
electrical grid supplied after CHP and absorption taken off	5,447,000	24,200,861	7,465,920
cost	544,700	2,420,086	746,592
gas supply input to CHP	60,810,816	31,078,795	42,494,213
remaining thermal input needed from boilers	3,895,615	42,627,181	24,689,000
distribution losses	4,285,177	46,889,899	27,157,900
gas input from boilers	4,982,763	54,523,138	31,578,953
total gas input	65,793,579	85,601,933	74,073,166
cost	2,302,775	2,996,068	2,592,561
total cost	**2,847,475**	**5,416,154**	**3,339,153**
plus labs cost	1,376,452	1,376,452	1,376,452
ESTIMATED GRAND TOTAL	**4,223,927**	**6,792,606**	**4,715,605**
bidders declared values			
children's			1,058,339
main hospital			3,152,127
sub total	2,640,000	6,411,680	4,210,467
labs (as per board estimate)	1,376,452	1,376,452	1,376,452
	4,016,452	7,788,132	5,586,919
add 15% tolerance as quoted in bid	4,618,919		
GRAND TOTAL DECLARED	**4,618,919**	**7,788,132**	**5,586,919**

Table 3.3: Estimated product costs for 2020 in pence/litre – source http://www.dft.gov.uk/pgr/roads/environment/research/cqvcf/internationalresourcecostsof3833?page=6

Option & Fuel type	Feedstock	Product Cost p/litre			
		US	EU15	Eastern Europe	South America
1. Biodiesel	Oil seeds	32.91	40.78	34.57	-
2. Biodiesel	Oil seeds - UK production	32.91	40.78	34.57	-
3. Bioethanol	Wood - Acid hydrolysis	21.23	22.50	20.70	-
4. Bioethanol	Straw - Acid hydrolysis	39.14	39.93	28.42	-
5. Bioethanol	Wheat	26.87	28.22	21.01	-
6. Bioethanol	Corn	14.19	14.90	11.10	-
7. Bioethanol	Sugar cane	13.62	-	-	11.03
8. Bioethanol	Sugar cane - UK production	53.99	-	-	43.71
9. Bioethanol	Sugar beet	32.73	33.71	27.40	-
10. Biodiesel	Wood - FT processing	18.68	19.05	14.19	-
11. Biodiesel	Straw - FT processing	18.68	19.05	14.19	-
12. Bioethanol	Wood - Enzymic hydrolysis	18.47	19.39	14.44	-
13. Bioethanol	Straw - Enzymic hydrolysis	18.47	19.39	14.44	-

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4. Low Carbon tracker – first contract issue

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List of Revisions – FIRST CONTRACT ISSUE 25/2/10					
SECTION 1 EARLY DESIGN ISSUES					
ISSUE/ REFERENCE		ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
TARGETS					
Operational energy target	Set target	ALL	The operational target for this development is 80 Kg/CO_2/m^2/annum. The working design target is 40 (asset rating, E&W EPC version compatible with BREEAM excellent)	Completed	COMPLETE AND IN CONTRACT
	Scope of target	ALL	Scope is new development (hospital and laboratories and includes all distribution from and plant within the energy centre	Completed	COMPLETE AND IN CONTRACT
	Hours of operation/occupancy/ factors affecting operational energy use.	C&B, NHS GGC	Decide on how operational hours and occupancy will be recorded and conveyed to designer/contractor. Decide if there will BCL any other stated parameters affecting the operational energy target.	Completed	Hours are as per Clinical Output Specifications. Other parameters are defined in appendix A of this document
	Confirm method of calculation at design stage	BCL	Confirm method based on employer's requirements	completed	Detailed calculations for elemental energy consumption have used an Excel spreadsheet supported by IES Thermal modelling

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List of Revisions – FIRST CONTRACT ISSUE 25/2/10					
SECTION 1 EARLY DESIGN ISSUES					
ISSUE/ REFERENCE		ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
					exercises
	Confirm how the target will BCL monitored through the design stage	Ecoteric to monitor	Confirm method based on employer's requirements. Bidder to state and quantify impact of climate change within structural life of building. State why data used is believed competent	Preferred bidder stage	The energy modelling tool will be a live document and regularly updated as the detailed design and specifications advance in order to continually track the target as the design brief/design develops. The plant will include margins (25% on AHUs as requested by Board's ITPD which will incorporate an allowance for Climate Change. The energy model is based on these allowances.
	Confirm how	BCL	Confirm method based on employer's	Preferred Bidder	As part of the building

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List of Revisions – FIRST CONTRACT ISSUE 25/2/10					
SECTION 1 EARLY DESIGN ISSUES					
ISSUE/ REFERENCE		ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
	target will BCL monitored in operational phase		requirements. - Bidder shall propose a normalisation method that is equitable, and applies to both increases and decreases in occupancy, hours of operation, changes of use, and heat gain / reduction due to installation / removal of fixed and mobile energy consuming equipment.	Stage	user guide, a document will be prepared by ZBP for use by the Hospital FM team, that uses a system of KPI's. The monitoring will also include an electrical energy management metering system to provide actual consumption information. The Zutec asset management system will locate all information and interface with EMMS Detail required in later sections of this tracker
	Set Contractual remedy for	NHS GGC	Confirm method based on employer's requirements	Preferred Bidder Stage	See appendix A of this tracker.

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	failure to meet target				
	Involve operational energy manager	NHS GGC	Consult and involve operational energy manager in process	Preferred Bidder Stage	Invite to meetings periodically – Ian Powrie, Trust Energy manager and/or site energy manager
	Overall audit procedure	BCL	Confirm that all information to determine adherence to targets and to evaluate design and design processes will be made available to client's representative as requested and in sufficiently comprehensive and transparent format to evaluate. Scope as defined in ERs. Confirm key sustainability and energy information , cost benefit can be made available publically to inform future development	Preferred Bidder Stage	BCL will use a transparent audit process.- need to set key audit dates
OPTION APPRAISALS AND APPOINTMENTS					
Energy model		ZBP	Provide sketch scheme energy models based on options considered illustrating how design targets have been calculated and confirming	Completed	Refer to Energy Strategy Report Volume 3.0/3.20

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			methodology for calculation through to building operation		
			Provide sketch scheme energy models based on options considered illustrating how operational targets have been calculated and confirming methodology for calculation through to building operation	Completed	Refer to Energy Strategy Report Volume 3.0/3.20
	Internal appointment	NHS GGC	Appoint internal manager and /or external auditor to oversee low carbon and sustainability process. Allocate staff resource to managing process and keeping tracker.	Prior to issue of output spec	Hugh McDerment appointed
Specific studies		C&B	Sustainable cooling – ground investigation	Prior to issue of output spec	complete
		BCL	Sustainable cooling – feasibility. Needs to follow on from ground investigation and results implemented in output specification	complete	Ground cooling does not provide sufficient carbon savings against the large capital investment and operational cost. Refer to Energy Strategy Report Volume

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					3.0/3.20 for further detail
		BCL	Renewables/LZC – establish which renewable energy sources are viable and include firm requirements in proposals (see also whole site energy strategy)	Early design proposals – April/May 2010	The contractors proposals include 2MWe CHP coupled with absorption cooling and 12 vertical axis wind turbines with a rated output of (please confirm) the emergent design to be monitored to ensure contractors proposals are implemented
Programme and resources		BCL	Include time in master programme for site studies and investigation.	Early design proposals – April/May 2010	Not yet issued
Site selection	Noise		Undertake Site specific noise assessment of potentially noisy or noise sensitive sites to establish if site choice will lead to sealed building, additional acoustic treatment. Factor into cost plan or choose alternative site.	Prior to issue of output spec	Noise assessment report complete
	Pollution		Undertake assessment of likely pollution	Early design	See minutes of

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			sources to establish if site choice will lead to sealed building or air treatment. Need to avoid permanently sealed building	proposals – April/May 2010	10/12/09. No confirmation as yet as to whether building is sealed or not although confirmation has been given that the building is not reliant on natural ventilation.
	Footprint		Evaluate fit to determine if building will BCL driven deep plan through restricted footprint. If so, choose alternative site, increase levels or reduce accommodation.	Audits prior to issue of output spec	Site options report complete
	Daylighting potential		Evaluate proximities to building to determine if building will be heavily over shaded. If so choose, alternative site or orientate building such that only areas not requiring daylight are overshaded.	Audits prior to issue of output spec	Site options report and daylight model
Site wide energy strategy	Strategy present	NHSGGC	Whole site energy strategy – need to have master plan for energy use on retained as well as new development and optimise plant selection in new energy centre.	Early design stage – April- May 2010	Commission study from energy specialist and incorporate requirements into output specification. Determine what the

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					basis of the energy centre sizing was and if it is still correct. Establish a clear trail of calculations and modelling to highlight basis.
		NHSGGC	Establish if site wide energy supply is appropriate to building. If it is, establish most efficient distribution and conversion option.	Early design stage – April- May 2010	As above
	Grants	BCL/NHSGGC	Evaluate grant options and research availability and requirements	Early design stage – to follow issue of initial design proposals and detailed renewables feasibility study	Grant options to be included in energy feasibility study
	Bio gas/ alternative fuels	NHSGGC	Continue feasibility investigation on use of biogas and negotiations with Sustainable Glasgow	Early design stage – April- May 2010	Decide if there is likely to be any impact on the energy centre and include provision for future if necessary.
	Site	C&B	Undertake site investigation with	complete	Site investigation report

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	investigation		respect to bore holes, ground linking, wind turbines, other renewable and low carbon heating and cooling sources. See above re ground investigation		feeding into energy study and whole life cost and carbon model
User operational requirements	User education	NHSGGC	Brief users in low energy principles to ensure ADB sheets do not conflict with Low carbon principles	Prior to preparation of ADB sheets	Training session for major projects
	Guidance	NHSGGC	Manage expectations in terms of air conditioning – set principles and issue guidance. Embed in operational policies as relevant.	Prior to preparation of ADB sheets	Guidance notes and exemplar ADB's issued – ensure these are owned by design team and principles embedded.
	Audit user briefs	NHSGGC	Sustainability auditor to evaluate user briefs for compatibility with overarching technical brief	Prior to issue of user briefs	Audit report and modified brief
SKETCH SCHEME – ADULT AND CHILDRENS HOSPITAL					
Internal planning	Layout	BCL	Internal planning to address generic ADB sheet requirements for access to natural ventilation and daylight	Early design proposals – April/May 2010	1:200s , 1:100s to be made available to Ecoteric for comment. Ecoteric to be added to Extranet and receive notifications of drawing issue.

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	Courtyards and atria	BCL	Carry out study to ensure any courtyards or atria proposed provide adequate views out, daylight, natural ventilation opportunities and do not compromise acoustics requirements. If not, redesign.	Early design proposals – April/May 2010	Design of all courtyards, allows the use of natural ventilation without compromise of noise criteria set out in HTM 08-01, this is due to barrier effects provided to courtyards, from surrounding building elements – discussion found in Acoustic Report
	Proximity to pollutants	BCL	Internal planning to avoid siting openable window and air intakes near polluting sources	Early design proposals – April/May 2010	Plant layouts will address the positioning of exhaust points to prevent short circuiting to ventilation air intakes and openable windows. Refer to drawing section Vol.2.23 for indicative plantroom layouts.

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	Proximity to sources of noise	BCL	Internal planning to avoid siting openable window and noise sensitive areas near to sources of noise	Early design proposals – April/May 2010	Noise sources which may affect openable windows in a hospital environment will be from mechanical plant. All plant rooms will be treated so that noise emissions fully comply with environmental criteria – traffic noise controlled due to silting of building away from busy roadways – discussion found in Acoustic Report.
	Orientation	BCL	Option appraisal looking at siting of areas on particular orientation	Early design proposals – April/May 2010	Early design drawings
Audits	Low carbon Audits	BCL	To be submitted to sustainability auditor for comment	Early design proposals – April/May 2010	Auditors comments on issues listed above
	Acoustic	AL	Confirm acoustic audit stages	Early design proposals –	Acoustic Logic will perform audits, as

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				April/May 2010	detailed in: VOL 2/1 Appendix S – Acoustic Requirements – provide copy of completed early design audit
	Façade development	BCL	Provide optimisation study looking at daylighting/ shading /extent of glazing/ summertime temperature/ room height/ opening types/ ventilation options.	Early design proposals – April/May 2010	Thermal modelling has been undertaken to determine the balance between daylighting and thermal performance and inputted into the façade selection. Refer to Volume 3.0/3.9. Provide more detailed copy of model output
	Fabric Development	BCL	Cost benefit analysis of thermal mass, reduced air infiltration and insulation options	Early design proposals – April/May 2010	Optimisation report– needed now
	Plant space and access studies	BCL	Space studies to allow options for passive ventilation and heat recovery	Early design proposals – April/May 2010	Optimisation report and space studies needed now- confirm systems proposed and HR

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					opportunities
	Systems development	BCL	Options studies on proposed ventilation and energy supply strategies, integrating supply and demand side.	Early design proposals – April/May 2010	Provide sketch schematics
	Hot water efficiency	ZBP	Option appraisal for HWS generation and systems	Early design proposals – April/May 2010	Provide option appraisal with carbon implications of systems considered.
Site layout	Microclimate	BCL	Studies looking at effect of heat islands, hard landscaping, trees, over shading, water on proposed building	Early design proposals – April/May 2010	Input to modelling
	Massing	BCL	Option appraisal looking at narrow plan options	complete	Building massing was set at bid stage- generally narrow plan except for podium level.
	Wind studies	BCL	Commission studies on wind effects to determine optimum cladding and detailing for air tightness, wind effects at entrances and avoidance or pollutants being drawn into air intakes	Detailed design stage	Wind effect modelling – confirm commissioned
	Pollutants	BCL	Site layout options with respect to access roads, parking and other pollutants and proximity to air intakes and windows	complete	Site layout set at bid stage
Energy model		BCL	Provide sketch scheme energy models	complete	Sketch Energy model

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			based on options considered		and input to whole life cost model competed at bid stage
The above studies and options must then BCL summarised into a stage report with all key decisions recorded and whole life cost and carbon model optimised. The energy model must at this stage show compliance with design target and development towards operational target. The report must BCL audited and corrective action taken BCLfore proceeding to next stage if necessary.					

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BUILDING SERVICES SYSTEMS					
General systems options	Energy sub metering	ZBP/WSP/ NHSGGC	Agree and record logical cost and ownership centres, site strategy for metering and monitoring and then provide drawings indicating appropriate departmental meters. Check BREEAM requirements met	End stage D prior to FBC	Metering strategy drawing and performance specification – develop through meetings with site and trust energy manager.
	Choice of internal deign conditions	ZBP/WSP	Have all internal design temperatures and humidities been specified with agreed tolerances to ensure lowest energy consumption and avoidance of reheat? See also ADB sheets section	End stage D prior to FBC	Schedule of summer and winter design internal conditions and humidities
	Choice of filtration	ZBP	Have filter clean and dirty resistances been specified to optimise energy cost versus filter cost	End stage D prior to FBC	Sample calcs
	System zones	ZBP	Drawings, schematics and system description indicating how different heating and cooling requirements (time /temp/gains) can be controlled separately Schematics required for evaluation by auditor prior to detail design	End stage D prior to FBC	Schematics and auditors comments

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			commencing		
	Local controls	ZBP	Develop strategy for local controls. Check BREEAM requirements	End stage D prior to FBC	Schematics and auditors comments
	System selection	ZBP	Drawings, schematics and system description indicating how systems are designed to meet seasonal variations in demand Schematics required for evaluation	End stage D prior to FBC	Schematics and auditors comments
	Heat recovery	ZBP	Heat recovery strategy to be produced demonstrating opportunities and viability.	End stage D prior to FBC	Schematics and auditors comments
	High efficacy internal lighting	ZBP	Schedule of design illuminance, proposed light fittings and schedule of lumens per cc watt achieved (typical per area acceptable). Strategy for low energy lighting required for evaluation	End stage D prior to FBC	DEER calculation typical and auditors comments
	Lighting control	ZBP	Description of operation of proposed lighting controls and drawings indicating where each type of control is used. Strategy for low energy lighting required for evaluation. Check BREEAM requirements	End stage D prior to FBC	Outline drawings and description and auditors comments
	High efficacy	ZBP	Schedule of design illuminances,	End stage D prior	DEER calculation typical

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	external lighting		proposed light fittings and schedule of lumens per cct watt achieved (typical per area acceptable).	to FBC	and auditors comments
	Security lighting controls	ZBP	Description of operation of proposed lighting controls and drawings indicating where each type of control is used. Strategy for low energy lighting required for evaluation. Check BREEAM requirements	End stage D prior to FBC	
	Fan/pump speeds	ZBP	Statement regarding criteria for specifying VSD's and plant schedules indicating where specified – provide schematics and design details for evaluation	End stage D prior to FBC	provide schematics and design details for evaluation
	Air conditioning measures	ZBP	Statement of measures taken to avoid air conditioning. Statement of areas making use of free cooling and control strategy to maximise benefit.	End stage D prior to FBC	provide schematics and design details for evaluation
	Renewables. Central energy supply and Combined heat and power	ZBP	Business case to be provided if necessary. Provide confirmation that recommended measures identified in feasibility are now implemented in the design.	End stage D prior to FBC	Provide schematics and confirmation of funding

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	(CHP)				
	Grant funding	BCL	Grant funding applied for and in place	End stage D prior to FBC	Funding applications and confirmation
	Bio gas/ alternative fuels	NHSGGC	Continue feasibility investigation on use of biogas and negotiations with Sustainable Glasgow	End stage D prior to FBC	Decide if there is likely to be any impact on the energy centre and include provision for future if necessary.
	Building energy management systems (BCLMS)	ZBP	Confirmation that BMS is specified, and provide confirmation from building manager on arrangements and responsibilities for training and operation	End stage D prior to FBC	Building management operational policy, input to revenue funding appraisal
	Heat recovery	ZBP	Schedule of heat recovery devices, plant capacities and areas served. Include systems where heat recovery (if any) has not been used and justification for omission	End stage D prior to FBC	Provide schematics and details of proposed systems
	High frequency ballasts	ZBP	Ensure these are specified	End stage D prior to FBC	Provide details of luminaires
	Hot water	ZBP	Confirmation that systems with best	End stage D prior	System schematics

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	efficiency		carbon profile/WLC have been specified	to FBC	
OVERALL BUILDING ISSUES					
Fabric	U values	BCL	Schedule of U values. Look in particular at overall frame and glass U values for curtain walling.	End stage D prior to FBC	U values confirmed at bid stage as glazing 1.4 W/m^2K, external wall 0.3 W/m^2K, roof 0.25 W/m^2K. Confirm at this stage with manufacturer's information and layer calculations.
	Air permeability	BCL	Confirmation of air permeability and the standards to which the building will be designed AND tested	End stage D prior to FBC	Air permeability confirmed at design stage Clarification 005 as $5m^3/hr/m^2$@50Pa. Re confirm at this stage
Modelling	Net CO_2 emission	BCL	Detailed model to be produced based on stage D design. Corrective action if needed to be undertaken before scheme proceeds	End stage D prior to FBC	Model and interpretative report confirming design objectives have been met or corrective action needed if not.

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		BCL	Output from energy calculation, along with schedule of input data and occupancy/ usage/internal gain defaults Must produce model and comparison with both design and operational targets	End stage D prior to FBC	Provide full design model at this stage and update operational model
WLC	Whole life cost model	BCL	Update model and check that cost plan includes for lowest whole life cost and carbon design. Check BREEAM requirements have been met	End stage D prior to FBC	Provide detail of WLC cost exercise in relation to major energy consuming elements – central plant selections and envelope.
ADB	ADB Sheets	BCL/NH SGGC	Create master set of ADB sheets embracing low carbon objectives and ensure these are used on all ADB sheets generated for the project with a definition sheet	End stage D prior to FBC	
INTERNAL ENVIRONMENT					
Facade	Passive ventilation and façade engineering	ZBP/WSP	Ventilation and façade recommendations from sketch scheme phase report to be confirmed as implemented	End stage D prior to FBC	Elevations/sections and plans confirming implementation of proposals
Ventilation	Fresh air rates	ZBP/WSP	Confirmation of HTM 03-01 compliance Check BREEAM requirements havebe	End stage D prior to FBC	Include in design statement with sample

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			met		compliance calculations
Acoustics	Acoustics	ZBP/WSP	Confirmation of HTM 08-01 compliance, testing requirements built in to output specification Check BREEAM requirements have been met.	End stage D prior to FBC	As above
			Check acoustic requirements do not conflict with any passive design e.g. speech privacy	End stage D prior to FBC	As above
			Check attenuator selection is as low resistance as possible	End stage D prior to FBC	As above
			Check any external acoustic treatment does not affect plant performance – e.g. short circuiting	End stage D prior to FBC	As above
Daylighting and Glare	Daylighting	ZBP/WSP	Provide daylighting calculations	End stage D prior to FBC	As above
		ZBP/WSP	Check lighting control to all possible areas makes use of available daylight	End stage D prior to FBC	As above
	Glare control	ZBP/WSP	Check that design avoids lights on blinds down issues	End stage D prior to FBC	As above
Internal areas		BCL	Final check to ensure there are no internal areas other than clinical which are designed to BCL occupied for more than 30 minutes	End stage D prior to FBC	Include in design statement

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NON SYSTEM RELATED ENERGY ISSUES					
Equipment	Energy consuming equipment	BCL	Create a generic schedule of energy consuming equipment and including realistic assessments of energy consumption and heat emission to the space		Schedule including energy consumption and heat emissions
		BCL	Formulate procedures and documents for procuring energy efficient equipment and get agreement from client on process and timetable. Check BREEAM requirements have BCLen met for Ene 15 which requires procurement on WLC and carbon issues		Provide schedule of new equipment and specifications, which should incorporate whole life costing element including assessment of energy consumption.
Whole site energy strategy	Renewables	ZBP	Are these now incorporated in planning procedure and planning drawings		Supply drawings and specification
			Does the design allow for the **retro-fitting** of active solar devices, PVs etc. when not fitted initially and when economic case is strong?		Confirm proposals
			Has provision been made if necessary for alternative fuel such as biogas – what is implication and cost?		Confirm proposals

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	Implementation of site /building energy strategy		Has the strategy determined in section 1 BCLen implemented, specified and funded and reflected in the scheme proposals and specification?		Drawings, specification and cost plan
At the end of the design stage leading to FBC, all the above issues should have been addressed and a design statement prepared. The low carbon auditor will need to have seen all above listed detail, commented on the issues and be able to confirm to the Carbon Trust and the Board that the design meets the objectives in the employers requirements and targets.					

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BUILDING SERVICES SYSTEMS					
General systems options	Energy sub metering	ZBP/WSP/ NHSGGC	Check BREEAM requirements met. Specification for BMS/AMT to be provided	FBC approval to end stage E	Agree detail of how metering will monitor and report
	Choice of filtration	ZBP	Have filter clean and dirty resistances been specified to optimise energy cost versus filter cost	FBC approval to end stage E	Sample technical schedules from suppliers
	System zones	ZBP	Drawings, schematics and system description indicating how different heating and cooling requirements (time /temp/gains) can be controlled separately Detailed drawing sample checking	FBC approval to end stage E	Final Schematics and detail drawings auditors comments
	Local controls	ZBP	Develop strategy for local controls. Check BREEAM requirements, Provide descriptions of operation for each system	FBC approval to end stage E	Descriptions of operation and auditors comments
	Heat recovery	ZBP	Heat recovery strategy to be produced demonstrating opportunities and viability.	FBC approval to end stage E	Sample of Detail drawings and Schematics and auditors comments
	High efficacy internal lighting	ZBP	Schedule of design illuminance, proposed light fittings and schedule of lumens per cc watt achieved (typical per area acceptable). Strategy for low	FBC approval to end stage E	Provide final detail if changed from previous stage

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SECTION 3 FBC APPROVAL TO END OF DESIGN PHASE MAIN and CHILDRENS HOPITALS					
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			energy lighting required for evaluation		
	Lighting control	ZBP	Description of operation of proposed lighting controls and drawings indicating where each type of control is used. Strategy for low energy lighting required for evaluation. Check BREEAM requirements	FBC approval to end stage E	Sample final design drawings and auditors comments
	High efficacy external lighting	ZBP	Schedule of design illuminances, proposed light fittings and schedule of lumens per cct watt achieved (typical per area acceptable).	FBC approval to end stage E	Provide final detail if changed from previous stage
	Security lighting controls	ZBP	Description of operation of proposed lighting controls and drawings indicating where each type of control is used. Strategy for low energy lighting required for evaluation. Check BREEAM requirements	FBC approval to end stage E	As above
	Fan/pump speeds	ZBP	Statement regarding criteria for specifying VSD's and plant schedules indicating where specified	FBC approval to end stage E	Provide confirmation of specification
	Fan and pump selection	ZBP	Provide confirmation of fan a pump efficiencies – demonstrating use of HE motors and most efficient fan configuration.	FBC approval to end stage E	Provide indicative fan and pump schedules and details
	Fan and pump WLC	ZBP	Demonstrate that selections made on best WL carbon performance	FBC approval to end stage E	Provide WL carbon calcs

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	Renewables. Central energy supply and Combined heat and power (CHP)	ZBP	Provide confirmation that recommended measures identified in feasibility are now implemented in the design.	FBC approval to end stage E	Provide detailed drawings
	Grant funding	BCL	Grant funding applied for and in place	FBC approval to end stage E	Funding applications and confirmation if not available at previous stage
	Building energy management systems (BMS)	ZBP	Detailed BMS specifications, proposals for head end and maintenance and training contracts in place	FBC approval to end stage E	Provide confirmation of arrangement and acceptability to Board end users
	Heat recovery	ZBP	Schedule of heat recovery devices	FBC approval to end stage E	Provide sample detailed heat recovery efficiencies
	Hot water efficiency	ZBP	Confirmation that systems with best carbon profile/WLC have been specified	FBC approval to end stage E	final schematics and sample detailed drawings
OVERALL BUILDING ISSUES					
Fabric	U values	BCL	No further action at this stage unless there are changes		

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SECTION 3 FBC APPROVAL TO END OF DESIGN PHASE MAIN and CHILDRENS HOPITALS					
ISSUE/ REFERENCE	ISSUE/ REFERENCE	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
	Air permeability	BCL	No further action at this stage unless there are changes		
Modelling	Net CO_2 emission	BCL	Updated model to be produced based on final design. Corrective action if needed to be undertaken before scheme proceeds	FBC approval to end stage E	Model and interpretative report confirming design objectives have been met or corrective action needed if not.
		BCL	Updated model and comparison with both design and operational targets	FBC approval to end stage E	Update full design model at this stage and update operational model with detailed equipping consumption
WLC	Whole life cost model	BCL	Update model and check that cost plan includes for lowest whole life cost and carbon design. Check BREEAM requirements have been met	FBC approval to end stage E	Update detail of WLC cost exercise in relation to major systems
ADB	ADB Sheets	BCL/NH SGGC	Check ADB sheets before sign off	FBC approval to end stage E	Confirm all ADBs meet low carbon objectives before sign off. Provide representative cross section for record purposes.
INTERNAL ENVIRONMENT					
Facade	Passive ventilation and	ZBP/WSP	No further action at this stage unless there are changes		

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SECTION 3 FBC APPROVAL TO END OF DESIGN PHASE MAIN and CHILDRENS HOPITALS					
ISSUE/ REFERENCE	ISSUE/ REFERENCE	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
	façade engineering				
Ventilation	Fresh air rates	ZBP/WSP	No further action at this stage unless there are changes		
Acoustics	Acoustics	ZBP/WSP	No further action at this stage unless there are changes		
Daylighting and Glare	Daylighting	ZBP/WSP	No further action at this stage unless there are changes		
	Glare control	ZBP/WSP	No further action at this stage unless there are changes		
Internal areas		BCL	No further action at this stage unless there are changes		
NON SYSTEM RELATED ENERGY ISSUES					
Equipment	Energy consuming equipment	BCL	Generic schedule should now be replaced by actual equipping schedule and variances affecting design resolved	FBC approval to end stage E	Schedule including energy consumption and heat emissions
		BCL	Provide tender and selections documentation confirming equipment has been selected on WLC and carbon considerations as well as performance.	FBC approval to end stage E	Provide selection information.
Whole site energy strategy	Renewables	ZBP	No further action at this stage unless there are changes		
	Implementation of site /building energy strategy		No further action at this stage unless there are changes		
At the end of the detail design phase, all the above issues should have been addressed and any outstanding items from earlier phases					

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SECTION 3 FBC APPROVAL TO END OF DESIGN PHASE MAIN and CHILDRENS HOPITALS					
ISSUE/ REFERENCE	ISSUE/ REFERENCE	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
cleared. The low carbon auditor will need to have seen all above listed detail, commented on the issues and be able to confirm to the Carbon Trust and the Board that the design meets the objectives in the employers requirements and targets.					

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SECTION 4 CONSTRUCTION PHASE MAIN and CHILDRENS HOPITALS					
ISSUE/ REFERENCE	ISSUE/ REFERENCE	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
BUILDING SERVICES SYSTEMS					
General systems options	Energy sub metering	ZBP/WSP/ NHSGGC	No further action at this stage unless there are changes		
	Choice of filtration	ZBP	No further action at this stage unless there are changes		
	System zones	ZBP	No further action at this stage unless there are changes		
	Local controls	ZBP	No further action at this stage unless there are changes		
	Heat recovery	ZBP	No further action at this stage unless there are changes		
	High efficacy internal lighting	ZBP	No further action at this stage unless there are changes		
	Lighting control	ZBP	No further action at this stage unless there are changes		
	High efficacy external lighting	ZBP	No further action at this stage unless there are changes		
	Security lighting controls	ZBP	No further action at this stage unless there are changes		
	Fan/pump speeds	ZBP	No further action at this stage unless there are changes		
	Fan and pump selection	ZBP	No further action at this stage unless there are changes		

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SECTION 4 CONSTRUCTION PHASE MAIN and CHILDRENS HOPITALS					
ISSUE/ REFERENCE	ISSUE/ REFERENCE	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
	Fan and pump WLC	ZBP	No further action at this stage unless there are changes		
	Renewables. Central energy supply and Combined heat and power (CHP)	ZBP	No further action at this stage unless there are changes		
	Grant funding	BCL	No further action at this stage unless there are changes		
			No further action at this stage unless there are changes		
	Building energy management systems (BMS)	ZBP	No further action at this stage unless there are changes		
	Heat recovery	ZBP	No further action at this stage unless there are changes		
	Hot water efficiency	ZBP	No further action at this stage unless there are changes		
OVERALL BUILDING ISSUES					
Fabric	U values	NHSGGC clerk of works	Check insulation continuity through construction period	Up to building weather tight	Site report
	Air permeability	NHSGGC clerk of works	Check integrity of building sealing	Up to building weather tight	Site report

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SECTION 4 CONSTRUCTION PHASE MAIN and CHILDRENS HOPITALS					
ISSUE/ REFERENCE	ISSUE/ REFERENCE	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
Modelling	Net CO_2 emission	BCL	Prepare as built model	Before practical completion	Final EPC
		BCL	Prepare final operational model	Before practical completion	Update operational model at this stage including any known changes in operational policy, operating hours etc.
WLC	Whole life cost model	BCL	No further action at this stage unless there are changes		
ADB	ADB Sheets	BCL/NH SGGC	No further action at this stage unless there are changes		
INTERNAL ENVIRONMENT					
Facade	Passive ventilation and façade engineering	ZBP/WSP	No further action at this stage unless there are changes		
Ventilation	Fresh air rates	ZBP/WSP	No further action at this stage unless there are changes		
Acoustics	Acoustics	ZBP/WSP	No further action at this stage unless there are changes		
Daylighting and Glare	Daylighting	ZBP/WSP	No further action at this stage unless there are changes		

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SECTION 4 CONSTRUCTION PHASE MAIN and CHILDRENS HOPITALS					
ISSUE/ REFERENCE	ISSUE/ REFERENCE	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
	Glare control	ZBP/WSP	No further action at this stage unless there are changes		
Internal areas		BCL	No further action at this stage unless there are changes		
NON SYSTEM RELATED ENERGY ISSUES					
Equipment	Energy consuming equipment	BCL	Generic schedule should now be replaced by actual equipping schedule and variances affecting design resolved	FBC approval to end stage E	Complete any outstanding actions from previous section
		BCL	Provide tender and selections documentation confirming equipment has been selected on WLC and carbon considerations as well as performance.	FBC approval to end stage E	Complete any outstanding actions from previous section
Whole site energy strategy	Renewables	ZBP	No further action at this stage unless there are changes		
	Implementation of site /building energy strategy		No further action at this stage unless there are changes		
At the end of the constructioni phase, all the above issues should have been addressed and any outstanding items from earlier phases cleared. The low carbon auditor will need to have seen all above listed detail, commented on the issues and be able to confirm to the Carbon Trust and the Board that the design meets the objectives in the employers requirements and targets.					

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SECTION 5 COMMISSIONING PHASES MAIN and CHILDRENS HOPITALS					
ISSUE/ REFERENCE	ISSUE/ REFERENCE	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
BUILDING SERVICES SYSTEMS					
General systems options	Energy sub metering	ZBP/WSP/ NHSGGC	Metering should now be set up and all software installed. Users trained and reporting systems installed	Prior to handover	Signed off report sheets and written method of operation, all points which will need to be measured for operational energy reporting set up and agreed. All cost and function areas set up and agreed. Users fully familiar with the system and able to derive reports.
	Choice of filtration	ZBP	No further action at this stage unless there are changes	Prior to handover	
	System zones	ZBP	Systems zones set up and proved to operate without simultaneous heating and cooling	Prior to handover	Report sheets and written method of operation, time and temperature and settings recorded for each zone.
	Local controls	ZBP	Operation of local controls checked and representative sample of rooms checked under load conditions	Prior to handover	Report sheets
	Heat recovery	ZBP	Performance testing	Prior to handover	All heat recovery to be

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SECTION 5 COMMISSIONING PHASES MAIN and CHILDRENS HOPITALS					
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					tested to prove rated performance is achieved in situ – test sheets
	High efficacy internal lighting	ZBP	No further action at this stage unless there are changes		
	Lighting control	ZBP	Lighting control proved to operate under varying daylight conditions, occupancy sensing proved and operational.	Prior to handover	Report sheets and written mode of operation, end users trained
	High efficacy external lighting	ZBP	No further action at this stage unless there are changes	Prior to handover	
	Security lighting controls	ZBP	No further action at this stage unless there are changes	Prior to handover	
	Fan/pump speeds	ZBP	Inverter and speed control set up and proved under varying load conditions	Prior to handover	Report sheets and written method of operation, inverter settings recorded for each system
	Fan and pump selection	ZBP	No further action at this stage unless there are changes	Prior to handover	
	Fan and pump WLC	ZBP	No further action at this stage unless there are changes	Prior to handover	
	Renewables. Central energy supply and Combined heat	ZBP	Central plant and renewable energy systems commissioned and under maintenance contract . performance testing proves operation and carbon	Prior to handover	

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SECTION 5 COMMISSIONING PHASES MAIN and CHILDRENS HOPITALS					
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	and power (CHP)		savings to be achieved.		
	Grant funding	BCL	No further action at this stage unless there are changes		
	Boigas/ alternative fuels		Conclusion and timescale for any future installation	Prior to handover	Need to provide statement of intent or outcome of negotiations
	Building energy management systems (BMS)	ZBP	Commissioning to be undertaken which optimises energy performance, sets up exception reporting for systems left in hand or disconnected and graphical interfaces fully set up and commissioned. Systems proved under load. BREEAM requirements have been met re man 1	Prior to handover	Report sheets and demonstration to auditor
	Hot water efficiency	ZBP	No further action at this stage unless there are changes		
OVERALL BUILDING ISSUES					
Fabric	U values	NHSGGC clerk of works	No further action		
	Air permeability	NHSGGC clerk of works	Airtightness testing	Prior to handover	Site report
Modelling	Net CO_2 emission	BCL	No further action		

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SECTION 5 COMMISSIONING PHASES MAIN and CHILDRENS HOPITALS					
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		BCL	No further action		
WLC	Whole life cost model	BCL	No further action		
ADB	ADB Sheets	BCL/NH SGGC	No further action		
INTERNAL ENVIRONMENT					
Facade	Passive ventilation and façade engineering	ZBP/WS P	No further action		
Ventilation	Fresh air rates	ZBP/WS P	Commissioning to demonstrate that air systems have been set up to correct flow rates and that systems are optimised for required ventilation rates and free cooling.	Prior to handover	Report sheets and proof of operation under load
Acoustics	Acoustics	ZBP/WS P	Acoustic testing undertaken		
Daylighting and Glare	Daylighting	ZBP/WS P	No further action		
	Glare control	ZBP/WS P	No further action		
Internal areas		BCL	No further action		
NON SYSTEM RELATED ENERGY ISSUES					
Equipment	Energy consuming	NHSGG C	Energy consuming equipment set up to optimum performance	FBC approval to end stage E	Manufacturer's set up of major items to be

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SECTION 5 COMMISSIONING PHASES MAIN and CHILDRENS HOPITALS					
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	equipment				witnessed and evaluated.
Whole site energy strategy	Renewables	ZBP	No further action at this stage unless there are changes		
	Implementation of site /building energy strategy		No further action at this stage unless there are changes		
At the end of the commissioning phase, all the above issues should have been addressed and any outstanding items from earlier phases cleared. The low carbon auditor will need to have seen all above listed reports, commented on the issues and be able to confirm to the Carbon Trust and the Board that the completed building meets the objectives in the employers requirements and targets.					

SECTION 6 OPERATIONAL PHASE MAIN and CHILDRENS HOPITALS **Note ! where joint responsibility noted, this shall generally be BCL in contractual defects phase and undertaken where excess or unexpected energy use has been noted and NHSGGC beyond this phase**					
ISSUE/ REFERENCE	ISSUE/ REFERENCE	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
ALL SYSTEMS					
General Issues	Energy sub metering	ZBP/WSP	Metering should now be set up and all software installed. Users trained and reporting systems installed	First 3 years of operation	Monthly exception reporting and trend logging taking place, monthly departmental, major plant and whole building energy monitoring taking place
	audits	NHSGGC	6 monthly audit procedure set up to monitor progress and reconcile any difficulties	First 3 years of operation	Audit report
	Appointments	BCL	Suitably qualified and experienced energy specialist as specified (e.g. CIBSE Low Carbon Consultant, Carbon Trust registered consultant, chartered member of the Energy Institute, all with knowledge and experience of operational energy use in large acute hospitals allocated to the project for the three years and beyond until targets are met and remedial action completed, with sufficient time allocation to undertake the identified actions, working in conjunction with the Boards own energy manager	First 3 years of operation	Confirm appointment and hours allocated to scheme. Provide progress reports
	Remedial actions	BCL	If remedial actions identified, prepare method statement and timescale for action	First 3 years of operation	Action plan
	Heat recovery	BCL/NHSGGC	Performance testing	First 3 years of operation /Life of building	Periodic check that operation is satisfactory
	external lighting	BCL/NHSGGC	External lighting not on during day	First 3 years of operation /Life of building	Periodic check that operation is satisfactory

SECTION 6 OPERATIONAL PHASE MAIN and CHILDRENS HOPITALS Note ! where joint responsibility noted, this shall generally be BCL in contractual defects phase and undertaken where excess or unexpected energy use has been noted and NHSGGC beyond this phase					
ISSUE/ REFERENCE	ISSUE/ REFERENCE	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
	Fan/pump speeds	BCL/NHS GGC	Inverter and speed control set up and proved under varying load conditions	First 3 years of operation /Life of building	Periodic check that operation is satisfactory
	Renewables. Central energy supply and Combined heat and power (CHP)	BCL/NHS GGC	Central plant and renewable energy systems commissioned and under maintenance contract . performance testing proves operation and carbon savings to be achieved.	First 3 years of operation /Life of building	Periodic check that operation and performance is satisfactory
	Grant funding	NHSGGC	Monitor funds for any further opportunities e.g. PV	First 3 years of operation /Life of building	Annual check
	Biogas/ alternative fuels	NHSGGC	Conclusion and timescale for any future installation	TBA	Need to provide statement of intent or outcome of negotiations
	Hot water efficiency	BCL/NHS GGC	Performance testing	Life of building	Periodic check that operation is satisfactory
Fabric	U values	BCL	Thermography to ensure integrity of insulation	First 3 years of operation	Recommended if any empirical evidence of bridging/condensation
Modelling	Net CO_2 emission	NHSGGC	Periodically update operational model as circumstances change	every 5 years	Update to reflect heated area and any major operational changes
Lighting	Lighting controls	BCL/NHS GGC	Monitor departmental use monthly through exception reporting via BMS – i.e. any department which uses +10% of monthly target. Note target needs to be set related to proportion of internal and daylit rooms and available daylight hours.	First 3 years of operation	Interaction with department to identify usage patterns, check on correct operation of lighting controls and any occupant action to disable

SECTION 6 OPERATIONAL PHASE MAIN and CHILDRENS HOPITALS Note ! where joint responsibility noted, this shall generally be BCL in contractual defects phase and undertaken where excess or unexpected energy use has been noted and NHSGGC beyond this phase					
ISSUE/ REFERENCE	ISSUE/ REFERENCE	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
					them. If cause isolated at higher hours of usage, uplift target
	Behaviour and operating hours	NHSGGC	As above	First 3 years of operation	As above
Small power	Clinical need	NHSGGC	Monitor departmental use monthly through exception reporting via BMS – i.e. any department which uses +10% of monthly target. Target set by adding up all connected equipment and applying diversity factors	First 3 years of operation	Interaction with department to identify usage patterns and connected equipment. If found to be necessary, target can be uplifted.
	Rating of new purchased equipment	NHSGGC	As above	First 3 years of operation /Life of building	Ensure equipment purchased has low energy use, record any new equipment and notify energy manager. Implement purchasing policy
	behaviour	NHSGGC	As above	First 3 years of operation /Life of building	Interaction with department to identify usage patterns and connected equipment. If found to be necessary, target can be amended
Heating	External conditions	BCL/NHS GGC	Record profile through BMS. Set target based on 20 year average weather file and projected occupancy	First 3 years of operation /Life of building	No action unless energy use exceeds + 10% . Undertake weather normalisation by agreed

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SECTION 6 OPERATIONAL PHASE MAIN and CHILDRENS HOPITALS Note ! where joint responsibility noted, this shall generally be BCL in contractual defects phase and undertaken where excess or unexpected energy use has been noted and NHSGGC beyond this phase					
ISSUE/ REFERENCE	ISSUE/ REFERENCE	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
					method if +10% energy use of heating energy over target detected.
	Controls and zoning	BCL/NHS GGC	Metering - Monitor departmental or zone use monthly through exception reporting via BMS – i.e. any department or zone which uses +10% of monthly target.	First 3 years of operation /Life of building	Check controls operation. Check for simultaneous heating and cooling. Check that set points have not been altered outside allowable tolerance.
	Maintenance and behaviour	BCL/NHS GGC	As above	First 3 years of operation /Life of building	Check that set points have not been altered outside allowable tolerance. Interact with department to check windows not opened in peak heating season to relieve overheating etc. If cause isolated at higher hours of usage, uplift target
cooling	External conditions	BCL/NHS GGC	Record profile through BMS. Set target based on 20 year average weather file and projected occupancy.	First 3 years of operation /Life of building	No action unless energy overall exceeds + 10%. Undertake weather normalisation by agreed method if +10% energy use of cooling energy over target detected.

SECTION 6 OPERATIONAL PHASE MAIN and CHILDRENS HOPITALS Note ! where joint responsibility noted, this shall generally be BCL in contractual defects phase and undertaken where excess or unexpected energy use has been noted and NHSGGC beyond this phase					
ISSUE/ REFERENCE	ISSUE/ REFERENCE	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
	Controls and zoning	BCL/NHS GGC	Metering - Monitor plant or zone use monthly through exception reporting via BMS – i.e. any department or zone which uses +10% of monthly target.	First 3 years of operation /Life of building	Check controls operation. Check for simultaneous heating and cooling. Check that set points have not been altered outside allowable tolerance.
	solar gains	BCL/NHS GGC	As above	First 3 years of operation /Life of building	Check that window and blinds are as designed and blinds/shading use is as intended. If all other explanations for excess use have been eliminated, independent consultant to undertake further analysis, calculation and detailed room monitoring via BMS of room conditions and recommended remedial action
	Internal gains	BCL/NHS GGC	As above	First 3 years of operation /Life of building	Interact with department to monitor and record occupancy levels. Correlate with equipment usage and lighting usage. If significant variance in expected occupancy level,

SECTION 6 OPERATIONAL PHASE MAIN and CHILDRENS HOPITALS Note ! where joint responsibility noted, this shall generally be BCL in contractual defects phase and undertaken where excess or unexpected energy use has been noted and NHSGGC beyond this phase					
ISSUE/ REFERENCE	ISSUE/ REFERENCE	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
					hours of use and /or equipment use is agreed cause, uplift target.
HWS	demand	BCL/NHS GGC	Metering - Monitor departmental use monthly through exception reporting via BMS – i.e. any department or zone which uses +10% of monthly target	First 3 years of operation /Life of building	Interact with department to establish water use patterns. Ensure no avoidable waste or leakage. If usage reasonable, uplift target
Central plant and distribution	Plant and system selection and efficiency	BCL/NHS GGC	Metering – monitor plant and system efficiencies monthly through exception reporting via BMS – i.e. any plant item deviating by 5% of design quoted efficiency or overall change in system distribution losses against target of +10%	First 3 years of operation /Life of building	Check plant conditions and if necessary employ specialist independent consultant to undertake detailed logging. Undertake remedial action recommended by specialist
	Controls and zoning	BCL/NHS GGC	As above	First 3 years of operation /Life of building	Check controls operation, Check that set points have not been altered outside allowable tolerance. Check for deviation from commissioned values. If no apparent cause action as above
	maintenance	NHSGGC		Life of building	physical checks for hand operation, leakage, closed

SECTION 6 OPERATIONAL PHASE MAIN and CHILDRENS HOPITALS **Note ! where joint responsibility noted, this shall generally be BCL in contractual defects phase and undertaken where excess or unexpected energy use has been noted and NHSGGC beyond this phase**					
ISSUE/ REFERENCE	ISSUE/ REFERENCE	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
					vales, breakdown of insulation
At the end of each of the first three years of the operational phase, all the above issues should have been addressed and any outstanding items from earlier phases cleared. The low carbon auditor will need to have seen all above listed reports, commented on the issues and be able to confirm to the Carbon Trust and the Board that the completed building meets the objectives in the employers requirements and targets.					

5. Scope of work

5.1. Scope for Low Carbon Design support to NHS Greater Glasgow and Clyde for the New Southern General Hospital

Client Contact Hugh McDerment Senior Project Manager
Carbon Trust Account Manager: Renate Powell

5.2. Background

Susan Logan has been working with the Board since September 2008 to steer the project towards a challenging energy target.
This has been part funded by the Carbon Trust, but latterly the Board have funded activities such as the provision of contract documentation that sets out the requirements and process for achieving an operational carbon target of 80kgCO_2/m^2/annum and evaluation of the bids.
3 bids were evaluated in detail by Susan Logan, and carbon and sustainability contributed significantly to the quality score which was used to determine the most economically advantageous tender.
A bidder has now been selected. This bidder offered the lowest carbon solution, but in the very nature of such a large and complex bid, much detail remains to be resolved. The process of evaluating the emergent design, energy models and contractors commitment to the operational energy target needs to continue.
The attached executive summary sets out the process so far. Bidder 1 is the likely successful bidder (subject to contract) and the executive summary includes a list of issues to be resolved pre contract.
This proposal sets out the anticipated process and costs for Susan Logan to continue the process started. The Board are seeking part funding from the Carbon Trust for this process.

5.3. Process

The process will be, in summary, to monitor and influence the project to ensure that the employer's requirements are delivered.

Phase 1 Pre contract

See attached executive summary of actions to be undertaken up to contract agreement. The proposal would be to meet with the proposed bidder to resolve as many of these issues as possible and intervene with the technical and legal advisers to try to reinforce the agreements in the contract.

Anticipated – 1 meeting and follow up – 2 days, 1 in Glasgow
Timescale – to December 2009

Phase 2 Design

The process would be to monitor the contract requirements in terms of :

- Design energy model,, facade development, the thermal characteristics, system selections, lighting, controls etc. to establish that the building design in on track to meet the contract commitments.
- This would include review of schematics and emergent architectural and engineering designs, energy models and design specifications as required to verify that the design intent was being carried out.

- The energy centre, renewables and plant selections to establish that the supply side will meet contract and renewables obligations
- The overall supply and demand operational energy model incorporating actual usage predictions to establish that the operational energy target will be met.
- The monitoring and metering proposals, working with the client and the developer to establish how energy will be metered and accounted for in the operational phase. We anticipate this will include deciding how and where energy will be metered so that useful data is produced which will enable users to be accountable within the various departments.
- Evaluating as far as possible equipments selections to promote selection on the basis of whole life costing including energy use
- Generally acting as an advocate for low carbon choices amongst other competing demands.

It is difficult to be definite on the time demands of this phase, but it is anticipated that to keep these items on the agenda would require attendance at design principals meetings on a monthly basis throughout the design phase and an allowance of another day per month reviewing, follow up and writing up. This may be more or less time intensive at various stages depending on the production of information from the contractor.

Total anticipated average 2 days per month during initial design phase of 18 months - 36 days, 18 in Glasgow
Detail design phase – the input could reduce in this phase to one day per month – meeting say every other month – 18 months, 18 days in total, 9 in Glasgow
Timescales per financial year
To end march 2010 - 3 site days. 3 office days
To end March 2011 – 12 site days, 12 office days

5.4. Future work

The following work is not in this proposal and could be undertaken subject to future funding being available:-
Phase 2 Design
Continuation of the above tasks through to the completion of the detail design phase.

Phase 3 Construction and Commissioning phase

It may be useful to monitor the quality and effectiveness of construction and commissioning with respect to energy use but we have not included for this at this stage as this may be adequately covered by other appointments.

Phase 4 Post completion

Beyond construction, it would be useful to maintain an interest and involvement in the project to ensure the contractor is providing a sufficient level of active energy management as required in the contract, to assist the client in setting up and managing the energy use of the new development and to monitor the actual energy use of the departments compared to the predicted model.

5.5. Deliverables

The deliverables would be the low carbon tracker already developed for this scheme, updated on a monthly basis to record progress plus annual reports with estimated carbon savings from an agreed baseline and write ups of each review undertaken.

5.6. Costs

The costs per day are £500 plus expenses. We would propose a fixed charge per site day of £150,, provided that sufficient notice is given to book travel 2 weeks in advance. Invoicing would be monthly.

The phase costs are

Phase 1 – to December 2009 £1150

Phase 2 – to end of financial year 2010-11
Broken down as follows -
To end march 2010 - 3 site days. 3 office days Cost £3450
To end March 2011 – 12 site days, 12 office days Cost £13800

Currie & Brown

HAI Scribe Review - NHS
Date

ADULT

Development Stage 1: HAI-SCRIBE applied to the proposed site for development

NHS Lanarkshire

Item No	Question	Yes	No	N/A	Comments
2.1	Is Contaminated land an issue? (eg smallpox - also refer to contaminated land register	☐	☐	☐	
2.2	Are there industries or other sources in the neighbourhood which may present a risk of noise, smell, other pollution or infection e.g. animal by-products processing plant?	☐	☐	☐	STAGE 1 - COMPLETED FOR OUTLINE BUSINESS CASE BY ANNETTE RANKIN
2.3	Are there industries or other sources in the neighourhood which may present a risk of noise, smell, other pollution which might affect the designed operation of the healthcare facility e.g. windows and ventilation systems in the healthcare being kept closed because of a sewage treatment plant?	☐	☐	☐	
2.4	Are there constructin/demolition works programmed in the nieghbourhood which may present a risk of noise, smell, other pollution or infection e.g. fungal infection?	☐	☐	☐	
2.5	Are there cooling towers in the neighbourhood which may present a risk of legionella infection?	☐	☐	☐	
2.6	Does the topography of the site in relation to the surrounding area and the prevailing wind direction present any ptential HAI risk e.g. from entrainment of plumes containing legionella?	☐	☐	☐	

Development Stage 1: HAI-SCRIBE applied to the proposed site for development

NHS Lanarkshire

Item No	Question	Yes	No	N/A	Comments
2.7	Is there a locally recognised increased risk of contamination/infection e.g. cryptosporidium?	☐	☐	☐	
2.8	Will the proposed development impact on the surrounding area in any way which may lead to restrictions being applied to the operation of the proposed facility which may in turn present potential for HAI risk e.g. storage and collection arrangements for healthcare clinical waste leading to pressure to reduce collection frequency?	☐	☐	☐	
2.9	Will lack of space limit the proposed development and any future expansion of the facility?	☐	☐	☐	

Notes relating to Development Stage 1

NHS Lanarkshire

Please now complete the HAI-Scribe risk assessment on the next page to confirm the risk/s identified at Development Stage 1.

Development Stage 1 completed by _____

Signature _____ Date _____

Signature _____ Date _____

Signature _____ Date _____

Signature _____ Date _____

Signature _____ Date _____

Signature _____ Date _____

Signature _____ Date _____

Signature _____ Date _____

Development Stage 2: HAI-SCRIBE applied to planning and design stage of development

NHS Lanarkshire

Item No	Question	Yes	No	N/A	Comments
3.1	Does the design and layout of the healthcare facility inhhibit the spread of infection?	☑	☐	☐	
3.2	Is the ventilation system design fit for purpose, given the potential for infection spread via ventilation systems?	☑	☐	☐	
3.3	Has account been taken of the use of natural ventilation being affected by neighbourhood sources of environmental pollution as discussed in Development Stage 1?	☑	☐	☐	FACILITY FOR FILTERS ON INTAKE AIR.
3.4	Is the interior of the healthcare facility easy to clean and maintain clean? (Surfaces of floors, walls and ceilings should be appropriate to the particular room and the required management of infection risk. Thus, carpeted floors in offices may be appropriate but not appropriate in clinical areas. There should be coving at right angle junction of walls, floors and celings to ease effective cleaning.)	☑	☐	☐	
3.5	Does each ward allow sufficient space between beds to comply with the current guidance, thus facilitating the healthcare services to the patients, which in turn may reduce HAI risk?	☐	☐	☑	WARDS ARE ALL SINGLE ROOMS

Development Stage 2: HAI-SCRIBE applied to planning and design stage of development

NHS Lanarkshire

Item No	Question	Yes	No	N/A	Comments
3.6	Are there facilities to enable high standards of hand hygiene to be maintainted? For example, standards specified in: * 'Improving Clinical Care in Scotland Healthcare Associated Infection (HAI); Infection Control' (QIS 2003); * 'Standards Healthcare Associated Infection (HAI) Infection Control' (CSBS 2001). (Hand-wash basins, liquid soap dispensers, paper towels and alcohol gel despensers must be provided in sufficient numbers and be readily accessible. It should be noted that the effective use of alcohol gel first requires hands to be physically clean.)	☑	☐	☐	
3.7	Where curtain rails and curtains are fitted are they easy to clean and maintain clean?	☑	☐	☐	
3.8	Is the toilet, bath and shower accommodation conveniently sited in relation to the ward and, where possbile, is this accommodation en-suite?	☑	☐	☐	
3.9	Is the toilet, bath and shower accommodation accessible for cleaning purposes and is the accommodation easily cleaned?	☑	☐	☐	
3.10	Does the ventilation of the toilet, bath and shower accommodation ensure extraction of air from the room to be outside air?	☑	☐	☐	

NHS Lanarkshire

Item No	Question	Yes	No	N/A	Comments
3.11	Are the staff changing facilities suitably sited, have sufficient space, and readily accessible?	☑	☐	☐	
3.12	Are the staff showering facilities suitably sited and readily accessible for use, particularly in the event of contamination incidents?	☑	☐	☐	
3.13	Is there satisfactory provision of isolation facilities for infectious and potentially infectious patients?	☑	☐	☐	
3.14	Is there separation of dirty areas from clean areas to minimise the risk of HAI contamination?	☑	☐	☐	
3.15	Is there sufficient storage accommodation provided in each area of the healthcare facility for equipment which is mobile and not in continuous use?	☑	☐	☐	
3.16	Are there satisfactory facilities for storage of cleaning equipment e.g. Domestic Services room?	☑	☐	☐	

Development Stage 2: HAI-SCRIBE applied to planning and design stage of development

NHS Lanarkshire

Item No	Question	Yes	No	N/A	Comments
3.17	Is the service ducting for utilities etc, conceealed to ease routine cleaning surfaces?	☑	☐	☐	
3.18	Does the service ducting for utilities provide sufficient access for maintenance and pest control.	☑	☐	☐	
3.19	Are there sufficient and conveniently sited facilities provided for the cleaning of common equipment like trolleys, wheelchairs etc?	☑	☐	☐	
3.2	Are the food preparation areas (including ward kitchens) and distribution systems fit for purpose and complying with current food safety hygiene standards?	☑	☐	☐	
3.21	Are waste management facilities and systems robust and fit for purpose? (this includes local and central storage, systems for movement of waste to central storage, systems for handling and compaction of waste, systems for separation and security of waste, especially healthcare clinical waste.)	☑	☐	☐	
3.22	Is the water distribution system designed to discourage bacterial growth and to ensure delivery of hot and cold water to users at the appropriate temperatures?	☑	☐	☐	

Development Stage 2: HAI-SCRIBE applied to planning and design stage of development

NHS Lanarkshire

Item No	Question	Yes	No	N/A	Comments
3.23	Is the drainage system design, epscially within the healthcare facility building, fit for purpose with access points for maintenance carefully sited to minimise HAI risk?	☑	☐	☐	
3.24	Are there satisfactory arrangements for effective management of laundry? (This includes local and central storage, systems for movement of laundry to central storage, systems for handling laundry, systems for separation and security of laundry, espcially contaminated laundry.)	☑	☐	☐	
3.25	Are there sufficient and suitably sited facilities for bed pan washing/disposal?	☑	☐	☐	

Notes relating to Development Stage 2

NHS Lanarkshire

Please now complete the HAI-Scribe risk assessment on the next page to confirm the risk/s identified at Development Stage 2.

Development Stage 2 completed by [redacted] 7/7/2010

Signature [redacted] Date 7/7/2010

Signature _____ Date _____

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Signature _____ Date _____

NCH

Development Stage 1: HAI-SCRIBE applied to the proposed site for development

NHS Lanarkshire

Item No	Question	Yes	No	N/A	Comments
2.1	Is Contaminated land an issue? (eg smallpox - also refer to contaminated land register	☐	☐	☐	
2.2	Are there industries or other sources in the neighbourhood which may present a risk of noise, smell, other pollution or infection e.g. animal by-products processing plant?	☐	☐	☐	
2.3	Are there industries or other sources in the neighourhood which may present a risk of noise, smell, other pollution which might affect the designed operation of the healthcare facility e.g. windows and ventilation systems in the healthcare being kept closed because of a sewage treatment plant?	☐	☐	☐	
2.4	Are there constructin/demolition works programmed in the nieghbourhood which may present a risk of noise, smell, other pollution or infection e.g. fungal infection?	☐	☐	☐	Completed for outline business case – Annette Rankin
2.5	Are there cooling towers in the neighbourhood which may present a risk of legionella infection?	☐	☐	☐	
2.6	Does the topography of the site in relation to the surrounding area and the prevailing wind direction present any ptential HAI risk e.g. from entrainment of plumes containing legionella?	☐	☐	☐	

Development Stage 1: HAI-SCRIBE applied to the proposed site for development

NHS Lanarkshire

Item No	Question	Yes	No	N/A	Comments
2.7	Is there a locally recognised increased risk of contamination/infection e.g. cryptosporidium?	☐	☐	☐	
2.8	Will the proposed development impact on the surrounding area in any way which may lead to restrictions being applied to the operation of the proposed facility which may in turn present potential for HAI risk e.g. storage and collection arrangements for healthcare clinical waste leading to pressure to reduce collection frequency?	☐	☐	☐	
2.9	Will lack of space limit the proposed development and any future expansion of the facility?	☐	☐	☐	

Notes relating to Development Stage 1

NHS Lanarkshire

Please now complete the HAI-Scribe risk assessment on the next page to confirm the risk/s identified at Development Stage 1.

Development Stage 1 completed by _____

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Signature _____ Date _____

Signature _____ Date _____

Signature _____ Date _____

Signature _____ Date _____

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Development Stage 2: HAI-SCRIBE applied to planning and design stage of development

NHS Lanarkshire

Item No	Question	Yes	No	N/A	Comments
3.1	Does the design and layout of the healthcare facility inhhibit the spread of infection?	☑	☐	☐	
3.2	Is the ventilation system design fit for purpose, given the potential for infection spread via ventilation systems?	☑	☐	☐	
3.3	Has account been taken of the use of natural ventilation being affected by neighbourhood sources of environmental pollution as discussed in Development Stage 1?	☑	☐	☐	There is the facility for filters on air intake
3.4	Is the interior of the healthcare facility easy to clean and maintain clean? (Surfaces of floors, walls and ceilings should be appropriate to the particular room and the required management of infection risk. Thus, carpeted floors in offices may be appropriate but not appropriate in clinical areas. There should be coving at right angle junction of walls, floors and celings to ease effective cleaning.)	☑	☐	☐	
3.5	Does each ward allow sufficient space between beds to comply with the current guidance, thus facilitating the healthcare services to the patients, which in turn may reduce HAI risk?	☑	☐	☐	Where there are no single rooms, bed spacing is compliant.

Development Stage 2: HAI-SCRIBE applied to planning and design stage of development

NHS Lanarkshire

Item No	Question	Yes	No	N/A	Comments
3.6	Are there facilities to enable high standards of hand hygiene to be maintainted? For example, standards specified in: * 'Improving Clinical Care in Scotland Healthcare Associated Infection (HAI); Infection Control' (QIS 2003); * 'Standards Healthcare Associated Infection (HAI) Infection Control' (CSBS 2001). (Hand-wash basins, liquid soap dispensers, paper towels and alcohol gel despensers must be provided in sufficient numbers and be readily accessible. It should be noted that the effective use of alcohol gel first requires hands to be physically clean.)	☑	☐	☐	
3.7	Where curtain rails and curtains are fitted are they easy to clean and maintain clean?	☑	☐	☐	
3.8	Is the toilet, bath and shower accommodation conveniently sited in relation to the ward and, where possbile, is this accommodation en-suite?	☑	☐	☐	
3.9	Is the toilet, bath and shower accommodation accessible for cleaning purposes and is the accommodation easily cleaned?	☑	☐	☐	
3.10	Does the ventilation of the toilet, bath and shower accommodation ensure extraction of air from the room to be outside air?	☑	☐	☐	

Item No	Question	Yes	No	N/A	Comments
3.11	Are the staff changing facilities suitably sited, have sufficient space, and readily accessible?	☑	☐	☐	
3.12	Are the staff showering facilities suitably sited and readily accessible for use, particularly in the event of contamination incidents?	☑	☐	☐	
3.13	Is there satisfactory provision of isolation facilities for infectious and potentially infectious patients?	☑	☐	☐	
3.14	Is there separation of dirty areas from clean areas to minimise the risk of HAI contamination?	☑	☐	☐	
3.15	Is there sufficient storage accommodation provided in each area of the healthcare facility for equipment which is mobile and not in continuous use?	☑	☐	☐	
3.16	Are there satisfactory facilities for storage of cleaning equipment e.g. Domestic Services room?	☑	☐	☐	

Item No	Question	Yes	No	N/A	Comments
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3.18	Does the service ducting for utilities provide sufficient access for maintenance and pest control.	☑	☐	☐	
3.19	Are there sufficient and conveniently sited facilities provided for the cleaning of common equipment like trolleys, wheelchairs etc?	☑	☐	☐	
3.2	Are the food preparation areas (including ward kitchens) and distribution systems fit for purpose and complying with current food safety hygiene standards?	☑	☐	☐	
3.21	Are waste management facilities and systems robust and fit for purpose? (this includes local and central storage, systems for movement of waste to central storage, systems for handling and compaction of waste, systems for separation and security of waste, especially healthcare clinical waste.)	☑	☐	☐	
3.22	Is the water distribution system designed to discourage bacterial growth and to ensure delivery of hot and cold water to users at the appropriate temperatures?	☑	☐	☐	

Item No	Question	Yes	No	N/A	Comments
3.23	Is the drainage system design, epscially within the healthcare facility building, fit for purpose with access points for maintenance carefully sited to minimise HAI risk?	☑	☐	☐	
3.24	Are there satisfactory arrangements for effective management of laundry? (This includes local and central storage, systems for movement of laundry to central storage, systems for handling laundry, systems for separation and security of laundry, espcially contaminated laundry.)	☑	☐	☐	
3.25	Are there sufficient and suitably sited facilities for bed pan washing/disposal?	☑	☐	☐	

Notes relating to Development Stage 2

NHS Lanarkshire

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Development Stage 2 completed by _____

Signature [redacted] Date 7/7/2010

Signature [redacted] Date 7/7/2010

Signature _____ Date _____

Signature _____ Date _____

Signature _____ Date _____

Signature _____ Date _____

Signature _____ Date _____

Signature _____ Date _____

List of Revisions –
FIRST CONTRACT ISSUE 25/2/10
SECOND CONTRACT ISSUE 17/9/10
THIRD CONTRAC
General information and Documents – to be read in conjunction with Appendix M&E4 and Section 10.00 of ERs

Present	25/9/10	13/10/10	10/11/10	8/12/10	January 2011 date to be confirmed
Meeting theme	General tracker issues	General tracker issues – wrap up issues to FBC	Whole site energy issues	BMS	Energy implications of equipping
David Hall C&B	³	Invited	Invited	Invited	Invited
Graham Thompson C&B	³	Invited	Invited	Invited	Invited
Kenny Todd WSP	³	Invited	Invited	Invited	Invited
Darren Pike BE	³	Invited	Invited	Invited	Invited
Hugh McDerment NHSGGC	³	Invited	Invited	Invited	Invited
Guy Willis-Robb ZBP	³	Invited	Invited	Invited	Invited
Robert O'Donovan Mercury	³	Invited	Invited	Invited	Invited
Susan Logan Ecoteric	³	Invited	Invited	Invited	Invited
Darren Smith		Invited	Invited	Invited	Invited
Manny Ajuwon		Invited	Attend if desired	Invited	Invited
Anna Brown or John Wiggett		Invited	Attend if desired	Attend if desired	Attend if desired
John Bushfield (or other rep from WW)		Attend if desired	Attend if desired	Invited	Attend if desired
NHS GGC energy manager (HmcD to advise who should be invited)		Attend if desired	Invited	Invited	Invited
NHS GGC procurement adviser (HmcD to advise who should be invited					Invited

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Circulation
BMJ Architects Rajib Deb, Stephanie Gan
Brookfield Construction (UK) Ltd Manny Ajuwon, Ian Armstrong, Eva Gkenakou , Alan Keeley, Darren Pike, Darren Smith Currie & Brown
David Hall
Glasgow NHS Board Shiona Frew, Hugh McDerment, Peter Moir, Alan Seabourne Ironside
Farrar James Miller
Mercury Engineering (Ireland) Robert O'Donovan NIGHTINGALE
ASSOCIATES Anna Brown, JOHN WIGGETT URS Corporation
Ltd Graham Annandale
Wallace Whittle/Harley Haddow John Bushfield
WSP Buildings David Bownass, Rebecca Hart, Kenny Todd, Gail Williams Zisman
Bowyer & Partners LLP Steven Pardy

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SECTION 1 EARLY DESIGN ISSUES						
ISSUE/ REFERENCE		ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green action completed, pink action not yet completed)	RECORD OF MEETINGS AND OUTSTANDING ACTIONS
TARGETS						
Operational energy target	Set target	ALL	The operational target for this development is 80 $Kg/CO_2/m^2$/annum. The working design target is 40 (asset rating, E&W EPC version compatible with BREEAM excellent)	Completed	COMPLETE AND IN CONTRACT	No further action required in this stage
	Scope of target	ALL	Scope is new development (hospital and laboratories and includes all distribution from and plant within the energy centre	Completed	COMPLETE AND IN CONTRACT	No further action required in this stage
	Hours of operation/occupancy/ factors affecting operational energy use.	C&B, NHS GGC	Decide on how operational hours and occupancy will be recorded and conveyed to designer/contractor. Decide if there will BCL any other stated parameters affecting the operational energy target.	Completed	Hours are as per Clinical Output Specifications. Other parameters are defined in appendix A of this document	No further action required in this stage
	Confirm method of calculation at design stage	BCL	Confirm method based on employer's requirements	completed	Detailed calculations for elemental energy consumption have used an Excel spreadsheet supported by IES Thermal modelling exercises	No further action required in this stage
	Confirm how the target will BCL	Ecoteric to monit	Confirm method based on employer's requirements. Bidder to state and	Preferred bidder stage	The energy modelling tool will be a live document	No further action required in this stage

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	monitored through the design stage	or	quantify impact of climate change within structural life of building. State why data used is believed competent		and regularly updated as the detailed design and specifications advance in order to continually track the target as the design brief/design develops. The plant will include margins (25% on AHUs as requested by Board's ITPD which will incorporate an allowance for Climate Change. The energy model is based on these allowances.	
	Confirm how target will BCL monitored in operational phase	BCL	Confirm method based on employer's requirements. - Bidder shall propose a normalisation method that is equitable, and applies to both increases and decreases in occupancy, hours of operation, changes of use, and heat gain / reduction due to installation / removal of fixed and mobile energy	Preferred Bidder Stage	As part of the building user guide, a document will be prepared by ZBP for use by the Hospital FM team, that uses a system of KPI's. The monitoring will also include an electrical energy	No further action required in this stage

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			consuming equipment.		management metering system to provide actual consumption information. The Zutec asset management system will locate all information and interface with EMMS Detail required in later sections of this tracker	
	Set Contractual remedy for failure to meet target	NHS GGC	Confirm method based on employer's requirements	Preferred Bidder Stage	See appendix A of this tracker.	No further action required in this stage
	Involve operational energy manager	NHS GGC	Consult and involve operational energy manager in process	Preferred Bidder Stage	Invite to meetings periodically – Ian Powrie, Trust Energy manager and/or site energy manager	To be invited to future meetings as identified on front page Action Hugh McDerment
	Overall audit procedure	BCL	Confirm that all information to determine adherence to targets and to evaluate design and design processes will be made available	Preferred Bidder Stage	BCL will use a transparent audit process.- need to set key audit dates	Key audit dates set in following sections

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			to client's representative as requested and in sufficiently comprehensive and transparent format to evaluate. Scope as defined in ERs. Confirm key sustainability and energy information , cost benefit can be made available publically to inform future development			
OPTION APPRAISALS AND APPOINTMENTS						
Energy model		ZBP	Provide sketch scheme energy models based on options considered illustrating how design targets have been calculated and confirming methodology for calculation through to building operation	Completed	Refer to Energy Strategy Report Volume 3.0/3.20	No further action at this stage
			Provide sketch scheme energy models based on options considered illustrating how operational targets have been calculated and confirming	Completed	Refer to Energy Strategy Report Volume 3.0/3.20	No further action at this stage

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			methodology for calculation through to building operation			
	Internal appointment	NHS GGC	Appoint internal manager and /or external auditor to oversee low carbon and sustainability process. Allocate staff resource to managing process and keeping tracker.	Prior to issue of output spec	Hugh McDerment appointed	No further action at this stage
Specific studies		C&B	Sustainable cooling – ground investigation	Prior to issue of output spec	Complete	No further action at this stage
		BCL	Sustainable cooling – feasibility. Needs to follow on from ground investigation and results implemented in output specification	complete	Ground cooling does not provide sufficient carbon savings against the large capital investment and operational cost. Refer to Energy Strategy Report Volume 3.0/3.20 for further detail	No further action at this stage
		BCL	Renewables/LZC – establish which renewable energy sources are viable and include firm requirements in proposals (see also whole site energy strategy)	Prior to FBC	The contractors proposals include 3MWe CHP coupled with absorption cooling and 12 vertical axis wind turbines with a rated output of (please confirm) the	Noted that wind turbines are now omitted and a visual display tracker system is to be substituted – details to be developed

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					emergent design to be monitored to ensure contractors proposals are implemented	
Programme and resources		BCL	Include time in master programme for site studies and investigation.	Prior to FBC	Not yet issued	
Site selection	Noise		Undertake Site specific noise assessment of potentially noisy or noise sensitive sites to establish if site choice will lead to sealed building, additional acoustic treatment. Factor into cost plan or choose alternative site.	Prior to issue of output spec	Noise assessment report complete	
	Pollution		Undertake assessment of likely pollution sources to establish if site choice will lead to sealed building or air treatment. Need to avoid permanently sealed building	Prior to FBC	See minutes of 10/12/09. No confirmation as yet as to whether building is sealed or not although confirmation has been given that the building is not reliant on natural ventilation.	Confirmed building is sealed. Issue now closed but not positive outcome re carbon.
	Footprint		Evaluate fit to determine if building will BCL driven deep plan through restricted footprint. If so, choose alternative site, increase	Audits prior to issue of output spec	Site options report complete	No further action at this stage

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			levels or reduce accommodation.			
	Daylighting potential		Evaluate proximities to building to determine if building will be heavily over shaded. If so choose, alternative site or orientate building such that only areas not requiring daylight are overshaded.	Audits prior to issue of output spec	Site options report and daylight model	
Site wide energy strategy	Strategy present	NHSG GC	Whole site energy strategy – need to have master plan for energy use on retained as well as new development and optimise plant selection in new energy centre.	Early design stage – April-May 2010	Commission study from energy specialist and incorporate requirements into output specification. Determine what the basis of the energy centre sizing was and if it is still correct. Establish a clear trail of calculations and modelling to highlight basis.	To be discussed at meeting in November – please provide all background information on whole site loads, assumptions in plant sizing and any strategies developed to date to Ecoteric to review by next meeting. Noted that the development of a whole site energy strategy is likely to be a 3 month process and that infrastructure decisions need to be made before Mach 2011 when main roads start to be built Action DP/ZBP/DH
		NHSG GC	Establish if site wide energy supply is appropriate to building.	Early design stage – April-	As above	As above

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			If it is, establish most efficient distribution and conversion option.	May 2010		
	Grants	BCL/NHSGGC	Evaluate grant options and research availability and requirements	Early design stage – to follow issue of initial design proposals and detailed renewables feasibility study	Grant options to be included in energy feasibility study	Grants not believed to be available through national programmes due to introduction of FITs SCL to contact CT to see if any other options are possible
	Bio gas/ alternative fuels	NHSGGC	Continue feasibility investigation on use of biogas and negotiations with Sustainable Glasgow	Early design stage – April-May 2010	Decide if there is likely to be any impact on the energy centre and include provision for future if necessary.	Future provision confirmed as gas connection and space for 2? additional boilers – DP to confirm.
	Site investigation	C&B	Undertake site investigation with respect to bore holes, ground linking, wind turbines, other renewable and low carbon heating and cooling sources. See above re ground investigation	complete	Site investigation report feeding into energy study and whole life cost and carbon model	No further action at this stage
User operational requirements	User education	NHSGGC	Brief users in low energy principles to ensure ADB sheets do not conflict with Low carbon principles	Prior to preparation of ADB sheets	Training session for major projects	Confirmed that there is to be a master environmental conditions sheet and that ADB sheets will not contain environmental information. Provide sheet for review by

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						Ecoteric. See also action in next section Action: HMcD
	Guidance	NHSG GC	Manage expectations in terms of air conditioning – set principles and issue guidance. Embed in operational policies as relevant.	Prior to preparation of ADB sheets	Guidance notes and exemplar ADB's issued – ensure these are owned by design team and principles embedded.	As above
	Audit user briefs	NHSG GC	Sustainability auditor to evaluate user briefs for compatibility with overarching technical brief	Prior to issue of user briefs	Audit report and modified brief	Stage complete
SKETCH SCHEME – ADULT AND CHILDRENS HOSPITAL						
Internal planning	Layout	BCL	Internal planning to address generic ADB sheet requirements for access to natural ventilation and daylight	Prior to FBC	1:200s , 1:100s to be made available to Ecoteric for comment. Ecoteric to be added to Extranet and receive notifications of drawing issue.	Appendix K information to be made available to Ecoteric _ SCL to arrange with Shiona
	Courtyards and atria	BCL	Carry out study to ensure any courtyards or atria proposed provide adequate views out, daylight, natural ventilation opportunities and do not compromise acoustics requirements. If not, redesign.	Prior to FBC	Design of all courtyards, allows the use of natural ventilation without compromise of noise criteria set out in HTM 08-01, this is due to barrier effects	Confirmed that courtyards are much larger than earlier hospital designs

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					provided to courtyards, from surrounding building elements – discussion found in Acoustic Report	
	Proximity to pollutants	BCL	Internal planning to avoid siting openable window and air intakes near polluting sources	Prior to FBC	Plant layouts will address the positioning of exhaust points to prevent short circuiting to ventilation air intakes and openable windows. Refer to drawing section Vol.2.23 for indicative plantroom layouts.	No further action at this stage
	Proximity to sources of noise	BCL	Internal planning to avoid siting openable window and noise sensitive areas near to sources of noise	Prior to FBC	Noise sources which may affect openable windows in a hospital environment will be from mechanical plant. All plant rooms will be treated so that noise emissions fully comply with environmental	No further action at this stage

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					criteria – traffic noise controlled due to silting of building away from busy roadways – discussion found in Acoustic Report.	
	Orientation	BCL	Option appraisal looking at siting of areas on particular orientation	Prior to FBC	Early design drawings	No further action at this stage
Audits	Low carbon Audits	BCL	To be submitted to sustainability auditor for comment	Prior to FBC	Auditors comments on issues listed above	To be reviewed prior to FBC for any opportunities – need access to key documents as above- action SCL and SF
	Acoustic	AL	Confirm acoustic audit stages	Prior to FBC	Acoustic Logic will perform audits, as detailed in: VOL 2/1 Appendix S – Acoustic Requirements – provide copy of completed early design audit	Acoustics will be deleted from this tracker on next revision as not considered relevant to low carbon issues now that building form is set
	Façade development	BCL	Provide optimisation study looking at daylighting/ shading /extent of glazing/ summertime temperature/ room height/ opening types/ ventilation options.	Urgent – for FBC	Thermal modelling has been undertaken to determine the balance between daylighting and thermal	Need to complete studies looking at glass selection, differentiation in selection according to orientation, optimum choice of blinds, shading and reveals,

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					performance and inputted into the façade selection. Refer to Volume 3.0/3.9. Provide more detailed copy of model output	window splay angles to make sure there is an optimum balance between daylighting and heat gain/loss Action: Nightingales -
	Fabric Development	BCL	Cost benefit analysis of thermal mass, reduced air infiltration and insulation options	Urgent – for FBC	Optimisation report– needed now	Confirmation needed of infiltration and U values for comment before FBC Action Nightingales to provide information, Ecoteric to comment
	Plant space and access studies	BCL	Space studies to allow options for passive ventilation and heat recovery	Urgent – for FBC	Optimisation report and space studies needed now- confirm systems proposed and HR opportunities	Review of schematics needed prior to FBC so that there is clarity on the extent of heat recovery and whether there are any options for process heat recovery. Also review of layouts to see if there are any non clinical areas which would benefit from passive ventilation particularly the atria and associated areas Action Action

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						Nightingales/ZBP to provide information, Ecoteric to comment
	Systems development	BCL	Options studies on proposed ventilation and energy supply strategies, integrating supply and demand side.	Urgent – for FBC	Action to calculate/model based on estimated occupancy and times and revise ventilation rate if evidence suggests a lower rate is possible. Night setback to be included in design for lower operational energy reasons. Action DE/ZBP	Need to resolve the air change rate issues particularly to the wards. This currently is 4 ac/hr, bid was 2.5ac/hr and ER's required 6ac/hr. This appears to have been based on assessment of the number of people in a room. However this assumes room is permanently occupied SCL suggested that an evaluation should be made based on performance, with some modelling of the decay/rise of pollutants with intermittent occupation– the objectives being to maintain CO2 at or below 1000ppm and dilute bacteria/viruses. Estimated bacteria /virus load is 1000 particles per person per minute, of which 10% may carry infection. Acceptable colony counts vary on type of infection, and approach would be different for known infections in isolation facilities. See however WHO document appended. Needs further discussion
	Hot water efficiency	ZBP	Option appraisal for HWS generation and systems	Urgent – for FBC	Provide option appraisal with carbon implications	Review of schematics needed prior to FBC Action ZBP to provide

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					of systems considered.	information, Ecoteric to comment
Site layout	Microclimate	BCL	Studies looking at effect of heat islands, hard landscaping, trees, over shading, water on proposed building	Outline for FBC, full development in detailed design phase	Input to modelling	Need to build in to heat gain assumptions, plant locations and landscaping proposals – Action ZBP/Nightingales – respond in modelling report
	Massing	BCL	Option appraisal looking at narrow plan options	complete	Building massing was set at bid stage- generally narrow plan except for podium level.	Issue closed
	Wind studies	BCL	Commission studies on wind effects to determine optimum cladding and detailing for air tightness, wind effects at entrances and avoidance or pollutants being drawn into air intakes	Detailed design stage	Wind effect modelling – confirm commissioned	These are reported to be commissioned. Report to include issues identified here. Action ZBP/Nightingales – respond in modelling report
	Pollutants	BCL	Site layout options with respect to access roads, parking and other pollutants and proximity to air intakes and windows	complete	Site layout set at bid stage	Issue closed
Energy model		BCL	Provide sketch scheme energy models based on options considered	complete	Sketch Energy model and input to whole life cost model competed at bid stage	Issue closed at this stage
The above studies and options must then BCL summarised into a stage report with all key decisions recorded and						Provide report Action

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whole life cost and carbon model optimised. The energy model must at this stage show compliance with design target and development towards operational target. The report must before proceeding to next stage if necessary.		BCL	BCL audited and corrective action taken			BCL

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SECTION 2 STAGE C-D DESIGN to FBC MAIN and CHILDRENS HOPITALS						
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BUILDING SERVICES SYSTEMS						
General systems options	Energy sub metering	ZBP/WSP/ NHSGGC	Agree and record logical cost and ownership centres, site strategy for metering and monitoring and then provide drawings indicating appropriate departmental meters. Check BREEAM requirements met	End stage D prior to FBC	Metering strategy drawing and performance specification – develop through meetings with site and trust energy manager.	Agreed to discuss at meeting of 10/11/10 Action: HMc D to invite energy manager
	Choice of internal deign conditions	ZBP/WSP	Have all internal design temperatures and humidities been specified with agreed tolerances to ensure lowest energy consumption and avoidance of reheat? See also ADB sheets section	End stage D prior to FBC	Schedule of summer and winter design internal conditions and humidities – see action from section 1	– see action from section 1
	Choice of filtration	ZBP	Have filter clean and dirty resistances been specified to optimise energy cost versus filter cost	End stage D prior to FBC	Sample calcs -	Consider sample AHU Action ZBP
	System zones	ZBP	Drawings, schematics and system description indicating how different heating and cooling requirements (time /temp/gains) can be controlled separately Schematics required for evaluation by auditor prior to detail design commencing	End stage D prior to FBC	Schematics and auditors comments	Provide schematics for review – Action ZBP
	Local controls	ZBP	Develop strategy for local controls. Check BREEAM	End stage D prior to FBC	Schematics and auditors comments	Provide schematics for review – Action

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			requirements			ZBP
	System selection	ZBP	Drawings, schematics and system description indicating how systems are designed to meet seasonal variations in demand Schematics required for evaluation	End stage D prior to FBC	Schematics and auditors comments	Provide schematics for review – Action ZBP
	Heat recovery	ZBP	Heat recovery strategy to be produced demonstrating opportunities and viability.	End stage D prior to FBC	Schematics and auditors comments	Provide schematics for review – Action ZBP
	High efficacy internal lighting	ZBP	Schedule of design illuminance, proposed light fittings and schedule of lumens per cc watt achieved (typical per area acceptable). Strategy for low energy lighting required for evaluation	End stage D prior to FBC	DEER calculation typical and auditors comments	Need to carry out lighting review – can be carried into next section provided FBC contains statement of principle in line with requirements of appendix M&E4 of ERs
	Lighting control	ZBP	Description of operation of proposed lighting controls and drawings indicating where each type of control is used. Strategy for low energy lighting required for evaluation. Check BREEAM requirements	End stage D prior to FBC	Outline drawings and description and auditors comments	Need to carry out lighting review – can be carried into next section provided FBC contains statement of principle in line with requirements of appendix M&E4 of ERs

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	High efficacy external lighting	ZBP	Schedule of design illuminances, proposed light fittings and schedule of lumens per cct watt achieved (typical per area acceptable).	End stage D prior to FBC	DEER calculation typical and auditors comments	Need to carry out lighting review – can be carried into next section provided FBC contains statement of principle in line with requirements of appendix M&E4 of ERs
	Security lighting controls	ZBP	Description of operation of proposed lighting controls and drawings indicating where each type of control is used. Strategy for low energy lighting required for evaluation. Check BREEAM requirements	End stage D prior to FBC		Need to carry out lighting review – can be carried into next section provided FBC contains statement of principle in line with requirements of appendix M&E4 of ERs
	Fan/pump speeds	ZBP	Statement regarding criteria for specifying VSD's and plant schedules indicating where specified – provide schematics and design details for evaluation	End stage D prior to FBC	provide schematics and design details for evaluation	Need to carry out motor review – can be carried into next section provided FBC contains statement of principle in line with requirements of appendix M&E4 of ERs

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	Direct drive motor /belt drive/ motors in airstream		Strategy for each type of AHU – provide a typical comparison of the energy implications of a direct driven/belt driven/in airstream /not in airstream	End stage D prior to FBC		Need to resolve in principle the main fan configurations for AHUs as this can have major implications over the life of the plant.
	Air conditioning measures	ZBP	Statement of measures taken to avoid air conditioning. Statement of areas making use of free cooling and control strategy to maximise benefit.	End stage D prior to FBC	provide schematics and design details for evaluation	Need to carry out system review – can be carried into next section provided FBC contains statement of principle in line with requirements of appendix M&E4 of ERs
	Renewables. Central energy supply and Combined heat and power (CHP)	ZBP	Business case to be provided if necessary. Provide confirmation that recommended measures identified in feasibility are now implemented in the design.	End stage D prior to FBC	Provide schematics and confirmation of funding	
	Grant funding	BCL	Grant funding applied for and in place	End stage D prior to FBC	Funding applications and confirmation	As section 1
	Bio gas/ alternative fuels	NHSG GC	Continue feasibility investigation on use of biogas and negotiations with Sustainable Glasgow	End stage D prior to FBC	Decide if there is likely to be any impact on the	Action as section 1

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					energy centre and include provision for future if necessary.	
	Building energy management systems (BCLMS)	ZBP	Confirmation that BMS is specified, and provide confirmation from building manager on arrangements and responsibilities for training and operation	End stage D prior to FBC	Building management operational policy, input to revenue funding appraisal	Proposals for review in principle for Appendix K submission, will be followed up in more detail in section 3. Supplier will be selected by next meeting – progress action at November meeting
	Heat recovery	ZBP	Schedule of heat recovery devices, plant capacities and areas served. Include systems where heat recovery (if any) has not been used and justification for omission	End stage D prior to FBC	Provide schematics and details of proposed systems	Review of schematics as previous action in section 1
	High frequency ballasts	ZBP	Ensure these are specified	End stage D prior to FBC	Provide details of luminaires	Need to carry out lighting review – can be carried into next section provided FBC contains statement of principle in line with requirements of appendix M&E4 of ERs

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	Hot water efficiency	ZBP	Confirmation that systems with best carbon profile/WLC have been specified	End stage D prior to FBC	System schematics	Action as section 1
OVERALL BUILDING ISSUES						
Fabric	U values	BCL	Schedule of U values. Look in particular at overall frame and glass U values for curtain walling.	End stage D prior to FBC	U values confirmed at bid stage as glazing 1.4 W/m^2K, external wall 0.3 W/m^2K, roof 0.25 W/m^2K. Confirm at this stage with manufacturer's information and layer calculations.	To be stated in appendix K submission. Provide manufacturer's calculations at next stage Action Nightingales
	Air permeability	BCL	Confirmation of air permeability and the standards to which the building will be designed AND tested	End stage D prior to FBC	Air permeability confirmed at design stage Clarification 005 as $5m^3/hr/m^2$@50Pa. Re confirm at this stage	To be stated in appendix K submission Action Nightingales
Modelling	Net CO_2 emission	BCL	Detailed model to be produced based on stage D design. Corrective action if needed to be undertaken before scheme proceeds	End stage D prior to FBC – Urgent needs to align with appendix K submission – date to be advised as soon as	Model and interpretative report confirming design objectives have been met or corrective action needed if not.	Provide report as required in appendix M&E4 of ERs for FBC – it is accepted that there will be some assumptions but please state all uncertainties/risks/

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				possible		assumptions as clearly as possible for follow up at next stage – action BCL
		BCL	Output from energy calculation, along with schedule of input data and occupancy/ usage/internal gain defaults Must produce model and comparison with both design and operational targets	End stage D prior to FBC	Provide full design model at this stage and update operational model	As above
WLC	Whole life cost model	BCL	Update model and check that cost plan includes for lowest whole life cost and carbon design. Check BREEAM requirements have been met	End stage D prior to FBC	Provide detail of WLC cost exercise in relation to major energy consuming elements – central plant selections and envelope.	Action B CL
ADB	ADB Sheets	BCL/NHSGGC	Create master set of ADB sheets embracing low carbon objectives and ensure these are used on all ADB sheets generated for the project with a definition sheet	End stage D prior to FBC		Debate on maximum internal temperature. Temperature set in ERs at 26C to drive a solution where cooling was included but there may be flexibility in set points and humidity to allow for lower carbon in

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						use. Need to review master environmental condition sheets. Action as section 1
INTERNAL ENVIRONMENT						
Facade	Passive ventilation and façade engineering	ZBP/WSP	Ventilation and façade recommendations from sketch scheme phase report to be confirmed as implemented	End stage D prior to FBC	Elevations/sections and plans confirming implementation of proposals	Action as section 1
Ventilation	Fresh air rates	ZBP/WSP	Confirmation of HTM 03-01 compliance Check BREEAM requirements have been met	End stage D prior to FBC	Include in design statement with sample compliance calculations	Action ZBP
Acoustics	Acoustics	ZBP/WSP			Acoustics not considered in this meeting	
Daylighting and Glare	Daylighting	ZBP/WSP	Provide daylighting calculations	End stage D prior to FBC	As above	Action as section 1
		ZBP/WSP	Check lighting control to all possible areas makes use of available daylight	End stage D prior to FBC	As above	Need to carry out lighting review – can be carried into next section provided FBC contains statement of principle in line with requirements of appendix M&E4 of ERs

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	Glare control	ZBP/WSP	Check that design avoids lights on blinds down issues	To be completed in detailed design phase	As above	To be carried over to next stage
Internal areas		BCL	Final check to ensure there are no internal areas other than clinical which are designed to be occupied for more than 30 minutes	End stage D prior to FBC	Include in design statement	Review of layouts and planning to be undertaken action Nightingales
NON SYSTEM RELATED ENERGY ISSUES						
Equipment	Energy consuming equipment	BCL	Create a generic schedule of energy consuming equipment and including realistic assessments of energy consumption and heat emission to the space	To be completed in detailed design phase	Schedule including energy consumption and heat emissions	To be considered at meeting in January – action all, procurement adviser to be invited – action HmcD
		BCL	Formulate procedures and documents for procuring energy efficient equipment and get agreement from client on process and timetable. Check BREEAM requirements have BCLen met for Ene 15 which requires procurement on WLC and carbon issues		Provide schedule of new equipment and specifications, which should incorporate whole life costing element including assessment of energy consumption.	As above
Whole site energy strategy	Renewables	ZBP	Are these now incorporated in planning procedure and planning drawings		Supply drawings and specification	To be discussed at meeting in November

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			Does the design allow for the retro-fitting of active solar devices, PVs etc. when not fitted initially and when economic case is strong?		Confirm proposals	To be discussed at meeting in November
			Has provision been made if necessary for alternative fuel such as biogas – what is implication and cost?		Confirm proposals	To be discussed at meeting in November
	Implementation of site /building energy strategy		Has the strategy determined in section 1 been implemented, specified and funded and reflected in the scheme proposals and specification?		Drawings, specification and cost plan	To be discussed at meeting in November
At the end of the design stage leading to FBC, all the above issues should have been addressed and a design statement prepared. The low carbon auditor will need to have seen all above listed detail, commented on the issues and be able to confirm to the Carbon Trust and the Board that the design meets the objectives in the employers requirements and targets.						

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BUILDING SERVICES SYSTEMS						
General systems options	Energy sub metering	ZBP/WSP/ NHSGGC	Check BREEAM requirements met. Specification for BMS/AMT to be provided	FBC approval to end stage E	Agree detail of how metering will monitor and report	
	Choice of filtration	ZBP	Have filter clean and dirty resistances been specified to optimise energy cost versus filter cost	FBC approval to end stage E	Sample technical schedules from suppliers	
	System zones	ZBP	Drawings, schematics and system description indicating how different heating and cooling requirements (time /temp/gains) can be controlled separately Detailed drawing sample checking	FBC approval to end stage E	Final Schematics and detail drawings auditors comments	
	Local controls	ZBP	Develop strategy for local controls. Check BREEAM requirements, Provide descriptions of operation for each system	FBC approval to end stage E	Descriptions of operation and auditors comments	
	Heat recovery	ZBP	Heat recovery strategy to be produced demonstrating opportunities and viability.	FBC approval to end stage E	Sample of Detail drawings and Schematics and auditors comments	

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	High efficacy internal lighting	ZBP	Schedule of design illuminance, proposed light fittings and schedule of lumens per cc watt achieved (typical per area acceptable). Strategy for low energy lighting required for evaluation	FBC approval to end stage E	Provide final detail if changed from previous stage	
	Lighting control	ZBP	Description of operation of proposed lighting controls and drawings indicating where each type of control is used. Strategy for low energy lighting required for evaluation. Check BREEAM requirements	FBC approval to end stage E	Sample final design drawings and auditors comments	
	High efficacy external lighting	ZBP	Schedule of design illuminances, proposed light fittings and schedule of lumens per cct watt achieved (typical per area acceptable).	FBC approval to end stage E	Provide final detail if changed from previous stage	
	Security lighting controls	ZBP	Description of operation of proposed lighting controls and drawings indicating where each type of control is used. Strategy for low energy lighting required for evaluation. Check	FBC approval to end stage E	As above	

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			BREEAM requirements			
	Fan/pump speeds	ZBP	Statement regarding criteria for specifying VSD's and plant schedules indicating where specified	FBC approval to end stage E	Provide confirmation of specification	
	Fan and pump selection	ZBP	Provide confirmation of fan a pump efficiencies – demonstrating use of HE motors and most efficient fan configuration.	FBC approval to end stage E	Provide indicative fan and pump schedules and details	
	Fan and pump WLC	ZBP	Demonstrate that selections made on best WL carbon performance	FBC approval to end stage E	Provide WL carbon calcs	
	Renewables. Central energy supply and Combined heat and power (CHP)	ZBP	Provide confirmation that recommended measures identified in feasibility are now implemented in the design.	FBC approval to end stage E	Provide detailed drawings	
	Grant funding	BCL	Grant funding applied for and in place	FBC approval to end stage E	Funding applications and confirmation if not available at previous stage	

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	Building energy management systems (BMS)	ZBP	Detailed BMS specifications, proposals for head end and maintenance and training contracts in place	FBC approval to end stage E	Provide confirmation of arrangement and acceptability to Board end users	
	Heat recovery	ZBP	Schedule of heat recovery devices	FBC approval to end stage E	Provide sample detailed heat recovery efficiencies	
	Hot water efficiency	ZBP	Confirmation that systems with best carbon profile/WLC have been specified	FBC approval to end stage E	final schematics and sample detailed drawings	
OVERALL BUILDING ISSUES						
Fabric	U values	BCL	No further action at this stage unless there are changes			
	Air permeability	BCL	No further action at this stage unless there are changes			
Modelling	Net CO_2 emission	BCL	Updated model to be produced based on final design. Corrective action if needed to be undertaken before scheme proceeds	FBC approval to end stage E	Model and interpretative report confirming design objectives have been met or corrective action needed if not.	

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		BCL	Updated model and comparison with both design and operational targets	FBC approval to end stage E	Update full design model at this stage and update operational model with detailed equipping consumption	
WLC	Whole life cost model	BCL	Update model and check that cost plan includes for lowest whole life cost and carbon design. Check BREEAM requirements have been met	FBC approval to end stage E	Update detail of WLC cost exercise in relation to major systems	
ADB	ADB Sheets	BCL/NHSGGC	Check ADB sheets before sign off	FBC approval to end stage E	Confirm all ADBs meet low carbon objectives before sign off. Provide representative cross section for record purposes.	
INTERNAL ENVIRONMENT						
Facade	Passive ventilation and façade engineering	ZBP/WSP	No further action at this stage unless there are changes			
Ventilation	Fresh air	ZBP/W	No further action at this stage			

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	rates	SP	unless there are changes			
Acoustics	Acoustics	ZBP/WSP	No further action at this stage unless there are changes			
Daylighting and Glare	Daylighting	ZBP/WSP	No further action at this stage unless there are changes			
	Glare control	ZBP/WSP	No further action at this stage unless there are changes			
Internal areas		BCL	No further action at this stage unless there are changes			
NON SYSTEM RELATED ENERGY ISSUES						
Equipment	Energy consuming equipment	BCL	Generic schedule should now be replaced by actual equipping schedule and variances affecting design resolved	FBC approval to end stage E	Schedule including energy consumption and heat emissions	
		BCL	Provide tender and selections documentation confirming equipment has been selected on WLC and carbon considerations as well as performance.	FBC approval to end stage E	Provide selection information.	
Whole site energy strategy	Renewables	ZBP	No further action at this stage unless there are changes			
	Implementation of site /building		No further action at this stage unless there are changes			

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SECTION 3 FBC APPROVAL TO END OF DESIGN PHASE MAIN and CHILDRENS HOPITALS – not yet commenced						
ISSUE/ REFERENCE	ISSUE/ REFERENCE	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)	RECORD OF MEETINGS AND OUTSTANDING ACTIONS
	energy strategy					
At the end of the detail design phase, all the above issues should have been addressed and any outstanding items from earlier phases cleared. The low carbon auditor will need to have seen all above listed detail, commented on the issues and be able to confirm to the Carbon Trust and the Board that the design meets the objectives in the employers requirements and targets.						

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SECTION 4 CONSTRUCTION PHASE MAIN and CHILDRENS HOPITALS					
ISSUE/ REFERENCE	ISSUE/ REFERENCE	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
BUILDING SERVICES SYSTEMS					
General systems options	Energy sub metering	ZBP/WSP/ NHSGGC	No further action at this stage unless there are changes		
	Choice of filtration	ZBP	No further action at this stage unless there are changes		
	System zones	ZBP	No further action at this stage unless there are changes		
	Local controls	ZBP	No further action at this stage unless there are changes		
	Heat recovery	ZBP	No further action at this stage unless there are changes		
	High efficacy internal lighting	ZBP	No further action at this stage unless there are changes		
	Lighting control	ZBP	No further action at this stage unless there are changes		
	High efficacy external lighting	ZBP	No further action at this stage unless there are changes		
	Security lighting controls	ZBP	No further action at this stage unless there are changes		
	Fan/pump speeds	ZBP	No further action at this stage unless there are changes		
	Fan and pump selection	ZBP	No further action at this stage unless there are changes		
	Fan and pump	ZBP	No further action at this stage unless		

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SECTION 4 CONSTRUCTION PHASE MAIN and CHILDRENS HOPITALS					
ISSUE/ REFERENCE	ISSUE/ REFERENCE	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
	WLC		there are changes		
	Renewables. Central energy supply and Combined heat and power (CHP)	ZBP	No further action at this stage unless there are changes		
	Grant funding	BCL	No further action at this stage unless there are changes		
			No further action at this stage unless there are changes		
	Building energy management systems (BMS)	ZBP	No further action at this stage unless there are changes		
	Heat recovery	ZBP	No further action at this stage unless there are changes		
	Hot water efficiency	ZBP	No further action at this stage unless there are changes		
OVERALL BUILDING ISSUES					
Fabric	U values	NHSGGC clerk of works	Check insulation continuity through construction period	Up to building weather tight	Site report
	Air permeability	NHSGGC clerk of works	Check integrity of building sealing	Up to building weather tight	Site report

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SECTION 4 CONSTRUCTION PHASE MAIN and CHILDRENS HOPITALS					
ISSUE/ REFERENCE	ISSUE/ REFERENCE	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
Modelling	Net CO_2 emission	BCL	Prepare as built model	Before practical completion	Final EPC
		BCL	Prepare final operational model	Before practical completion	Update operational model at this stage including any known changes in operational policy, operating hours etc.
WLC	Whole life cost model	BCL	No further action at this stage unless there are changes		
ADB	ADB Sheets	BCL/NH SGGC	No further action at this stage unless there are changes		
INTERNAL ENVIRONMENT					
Facade	Passive ventilation and façade engineering	ZBP/WSP	No further action at this stage unless there are changes		
Ventilation	Fresh air rates	ZBP/WSP	No further action at this stage unless there are changes		
Acoustics	Acoustics	ZBP/WSP	No further action at this stage unless there are changes		
Daylighting and Glare	Daylighting	ZBP/WSP	No further action at this stage unless there are changes		
	Glare control	ZBP/WS	No further action at this stage unless		

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SECTION 4 CONSTRUCTION PHASE MAIN and CHILDRENS HOPITALS					
ISSUE/ REFERENCE	ISSUE/ REFERENCE	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
		P	there are changes		
Internal areas		BCL	No further action at this stage unless there are changes		
NON SYSTEM RELATED ENERGY ISSUES					
Equipment	Energy consuming equipment	BCL	Generic schedule should now be replaced by actual equipping schedule and variances affecting design resolved	FBC approval to end stage E	Complete any outstanding actions from previous section
		BCL	Provide tender and selections documentation confirming equipment has been selected on WLC and carbon considerations as well as performance.	FBC approval to end stage E	Complete any outstanding actions from previous section
Whole site energy strategy	Renewables	ZBP	No further action at this stage unless there are changes		
	Implementation of site /building energy strategy		No further action at this stage unless there are changes		
At the end of the constructioni phase, all the above issues should have been addressed and any outstanding items from earlier phases cleared. The low carbon auditor will need to have seen all above listed detail, commented on the issues and be able to confirm to the Carbon Trust and the Board that the design meets the objectives in the employers requirements and targets.					

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SECTION 5 COMMISSIONING PHASES MAIN and CHILDRENS HOPITALS					
ISSUE/ REFERENCE	ISSUE/ REFERENCE	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
BUILDING SERVICES SYSTEMS					
General systems options	Energy sub metering	ZBP/WSP/ NHSGGC	Metering should now be set up and all software installed. Users trained and reporting systems installed	Prior to handover	Signed off report sheets and written method of operation, all points which will need to be measured for operational energy reporting set up and agreed. All cost and function areas set up and agreed. Users fully familiar with the system and able to derive reports.
	Choice of filtration	ZBP	No further action at this stage unless there are changes	Prior to handover	
	System zones	ZBP	Systems zones set up and proved to operate without simultaneous heating and cooling	Prior to handover	Report sheets and written method of operation, time and temperature and settings recorded for each zone.
	Local controls	ZBP	Operation of local controls checked and representative sample of rooms checked under load conditions	Prior to handover	Report sheets
	Heat recovery	ZBP	Performance testing	Prior to handover	All heat recovery to be

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SECTION 5 COMMISSIONING PHASES MAIN and CHILDRENS HOPITALS					
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					tested to prove rated performance is achieved in situ – test sheets
	High efficacy internal lighting	ZBP	No further action at this stage unless there are changes		
	Lighting control	ZBP	Lighting control proved to operate under varying daylight conditions, occupancy sensing proved and operational.	Prior to handover	Report sheets and written mode of operation, end users trained
	High efficacy external lighting	ZBP	No further action at this stage unless there are changes	Prior to handover	
	Security lighting controls	ZBP	No further action at this stage unless there are changes	Prior to handover	
	Fan/pump speeds	ZBP	Inverter and speed control set up and proved under varying load conditions	Prior to handover	Report sheets and written method of operation, inverter settings recorded for each system
	Fan and pump selection	ZBP	No further action at this stage unless there are changes	Prior to handover	
	Fan and pump WLC	ZBP	No further action at this stage unless there are changes	Prior to handover	
	Renewables. Central energy supply and Combined heat	ZBP	Central plant and renewable energy systems commissioned and under maintenance contract . performance testing proves operation and carbon	Prior to handover	

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SECTION 5 COMMISSIONING PHASES MAIN and CHILDRENS HOPITALS					
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	and power (CHP)		savings to be achieved.		
	Grant funding	BCL	No further action at this stage unless there are changes		
	Boigas/ alternative fuels		Conclusion and timescale for any future installation	Prior to handover	Need to provide statement of intent or outcome of negotiations
	Building energy management systems (BMS)	ZBP	Commissioning to be undertaken which optimises energy performance, sets up exception reporting for systems left in hand or disconnected and graphical interfaces fully set up and commissioned. Systems proved under load. BREEAM requirements have been met re man 1	Prior to handover	Report sheets and demonstration to auditor
	Hot water efficiency	ZBP	No further action at this stage unless there are changes		
OVERALL BUILDING ISSUES					
Fabric	U values	NHSGGC clerk of works	No further action		
	Air permeability	NHSGGC clerk of works	Airtightness testing	Prior to handover	Site report
Modelling	Net CO_2 emission	BCL	No further action		

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SECTION 5 COMMISSIONING PHASES MAIN and CHILDRENS HOPITALS					
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		BCL	No further action		
WLC	Whole life cost model	BCL	No further action		
ADB	ADB Sheets	BCL/NH SGGC	No further action		
INTERNAL ENVIRONMENT					
Facade	Passive ventilation and façade engineering	ZBP/WS P	No further action		
Ventilation	Fresh air rates	ZBP/WS P	Commissioning to demonstrate that air systems have been set up to correct flow rates and that systems are optimised for required ventilation rates and free cooling.	Prior to handover	Report sheets and proof of operation under load
Acoustics	Acoustics	ZBP/WS P	Acoustic testing undertaken		
Daylighting and Glare	Daylighting	ZBP/WS P	No further action		
	Glare control	ZBP/WS P	No further action		
Internal areas		BCL	No further action		
NON SYSTEM RELATED ENERGY ISSUES					
Equipment	Energy consuming equipment	NHSGG C	Energy consuming equipment set up to optimum performance	FBC approval to end stage E	Manufacturer's set up of major items to be witnessed and

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SECTION 5 COMMISSIONING PHASES MAIN and CHILDRENS HOPITALS					
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					evaluated.
Whole site energy strategy	Renewables	ZBP	No further action at this stage unless there are changes		
	Implementation of site /building energy strategy		No further action at this stage unless there are changes		
At the end of the commissioning phase, all the above issues should have been addressed and any outstanding items from earlier phases cleared. The low carbon auditor will need to have seen all above listed reports, commented on the issues and be able to confirm to the Carbon Trust and the Board that the completed building meets the objectives in the employers requirements and targets.					

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SECTION 6 OPERATIONAL PHASE MAIN and CHILDRENS HOPITALS Note ! where joint responsibility noted, this shall generally be BCL in contractual defects phase and undertaken where excess or unexpected energy use has been noted and NHSGGC beyond this phase					
ISSUE/ REFERENCE	ISSUE/ REFERENCE	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
ALL SYSTEMS					
General Issues	Energy sub metering	ZBP/WSP	Metering should now be set up and all software installed. Users trained and reporting systems installed	First 3 years of operation	Monthly exception reporting and trend logging taking place, monthly departmental, major plant and whole building energy monitoring taking place
	audits	NHSGGC	6 monthly audit procedure set up to monitor progress and reconcile any difficulties	First 3 years of operation	Audit report
	Appointments	BCL	Suitably qualified and experienced energy specialist as specified (e.g. CIBSE Low Carbon Consultant, Carbon Trust registered consultant, chartered member of the Energy Institute, all with knowledge and experience of operational energy use in large acute hospitals allocated to the project for the three years and beyond until targets are met and remedial action completed, with sufficient time allocation to undertake the identified actions, working in conjunction with the Boards own energy manager	First 3 years of operation	Confirm appointment and hours allocated to scheme. Provide progress reports

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ISSUE/ REFERENCE	ISSUE/ REFERENCE	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
	Remedial actions	BCL	If remedial actions identified, prepare method statement and timescale for action	First 3 years of operation	Action plan
	Heat recovery	BCL/NH SGGC	Performance testing	First 3 years of operation /Life of building	Periodic check that operation is satisfactory
	external lighting	BCL/NH SGGC	External lighting not on during day	First 3 years of operation /Life of building	Periodic check that operation is satisfactory
	Fan/pump speeds	BCL/NH SGGC	Inverter and speed control set up and proved under varying load conditions	First 3 years of operation /Life of building	Periodic check that operation is satisfactory
	Renewables. Central energy supply and Combined heat and power (CHP)	BCL/NH SGGC	Central plant and renewable energy systems commissioned and under maintenance contract . performance testing proves operation and carbon savings to be achieved.	First 3 years of operation /Life of building	Periodic check that operation and performance is satisfactory
	Grant funding	NHSGG C	Monitor funds for any further opportunities e.g. PV	First 3 years of operation /Life of building	Annual check
	Biogas/ alternative fuels	NHSGG C	Conclusion and timescale for any future installation	TBA	Need to provide statement of intent or outcome of negotiations
	Hot water efficiency	BCL/NH SGGC	Performance testing	Life of building	Periodic check that operation is satisfactory

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ISSUE/ REFERENCE	ISSUE/ REFERENCE	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
Fabric	U values	BCL	Thermography to ensure integrity of insulation	First 3 years of operation	Recommended if any empirical evidence of bridging/condensation
Modelling	Net CO_2 emission	NHSGGC	Periodically update operational model as circumstances change	every 5 years	Update to reflect heated area and any major operational changes
Lighting	Lighting controls	BCL/NHSGGC	Monitor departmental use monthly through exception reporting via BMS – i.e. any department which uses +10% of monthly target. Note target needs to be set related to proportion of internal and daylit rooms and available daylight hours.	First 3 years of operation	Interaction with department to identify usage patterns, check on correct operation of lighting controls and any occupant action to disable them. If cause isolated at higher hours of usage, uplift target
	Behaviour and operating hours	NHSGGC	As above	First 3 years of operation	As above
Small power	Clinical need	NHSGGC	Monitor departmental use monthly through exception reporting via BMS – i.e. any department which uses +10% of monthly target. Target set by adding up all connected equipment and applying diversity factors	First 3 years of operation	Interaction with department to identify usage patterns and connected equipment. If found to be necessary, target can be uplifted.
	Rating of new purchased equipment	NHSGGC	As above	First 3 years of operation /Life of building	Ensure equipment purchased has low energy use, record any

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ISSUE/ REFERENCE	ISSUE/ REFERENCE	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
					new equipment and notify energy manager. Implement purchasing policy
	behaviour	NHSGGC	As above	First 3 years of operation /Life of building	Interaction with department to identify usage patterns and connected equipment. If found to be necessary, target can be amended
Heating	External conditions	BCL/NHSGGC	Record profile through BMS. Set target based on 20 year average weather file and projected occupancy	First 3 years of operation /Life of building	No action unless energy use exceeds + 10% . Undertake weather normalisation by agreed method if +10% energy use of heating energy over target detected.
	Controls and zoning	BCL/NHSGGC	Metering - Monitor departmental or zone use monthly through exception reporting via BMS – i.e. any department or zone which uses +10% of monthly target.	First 3 years of operation /Life of building	Check controls operation. Check for simultaneous heating and cooling. Check that set points have not been altered outside allowable tolerance.
	Maintenance	BCL/NH	As above	First 3 years of	Check that set points

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SECTION 6 OPERATIONAL PHASE MAIN and CHILDRENS HOPITALS Note ! where joint responsibility noted, this shall generally be BCL in contractual defects phase and undertaken where excess or unexpected energy use has been noted and NHSGGC beyond this phase					
ISSUE/ REFERENCE	ISSUE/ REFERENCE	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
	and behaviour	SGGC		operation /Life of building	have not been altered outside allowable tolerance. Interact with department to check windows not opened in peak heating season to relieve overheating etc. If cause isolated at higher hours of usage, uplift target
cooling	External conditions	BCL/NH SGGC	Record profile through BMS. Set target based on 20 year average weather file and projected occupancy.	First 3 years of operation /Life of building	No action unless energy overall exceeds + 10%. Undertake weather normalisation by agreed method if +10% energy use of cooling energy over target detected.
	Controls and zoning	BCL/NH SGGC	Metering - Monitor plant or zone use monthly through exception reporting via BMS – i.e. any department or zone which uses +10% of monthly target.	First 3 years of operation /Life of building	Check controls operation. Check for simultaneous heating and cooling. Check that set points have not been altered outside allowable tolerance.
	solar gains	BCL/NH	As above	First 3 years of	Check that window and

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SECTION 6 OPERATIONAL PHASE MAIN and CHILDRENS HOPITALS Note ! where joint responsibility noted, this shall generally be BCL in contractual defects phase and undertaken where excess or unexpected energy use has been noted and NHSGGC beyond this phase					
ISSUE/ REFERENCE	ISSUE/ REFERENCE	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
		SGGC		operation /Life of building	blinds are as designed and blinds/shading use is as intended. If all other explanations for excess use have been eliminated, independent consultant to undertake further analysis, calculation and detailed room monitoring via BMS of room conditions and recommended remedial action
	Internal gains	BCL/NH SGGC	As above	First 3 years of operation /Life of building	Interact with department to monitor and record occupancy levels. Correlate with equipment usage and lighting usage. If significant variance in expected occupancy level, hours of use and /or equipment use is agreed cause, uplift target.
HWS	demand	BCL/NH	Metering - Monitor departmental use	First 3 years of	Interact with

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SECTION 6 OPERATIONAL PHASE MAIN and CHILDRENS HOPITALS Note ! where joint responsibility noted, this shall generally be BCL in contractual defects phase and undertaken where excess or unexpected energy use has been noted and NHSGGC beyond this phase					
ISSUE/ REFERENCE	ISSUE/ REFERENCE	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
		SGGC	monthly through exception reporting via BMS – i.e. any department or zone which uses +10% of monthly target	operation /Life of building	department to establish water use patterns. Ensure no avoidable waste or leakage. If usage reasonable, uplift target
Central plant and distribution	Plant and system selection and efficiency	BCL/NH SGGC	Metering – monitor plant and system efficiencies monthly through exception reporting via BMS – i.e. any plant item deviating by 5% of design quoted efficiency or overall change in system distribution losses against target of +10%	First 3 years of operation /Life of building	Check plant conditions and if necessary employ specialist independent consultant to undertake detailed logging. Undertake remedial action recommended by specialist
	Controls and zoning	BCL/NH SGGC	As above	First 3 years of operation /Life of building	Check controls operation, Check that set points have not been altered outside allowable tolerance. Check for deviation from commissioned values. If no apparent cause action as above
	maintenance	NHSGG C		Life of building	physical checks for hand operation, leakage, closed vales, breakdown

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SECTION 6 OPERATIONAL PHASE MAIN and CHILDRENS HOPITALS Note ! where joint responsibility noted, this shall generally be BCL in contractual defects phase and undertaken where excess or unexpected energy use has been noted and NHSGGC beyond this phase					
ISSUE/ REFERENCE	ISSUE/ REFERENCE	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED, DOC. REF.(green fill denotes action completed, pink that action not yet completed)
					of insulation
At the end of each of the first three years of the operational phase, all the above issues should have been addressed and any outstanding items from earlier phases cleared. The low carbon auditor will need to have seen all above listed reports, commented on the issues and be able to confirm to the Carbon Trust and the Board that the completed building meets the objectives in the employers requirements and targets.					

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Health Finance Directorate
Capital Planning and Asset Management Division

The Scottish Government

CEL 35 (2010)

27 September 2010

Dear Colleague

A POLICY FOR PROPERTY AND ASSET MANAGEMENT IN NHSSCOTLAND

Summary

1. This letter provides colleagues with a statement of the Scottish Government's Policy for Property and Asset Management in NHSScotland which establishes the framework for monitoring the performance and management of assets held and utilised in support of the provision of services by NHSScotland.

2. This CEL with attached policy statement supersedes NHS MEL(1999)44: 'Property Management Policy and Other Matters' issued on 5 May 1999.

Action

3. **Addressees should ensure that a copy of this CEL with attached policy statement is cascaded to all appropriate staff within their area of responsibility.**

4. **The Policy for Property and Asset Management in NHSScotland and associated Mandatory Requirements take immediate effect.**

Background

5. The 2009 Audit Scotland report 'Asset management in the NHS in Scotland' examined how NHSScotland is strategically managing its assets to support effective service delivery.

6. The 2009 report highlighted that Scottish Government Health Directorates policies and guidance [MEL(1999)44] did not cover all assets and that there was limited monitoring of the way NHSScotland bodies manage their assets within the 1999 policy framework.

Addresses

For action
Chief Executives, NHS Boards.
Chief Executives, Special Health Boards.

For information
Director, Health Facilities Scotland.
DG Health.
NHSScotland Strategic Facilities Group.
NHSScotland Property Advisory Group.

Enquiries to:
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Head of Asset Management
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Regent Road
Edinburgh EH1 3DG

Tel: [redacted]
Fax: [redacted]
Point of contact
bettina.sizeland[redacted]
http://www.pcpd.scot.nhs.uk
http://www.scotland.gov.uk

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RS 250653

7. The Audit Scotland report made a number of recommendations for Scottish Government and NHS Boards' action.

   The Scottish Government to:
   - provide policies and guidance for all types of assets and update current policies and guidance to reflect changes in the NHS and development of new health policies;
   - routinely collect information from NHS bodies on the performance of their assets;
   - ensure momentum is maintained in the development of the new national estate management system; and
   - ensure momentum is maintained in developing the hub initiative to support joint working across the public sector.

   NHS Boards to:
   - develop strategies for each type of asset and then develop a corporate asset management strategy and plan, which links to their clinical strategies;
   - ensure they assess estate condition, statutory compliance, functional suitability and, space utilisation on a regular basis;
   - ensure all information on assets is held electronically; and
   - review their performance management arrangements and, where required, develop performance measures and targets for assets.

8. Since the Audit Scotland report issued, Scottish Government Health Directorates has been working with Health Facilities Scotland to put in place the tools and systems to support a robust approach to asset management, including the procurement of an Asset Management System for NHSScotland and, the development of appropriate and supporting technical guidance. Now that these tools are in place, the attached policy statement will ensure the implementation of the Audit Scotland report recommendations.

Further Information

9. A principal requirement of the attached Policy is that all NHSScotland Bodies must have appropriate Board level and supporting governance, with assurance regarding these arrangements provided within Property and Asset Management Strategies (PAMS). Guidance on the preparation of PAMS and on the utilisation of the NHSScotland Asset Management System is available from Health Facilities Scotland.

   http://www.hfs.scot.nhs.uk/

Yours sincerely,

Mike Baxter

[redacted]

Deputy Director, Capital Planning and Asset Management

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The Scottish Government

A Policy for Property and Asset Management in NHSScotland

Scottish Government
Health Finance Directorate
Capital Planning and Asset Management

2010

BUILDING A HEALTHY AND SUSTAINABLE FUTURE

A POLICY FOR PROPERTY AND ASSET MANAGEMENT IN NHSSCOTLAND

Purpose

Property and Asset Management is the strategic management of land, building and other assets including equipment, vehicles and IT which seeks to:

'*optimise the utilisation of assets in terms of service benefit and financial return*.'

The scope of this policy encompasses strategic property and asset management. Asset management is concerned with the long-term view of all the holding body's assets, including those held and used by the NHSScotland Body, those held by a NHSScotland Body but used by an external organisation and those held by third parties (such as GP's/GDP's) in support of direct service provision.

This document provides a clear statement of the Scottish Government Health Directorates (SGHD) Property and Asset Management Policy and establishes the framework for monitoring the performance and management of assets held and utilised in support of the provision of services by NHSScotland. NHSScotland has a duty to demonstrate best value for money (VfM) use of its resources and assets under the Public Finance and Accountability (Scotland) Act 2000.

The approach set out in this policy document seeks to establish asset management excellence within NHSScotland and builds upon previous policy relating to property management to encompass wider assets held and utilised by NHSScotland in the discharge of its activities. The policy establishes a robust framework against which the planning, delivery, management and disposal of property and other assets is undertaken and assessed.

This policy covers SGHD requirements in each of the 4 key stages in the asset management process. These are:

- Planning;
- Acquisition;
- Operations and Management; and
- Disposal.

The whole of this asset management process is underpinned by a performance management and monitoring framework. This performance framework exists at two levels. The first of these is about providing assurance that the governance and management arrangements within NHSScotland with regard to asset management are robust, fit for purpose and operating appropriately. The second level is more detailed and aimed at providing key and consistent strategic performance data on the asset base at both local and national level.

Context

The asset base of NHSScotland is valued at approximately £5bn. Most of this value is associated with the estate (land and buildings). Other significant physical assets are vehicles, medical equipment and Information Management and Technology. This policy covers all assets and is focused on the asset management process. It should be considered alongside other asset-related policy statements including those for property transactions, fire safety, environmental management, and sustainability.

These policy statements are intended to direct and underpin the formulation and updating of operational policies covering all asset types. Such operational policies and Property and Asset Management Strategies (PAMS) are important corporate expressions of Bodies intentions and as such should result from an integrated approach to service planning and the appropriate involvement of all stakeholders. Consequently they must reflect and support the agreed agenda for service quality and patient safety as well as supporting clinical and service change.

Policy Aims

- To ensure that NHSScotland assets are used efficiently, coherently and strategically to support Scottish Government's plans and priorities and identified clinical strategies and models of care.
- To provide, maintain and develop a high quality, sustainable asset base that supports and facilitates the provision of high quality health care and better health outcomes.
- To ensure that the operational performance of assets is appropriately recorded, monitored, reported and reviewed and, where appropriate improved.
- To ensure an effective asset management approach to risk management and service continuity.
- To support and facilitate joint asset planning and management with other public sector organisations.

Note:
Where this policy document refers to "Essential" and "Non-essential" property, this is in the context defined within the **NHSScotland Property Transactions Handbook**:

Essential Property: Property considered necessary for a Holding Body's operational purposes beyond a 5-year service provision planning horizon.

Non-essential Property: Property not considered necessary for a Holding Body's operational purposes beyond a 5-year service provision planning horizon.

POLICY STATEMENTS

GOVERNANCE

Statement 1 All NHSScotland bodies[1] must have appropriate Board level and supporting governance, accountability and reporting arrangements in place to ensure the efficient and effective planning, operation, management and disposal of assets.

Statement 2 All NHSScotland bodies must hold appropriate up to date information to ensure the effective planning, operation, management and disposal of the assets held and utilised in support of service delivery.

PLANNING

Statement 3 All NHSScotland bodies must have a current Property and Asset Management Strategy (PAMS) which reflects the foregoing policy aims and which reflects their particular circumstances.

Statement 4 All NHSScotland bodies must have a PAMS which is technically robust, achievable and affordable within the context of agreed financial plans (capital and revenue). Such strategies should demonstrate clear and explicit links to Scottish Government and Local Delivery Plan objectives, HEAT targets and clinical/service strategies, Local Authority Structure Plans and broader planned outcomes.

Statement 5 Where NHSScotland bodies are responsible for the delivery of regional and/or national services, the PAMS must reflect the links to appropriate regional and/or national service strategies, priorities and targets.

ACQUISITION & DISPOSAL

Statement 6 NHSScotland bodies must ensure that they comply with the requirements of the Scottish Public Finance Manual to ensure the effective management of the acquisition (by purchase, lease or excambion) and disposal of assets and to secure value for money in such transactions. Detailed guidance on these matters is contained within **Part B of NHSS Property Transactions - A Handbook for Managers and Advisers**.

Statement 7 NHSScotland bodies must ensure that they comply with the requirements of the Scottish Capital Investment Manual to procure new facilities, and secure value for money in such transactions.

OPERATION AND MANAGEMENT

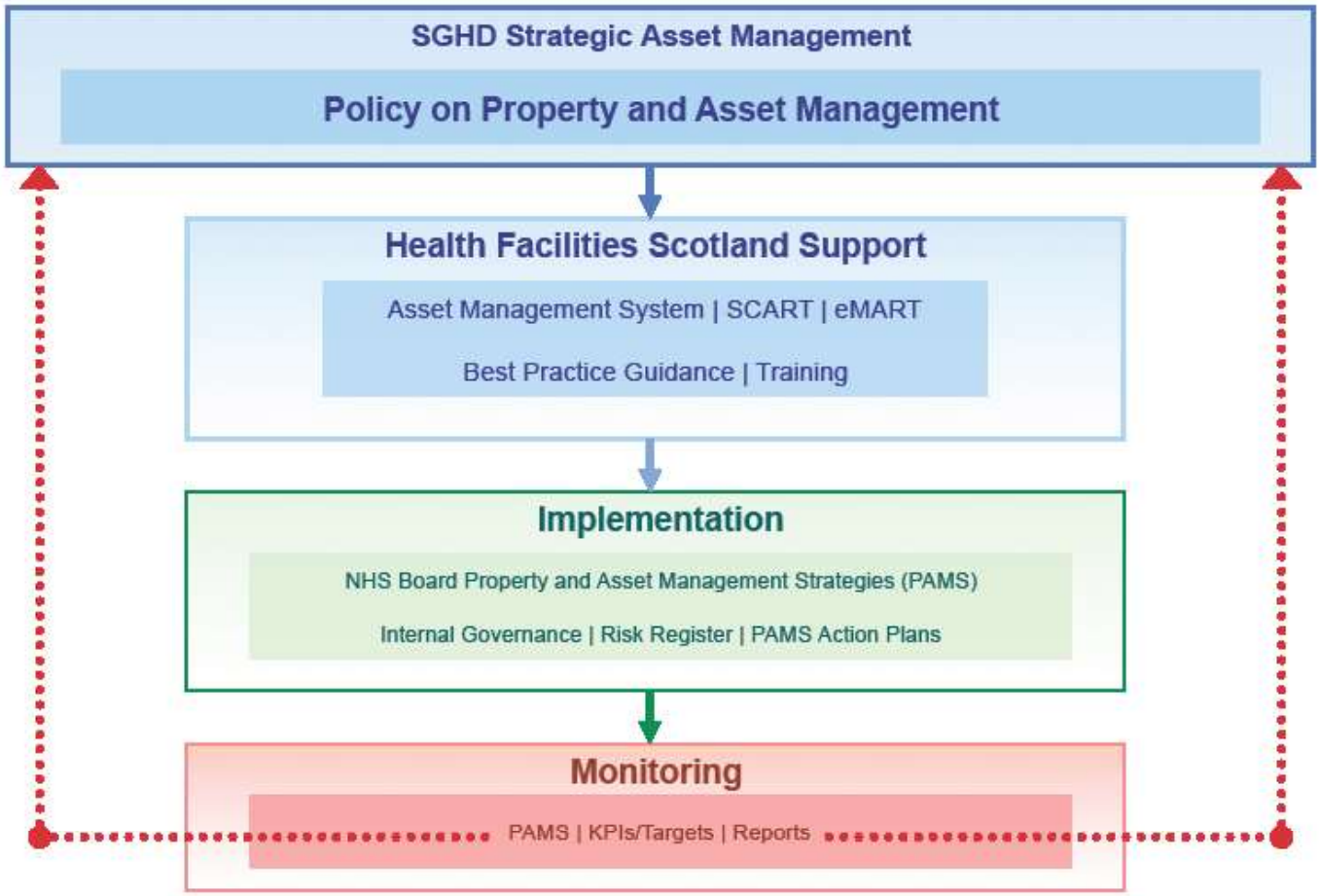
Statement 8	All NHSScotland bodies must comply with all requirements laid down by statutes bearing upon the health, safety and welfare of staff, patients and the public in relation to and in respect of the management of the property and other assets which they own or occupy in the performance of their functions.
Statement 9	All NHSScotland bodies must comply with all requirements laid down by statutes bearing upon the physical access of staff, patients and visitors, to and within the property which they own or occupy. To support this all NHSScotland bodies must have appropriate Board level and supporting governance arrangements in place to ensure compliance.
Statement 10	All NHSScotland bodies commissioning new property for owner occupation, regardless of the method of financing/ procurement must be satisfied that such property complies with all requirements laid down by statutes bearing upon newly constructed property.
Statement 11	The Scottish Government Health Directorates will identify mandatory requirements necessary to underpin statutory obligations and to promote the delivery of both wider government policies and policies and strategies for the NHSScotland, and do so in a clear and comprehensive manner.

GENERAL STATEMENTS

Statement 12	All NHSScotland bodies are required to comply with all guidance published by relevant Authorities in relation to compliance with all statutory and mandatory requirements which are particular to property and asset management. Such guidance may be effected through Health Facilities Scotland and/ or SGHD directly.
Statement 13	All property and assets used for NHSScotland purposes whether new or existing, owner occupied, leased or provided through PPP, must be managed in accordance with the mandatory requirements set out hereafter.

MANDATORY REQUIREMENTS

Governance



1. All NHSScotland bodies must have appropriate Board level and supporting governance, accountability and reporting arrangements in place to ensure the efficient and effective planning, operation, management and disposal of assets. These requirements should be included within appropriate schemes of delegation. Assurance regarding such arrangements must be provided within Property and Asset Management Strategies.

2. Holding Bodies must utilise the NHSScotland Asset Management System as a means of holding property and asset management data in a readily updateable and consistent form. This will enable the production of local and aggregated management reports and statistics as required by both holding bodies and SGHD at national level.

3. Holding Bodies must ensure that the data held is in accordance with the guidance issued by Health Facilities Scotland which can be accessed at http://www.hfs.scot.nhs.uk

4. Full condition surveys of property assets should be carried out at least once in every 5 years and reviewed/updated as necessary in between. If, however, the nature of the existing property asset and/or the need to maintain up to date information to support a fast moving change agenda demands it, then full surveys may be required at lesser intervals. It is recommended that a rolling programme of surveys be implemented resulting in complete re-survey every 5 years i.e. 20% per annum re-surveyed. In addition NHS Boards will be required to update their Estate information on a continual basis where capital and/or major maintenance work has been undertaken.

5. All NHSScotland bodies must ensure an appropriate structure of suitably qualified staff to provide the comprehensive management of the estate, covering all statutory and mandatory requirements including the appointment of Authorised and Competent Persons. The team requires to demonstrate a suitable range of qualifications, be experienced and up to date, and capable of delivering the informed client role when commissioning support from external sources.

6. Holding bodies must ensure that as part of their workforce planning processes, the need for maintenance of appropriate skills, the skills development of staff and succession planning arrangements relating to property and asset management activities are adequately addressed.

Strategic Asset Planning

7. All NHSScotland bodies must have a Property and Asset Management Strategy (PAMS) which is reviewed and approved by its Board annually. The PAMS will be prepared in accordance with the detailed guidance "Strategic Property and Asset Management Guidance for NHSScotland – Developing a Property and Asset Management Strategy (PAMS)" which has been developed by Health Facilities Scotland and is available at http://www.hfs.scot.nhs.uk

8. The PAMS and associated capital investment programme must be submitted annually to the Capital Planning and Asset Management Division of SGHD in a timeframe consistent with the submission of Local Delivery Plans. This will enable a review of not just the PAMS but will enable the linkages between the Local Delivery Plan and PAMS to be assessed. The submission of PAMS will also support strategic decisions on future priorities as well as the monitoring and reporting of performance in the management and utilisation of the NHSScotland asset base.

9. In addition to assets owned by the holding body the PAMS must include a section dealing with the planning, management and performance of non NHS property and assets utilised for the provision of NHSScotland services e.g. Independent Contractors (including GP's/ Dental premises) and leased premises. *(Separate guidance on this aspect to be developed)*

10. A Holding Body's PAMS must include targets for the translation of non-essential assets to subsequent disposal. This information should include key milestones/ decision points in order that progress in realising disposals can be monitored.

11. A Holding Body's PAMS must contain a commitment to maintain compliance with existing statutory requirements and to achieve compliance as appropriate with new statutory requirements.

12. Where a Holding Body does not or cannot reasonably comply with existing statutory requirements its PAMS must include identified solutions or reasonably acceptable alternatives, preferably agreed with the relevant statutory regulatory body, for addressing non-compliance using a risk management approach where appropriate.

13. A Holding Body's PAMS must identify the age, physical condition, functional suitability, space utilisation and energy performance of both its essential and non-essential property. The PAMS must also contain appropriate measures consistent with the minimum datasets and Key Performance Indicators (KPI's) in Annex 1 and 2, relating to equipment, vehicles and IT.

14. A Holding Body's PAMS must include targets for improving physical condition, functional suitability and space utilisation of its essential property where that is considered necessary to achieve the policy aims and to ensure continuing compliance. This should be expressed as targets for the following year, three years, five years and ten years.

15. The PAMS must include a section dealing with the engagement with other public sector organisations regarding the arrangements in place or in development to support the delivery of joint asset planning and joint premises development. This should include specific development actions and objectives with key milestones/ deliverables.

16. The Financial plans submitted annually as part of the Local Delivery Plan process will demonstrate how the PAMS is to be funded and implemented in both capital and revenue terms within the context of the NHSScotland body's overall financial strategy. The PAMS should explicitly state the capital and revenue resources being applied in support of the asset base and the impact of these resources on projected asset performance i.e. condition, backlog maintenance, reduced risk.

17. NHSScotland Bodies must use a risk based approach for the assessment of priorities for investment and reporting of backlog maintenance. Guidance on the assessment of backlog maintenance is contained in "A Risk Based Methodology for Property Appraisal" which has been developed by Health Facilities Scotland and is available at http://www.hfs.scot.nhs.uk .

Acquisition and Disposal of Property

18. Holding Bodies must comply with the mandatory requirements for the disposal of property by sale, lease or excambion, and the acquisition of property by purchase, lease or excambion. These requirements are established within the Scottish Public Finance Manual and supported by guidance as set out in **Part B of NHSS Property Transactions - A Handbook for Managers and Advisers**.

19. Holding Bodies must provide Property Transaction Monitoring Reports for the preceding financial year as set out in **Part B of NHSS Property Transactions - A Handbook for Managers and Advisers** to SGHD Capital Planning and Asset Management Division no later than 30th October annually.

20. A Holding Body must support national and local healthcare priorities by identifying its essential and non-essential property. Essential property is defined as land holdings or buildings considered necessary for operational purposes beyond a 5 year planning horizon.

21. A Holding Body must demonstrate that it is making effective use of its existing property or demonstrate through the business case process that its existing land and buildings are unsuitable, before acquiring new land or committing itself to capital investment in new buildings on new or existing land. In these cases holding bodies must follow the guidance set out in the Scottish Capital Investment Manual.

Operation and Management

22. NHSScotland bodies must comply with all statutory requirements relating to the inspection, operation and management of assets.

23. NHSScotland bodies must utilise an appropriate audit risk system to record compliance with statutory requirements and any necessary actions associated with identified risks must be recorded and regularly updated in the system. The electronic Statutory Compliance Audit Risk Tool (SCART) system is recognised by SGHD as the exemplary tool towards achieving these goals. The resulting action plans will inform capital/ revenue investment plans for each holding body as required.

24. The operation and management of assets should comply with best practice guidance available from Health Facilities Scotland. http://www.hfs.scot.nhs.uk

Medical Equipment

25. A Holding body must ensure that it has appropriate arrangements in place for the effective management of medical equipment. **Annex 3** sets out guidance on the governance and management arrangements required to support this requirement.

Performance Reporting

26. The PAMS will contain an assurance assessment of the governance and management arrangements in respect of assets to confirm that these are in place. Holding bodies will be expected to provide quarterly highlight reports and annual PAMS using the format described in the HFS PAMS Guidance.

27. NHSScotland Bodies will report against mandated KPI's. This data will be collated into an all Scotland Report on the performance of the NHSScotland asset base. These KPI's are detailed at **Annex 2**. Such arrangements will apply for the year 2010-11 forward. Detailed arrangements and guidance will be issued regarding data collection and reporting.

General

28. A Holding Body must provide its PAMS and information on property/asset management performance to SGHD as and when required.

[1] NHSScotland bodies in the context of this document means all Health Boards, Special Health Boards and the Common Services Agency performing functions on behalf of Scottish Ministers

MINIMUM DATASETS

Estates

a) The minimum dataset for NHSScotland Estates as specified in "Estates Asset Management Property Appraisal Manual" prepared by Health Facilities Scotland and available at http://www.hfs.scot.nhs.uk

Medical Eqipment

a) Minimum Management Statistics to be held

- **Financial**
    - Capital Expenditure - purchase
    - Revenue Expenditure - purchase, maintenance and support
    - Lease Expenditure - lease payments
    - Total Replacement Value - fixed assets and non capitalised
    - Net Book Value
    - Annual Depreciation
    - Maintenance Expenditure - commercial third party, in house, other NHS
    - Investment in training
    - Leasing arrangements - cost, duration
- **Other**
    - Usage statistics
    - Age Profile
    - Clinical Speciality/ Department

b) Dataset for Individual Items of Equipment

- The establishment of an electronic inventory of medical devices and equipment, including:
    - Serial Number
    - Location
    - Model
    - Make
    - Supplier
    - Purchase/Acquisition Date and manufacture date if different;
    - Purchase Cost
    - Expected/Standard Life
    - Annual Depreciation
    - Estimated Replacement cost
    - Maintenance Information (Contract type and coverage)
    - Planned Preventative maintenance and repairs
    - Service histories (including software version for upgrade purposes.

- The planned replacement programme for medical devices and equipment. In addition factors to consider outwith the planned programme in assessing whether a device or equipment requires replacement include that the item is:

    - Worn out beyond economic repair.
    - Damaged beyond economic repair.
    - Unreliable (based on service history).
    - Clinically or technically obsolete.
    - Spare parts are no long available.
    - Superseded by a more cost effective or clinically effective device or equipment.
    - Unable to be cleaned or decontaminated effectively.

Vehicles

a) Minimum dataset to be recorded

- Asset Register reference (for fixed assets)
- Serial Number
- Location
- Model
- Licence requirements (Driver and Operator)
- Make
- Supplier
- Purchase/ Acquisition Date
- Purchase/Lease Cost
- Estimated Disposal Cost
- Fuel type
- CO_2 Rating
- Expected/ Standard Life
- Annual and cumulative mileage
- Annual Depreciation
- Estimated Replacement cost
- Maintenance Information (Contract type and coverage)
- Planned Preventative maintenance and repairs
- Service Histories
- Accident reports
- Active/Passive Passenger/Pedestrian safety rating

IM&T

b) Minimum dataset to be recorded

- Asset Register reference (for fixed assets)
- Serial Number
- Location
- Model
- Make
- Supplier
- Purchase/Acquisition Date

- Purchase Cost
- Expected/Standard Life
- Annual Depreciation
- Estimated Replacement cost
- Maintenance Information (Contract type and coverage)
- Planned Preventative maintenance and repairs
- Service Histories

KEY PERFORMANCE INDICATORS - PREMISES

Age profile

a) Age profile of NHS Owned/leased essential estate (pre 1900, 1900-1960, 1961-1980, 1981-2000, 2001 and later). This should include those facilities funded under PFI/PPP.

b) Age profile of essential estate used in support of direct healthcare - e.g. those owned/leased by independent contractors - (pre 1900, 1900-1960, 1961-1980, 1981-2000, 2001 and later). This should include those facilities funded under PFI/PPP.

Functional Analysis

a) Profile of NHS owned/leased estate by number and m^2 in the following categories:

1. Acute hospitals
2. Children's hospitals
3. Maternity hospitals
4. Specialist hospitals
5. Mental Health hospitals
6. Community hospitals
7. Older people hospitals
8. Multi-service hospitals
9. Health centre
10. Clinics (including day hospitals and resource centres)
11. Offices
12. Support facilities
13. Staff residential accommodation
14. Patient residential accommodation
15. GP Practice
16. Dental Practice
17. Pharmacy
18. Optician

b) Profile of total estate including those owned/leased by independent contractors by number and m^2 in the above categories.

Essential and Non Essential Holdings (as defined in the NHSS Property Transactions - A Handbook for Managers and Advisers)

a) % of NHS Owned/leased buildings categorised as essential as % of total NHS Owned/leased buildings.

b) % of NHS Owned/leased land categorised as essential as % of total NHS Owned/leased land.

c) non-essential land holdings (hectares) owned/leased.

d) Area of NHS Owned/leased land categorised as non-essential expected to be disposed of within 3 years, between 3 and 5 years and more than 5 years as % of total Area of NHS Owned/leased land categorised as non-essential.

Physical Condition

a) Analysis of physical condition of NHS owned/leased essential estate by % in category A, B, C and D.

b) Analysis of physical condition of essential estate including those owned/ leased by independent contractors by % in category A, B, C and D.

c) % of NHS owned/leased essential estate at condition B or better as % of total NHS Owned/leased essential estate.

d) % of Essential estate including those owned/leased by independent contractors at physical condition B or better as % of total essential estate.

Statutory Compliance

a) Analysis of statutory compliance of NHS owned/leased essential estate by the amount (£), split by risk category (Low, Moderate, Significant, High), required to address any outstanding Statutory Compliance items.

b) Analysis of statutory compliance of essential estate including those owned/leased by independent contractors by the amount (£), split by risk category (Low, Moderate, Significant, High), required to address any outstanding Statutory Compliance items.

Functional Suitability

a) NHS Owned/leased essential estate at category B or better (acceptable or high degree of satisfaction) as % of total NHS Owned/leased essential estate.

b) Essential estate including those owned/leased by independent contractors at category B or better (acceptable or high degree of satisfaction) as % of total essential estate.

Space Utilisation

a) NHS Owned/leased essential estate empty or underused at category B or better (acceptable or high degree of satisfaction) as % of total NHS Owned/ leased essential estate.

b) Essential estate including those owned/leased by independent contractors at category B or better (acceptable or high degree of satisfaction) as % of total empty or underused.

Backlog Maintenance

a) Level of backlog maintenance by risk category as described in the HFS guidance "A Risk based Methodology for Property Appraisal" within NHS Owned/leased essential estate.

b) Level of backlog maintenance by risk category as described in the HFS guidance "A Risk based Methodology for Property Appraisal" within NHS Owned/leased essential estate. Essential estate including those owned/ leased by independent contractors.

c) % of backlog categorised as significant/ high risk.

Environmental Performance

a) Progress on delivery of the H.E.A.T. Target for carbon emissions reduction and energy efficiencies and update on risks associated with target delivery as identified within the Board Local Delivery Plan Risk Narratives.

b) Analysis of performance in relation to the absolute and weather-corrected variances and Key Performance Indicators produced through the Health Facilities Scotland Environmental Monitoring and Reporting Tool (eMART) across the following three main streams:

- **Energy**
- **Water**
- **Waste**

Performance must be set against the following categories:

- **Estate size**: volume and expenditure
- **Staff bed numbers**: volume and expenditure

Office Accommodation

a) Cost per m^2

b) Cost per Whole Time Equivalent (WTE)

c) Space per person (m^2)

KEY PERFORMANCE INDICATORS – VEHICLES

Monitoring of NHS Board Fleet Management Strategy Performance through:

a) Fleet use
- **Vehicle downtime:** the number of days service lost due to maintenance and repairs
- **Vehicle availability:** the number of days the fleet was available for use
- **Vehicle utilisation:** whether fleet size is optimal to meet service demand

b) Compliance
- **Number of accidents:** to highlight staff training requirements
- **Number of vehicle defects:** to highlight maintenance issues adding to operational costs
- **Number of voluntary vehicle check failures or first-time passes** (e.g. Freight Transport Association)
- **Number of MOT failures or first-time passes:** to measure performance of maintenance provider

c) Operational/Environmental
- **Fuel usage (miles per gallon):** to highlight staff driving training requirements, fuel inefficiencies, new vehicle selection
- **Total fleet mileage:** to monitor reasons for increase (fuel typically can account for 20-30% operating costs
- **Green indicators (CO_2 emissions related to fuel type):** to inform Fleet Management Strategy with a view to reducing costs, support environmental policy and compliance with statutes

d) Costs
- **Maintenance cost per vehicle:** to monitor cost against vehicle type, overcharging by maintenance provider, vehicle damage through misuse
- **Replacement hire costs** during maintenance period
- **Tyre cost per vehicle:** to inform of excessive tyre damage or cost-related issues associated with tyre type
- **Insurance cost per vehicle:** this can be reviewed and linked to number of accidents
- **Fuel cost per vehicle:** to be used as part of the total cost per vehicle calculation
- **Operating or running cost per vehicle:** when split by vehicle type may highlight vehicle services which would be better contracted out
- **Cost per kilometre or mile:** measurement for vehicles operating fixed amounts of mileage to provide a specific service

KEY PERFORMANCE INDICATORS - MEDICAL EQUIPMENT

a) Expenditure on Equipment (capital, direct revenue and leases)

b) Expenditure on Maintenance (commercial, in house, other NHS)

c) Adverse Incident rates (number of incidents reported each month)

d) Staff training levels (number of staff trained and tracked as % of total staff who should be trained)

e) Equipment down time (hours per month)

f) Maintenance schedules adhered to (% of equipment achieved by scheduled date)

g) Usage of major Equipment (patient throughput)

KEY PERFORMANCE INDICATORS – IM & T General

a) Annual capital IT spend as % of total capital spend

b) Confirmation of an up-to-date IT Asset register (hardware and software)

c) Confirmation of approval of all IT Business cases by SGHD eHealth directorate

MEDICAL DEVICE AND EQUIPMENT MANAGEMENT

Background

The Scottish Government asset management policy for NHSScotland sets out the core data set of information which NHS Boards should hold about their medical devices and equipment. This guidance provides further support to NHS Boards on the structures required to ensure that medical devices and equipment are managed appropriately.

Accountability

Board level responsibility for medical devices and equipment management should be defined and clearly supported by clear lines of accountability through the organisation, leading to the Board.

Medical devices and equipment represent a substantial asset for NHS Boards. Accordingly, clear leadership at NHS Board level is essential if they are to be managed strategically.

The Chief Executive has overall responsibility for the NHS Board affairs and, to support that, an Executive Director should be designated as responsible for medical devices and equipment as part of overall Asset Management responsibility.

In particular, the designated Executive Director should monitor the following:

- performance against the key performance indicators (KPIs) as noted below;
- expenditure on Equipment (capital, direct revenue and leases);
- total replacement value (for assets on Fixed Asset Register)
- estimated replacement value for non capitalised equipment items;
- net book value;
- depreciation;
- maintenance expenditure (commercial, in house, other NHS);
- investment in training on equipment;
- leasing arrangements; and
- Usage of major items of equipment.

To support the Designated Executive Director, the **Equipment coordinator** appointed within each NHS Board [see CEL 43 (2009)] will be responsibility for:

- ensuring managers and staff are aware of the procedures for reporting adverse incidents and for implementing safety advice;
- monitoring all adverse incidents reports from within own organisation;
- receiving emails from Health Facilities Scotland (HFS) notifying of alerts and bulletins, and cascading within own organisation;
- monitoring relevant websites for information on equipment safety and management issues;
- discussing equipment safety issues with HFS;
- promoting equipment safety by staff education and training in conjunction with HFS;
- building and maintaining communication links with HFS;
- attending Equipment Co-ordinators' conferences and seminars; and

- monitoring internal cascade systems to ensure alerts are received, assessed and acted on.

It is particularly important that the Equipment Co-ordinator is integral to the NHS Board's risk management structure and that they have clear lines of accountability to the designated Executive Director. Given this, they should be trained in risk assessment techniques (as part of their personal development plan, ensuring that appropriate records are kept) and should encourage improvements in work practice to progressively minimise or remove patient or user risk and stimulate continued improvement. In particular the risks associated with medical devices or equipment should be included in the NHS Board risk register.

The coordinator should ensure that the sufficient information and reporting is made to the NHS Board's risk management group on the efficacy of the medical devices and equipment. There are a number of approaches which include:

- review of adverse incidents;
- review of alerts and safety information from manufacturers;
- review of Audit reports;
- workshops with staff; and
- feedback from professional users, patients and the public.

Medical Devices and Equipment Group should be established, and led by the designated Executive Director and including appropriate representation from medical, nursing, allied health professionals, HAI, Medical Physics, engineering etc to improve communication between the various groups of stakeholder.

The group's remit should incorporate advising the NHS Board on:

- Purchasing and acquisition of medical devices and equipment, including comparisons of alternatives, reliability of ongoing support and the opportunities to rationalise the number of models or types of medical devices or equipment in use.
- Technical specifications, regulatory compliance information and related issues.
- Financial data, including consideration of full on-costs (ie running, maintenance and consumable costs) when preparing a medical device or equipment business case, and including disposal (taking into account legislative requirements, eg WEEE regulations etc) and replacement costs at the appropriate time.
- Preparation of decontamination guidelines for medical devices and equipment.
- Coordinate the medical device and equipment inventory, including the core data set included in the Asset Management policy and any other data required by the NHS Board.
- Oversee training on the use of medical devices and equipment, including ensuring that all users have access to the latest manufacturer's instructions.
- Oversee arrangements for the management and maintenance of medical devices and equipment.

NHS Board wide policy and procedure for the management of Medical Devices and equipment

This should set out:

- The process for the selection and procurement of new medical devices and equipment, taking into account:
  - guidance provided by National Procurement and/or Health Facilities Scotland;
  - the needs and preferences of professionals and end-users;
  - consistency and control to ensure that value for money is achieved.
- Assessing whether purchase, lease or any other form of procurement (ie loan or in-house manufacture) would be the most appropriate procurement route.
- The process for the selection and procurement of medical devices and equipment.
- The establishment of an electronic inventory of medical devices and equipment which contains all necessary information required for an NHS Board to properly manage its medical devices and equipment is recorded on a suitable system.
- The process for commissioning new medical devices or equipment, including delivery checks, safety checks pre-use checks and decontamination and training requirements.
- The storage, maintenance and repair of medical devices and equipment including decontamination when required (ie before use, after maintenance, before storage etc), tracking, recall, replacement and disposal policies. This includes ensuring the correct power lead is kept with the device or equipment.
- Governance arrangements for medical device developments, modifications and trials to ensure they are carried out in accordance with relevant legislation and guidance. It should:

  - Set out clearly where responsibilities and liabilities lie, particularly where developments may be carried out in conjunction with external parties such as universities, manufacturers etc.
  - Where developments are undertaken in-house, ensuring that, where required, the Medical Devices Regulations are complied with and that adequate documentation is provided – detailed guidance is available from the Medicines and Healthcare products Regulatory Agency (MHRA).
  - Ensuring that the appropriate indemnities are in place for equipment on trial.

Processes

Instructions - Users of medical devices and equipment must have access to the manufacturer's instructions, including revised and updated instructions. Where the instructions are lengthy, consideration should be given to attaching to the device or equipment of *Instructions for Use* (IfU), preferably provided by or in conjunction with the manufacturer.

Good clear instructions including IfU have a crucial role to play in the safe and effective use of medical devices and equipment. The instructions or IfU include information on the safe use of the medical device or equipment, the nature and frequency of maintenance and calibration required to ensure the device operates correctly and any special handling or storage requirements.

Extra care is required where the end-user is a patient for whom the device or equipment has been prescribed.

NHS Boards may, in the event of litigation, be required to provide evidence that instructions (verbal or written) have been passed on to users. Accordingly good records should be kept about instructions passed to users.

Additionally where instructions or IfU are revised, these should also be made available to users and a record kept that this has been done.

Any additional instructions supplied by NHS Boards must be evaluated for their adequacy. For example, where instructions may need to be customised to meet the local needs of users or if two devices are being connected in a novel way (eg connecting a blood analyser to a computer system to automatically update patient records. NHS Boards should therefore ensure that any such instructions are adequate. The following check list should be considered:

- Placement – should the instructions be placed on the device or equipment or supplied as a leaflet?
- Content – instructions must be precise and clear and include commonsense advice.
- Print size – needs to be adequate to meet the needs of users.
- Technical or difficult language – should be avoided as end-users may lack technical knowledge. Instructions must be precise and clear.
- Translations into English – care must be taken to ensure that the meaning of the original language is preserved.
- Translations into other languages – as with English instructions, these should be precise and clear and be appropriate for the use of the device or equipment.

NHS Boards may wish to clear their instructions with the manufacturer or asking the manufacturer to meet the needs of the particular circumstance.

Delivery and pre-use checks are carried out on all newly delivered medical devices and equipment.

Storage - All newly delivered medical devices and equipment is properly stored after acceptance.

Prescribing - All prescribing decisions concerning medical devices or equipment are made by staff with appropriate qualifications and suitable experience, backed by appropriate administrative and technical support.

Accreditation - Any in-house medical device or equipment maintenance department is externally accredited.

NHS Greater Glasgow & Clyde
Board Seminar
5th October 2010

Agenda

- Construction and Design
- Capital Cost and Risk
- Affordability

NHS Greater Glasgow and Clyde

Contract with Brookfield (NEC3) – What did we sign up to?

Stage 1 -	Construct New Laboratory and FM facility Construct 33KVA sub-station
Stage 2 -	Design New Adult and Children's Hospital Complete Full Business Case for Adult and Children's Hospitals Obtain statutory approvals
Stage 3 -	Construct Adult and Children's Hospitals
Stage 3(a) -	Final Master Plan layout works including roads, landscape and demolitions

NHS Greater Glasgow and Clyde

Stage 1 – Laboratory/FM Construction

- Started construction February 2010
- Contract due for completion March 2012
- Named Project Manager NEC3 – Peter Moir
- Construction programme on schedule
- Report progress to various groups
- Change Control process fully established
- Construction costs within budget
- Fully establish Governance structure to manage construction and non-construction issues

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NHS Greater Glasgow and Clyde

Stage 2 – Design of Hospitals

Detailed Design Stage 1:200s

- January to June 2010
- Over 70 user groups
- Patient journeys including between departments
- Looking at critical adjacencies of rooms
- 2 meetings but in some complicated areas 3 or 4 meetings eg ED, AAU
- Sign off by Groups
- Project Review by Project Team and Advisors completed August 2010

NHS Greater Glasgow and Clyde

Stage 2 – Design of Hospitals

Detailed Design Stage - 1:50s

- June to September 2010
- Same user groups - input in some areas from patient groups
- Constructed mock-up rooms
- Room size fit for function
- Equipment fits in rooms
- Some changes to 1:200s to get rooms to work – doors walls moved – no increase to area
- Main departments 2 meetings eg theatres, imaging
- Over 700 room types loaded
- Project Review completed by Project Team and Advisors

Greater Glasgow and Clyde

Stage 2 – Design of Hospitals

Appendix K Review – FBC Design Requirements

- Sets minimum level of design information required for FBC
  - surface finishes & protection;
  - acoustics;
  - fire strategy;
  - mechanical systems;
  - electrical systems;
  - access and security systems;
  - energy and power generation;
  - equipment (including replacement strategy);
  - facilities management systems (AGVs and pneumatic tubes);
  - radiation protection
- Review and sign off by Board, technical and supervisory team
- Design stage allows early start in 2011

Greater Glasgow and Clyde

Stage 2 Design of Hospitals

Planning Consent

- Outline Planning Consent Granted July 2009 based upon Exemplar Scheme and subject to 43 conditions and a Section 75 Agreement for off site works
- Workshops held with Glasgow City Council DRS and relevant stakeholders from February to September 2010 to develop the design in 4 key areas. Architecture, Landscape, Transportation and Roads/Drainage
- Masterplan Matters Specified (MSC) in Conditions application approved June 2010 based upon BCL scheme
- Architectural and pre-start MSC application submitted in July 2010 and approval expected in early October 2010

Greater Glasgow and Clyde

Stage 2 – Design of Hospitals

Building Warrant

- The Building warrant application will be submitted in stages including sub-structure, super-structure and fit-out
- Early stage application submitted to engage GCC Building Control in discussions regarding the Fire Strategy and this is close to conclusion
- Negotiated fee levels agreed by BCL with Glasgow City Council.
- Energy Centre and Hospitals Sub-structure application to be submitted on approval of FBC to allow early commencement of works on-site
- Further staged applications to be submitted to meet project programme and cash flow

Hardgate Road
Maternity
Neo-Natal
Children's Park
Car Park 2
1040 Spaces
Children's Hospital
Laboratories
Energy
Centre
Arrival Square
Entrance Boulevard
Car Park 3
312 Spaces
Adult Acute Hospital
Cental Park
Renfrew Road
Neurosurgical
Car Park 1a
691 Spaces
Car Park 1b
691 Spaces
0 10 20 50 100m
N

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A PPC Preformed Aluminium Fins fixed to unitised cladding

B Cladding to column material in abeyance

1 Unitised capless structurally bonded glazed cladding system

2 Curtain walling capped system

3 Trespa or similar HLP rainscreen cladding on Structural Framing System

4 Grade A masonry: external high quality Sandstone on Structural Framing System

5 Grade B masonry: external facing blockwork on Structural Framing System

6 External insulated render on Structural Framing System

7 Composite insultated panel cladding system incorporating louvres

8 Zinc seamed cladding on Structural Framing System

9 Unitised capless insulated Reynobond or similar cladding system

10 ETFE panelling

11 Reynobond or similar rainscreen cladding

North Elevation

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7 4 7 8 4 2 11 4 11 2 B 2 4 2 2 4 7

A PPC Preformed Aluminium Fins fixed to unitised cladding

B Concrete column

1 Unitised capless structurally bonded glazed cladding system

2 Curtain walling capped system

3 Trespa or similar HLP rainscreen cladding on Structural Framing System

4 Grade A masonry: external high quality Sandstone on Structural Framing System

5 Grade B masonry: external facing blockwork on Structural Framing System

6 External insulated render on Structural Framing System

7 Composite insultated panel cladding system incorporating louvres

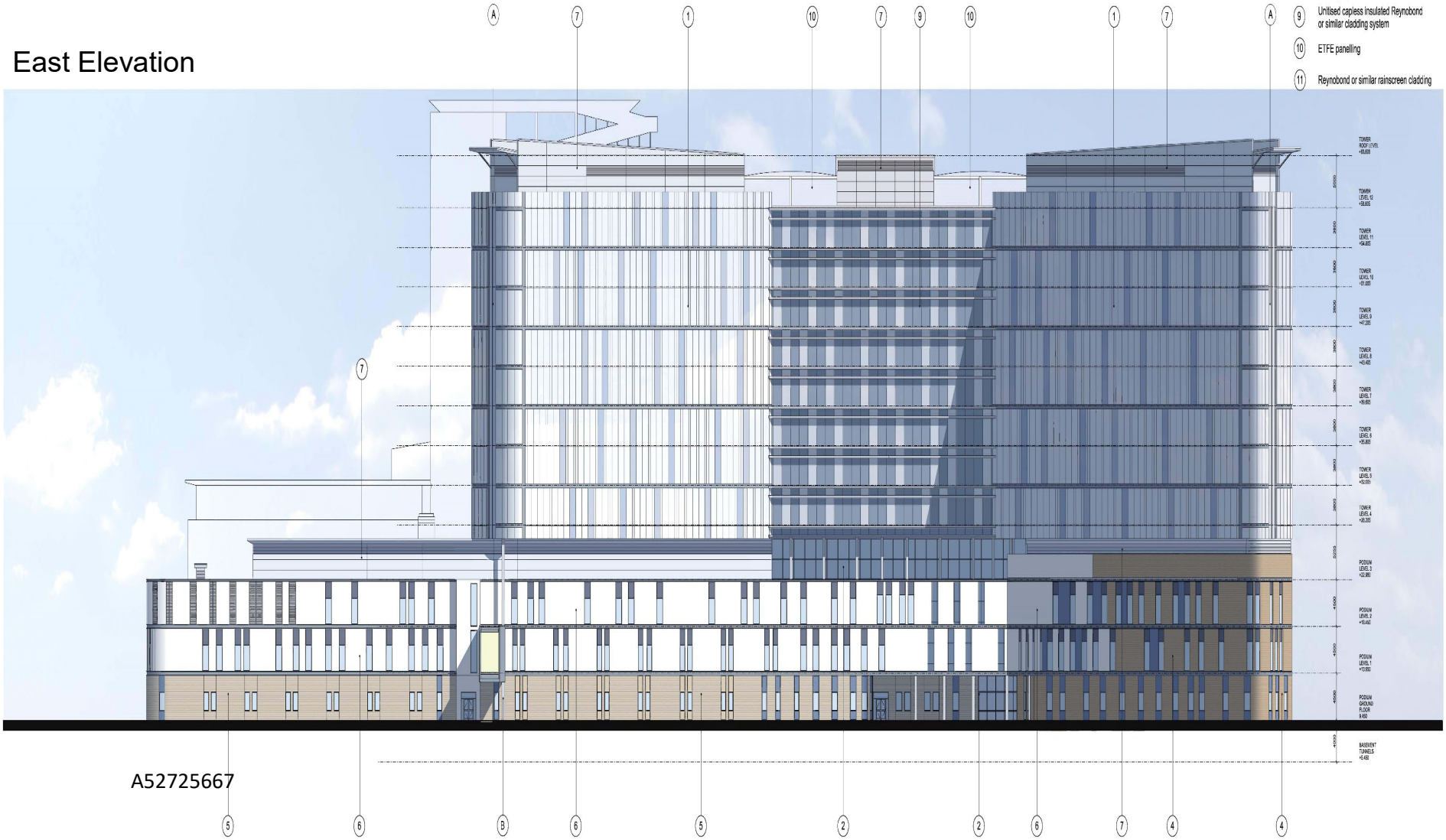
8 Zinc seamed cladding on Structural Framing System

9 Unitised capless insulated Reynobond or similar cladding system

10 ETFE panelling

11 Reynobond or similar rainscreen cladding

East Elevation



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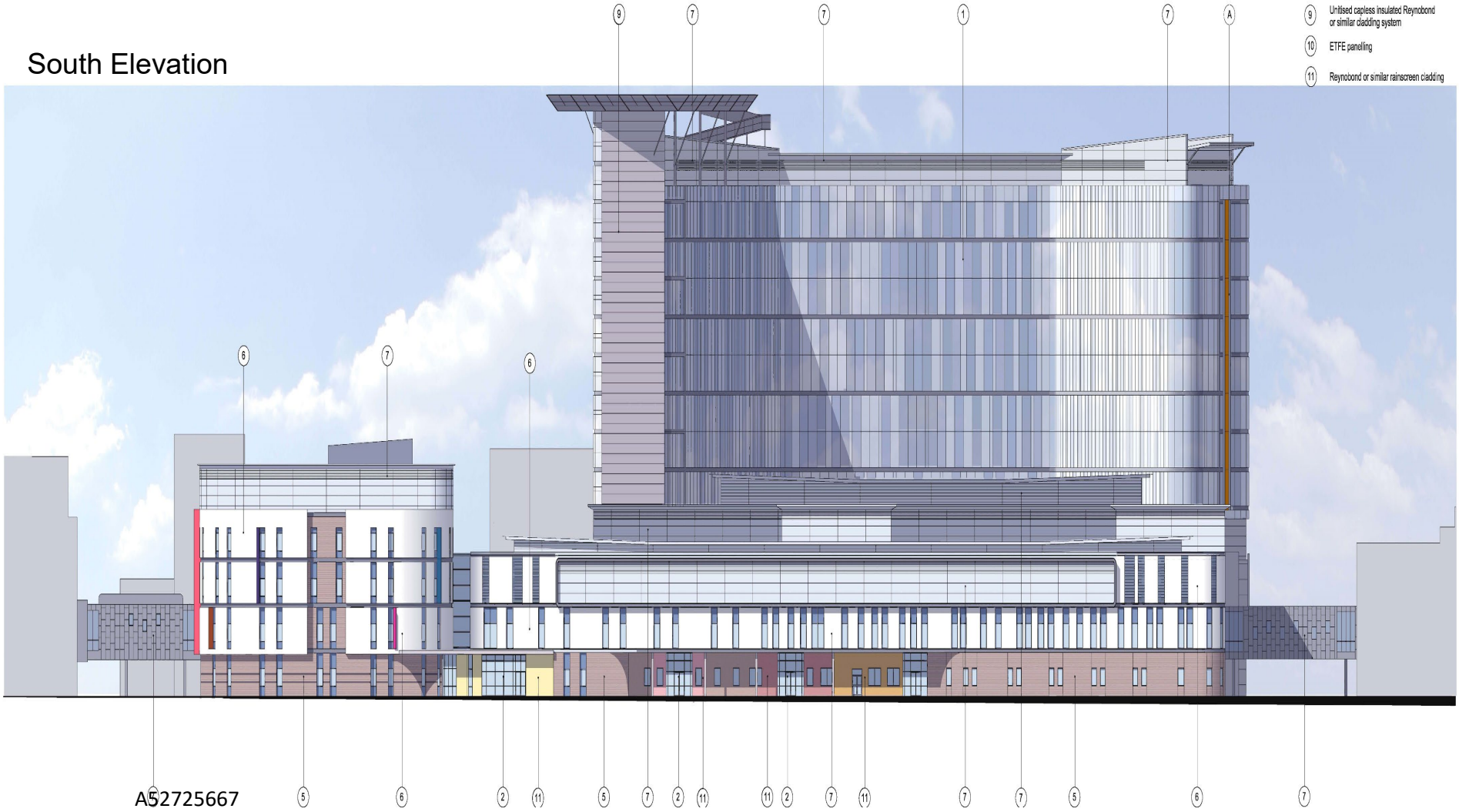
A PPC Preformed Aluminium Fins fixed to unitised cladding

1 Unitised capless structurally bonded glazed cladding system
2 Curtain walling capped system
3 Trespa or similar HLP rainscreen cladding on Structural Framing System
4 Grade A masonry: external high quality Sandstone on Structural Framing System
5 Grade B masonry: external facing blockwork on Structural Framing System
6 External insulated render on Structural Framing System
7 Composite insultated panel cladding system incorporating louvres
8 Zinc seamed cladding on Structural Framing System
9 Unitised capless insulated Reynobond or similar cladding system
10 ETFE panelling
11 Reynobond or similar rainscreen cladding

South Elevation



A PPC Preformed Aluminium Fins fixed to unitised cladding

B Cladding to column material in abeyance

C Tensile Fabric Canopy

1 Unitised capless structurally bonded glazed cladding system

2 Curtain walling capped system

3 Trespa or similar HLP rainscreen cladding on Structural Framing System

4 Grade A masonry: external high quality Sandstone on Structural Framing System

5 Grade B masonry: external facing blockwork on Structural Framing System

6 External insulated render on Structural Framing System

7 Composite insultated panel cladding system incorporating louvres

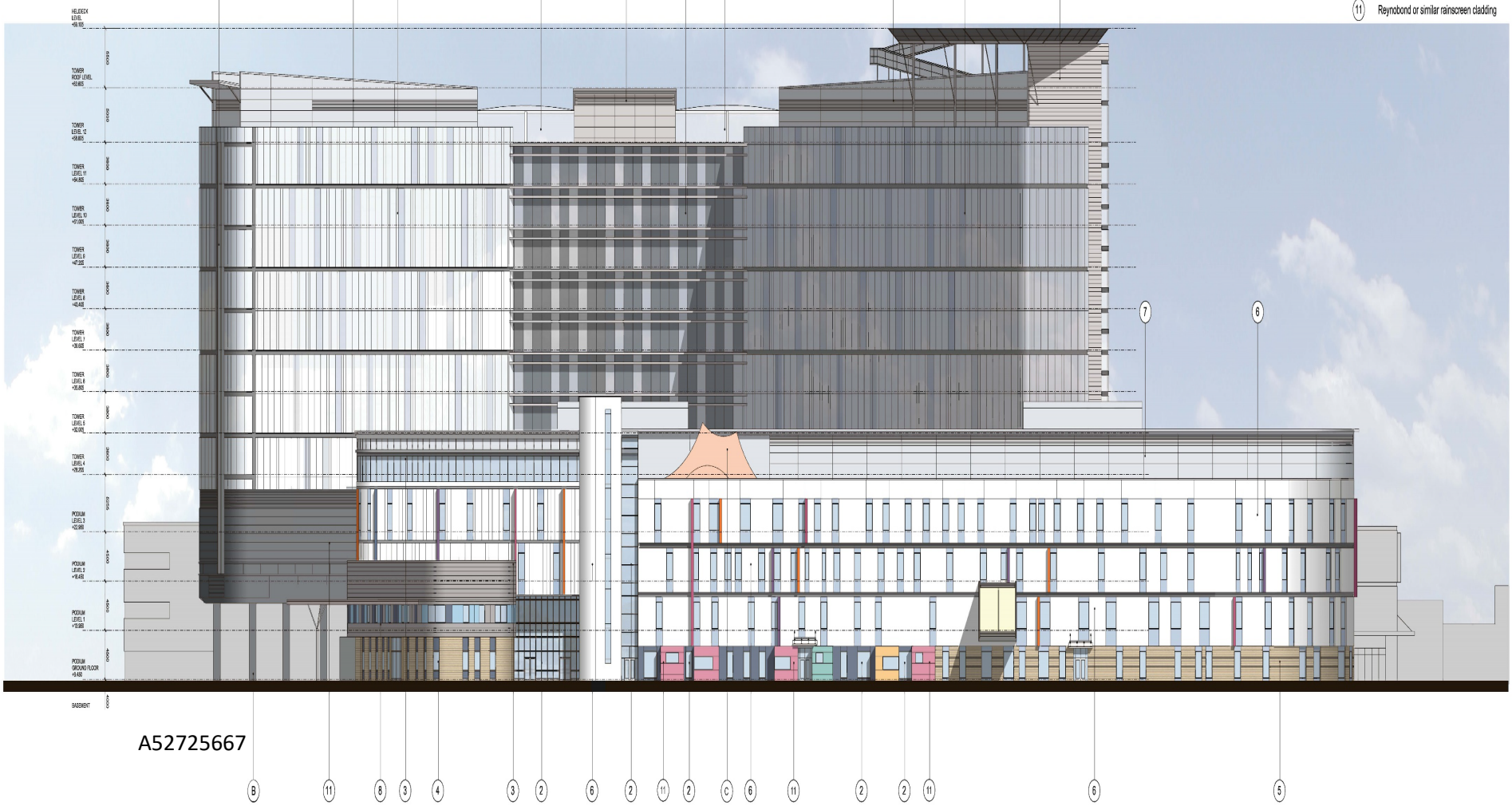
8 Zinc seamed cladding on Structural Framing System

9 Unitised capless insulated Reynobond or similar cladding system

10 ETFE panelling

11 Reynobond or similar rainscreen cladding

West Elevation



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Main Entrance Reception

Adult Single Bedroom

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NHS Greater Glasgow and Clyde

Stage	Contract Awarded Maximum Price	Changes	Current Contract Maximum Price
1	£76.54M	+£0.93M	£77.47M
2	£17.85M	-	£17.85M
3	£483.69M	-£1.75M	£481.94M
3a	£4.39M	0	£4.38M
	£582.46M+	**-£0.82M**	**£581.64M**

NHS Greater Glasgow and Clyde

Headline Risk Mitigation

- 1:200 process concluded
- 1:50 typical room types concluded
- Masterplan Planning Approval
- Evaluation treatment incorporates Planning Authority input
- Further ground investigation undertaken
- Comprehensive set of design deliverables completed during Stage 2
- SAS relocation and Scottish Water land purchase, costs agreed and timeline for transfer on programme
- VAT @ 20% accounted for a current budget
- Section 75 costs agreed
- Demolition on programme and within budget

Residual Risk

- Board Retained Contract Risk Assessed @ £37.3M (inc VAT)
- Key Risks
  - Inflation above average 2.5% pa over contract duration
  - Ground conditions varying from site investigation
  - Individual 1:50 room layout finalisation
  - Equipment
  - Helipad relocation
  - Cashflow

Overall Budget

	Contract Award	Changes	Current
Contract Works	£582.46M	£0.82M	£581.64M
Section 75 and Non Works	£7.00M	-	£7.00M
Mobile ITU	£1.50M	-	£1.50M
Direct Fees	£6.10M	£0.97M	£7.07M
SAS Relocation	-	£1.28M	£1.28M
Scottish Water Land Purchase	-	£0.50M	£0.50M
Enabling Schemes	-	£3.01M	£3.01M
Equipment	£52.8M	-£1.1M	£51.7M
VAT	£112.6M	£15.29M	£127.95M
Chief Risk/Optimisim Bias	£79.18M	-£19.13M	£60.05M
	£841.70M	**£0**	**£841.20M**

NHS Greater Glasgow & Clyde
Board
26th October 2010

AGENDA

- Strategic Context
- Contract
- Scope of Project and design
- Governance Arrangements
- Statutory Approvals
- Community Economic Benefits
- Gateway Review
- Capital Cost
- Financial Appraisal
- Timetable

Currently in Glasgow

7 Acute sites in Glasgow : 6 Adult inpatient sites + RHSC

Each has core services :

- Anaesthetics
- Critical Care
- Surgery
- Medicine

4 have A&E Units (including Trauma) – Stobhill has casualty

2 maternity units

Business Need - Case for Change

- Fragmented services, available resource spread over too many sites
- Need to consolidate specialities on fewer sites
- Pressures on workforce and moving towards larger clinical teams
- Need to meet Government policy
- Outdated buildings costly and no longer fit for purpose

Acute Services Strategy Review cont'd

- Strategy approved by Health Minister in 2002
- Phase 1 completed in 2009 (2 new ACH)
- Phase 2 = this project and lynchpin to ASR completion
- Will facilitate closure of Victoria Infirmary, MHU and RHSC, Western Infirmary and parts of Southern General
- New Children's Hospital on southern site to achieve triple location of adult, children's and maternity services approved by Health Minister in 2006
- 2010/2011 Accelerated ASR - Stobhill In-patient services transfer to Glasgow Royal Infirmary

NHS Greater Glasgow and Clyde

ASR – Final Configuration

- 2 major acute sites (New South Glasgow Hospitals with new children's hospital and GRI)
- New Southside lab complex + GRI Lab complex
- 3rd inpatient site (GGH)
- 2 new Ambulatory Care Hospitals – Stobhill/Victoria
- 2 maternity units (PRMH and SGH)
- New cancer hospital
- Cardiothoracic service at GJH
- WIG, Stobhill, Victoria, MHU, QMH, RHSC closed

Contract with Brookfield (NEC3) – What did we sign up to?

Stage 1-	Construct New Laboratory and FM facility Construct 33KVA sub-station
Stage 2-	Design New Adult and Children's Hospital Complete Full Business Case for Adult and Children's Hospitals Obtain statutory approvals
Stage 3-	Construct Adult and Children's Hospitals
Stage 3(a)-	Final Master Plan layout works including roads, landscape and demolitions

NHS Greater Glasgow and Clyde

Stage 1 – Laboratory/FM Construction

- Started construction February 2010
- Contract due for completion March 2012
- Construction programme on schedule
- Change Control process fully established
- Construction costs within budget

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Scope of Project

- New Adult Hospital
  - 1109 beds (single room with ensuite)
  - State of Art critical Care, A&E and Diagnostic facilities
  - 20 inpatient theatres
  - Outpatient and medical day facilities

- New Children's Hospital
  - 256 beds
  - State of Art critical Care, A&E and Diagnostic facilities
  - 9 inpatient and day theatres
  - Outpatient and medical/surgery day facilities

Examples of Project Benefits

- Triple Co-location
- Fit for Purpose Facilities (supporting regulatory compliance)
- Optimum Critical Co-locations, streamlined patient pathways increasing efficiency
- Sustained Achievement of Workforce Directives and reshaping the Workforce
- Continue ability to meet HEAT Targets and flexibility to meet future 2015 targets
- Facilitate Innovation
- Address Environmental Issues in Energy Consumption and Carbon Footprint

Stage 2 – Design of Hospitals

Detailed Design Stage 1:200s

- Over 70 user groups
- 1:200 drawings (January to June 2010)
- 2-3 meetings each group with sign off
- 1:50 drawings (June to September 2010)
- Over 700 room types loaded
- Mock- Ups

Stage 2 – Design of Hospitals

Appendix K Review – FBC Design Requirements

- Sets minimum level of design information required for FBC
  - surface finishes & protection;
  - acoustics;
  - fire strategy;
  - mechanical systems;
  - electrical systems;
  - access and security systems;
  - energy and power generation;
  - equipment (including replacement strategy);
  - facilities management systems (AGVs and pneumatic tubes);
  - radiation protection
- Review and sign off by Board, technical and supervisory team
- Design stage allows early start in 2011

Statutory Requirements

Planning Consent

- Outline Planning Consent Granted July 2009 based upon Exemplar Scheme and subject to 43 conditions and a Section 75 Agreement for off site works
- Workshops held with Glasgow City Council DRS and relevant stakeholders from February to September 2010 to develop the design in 4 key areas. Architecture, Landscape, Transportation and Roads/Drainage
- Masterplan Matters Specified (MSC) in Conditions application approved June 2010 based upon BCL scheme
- Architectural and pre-start MSC application submitted in July 2010 and approval received 19th October 2010

Illustrative Masterplan Landscape Masterplan

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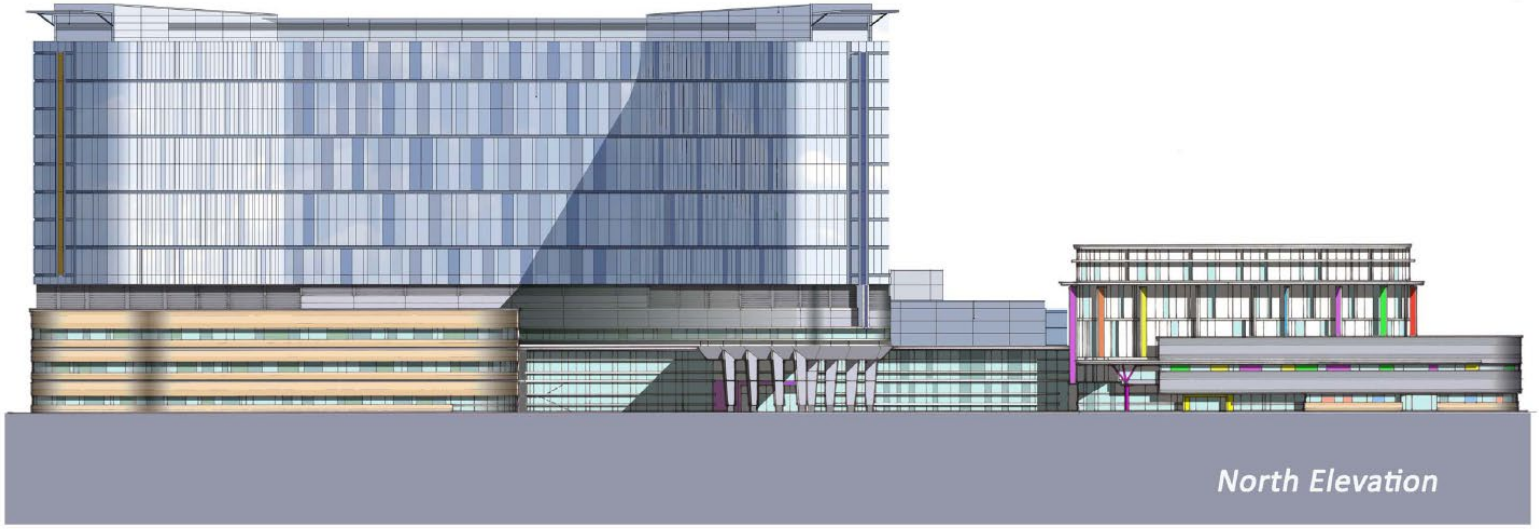
Final Elevations



North Elevation

West Elevation

Final Elevations

East Elevation

South Elevation

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Main Entrance Reception

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Arial View from North

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Arial View from South

Governance and Control

- Project Following Good Management Processes
- Robust Risk Management
- Strict Change Control Mechanism
- Subject to Regular External Audit
- NEC3 Option C
- Target Price and Maximum Price mechanism
- Collaborative, shared pain/gain

Community Economic Benefits

- Targets set within Contract to Support Local Recruitment and Small and Medium Enterprises and Social Enterprises
- 10% of Recruits to be New Entrants
- Brookfield Working in Partnership with South West Regeneration Agency and Glasgow City Council
- Training and Supporting Local Businesses to Tender for Project Work

Gateway

Gateway 3 Review – 3rd – 5th October 2010

Outcome

4 parts to the Review

Project received a Green level of Delivery Confidence Assessment

"Successful delivery of the project/programme to time, cost and quality appears highly likely and there are no major outstanding issues that at this stage appear to threaten delivery significantly"

Assessment of Solution	No recommendations
Business Case	Continue to develop targets from benefits listed Missed some indirect risks (ie political) on risk register
Current Phase (Procurement)	Case study should be compiled and shared widely
Readiness for Next Phase	No recommendations

Stage	Contract Awarded Target (Maximum) Price	Changes	Current contract Target (Maximum) Price
1	£75.8m (£76.5m)	+£0.9m (£0.9m)	£76.7m (£77.4m)
2	£17.9m (£17.9m)	-	£17.9m (£17.9m)
3	£477.1m (£483.7m)	-£1.8m (-£1.8m)	£475.3m (£481.9m)
4	£4.3m (£4.4m)	-	£4.3m (£4.4m)
	£575.1m (£582.5m)	**-£0.9m (-£0.9m)**	**£574.2m (£581.6m)**

Headline Risk Mitigation

- 1:200 process concluded
- 1:50 typical room types concluded
- Masterplan Planning Approval
- Hospital design approval
- Further ground investigation undertaken
- Comprehensive set of design deliverables completed during Stage 2
- SAS relocation and Scottish Water land purchase costs agreed and timeline for transfer on programme
- VAT @ 20% accounted for in current budget
- Section 75 costs agreed
- Demolition on programme and within budget

Residual Risk

- Board Retained Contract Risks
- Key Risks
  - Inflation above average 2.5% pa over contract duration
  - Ground conditions varying from site investigation
  - Individual 1:50 room layout finalisation
  - Equipment
  - Helipad relocation
- Risks reviewed regularly

Overall Budget (Target Price)

	Contract Award	Changes	Current
Contract Works	£575.1M	-£0.8M	£574.3M
Section 75 and Non Works	£6.8M	-	£6.8M
Mobile ITU	£1.5M	-	£1.50M
Direct Fees	£6.1M	£1.0M	£7.1M
SAS Relocation	-	£1.2M	£1.2M
Scottish Water Land Purchase	-	£0.5M	£0.5M
Enabling Schemes	-	£3.0M	£3.0M
Equipment	£52.8M	-£1.1M	£51.7M
VAT	£111.3M	£15.0M	£126.3M
Client Risk/Optimism Bias	£88.1M	-£18.8M	£69.3M
	£841.7M	**£0**	**£841.7M**

Overall Budget (Maximum Price)

	Contract Award	Changes	Current
Contract Works	£582.5M	-£0.9M	£581.6M
Section 75 and Non Works	£7.0M	-	£7.00M
Mobile ITU	£1.5M	-	£1.50M
Direct Fees	£6.1M	£1.0M	£7.1M
SAS Relocation	-	£1.2M	£1.2M
Scottish Water Land Purchase	-	£0.5M	£0.5M
Enabling Schemes	-	£3.0M	£3.0M
Equipment	£52.8M	-£1.1M	£51.7M
VAT	£112.6M	£15.2M	£127.8M
Client Risk/Optimism Bias	£79.2M	-£18.9M	£60.3M
	£841.7M	**£0**	**£841.7M**

Financial Appraisal

Affordability of Adult and Children's Hospitals

(1) Capital Affordability

	Full Business Case (Oct 2010) £'M	Selection of Preferred Bidder (Nov 09) £'M	Outline Business Case Approval (May 08) £'M
Capital Funding Requirement			
	841.7	841.7	841.7
Planned Expenditure			
Target build cost including professional fees and inflation allowance	574.3 (Max : 581.6)	571.0 (Max : 579)	603.8 (Max : 621)
Equipment	51.7	52.8	52.8
VAT	126.3	110.0	116.0
Other	20.1	8.3	8.3
Contingency for specific/general risks	69.3	99.6	60.8
	841.7	**841.7**	**841.7**

Affordability of Adult and Children's Hospitals

(1) Capital Affordability

Key Points

1. Brookfield target price still comfortably within FBC provision
2. Commitment of SGHD to specific funding allocation of £841.7M. Capital receipts generated by Board from disposal of surplus sites in future years will be retained by SGHD when generated by the Board.
3. Construction cost inflation provided for at 2.5% p.a.
4. Comments on cost movements
   - Increase in VAT costs relates predominantly to increase in VAT rate to 20%
   - Increase in other costs relates to crystallisation of some specific risks (eg upgrade of drainage infrastructure; costs of SAS depot relocation; land acquisition) also reclassification of provision for professional fees to separately identify those costs being borne directly by the Board independent of the main contractor (eg Board technical advisers, planning fees etc)
5. Reduction in contingency reflects more advanced stage of design solution but is mainly attributable to impact of increase in VAT rate. Reduced contingency, which includes general contingency of c £20m, is consistent with what SGHD would anticipate at FBC stage.

Affordability of Adult and Children's Hospitals

NHS Greater Glasgow and Clyde

(2) Revenue Affordability

	Full Business Case (Oct 2010) £'M	Selection of Preferred Bidder (Nov 09) £'M	Outline Business Case Approval (May 08) £'M
Forecast step up in Revenue Expenditure			
New adult/children's hospital	23.3	48.8	53.8
Enabling schemes	2.1	5.7	5.7
	25.4	**54.5**	**59.5**
Planned Cost Savings			
Cost savings from enhanced operation efficiency	30.6	22.1	22.1
Property cost savings, including capital charge and maintenance cost savings	13.0	19.9	22.8
	43.6	**42.0**	**44.9**
Net Cost Savings	**18.2**	**(12.5)**	**(14.6)**

Affordability of Adult and Children's Hospitals

(2) Revenue Affordability

Key Points

1. Project is forecast to generate a net cost saving of in excess of £18M p.a. and therefore is self-funding.
2. Cost savings forecast to come from enhanced operational efficiency, linked with full exploitation of investment in ACH facilities, and property cost savings.
3. FBC costings updated to reflect recent change to capital charges regime, implemented in 2010/11. This change has led to a net reduction in the step up of annual revenue expenditure related to the project of c £25M.
4. FBC is strengthened by fact it is self-funding and forecasts release of £18M plus of operational cost savings through enhanced efficiency. It is not dependent upon increased revenue funds at a time of (at best) very low or (more likely) flat funding allocations for NHS Scotland.

NHS Greater Glasgow and Clyde

Affordability of Adult and Children's Hospitals

(3) Financial Outlook → 2017/18

Key Risks	Financial Strategy
1. Funding uplifts reduce to zero or go negative and/or pay uplifts exceed level of funding uplift	1. Cost savings plan a dominant feature of this project. Project is self-funding
2. Implementation of NRAC recommendations	2. SGHD continue to maintain measured approach to NRAC implementation.
3. Significant restriction(s) on availability of capital funds	3. SGHD has restated their commitment to this project and has afforded it national priority status.
4. Achievability of cost savings plans	4. Cost savings plan is supported by specific operational plan(s).

NHS Greater Glasgow and Clyde

(4) Financial Strategy

1. Capital Funding

- SGHD funding commitment to the scheme is explicit and remains key
- hold general contingency and use if necessary to manage risk of increased capital expenditure
- secure forecast level of capital receipts to "repay" SGHD brokerage

Conclusion : Project remains affordable in capital terms.

2. Revenue Funding

- dependency of any new service commitment on funding from cost savings. Scheme is self-funding in revenue terms therefore not dependent on future funding uplift(s)
- drive through with implementation of programme aimed at improved operational efficiency and release of cost savings
- ring fence Acute £43.6m cost savings pool as this is released – specific to programme implementation - and use to fund step up in revenue costs associated with provision of new hospital buildings

Conclusion : Project remains affordable in revenue terms.

NHS Greater Glasgow and Clyde

Project timetable

Event	Milestone
Stage 2 completion, FBC approval by Health Board	26 October 2010
Stage 2 completion, FBC approval by Scottish Government Capital Investment Group	9th November 2010
Stage 3 (Construction of adult and children's hospitals) programme to commence	November 2010
Completion (Construction) - Laboratory Facilities	March 2012
Completion (Construction) – adult and children's hospitals	January 2015
Operational Date – adult and children's hospitals	Summer 2015
Stage 3a completion, demolition of surgical block and completion of landscaping	Summer 2016

RECOMMENDATION

Board Members are requested to:

- Receive Paper
- Approve the Full Business Case

Brookfield

New South Glasgow Hospitals
Response to Comments on Appendix K M&E Drawing
8th November 2010 – Rev "A"

Item	Wallace Whittle Comment	Brookfield Response	Further Comment
1	**Introduction** A number of drawings were presented over several days. The reviews were high level and of a strategic nature with detailed discussions on specific elements arising. It was noted that the drawings would be developed to a more detailed level for further review. The following details provide a summary of the comments noted during the reviews. Additional comments were also made by Capita and NHS but are not recorded herein.	This development would occur at Stage 3 as part of the final design.	
	GENERAL COMMENTS ARISING		
2	**Maintenance** Fully detailed report to be provided identifying full compliance with ERs and SHTMs. Sample method statements to be prepared.	Mercury engaged a local company to review install and removal of generators as an example an provide a sample Method statement . Sample Method Statement attached. Appendix 1.	
3	**Plant Replacement** Strategy and methodology to be written up by ZBP.	ZBP report has been issued. Appendix 2	
4	**Medium Voltage Systems** The site MV network is being developed, there are several changes to the bid proposals and it would appear that the scheme will not be strictly in accordance with generic schematics within SHTM 06-01 with open rings. A typical sub-station layout was tabled comprising transformer room 1, transformer room 2, ring main unit room 1, ring main unit room 2, and a combined low voltage room. It was noted that ZBP would review the space allocation to ensure optimum heat rejection from the transformers. Midel ONAN transformers proposed for roof mounted units, cast resin proposed for internal industry, problems of cast resin unit sourcing was discussed and full procurement details to be provided in due course. MV cable joints were discussed and it was agreed that if these were necessary they would be located within the soft landscaped areas with appropriate labelling and protection. Brookfield advised that Scottish Power work is progressing on target. Discussion required outwith this forum on possible wayleave requirements for retained estate cables prior to road realignment. ZBP advised that no remote control station facility proposed for individual MV	WW are required to expand the comment and advise where they believe the systems are not in accordance with SHTM 06-01. The review will take place during Stage 3 Full submittal will be provided before purchasing. Yes they should be located in a cable chamber in the soft BCL to organise Meeting	

	breakers however hierarchical control is available via the ENMS head end.	Manual & automatic control of all MV breakers will be available from the ENMS head end.	
5	**Post Workshop Comment** Subsequent to the workshops an amended copy of the Generator Load Control proposals has been provided. This was discussed with ZBP and Brookfield at site on 16 September 2010. The proposal starts all generators on a common bus rather than twin busses; this will affect the load availability at 15 seconds. ZBP are progressing load matrices which shall be issued in due course, however we suggest that a meeting is arranged with the NHS FM representative to discuss the proposal at an early date.	Agreed Agreed The clinical risk is to be assessed by the Board prior to finalisation of the switching scheme.	
6	**Low Voltage Systems** The low voltage network is being developed for the full system with particular emphasis on the 11 departments. Dual routing is being incorporated however this is not being fully met where excessive lengths would be required. The low voltage load control for generator start up is being developed with fail safe devices. It was noted that automatic failure recovery scenarios would be integrated in the control system, however overall manual control would be available for proficient staff to operate.	Dual feeds are being employed throughout from source to final distribution points. Separate routes for the A + B cables are envisaged where practical to do so. Agreed. Agreed.	
7	**Earthing** Earthing schematic indicates multiple neutral earthing on each system, this is to be remedied and a common solution agreed and implemented throughout.	Updated for FBC drawing issue. N-E link being provided at substation transformer.	
8	**Energy Centre** The energy centre is being developed in line with the bid proposals, the plant replacement procedures were discussed and it was agreed that these require to be developed with "Plant Move" specialists. The fuel tank supply and fill locations to be reviewed to minimise traffic impact. General plant replacement strategy to be fully developed. Step over bunds requested at doors for wet to dry plant rooms.	No further comments. The locations of the fill points have been finalised and the a route for the tankers, a one way route around the energy centre, to minimise any traffic problems has been agreed. A strategy has been discussed with regards the energy centre plant replacement. Step over bunds are being provided.	

Brookfield

New South Glasgow Hospitals
Response to Comments on Appendix K M&E Drawing
8th November 2010 – Rev "A"

9	**CHP** 3 No. 1MWe units proposed. WW requested that input sound attenuators were reviewed. ZBP advised that sound attenuation for the CHP units would be a combination of local canopy and air inlet and outlet attenuators. HMcD requested details of proposed Biogas connections.	3 No. 1.2MWe units are currently proposed but are subject to the final design. No further comments. No bio-gas provision is currently included as details of capacity/size etc. are not available. However a valve connection to the main gas line will be left for future use.	
10	**Lighting** The lighting scheme is being developed by Mercury Engineering (ME) in line with the bid proposals. The NHS bid comments require to be reviewed e.g. lighting levels at staff bases and non standard corridor areas which do not appear to have been developed. Lighting in corridors does not appear to be uniform. The quantity of ceiling mounted luminaires in bedrooms to supplement the main bed head combination light was discussed and ME advised that each room type would be evaluated separately. LED luminaires proposed for staff bases, touchdown areas, receptions, x-ray, and scanner rooms only.	Agreed This will be developed during Stage 3. This will be developed during Stage 3. Agreed Agreed	
11	**Lighting Control** The lighting control is to be developed.	Lighting control described in specification: ZBP-XX-XX-541-205. Lighting control matrix being developed to provide further guidance on switching principles for the generic rooms.	
12	**Wiring** A prefabricated wiring system is being proposed for parts of the wiring general circuits and shall be in steel conduit, it was noted that all connectors for the prefabricated system should be robust and tested in use.	Agreed	
13	**Theatre Lighting** Theatre lighting units to be detailed and emergency power system information provided.	Theatre lights indicating Emergency lights are detailed on drawings	
14	**Fire Alarms**		

Brookfield

New South Glasgow Hospitals
Response to Comments on Appendix K M&E Drawing
8th November 2010 – Rev "A"

	The fire alarm system is being developed in line with the bid proposals with several modular panels proposed rather than less large capacity units. Alarm annunciation is being detailed and the position of "clear text displays" is being progressed during the user group discussions.	Agreed To be developed further during stage 3.	
15	**Zone Distribution** The zone distribution is being developed in line with the bid proposals, however some zones incorporate multiple departments. Actual boundaries to be developed and agreed during the next stage.	Electrical zoning drawings will be developed throughout the design process in line with architectural layout changes and the refinement of LV power distribution strategies.	
16	**Containment** The containment is being developed in line with the bid proposals.	Agreed.	
17	**ICT Cabling** The ICT cabling does not comply with the Employers Requirements in that sufficient comms rooms have not been provided to ensure compliance with the 90 m horizontal cabling. This was evident in the core area and outreach areas in the bedroom block. The main comms rooms are not sized as per the Employers Requirements. The sub-main comms rooms are not sizes as per the Employers Requirements.	Space is now provided in the EL Risers/Cupboards. Detailed design including power consumption to be agreed. The one undersized room has been changed by NA and is now compliant.	
18	**General Comments Arising – Mechanical Systems** **Mains Distribution** Manufacturers guarantee conditions to be provided for underground heating and cooling mains along with examples of similar installations and compliance statements areas referenced to regulations and SHTMs.	Vendor details will be provided during stage 3.	
19	**Supplies to Retained Estates** Details of building and spatial provisions to allow future entrance and exit of necessary services to be provided.	Space allowance has been made for the taking the retained estate pipework from the energy centre alongside the leg "A" external services	
20	**Spare Capacity** Confirmation of allowances on all systems e.g. Air Handling Units, vertical rising services, etc. To be provided.	Refer to design Reserve Matrix attached.	
21	**Gas Supply** Full details of provision and details of necessary gas pressure reducing equipment	The gas supply system is shown as a schematic on drawing ZBP-EC-XX-SC-513-	

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	and system resilience, risk analysis and methodology to be provided.	002 and described in the specification ZBP-XX-XX-SP-511-352.	
22	**Chillers** Confirmation of model types required as suggestion was not providing high COP units previously indicated. Justification for same required together with impact on energy.	The minimum SEER value to be specified will be at least equal to bid proposal.	
23	**Expansion** Details of proposals to accommodate pipework expansion on internal and external mains to be provided.	Details of the expansion will be developed during stage 3 of the project.	
24	**Ward Heating/Cooling** Review provision of double panels in ward and en-suite as appears possible over complication.	4 pipe chilled beam providing heating and cooling will be provided in tower bedrooms. Heating only radiant panels will be provided in ensuites.	
25	**Overdoor Heaters** Review current electrical unit provision as appears non energy efficient solution at present.	Over door heaters will be served from LTHW circuit.	
26	**Isolation Suite – Control** Review of isolation suite's controls on how to run plant when the rooms are empty regarding energy savings and positive/negative pressure to adjacent areas. Final solution to be investigated and agreed with users. Solution to be in compliance with SHPN Note 4 & SHTMs.	The proposals are in compliance with SHPN Supplement 4. There is a risk that running the systems in a setback mode could give rise to inadvertent misuse and loss of isolation.	
27	**Isolation suite – Ventilation** Isolation suite extracts are gathered together within a common plenum within a plantroom and mixed with fresh air then extracted via another set of fans for discharge at high level. This is non standard and Board review required prior to proceeding with this philosophy. May provide problems if one system is to be fully sanitised; all rooms would have to be closed down when common plenum is to be cleaned.	SHPN 04: Supplement 1 in clause 4.8 does permit a common supply and extract systems with the provision of gas tight dampers to each isolation suite to allow cleaning & maintenance. As an alternative H14 filters could be provided on the extract but they are required to be in safe change enclosures external to the building which is not feasible. A compromise would be to provide the extract for the 11 isolation suite in 2 groups of 3 suites and 1 group of 4.	
28	**Renal Dialysis – Ventilation** Renal dialysis is taken as 10 ac/hr which is the category of a treatment room, discussion as to whether this can be reduced. Further investigation required by ZBP via the SHTM; risk assessment and other precedents to be utilised.	This has been discussed with the Board and it is likely that the definition of a 'treatment room' will be relaxed. To be developed during stage 3.	
29	**Operating Theatre**		

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	Operating theatre sharing of preparation room; further comfort to be provided that pressure regimes can be maintained when one system is isolated for maintenance to mitigate shut down of both facilities.	Sufficient air will be provided from each plant to ensure that all doorways can be protected in the event of one AHU being off line.	
30	**Ventilation Plant Capacity** Plant has currently been provided with 25% margin together with the main risers, final distribution does not have this margin applied – NOTE.	Agreed	
31	**Medical Gases** **VIE Plant** VIE plant location to be finalised together with the possible provision of a temporary set. ZBP to discuss with Air Products and the Board to agree final solution that will satisfy the projected consumption. The possibility of increasing the size of the existing maternity VIE plant is also to be explored with Air Products regarding regulations.	Final location of VIE plant now shown on site services plans: ZBP-EW-XX-PL-591 series. A report has been prepared on options for the VIE plant capacities for discussion: dated September 2010.	
32	**Oxygen Ring Main** The routing of the oxygen ring main is to be agreed and finalised by all parties.	The final route of the pipework and exact connection position will be agreed during Stage 3.	
33	**Helium/Oxygen** Clarification is required from the users if Helium/Oxygen is required within the building, requested within the Employers Requirements Clause 8.2.20.6 Page 176.	Awaiting clarification from Board.	
34	**Medical Air Plant** ZBP are proposing a common air plant to provide 4 & 7 Bar service. Employers Requirements asks for a separate system for each, Board sanction required.	Awaiting clarification from Board.	
35	**Valving Arrangement at Wards** Sub zone isolating valves to be provided within the medical gas pipework located in the ceiling void to allow individual wards to be isolated off the system and maintain a downstream service.	This has been added to the MGS drawings for the departments currently designed.	
36	**Medical Gas Plant Capacity** Plant has currently been provided with 25% margin together with the main risers, final distribution does not have this margin applied – NOTE.	Agreed	
37	**Operating Theatre – Valving Arrangement** Theatres to be valved in such a way as to allow upstream and downstream services	It was agreed that no more than 4/5 theatres would be provided from each set	

	to be maintained should one of them require to be isolated.	of DIVs. Each theatre will have its own AVSU. This has been added to the MGS drawings.	
38	**BMS** **Energy Display** Clarification required as to whether energy consumption should be provided via a display panel at the nurses stations, called for within the Employers Requirements M&E 5.	Options are being consider with regards the energy display for the building and these will be resolved during Stage 3 of the project.	
39	**Existing Site** The existing hospital site controls are via a Trend system – NOTE.	Noted	
40	**Renal** Discussion took place on the plantroom provision together with delivery and tank location for the bulk acid provision, ZBP to review and agree with the Board.	Provision has been made for the storage of bulk acid for the renal department in the basement adjacent core B. The tanks fill point is to be located near the patient discharge layby.	
41	**Water Services** **Scottish Water Approval** Discussed the need for early liaison with Scottish Water suggested to ensure understanding of the interpretation of the Bylaws in relation to zonal back flow between floor levels and departments.	ZBP have started the process of discussions with Scottish Water and issued them with schematic drawings for comment. To date no response has been received but this process will continue through stage 3.	
42	**Backflow Protection** Discussed the provision of adequate backflow provision for the various categories of risk in relation to water supplies to equipment.	Comment as 41 above.	
43	**BREEAM** Discussed the provision of leak prevention measures, etc. In relation to targeted BREEAM credits.	Leak detection is proposed via the BMS. Further details are provided in the ZBP specification ZBP-XX-XX-SP-660-406.	
44	**Hot Water Circulation** Discussed proposals for method of balancing hot water return legs and requirements for appropriate control valves.	Thermostatic balancing valves will be employed so that the correct minimum temperature in the return pipework is maintained.	
45	**Cold Water Distribution Temperature** Discussed methodology for compliance with cold water temperatures, Brookfield to review.	The design of the cold water services has been carried out to ensure that high usage cold water outlets are provided at the end of runs on the distribution pipework to ensure a good turnover of water in the pipework.	
46	**Water Services Resilience**		

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	Discussed proposed pipework strategy for ward flexibility and noted generally philosophy to supply a ward from two sources.	Agreed	
47	**Water Services Valving** Noted the requirement to be able to isolate individual rooms independently.	Each fitting will be provided with means of isolation and larger departments will be provided with sub-valving for maintenance.	
48	**Foul Drainage** Noted that foul drainage installation will be full ventilated, no automatic air admittance valves. Discussed discharge of radioactive drainage and NHS requirement to carry this waste via separate stacks systems. ZBP to consider feasibility/benefits of earlier dilution.	Agreed The dilution of radioactive waste will be explored further during stage 3.	
Item	**Capita Symonds comment Electrical Services 14/09/10**	**Brookfield Response**	**Further Comment**
49	**Energy Centre Drawings Series 532** Details of point of connection for existing site HV ring to be confirmed, although two number locations have been set aside for connection.	Agreed	
50	**HV Cables and Routes Series 532** Route of HV cable at rear of laboratory block will be only 300 mm deep due to tunnel construction below. Contractor is proposing protection by means of ducting and concrete, with surface marked tiles for warnings of HV cable below. Ca52ble runs around site will be in some cases too long for straight pull as one length. This will mean joints will be required in some cases. Contractor has confirmed that cable joint locations will be identified and marked for future inspection purposes. G59 parallel operation of mains and generator has been agreed, written confirmation from Supply Authority to be confirmed.	Agreed, design reworked to allow minimum 600mm cover under concrete yard. Agreed Yes – in principle.	
51	**Distribution Board Zoning Layouts Series 532** Some drawings appear to be missing boards or references need revised.	Updated for final Appendix K Issue.	
52	**Security Layouts Series 571** The layout will require to be developed further once more detail of Client requirements are clarified.	Agreed, will be subject to ongoing discussions between the design team and the Board.	

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53	**Lighting Layouts Series 541** Details of waiting areas style of lighting require input from Client as to the type and mood of lighting to be provided. The current submission of supplier of lighting is not currently part of the approved initial tender listed suppliers. Any change to supplier proposed will require to be submitted for Client approval. Details of switching will require to be developed later.	Agreed, will be provided within stage 3. Will be addressed within M&E component list for stage 3. Lighting control described in specification: ZBP-XX-XX-SP-541-205. Lighting control matrix being developed to provide further details on switching principles for the generic rooms.	
54	**Fire Alarm Layouts Series 572** Detection in operating theatres requires to be amended to ensure individual addressable capability. At present submitted drawings have two theatres monitored by one air sampling device, single pipe device. This does not provide detail enough of which theatre is in alarm.	VESDA Units have been added as per Board Review to allow individual theatres to be monitored	
55	**External Services & Combined Services Series 591** All drawing notes do not appear on every drawing, even when notes are referred to on each drawing.	Accepted will be corrected in the next issue of drawings.	
56	**Earthing Details Series 539** Lighting protection connections not shown.	To be incorporated during the stage 3.	
57	**IT Services Series 555** Some information shown for ward layouts, but questions on the cable length exceeding 90 m to be answered.	Hub room and sub hub panels will be provided to overcome the 90m requirement.	
58	**Access Control Series 322** Details will require to be tied up with small power supplies and fire alarm links. Basement area at kitchen/bed maintenance has security public/staff access control at corridor, is this not just staff area only? Level 3 has one access door possible wrong way round for public/staff door control at Public Core A lifts.	Power supplies will be incorporated in 1:50 small power layouts. Access control queries will be incorporated during stage 3.	
Item	**Capita Symonds comment Mechanical Services 16/09/10**	**Brookfield Response**	**Further Comment**
59	**General Comments**		

	The drawings provided although not comprehensive were sufficient to provide an overview of all services and were of a high standard for the current stage of the project. The design and layout of the systems, subject to modifications discussed at our meetings and marked on the drawings, appear to conform with the requirements of NHS GG&C. The requirement to include the 25% over capacity, within major items of plant and main pipework and ductwork runs, to allow for future change of use within areas, results in over capacity that will require to be addressed during the commissioning of the systems. The coordination of all services is required to ensure adequate provision is provided for access to maintain and repair all systems and plant.	Thanks Agreed Agreed, being reviewed as part of the VE excersise. Agreed, detailed coordination will occur during stage 3.	
60	**External Mechanical Services** Drawing No 591-001,002,003,004,005,006,007,008,009,010,011,012,013 & 014 Comments:- 1. Has the location of underground services been agreed? Can more services be run under soft earth? 2. What allowance has been made for expansion? 3. Separation of cold water services and heating pipework?	Ongoing with full external coordination, maximising running in services within the soft. Expansion is taken care of within Energy centre and A&C building, along with provision of reinforced bends on pipe runs, which accommodate expansion internally to the system proposed. A&B legs provided and separated, 250mm separation between services within a leg, sufficient with pre-insulated pipe system proposed.	
61	**Fire and Water Services Routes in Basement** Drawing No 500-061 & 062 Comments:- No Comment	Noted	
62	**HWS Zones** Drawing No 502-100,101,102,103,104,105 & 106 Comments:- No Comment	Noted	
63	**Heating Zones** Drawing No 521-310,311,312,313,314,315 & 316 Comments:- No Comment	Noted	
64	**Ventilation Zones** Drawing No 524- 300,301,302,303,304,305,306 & 307 Comments:- No Comment	Noted	

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65	**CWS Zones** Drawing No 525-320,321,322,323,324,325 & 326 Comments:- No Comment	Noted	
66	**Oil Schematic** Drawing No 513-001 Comments:- Additional meters to be added.	Will be added on at stage 3 drawing iteration.	
67	**Gas Schematic** Drawing No 513-002 Comments:- Confirm the burners on the boilers and CHP have been selected to run with a 200mb gas pressure. Will this have any implication for the onsite maintenance personnel?	Confirmed, Maintenance staff will need to be qualified and trained to the necessary standard.	
68	**Chilled Water Schematics** Drawing No 525-501,502,503,511,521,535,551,561,571,581 & 591 Comments:- Additional valves required of isolation.	Added to Final Appendix K drawings	
69	**Energy Centre Schematics** Drawing No 521-401,402,403,411,421,441,450,451,461,471,481 & 491 Comments:- 1. All isolation points on the MTHW systems require to have double shut off. 2. What strategy is being used for isolation of temp/pressure sensors and gauges? 3. Location of cross link connections on low loss header? 4. The pressurization systems are shown in duplicate with each having run/standby pumps and expansion vessels, are these required? 5. One of the pressurization units has the water tank being supplied via the system not the MWS. 6. The strategy to have 25% over capacity within the plant and mains has resulted in the boilers being sized for 125% of the design load with further backup of the CHP and absorption chillers. Is this required? Could the number of boilers and associated oil tanks etc be reduced with the over capacity being provided by the alternative systems.	 Noted, to be incorporated in stage 3. The temperature & pressure gauges will be double valved. Shown on Appendix K Energy Centre layouts. Part of VE review. Drawing amended in final Appendix K format. Noted, Part of the ongoing VE review.	
70	**Ventilation Schematics** Drawing No 524-		

	701,707,714,717,801,802,803,833,834,836,861,852,874,878,901,902,903 & 907 Comments:- 1. Fire and Smoke dampers indicated on fire clad kitchen extract? 2. Fire or Smoke dampers to be included at all penetrations through fire compartments and cavity barriers, as required. 3. Additional VCD on sub circuits for initial commissioning. 4. No Ultra Violet filters are indicated for critical clinical areas, are these required? 5. Single temperature controllers for several rooms with differing temperature requirements? 6. Thermal wheels are indicated within AHU for heat recovery. This may restrict possible change of use due to cross contamination. Have plate heat exchangers been considered? This would have an effect on the energy usage as plate heat exchangers are generally less efficient than the wheels.	 The fire & smoke dampers will not be required if the duct is fully fire clad. Agreed, will be fully coordinated with stage 3 design and fire strategy Agreed, comissionability will be reviewed prior to design sign off. UV filters are not required by the Board. As indicated in the in the controls specification single controls are used on some multiple rooms on the ventilation system to determine the supply air temperature but all rooms have individual heating and local cooling control were applicable. Thermal wheels are acceptable in the SHTM and are the most efficient means of heat recovery however plate heat exchangers are used in the Wards to further limit the possibility of cross infection . If a change of use is required in the future, space allowing, thermal wheels could be replace with plate heat exchangers or run around coils but they would be less efficient.	
71	**Heating & Chilled Water Plantroom Layouts** Drawing No 523- 101,102,103,104,111,112,113,114,121,122,123,124,125,126,127,128,129,130,131,132, 141,142,151,152,153,154,155,156,161,162,171,172,181,182,191 & 192 Comments :- Additional information required to adequately assess these areas.	 Plantroom layouts submitted in line with requirements for this stage. Full design within stage 3.	
72	**Ventilation Plantroom Layouts** Drawing No 524- 101,102,103,104,111,112,113,121,122,123,124,125,126,127,128,129,130,131,132,141 142,151,152,153,154,155,156,161,162,171,172,181,182,191 & 192 Comments :- 1. The majority of AHU are double height. What access for maintenance has been considered? 2. Additional fire and smoke dampers to be added.	 A mobile access platform/stair would need to be provided where necessary. Agreed, this would be reviewed at stage 3.	
73	**Water Services Layouts** Drawing No 500-002,004,005,007,015,016,017,023,024,025,028,029,032 & 050 Comments:- 1. Reno Plant to relocate to Plantroom 33. 2. Inconsistent valve arrangements for isolation and commissioning	 Current redesign of plantroom 33 ongoing to incorporate. Will be amended for Stage 3	
74	**Heating & Chilled Water General Layouts**		

	Drawing No 523-004,005,007,015,016,017,024,028,029 & 050. Comments:- 1. Are the Radiant panels within the en-suites required? If required what is the control regime to prevent hunting with the active beams in the bedrooms? 2. Inconsistent valve arrangements for isolation and commissioning.	Required due to SHTM, although being reviewed as part of Board PMI. Control interface set at 1oC above bedroom set point, via wall mounted sensors. Agreed, commissionability will be reviewed prior to design sign off	
75	**Ventilation General Layouts** Drawing No 523-004,005,007,015,016,017,025,028,029 & 050 Comments:- 1. Additional dampers required for commissioning. 2. Fire and Smoke dampers locations to be checked against fire compartments and any cavity barriers within ceiling voids.	Agreed, commissionability will be reviewed prior to design sign off Agreed, will be fully coordinated with stage 3 design and fire strategy	
76	**Medical Gases** Drawing No 512-002,004,005,007,015,016,017,023,024,025,027,028,029,032,050,111,121,141,151&171 Comments:- 1. Medical Air at 4bar (MA4) is indicated in most wards, is this a requirement? 2. Final Location of DIVs to be agreed, should generally be at inside the entrance to wards/departments. 3. Confirm that Hardgate Road compound conforms with the planning, space and transport requirements.	The requirement for 4bar Medical Air was omitted by the Board and is not shown on the FBC drawing issue. The final locations will be co-ordinated during stage 3 and shown on the 1:50 layouts. Hardgate road compound works with current scheme, however Brookfield would like to review overall storage requirements with the Board.	
77	**Energy Centre** Drawing No 521-001,002,011,012,021,022,031 & 032 Comments:- 1. Are access platforms required for maintenance? 2. Refer to items on schematic drawings.	A variety of access platforms will be provided as necessary to perform relevant task. Incorporated on final Appendix K drawings	
78	**Dry Riser & Sprinkler** Drawing No 575-002,100,101,102,103,104,105,106,107,108,109,110,111,112 & 120 Comments:- 1. Dry Riser to be added for Energy Centre. 2. Bedrooms and En-suites to be removed from sprinkler zones, Are smoke detectors installed in En-suites, etc? 3. Gas Suppression in IT Hubs?	Two number included. Located at the east and west stair. Yes Not provided to IT Hub rooms. Within the two main ICT rooms only.	

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	4. Sprinklers are required in all ceiling voids above 800mm.	Noted, being reviewed with a view to risk asses out of certain areas as part of the fire strategy.	
79	**Sanitation & Rainwater** Comments:- 1. Pipework specification to be confirmed. 2. Location of rainwater pipes to be checked to minimize noise breakout. 3. Contaminated waste pipe's, do these require to be separated or combined with local soil pipes to dilute concentration?	Will be addressed with the M&E component list for stage 3. Ongoing Noted, current scheme design separates.	
80			

New South Glasgow Hospitals
The 2010 Instruction to Proceed
Position Paper

The New South Glasgow Hospitals project has been procured utilising a staged approach for progressing through the various project Gateways.

Such an approach provides that the project only moves from stage to stage (e.g. Stage 2 Design Development to Stage 3 Construction) when the pre-set specific criteria are demonstrably achieved and satisfied.

This approach was embedded in the design and procurement competition that was carried out during 2009, and a feature of the formalised contract.

Subsequent to the signing of the contract on 18 December 2009, Stage 1 (Laboratories Design and Construction) and Stage 2 (Design Development: Hospitals) have been ongoing: engaging the Contractor team and designers as well as the Project Team and User groups in planned and extensive activity. The transition from Stage 2 to Stage 3 of the Hospitals required that in addition to the information for the Full Business Case documentation a set of pre-determined drawn and written design information required to be developed (referred to as 'Appendix K' information) and presented to the Board Project Team for review and comment.

This 'review and comment' approach has supported continued interaction between the Board and the Contractor beyond the scheduled User Group and other meetings into specific areas of design and specification proposals. The comments provided by the Board have been structured to give a tiered, A-B-C style, response to the designers, supporting a progressive and iterative approach to development of the various strategies and details of the evolving Hospitals designs.

Importantly, through this review and comment activity the output requirements of the Board Employer's Requirements remain intact with the Board responses being 'observations' rather than acceptance of the Contractor design. In this regard compliance risk (i.e. meeting the ER output requirements) remains vested with the Contractor.

The exception to this risk profile relates to aspects of clinical functionality – the day to day operational use, adjacencies and features of the departmental layouts at 1:500 & 1:200 scale and the individual rooms at 1:50 layouts which have been exhaustively reviewed and determined with the User groups. This means that should , for example, a department layout change be required, or a room reconfigured to satisfy a User request post final clinical sign off the cost and impact of such may be borne by the Board.

The current status of this staged approach to the evolution, control and management of the process is that the Stage 2 activity (referred to above) has been ongoing for the past 11months and has provided the required Full Business Case and Appendix K information for review and comment by the Board.

The Project Team is satisfied that the level of design development is commensurate with that anticipated and requested for this stage of the project and, as such, can recommend that on approval of the Full Business Case (the key Milestone for progression to Stage 3) the Stage 2 to Stage 3 'Instruction to Proceed' can be signed by the Board Authorised Signatories (Chief Executive and Chief Operating Officer) and Brookfield Construction Directors..

The relevant supporting paperwork will be signed by the Project Manager as designated in the contract (Peter Moir: Head of Major Projects) fully endorsed by the Project Director, Project Team.
The sign-off documentation identifies the relevant aspects of the Contract Data Part 1 and Contract Data Part 2 that are covered by the 'Instruction to Proceed' . The associated individual documents will be collated on an electronic record copy *'The 2010 Instruction to Proceed ~ Project Bible'* that provides a record as well as a usable copy of the information moving forwards. The documented 'Project Bible' is an updated and amended version of that

which was agreed in relation to the 2009 contract signature, taking cognisance of relevant design development.

In accordance with *The Scottish Capital Investment Manual (SCIM)* and other reference points and organisations (such as *The Office of Government Commerce*) the project has progressed through the various gateways, reviews, audits and consultations that are both necessary and good practice: with internal and external audit bodies approving the project at each review/juncture.

Following Main Board unanimous approval on 26th October the Full Business Case (FBC) was submitted to The Scottish Government Health Directorates in early November 2010. The formal Scottish Government approval for the project to progress to the next stage is anticipated, with this being the trigger for signing and release of the 'Instruction to Proceed' documentation by the Board.

ACUTE SERVICES STRATEGY BOARD

NEW SOUTH GLASGOW HOSPITALS PROJECT
FULL BUSINESS CASE UPDATE
3rd DECEMBER 2010

Following a successful Gateway Review the Full Business Case for the New South Glasgow Hospitals was submitted to the Health Board and was approved on 26th October 2010.

The Full Business Case was then submitted to the Scottish Government at the end of October for consideration by the Capital Investment Group at their meeting on 9th November.

A number of questions were received by the Health Board from the Government on 15th November. These totalled 24 in number and covered a range of issues including finance, construction, clinical services and also one question regarding workforce. The responses were returned to the Government on 22nd November, these are enclosed in Appendix A.

Subsequent to this a further question was received on 1st December. This was IT in nature and a response was returned to the Government on 2nd of December (this is included in Appendix A).

The SGHD have confirmed that all questions on the Full Business Case have been answered to their satisfaction and have verbally confirmed that the Capital Investment Group have approved the project.

Department and Contact: Workforce Planning		
	Comment	**NHS Board Response**
(1)	It would be helpful to have the timeframe for the tables in the Workforce Sections as it's not always clear. For example - the retirements table 10 – put in the title the period it covers i.e. 2010-2015.	Please see Appendix 1 for response, this gives the Workforce Section with updated tables showing timeframes.

Department and Contact: Asset Management		
	Comment	**NHS Board Response**
(2)	Has the Board dealt with the conditions set by the Council for master plan, and laboratories block detailed planning approvals?	The Board can report the current position in respect of planning applications and conditions. **Laboratories and FM Building (09/01676/DC) -** Planning consent was granted for the Laboratory complex on 1st December 2009, subject to 32 Planning conditions. All pre start conditions were purified prior to commencing on site in March 2010. At present 19 conditions have been discharged, 4 are with Glasgow City Council awaiting confirmation and the balance of 9 have to be concluded before the building opens in 2012. **2010 Campus Masterplan (10/00945/DC) -** Planning consent was granted for the 2010 Campus Masterplan on 24 June 2010, subject to six planning conditions. One of the conditions required to be discharged before the project can commence on site, this related to a full Site Waste management Plan, this condition has been discharged. Of the remaining five, two have submissions with Glasgow City Council awaiting response and two do not require any further action by the Board other than complying with the approved drawings.

		Outline Planning Consent (07/01158/DC) – Outline planning consent was granted on 30 July 2009 subject to 43 planning conditions. All pre-start conditions have been discharged with exception of four which have been lodged with the Council on noise control; noise impacts; SUDS scheme and surface water disposal. A fifth condition relating to ground contamination is substantially complete awaiting sampling of ground below buildings currently being demolished. This will take place in late November 2010 and a report will be lodged with Glasgow City Council in December 2010. Site investigation works undertaken in 2009 in the vicinity of these buildings did not identify any contaminated or unsuitable ground.
(3)	Does the design allow for use of prefab pipe work/bathrooms etc as appropriate?	At present the Board and Brookfield Construction are looking at a range of off-site fabrication opportunities that will take advantage of improving quality of manufacture, reduced wastage, reduce fabrication time on site and labour onsite. Opportunities being considered; • Service Modules - corridors will contain 6.0m long service modules for the primary mechanical services e.g. chilled water, heating water and domestic water services, this will also some of the main air handling duct work. The primary electrical containment would also be fitted onto these modules • Vertical Riser Modules – again primary electrical containment and mechanical services would be installed on the these modules off site, and craned into position vertically to form main service risers throughout the buildings • En suite shower / wc pods are being investigated • Pump Skids – pre assembled off-site skid mounted pump and valve assemblies are planned • Plant room pipe work – pre-fabricated pipe work assembled off-site and brought to site in modules • Flue stack for the Energy Centre – fabricated and assembled in a supporting

		frame for fixing to structure Benefits include; • Improved safety - less site based labour increasing safety and reducing accidents • Improved quality through enhanced assembly facilities • Offers opportunity for community engagement utilising local businesses in the manufacture and fabrication of certain elements • Reduces waste as stock is better utilised and controlled • Just in time delivery ensures components are installed in the project reducing double handling and waste caused by damage laying on site • Reduced site storage • Integrated building design solution (architectural/civil/mep services) • Better maintenance through planned accessible solutions • Improved programme delivery. • Better financial outcome from reduced cost.
(4)	Does the design facilitate lean construction (i.e. by minimising double handling & waste)?	The design facilitates lean construction principles by maximising off site modular construction such as cladding panels. This is delivered to site 'just in time' that ensures components are installed in the project soon after delivery reducing double handling and waste caused by damage laying on site. The contractor will also aim to minimise any adverse impacts that construction has on the environment. They will seek to do this through the design process, material selection, construction techniques and operational methods. Brookfield have subscribed to the WRAP (Waste Reduction Action Plan) initiative to halve waste to landfill by 2012. To meet the WRAP commitment Brookfield Construction has selected 2009 as its baseline year. The WRAP typical figure for waste sent to

		landfill was 10 tonnes per £100k and the Brookfield Construction target waste figure to be sent to landfill was 9 tonnes per £100k. The targets for 2010 and 2011 will be based on a linear progression from 2009 through to 2012. It is worth noting the Brookfield Construction have appointed Michael Owen, a SME, to manage their waste for the duration of the project.

Department and Contact: Capital Projects		
	Comment	**NHS Board Response**
	The Board should be congratulated on the combined efforts that have been put in to the development of this project both within the NHS and with external advisors and contractors. Questions:	
(5)	Can the Board explain their decision to use RPI inflation as opposed to BCIS and their views on how this will be sustained given current economic circumstances?	The Indices to be utilised were a discussion point during Competitive Dialogue and also discussed internally with Board Governance Groups (including Board Director of Finance, Board Financial Advisors and external Advisor from Partnerships UK) to determine best Index to be utilised to monitor for inflation risk being triggered above the 2.5% average over the life of the contract. The BCIS indices were considered to be volatile and not capture potential cost trends that would affect the outturn defined cost of the project. The RPIX was selected as it provided a better measure of the wider economy and its impact on the defined cost. RPIX is currently sitting at higher levels than the 2.5% trigger point and above the Government targets. Past trends over last 5 – 10 years have had peaks in RPIX with the average over 5 year cycles at around 2.5%. As the Government works to achieve its inflationary targets, it is anticipated that RPIX will come down from current levels, and over the 5 year period of the contract average out at the 2.5% target level in the Contract.

(6)	Can the Board explain what opportunities exist or may exist on a year by year basis to release risk funding being withheld?	As detailed in Chapter 4, risk management has been a primary focus of the project and the risk registers are continually reviewed and maintained. This process will allow for the identification of opportunities to release risk funding when appropriate. An early risk to be managed and monitored is the potential impact of the excavation works adjacent to Neurosurgery building. One of the major risks is in respect of inflation, for which complete certainty will not be available until completion of Stage 3 in 2015.
(7)	Is the Board able to quantify the financial benefit arising from the target price arrangements agreed with Brookfield as referred to in 4C1?	The financial benefits are twofold:- Maximum Price – by capping liability at a Maximum Price (which can be changed up or down depending on Compensation Events) the Board has protected itself from any significant costs overruns to deliver the Contract Requirement. Target Price – the incentivised structure to share in savings encourages the Contractor to bring Value Engineering opportunities and to use commercial expertise to bring best deal on sub-contract procurement for the benefit of the project, and control actual costs at levels at or below the Target Price. Value Engineering Opportunities have already been identified and implemented. With sub-contractor procurement for Stage 3 to be fully closed out, it is too early to identify what actual costs may be, and in turn what financial benefit may accrue to the Board. However, utilising a 2% under run on actual costs as a measure of saving, the share between the Board and Contractor would be £7.5m / £2.5m i.e. the Board would save £7.5m on the accepted contract budget value.

Department and Contact: Capital Planning		
	Comment	**NHS Board Response**
(8)	The project timetable in table 23 does not include a date for submission of a PPE (albeit that 6G2 refers to the need to carry out such a review within	Noted, will amend table to reflect a PPE within 12 months of completion of the service transfer to the new hospitals.

	12 months)?	
(9)	3B5.7 Changes in FBC compared to OBC. SCIM requires a record of changes. It is mentioned, for instance, that community benefits have been added but, in the Financial Case, details of quantified risks of £58.3m are not identified and the overall cost of £751.950m at FBC remains the same as at OBC. It is mentioned in Table 24 that the risks have been quantified in the Risk Register but a review of the cost column in appendix G revealed no entries. Which part of the equation has been de-risked by an equal and opposite amount for the rise in VAT since the OBC?	The rise in VAT was not funded through the specific de-risking of individual lines on the Risk Register. As detailed in Chapter 4, risk management has been a primary focus of the project and the risk registers are continually reviewed and maintained. Since the OBC, as part of the contract agreement with BCL, the Contractor and the Board have an agreed risk allocation. In addition, since the OBC, the work undertaken on areas such as design development, site investigations, planning consents have all resulted in a reduction of the general risk allowances as increased certainty arises within these key areas of the project. The risk register comprises a complete list of all the risks identified within the project including an estimate of the individual costs of each risk together with an assessment of the probability of each risk arising. Through the use of stochastic modelling techniques a value was derived which confirmed the optimal level of risk.
(10)	Page 80 - The Economic Case refers to a risk rate of 8.3% but Page 152 of SCIM advises that optimism bias should be of the order of 2% at FBC stage. How closely is 8.3% aligned to actual risks?	The 8.3% risk relates solely to the quantified risks derived from the Board's Risk Register.
(11)	5C.2 It was assumed at OBC that disposals would achieve £135m. It is surprising that this figure remains in the FBC without qualification. Can the Board provide an explanation for this?	Disposal receipts are no longer assumed to be included as part of the funding package for this business case. It was agreed that the total funding for this project will come directly from the Scottish Government with all capital receipts being sent directly to the Scottish Government.
(12)	4B.2 With reference to inflation no source or definition is provided?	The Contractor's accepted Target Price includes for inflation up to an average of 2.5% p.a. over the life of the contract and as such the risk of procuring sub-contracts within contract threshold rests with the Contractor. The baseline starting point for monitoring inflation movement against RPIX is December 2009 (contract award). Inflation above 2.5% average sits with the Board, and when triggered a Compensation Event would be issued**.**

		If inflation is less that 2.5% average over the life of the contract then an under spend to the target price may be achieved with a share of the saving between the Board and Contractor as per the contract terms.

Department and Contact: Medical		
	Comment	**NHS Board Response**
(13a)	**Implications for other neighbouring hospitals:** This will be a huge hospital and will require a significant capital injection. One of the key issues which SGHD need to at least consider is what the construction of this hospital means for the Golden Jubilee and whether this has any long term implications for the provision of surgical services at the GJH as there will be a need to rationalise what is provided.	The New South Glasgow Hospital is not expected to impact on the service provision at the GJNH. In other words, there is no planning duplication as the case mix for the GJH differs from the case mix planned for the New South Glasgow Hospital. The GJNH provides Cardiothoracic Services and other specialty elective services. The services transferring into the New South Glasgow Hospital are based on activity undertaken within Glasgow hospitals. This is part of a move to 3 acute sites with much of the activity for the New South Glasgow Hospital focused on the centralisation of emergency services and specialist services such as renal and vascular services.
(13b)	In addition, if Stobhill IP beds are being relocated to GRI by 2011, can the Board confirm whether this is to the old block of the GRI and if capital investment is being made to sustain the significant increase in patients?	The Board is investing circa £49m in extending and modernising clinical facilities housed in a number of buildings (including Castle Street) on the GRI site of which £30m will be completed by March 2011 to allow the transfer of Stobhill inpatient services. This includes the upgrade and expansion of the A&E, a dedicated Minor Injuries Unit, new build facilities for plastic surgery services including new outpatient facilities, an expansion of the Intensive Care Unit and refurbishment of a significant number of wards. Within the Castle Street estate a ward template has been agreed that meets the HAI and other standards along with improved isolation services. The balance of the circa £49m investment is planned to be spent by 2012/2013. The investment described above has either been spend or is in the process of being spent and therefore the New South Glasgow Hospital Business Case is not

		detrimental to this.
(14)	Does this project soak up all the capital and therefore lead to a 2 tier system with one side of the city receiving care in 21st century facilities while the other side, patients are still in 19th wards?	The New South Glasgow Hospitals is the second phase in the Acute Services review which is an ambitious programme of modernisation of services across Glasgow. As described above Glasgow Royal Infirmary is in the process of being refurbished and upgraded. In addition there has been significant investment in the New Stobhill Hospital providing 21st Century services to the North of the city. The new Victoria Hospital opened in 2009 providing modern services in a fit for purpose build in the South East of the city. The New South Glasgow Hospital is the second phase of the Acute Services Review. The Board expect to bring forward a Business Case in the medium term for the third and final phase of the strategy which sees the older part of the GRI vacated into a new build on the GRI campus.
(15a)	**Clinical pathways of care** Can the Board explain how they got to the significant reduction in beds and the assumptions together with degree of risk?	**Bed Model** - Section 2F in the Full Business Case describes the process for the bed model. In brief, the Board have worked with Civil Eyes (an independent clinical activity analysis service) to build upon the benchmarking exercises that the Board has undertaken over a number of years in order to review and determine the bed model for acute services across Glasgow. The objectives of the programme are to: • Provide an objective assessment of the current performance of the acute adult hospitals across Glasgow relative to their peers • Identify the potential for improving efficiency in terms of use of beds and patient throughput • Provide a projection of future demand in 2015 • Provide an indication of the potential bed requirements The bed model also takes cognisance of better clinical adjacencies, more efficient patient pathways, projected demographics and national policy adjustments. Within the core specialties covered by the Adult Bed Model there are currently

		inpatient beds across the 6 acute sites, against which the future bed provision is considered. The bed model for the Acute Services was updated during 2009/10 using the 2008/9 activity, and performance information to identify the currently proposed bed model supporting the Full Business Case. In considering the Adult Bed Model 2008/9 data was used to consider the efficiencies to be delivered through improved performance of Glasgow's hospitals compared to a range of peer hospitals across the UK. The bed number is dependant upon a range of factors and the Board continue to monitor these, they include: • Operating at upper quartile peer performance rates across each specialty • Achieving occupancy rates of 85% for elective work and 82% for non-elective activity • Growth in medicine and the impact of demographic changes • Performance targets on current and future activity such as waiting times The bed modelling is an iterative process and as described there is ongoing monitoring by the Board in recognition that things can change through time however the 3 hospital site model provides flexibility to allow beds to flex across the city and therefore alleviate risk. The Board have reviewed practice at other sites across the UK and are trying to emulate good practice across Glasgow and Clyde; the New South Glasgow Hospital layout will support efficient and effective working.
(15b)	In addition, as cancer has now become the commonest reason for discharge from hospital, it would be desirable for the Board to consider pathways of care for elderly people with cancer diagnosed following an emergency admission and how they are to be managed with shorter stays, liaise with cancer specialist/BOC.	The Board already manage elderly patients with cancer across a number of specialties and have established referral pathways to specialist cancer and palliative care services. This includes links to specialist palliative teams and, where relevant, the clinicians at the Beatson Oncology Centre which is the centre for cancer services in Glasgow. The New South Glasgow Hospital will have an Acute Assessment Unit with senior medical and nursing staff who will follow structured pathways and guidelines to ensure that patients with a new or probable

		new cancer diagnosis are seen as early in their journey as possible by the appropriate specialist group. Bringing 6 in-patient sites down to 3 allows for easier communication amongst specialist clinicians (including oncologists based at the Beatson Oncology Centre) and palliative care teams.
(16)	In addition, as 30% of people in acute sector beds are in the last year of life, it would also be helpful if the Board could comment on palliative care services for the new hospital.	In response to the Scottish Government's national action plan 'Living and Dying Well', the Board has developed and is taking forward a local action plan. Within NHSGGC work is currently being taken forward to establish an acute division group to consider palliative care pathways and develop a consistent approach across all specialties to Advanced Care Planning, Liverpool Care Pathway and DNACPR. The Scottish Government is shortly expected to publish 'Building on Progress of Living and Dying Well'. Any recommendations arising in this report will be considered locally. In addition the Board has recently completed a Palliative Care Health Needs Assessment which is informing work to improve access to specialist palliative care services. There is a well established acute specialist palliative care service with strong links to primary care teams, hospices and care homes. Specialist palliative care teams currently will continue to provide education and support to ward areas within the new hospital. Structured guidelines and pathways will be used for patient referral and on call Palliative Medicine Advice will be available out with office hours. The provision of 100% single rooms will provide privacy and dignity for the patient and improve access for family /visitors. Each ward has an interview/counselling room for private staff and relative communication out with the patients bedroom if required. There is a patient information and support facility in the atrium of the new adult hospital which can be also be accessed by visitors and the general public. In order to adopt a holistic approach to recently bereaved relatives and carers a Bereavement Room will be provided which will be situated within the atrium of the adult hospital. This facility will offer a quiet and confidential space for discussion between relatives/carers and healthcare professionals within a private and relaxing environment. It is anticipated that this room will be utilised for

		providing advice and information on practical issues following bereavement, e.g. registering the death, arranging a funeral, etc; Identifying and giving details of sources of further support in the community and providing booklets and other information /resources for relatives and carers. The New Children's Hospital will have family support services, a palliative care team, a chronic pain team, and also close links with hospices, these services are all in place currently.

Department and Contact: E-Health		
	Comment	**NHS Board Response**
(17)	Can the Board confirm that IT costs have been built into the business case?	The contract with BCL includes for the provision of a comprehensive and robust IT infra-structure including containment, cabling, power, air conditioning, comms rooms and server rooms. Furthermore BCL have to provide a fully functioning wireless network throughout the New Adult and Children's Hospitals. The Board have included, within the equipment costs, a sum to provide all anticipated hardware requirements taking into account what is suitable for transfer and re-utilisation.

Department and Contact: Health Delivery		
	Comment	**NHS Board Response**
(18)	Can the Board confirm that investment is being made in GRI to accommodate the Stobhill activity?	The relocation of IP beds from Stobhill is a key component of the Board's ASR. Significant capital investment has been made from the Board's core capital allocation to facilitate this including circa £49m at the GRI.

Department and Contact: Capital Planning and Asset Management		
	Comment	**NHS Board Response**
(19)	Page 10 First Paragraph – The Office of Government Commerce Gateway Review process is organised and managed by the Scottish Government.	Noted, will amend.
(20)	Page 31 first paragraph – Can the Board provide a comparison for in patient single rooms from existing to new facilities?	Page 31 refers to the children's hospital; the comparison is that currently in Yorkhill Hospital 44% of beds are in single rooms, in the New Children's Hospital this will rise to 83%.
(21)	Pages 58-69 – can the Board confirm whether it has established baselines against which the expected benefits will be compared. If not what is the programme to establish such baselines?	The expected benefits from the project are given in the Full Business Case in Section 2H but briefly fall into the categories of: improved clinical quality, sustainability of services, improved performance, physical environment, staff recruitment, retention and morale, accessibility, energy consumption, increased opportunity for research and teaching and economic community benefits with local recruitment and opportunities for small and medium businesses. There are established data gathering processes and ongoing surveys which will be used to form a baseline prior to the move of services into the new hospitals and again provide comparison post move. In more detail NHS GG&C undertake measurements of activity against key performance indicators, these will establish a baseline for expected performance benefits such as (amongst others) length of stay, turnover, new to return outpatient ratios, day case rate and waiting times. This data is collected on an ongoing basis and will provide pre and post move comparisons of performance. Indicators around HEAT targets are also collected on an ongoing basis such as, referral to treatment times (RTT) and A&E trolley waits etc. Although by 2015 the HEAT targets may change, the processes set up to monitor them will allow pre and

		post move comparisons. Benefits of a reduced incidence of infection and increased cleanliness are expected through the new hospitals. NHS GG&C has ongoing monitoring of Hospital Acquired Infection rates, MRSA rates, Clostridium Difficile infection rates, ward closures due to infection and hand hygiene audits. These will form a baseline to allow comparison following service transfer to the new hospitals. With regard to FM – the services in NHS GG&C are monitored through various quality assurance systems, these include: • The NHSScotland National Catering & Nutritional Services Specification Compliance Monitoring; • Monitoring Framework for NHSScotland National Cleaning Services & Estates HAI Issues. (This Framework provides a tool to monitor the local Cleaning Service Performance in relation to NHS Quality Improvement Scotland (QIS) HAI Standards: Cleaning Services Standard 14 and also the Estates Service Performance in relation to QIS HAI Standards: SHFN 30 and HAI Scribe) • Annual internal Patient Satisfaction Surveys for Portering, Domestic and Catering Services. Results are compiled by NHS GG&C FM Quality Managers to provide year on year comparisons on how the FM services are received by patients. The data gathered through these systems will allow comparison of, for example, standards of cleanliness before and after the move to the new hospitals. The ongoing yearly national patient and staff surveys will provide baseline data for monitoring clinical and environmental quality through feedback on patient satisfaction with care and treatment, the ward and hospital environment and staff feedback on staff morale. Ongoing NHS GG&C monitoring of doctor's rotas will provide comparison of the number of rotas pre and post the move from 3 hospital sites to 1.

		The yearly survey undertaken by NHS GG&C with regard to energy usage and carbon output of hospital estate will provide a pre-move baseline. This will be compared with the carbon output and energy consumptions of the new hospitals which are targeting BREEAM excellence. The University has ongoing monitoring of research output (Research Assessment Exercise) and local and national student satisfaction surveys, and again these will provide a baseline prior to the move to the new hospitals. With regard to measuring the anticipated community economic benefits, NHS GG&C and Brookfield Construction UK Ltd (BCL) have established a monitoring framework to identify the number of New Entrants recruited. BCL have committed to deliver a target of 10% of total labour required to deliver the project being New Entrants. In addition, the framework also monitors the interaction with local businesses. Details of the framework and measurements taken are given in the Full Business Case Appendix L.
(22)	Page 126 – Whilst the FBC details the breakdown of the £841.7m, it would be helpful if section 5B would detail the breakdown of enabling costs out with the £841.7m envelope, their purpose and relationship to each of the phases of the NSGH.	Provision has been made in the Board's current draft capital plan for enabling costs not currently contained within the £841.7m NSGH funding envelope. These costs relate to the required provision of car parking facilities in line with planning consents and the proposed relocation of essential service provision not contained within the adult and children's hospitals but which are required to remain on the existing SGH site. The total of these works are currently forecast at c.£60m however in common with all other schemes in the Board's draft capital plans these will be reviewed in line with future funding levels.
(23)	Page 126 – With regard to the risk provision within the budget envelope. Can the Board provide details of each risk allowed for and the milestones at which it will be possible to reassess allowances for such risks?	The risk register comprises a complete list of all the risks identified within the project including an estimate of the individual costs of each risk together with an assessment of the probability of each risk arising. Through the use of stochastic modelling techniques a value was derived which confirmed the optimal level of risk. As detailed in Chapter 4, risk management has been a primary focus of the project and the risk registers are continually reviewed and maintained. This process will

		allow for the identification of opportunities to release risk funding when appropriate.
(24)	Page 128 – Can the Board establish timelines for the realisation of disposals to assist with national planning assumptions?	The main sites that will become vacant as a result of the construction of the New South Glasgow Hospitals and completion of the Acute Services Review are the Victoria Infirmary, Mansion House Unit and Yorkhill Hospital. These will be marketed in line with the guidance received from the Board's property advisers however they will not become vacant prior to the final completion of NSGH in 2015. The Board will keep SGHD updated in respect of forecast disposal proceeds and timescales as plans are finalised. Previous discussions held between the Board's Director of Finance, Douglas Griffin, and Mike Baxter, noted that there was a reasonable probability that the Board will dispose of the Western Infirmary to the University of Glasgow in the final quarter of 2010/11. This site was not included within the list of sites forecast to generate land receipts to contribute to the funding of the new hospitals. The Board will keep in close contact with SGHD to confirm if/when the disposal of the Western Infirmary will take place in 2010/11.
(25)	Can the Board confirm that all IT costs are contained within the project budget and there would be no contribution from the e-health programme?	The Board can confirm that the IT costs are contained. However the Scottish Government has provided Boards with Programme monies (aka Change and Benefit monies) to support modernisation to enable development of Electronic Records, rationalisation of systems etc. This money has been non recurring over the past couple of years and is instrumental in ensuring that NHS GG&C can make the transition into the new hospital effectively and efficiently.

Appendix 1

RESPONSE TO QUESTION 1 - WORKFORCE SECTION

3D. WORKFORCE

3D.1 Introduction

The new South hospitals project will have a significant impact on the overall workforce of the Acute Services Division. As the anticipated economies of scale are realised from consolidating the acute sites we have the opportunity to review existing practices and redesign the way patient services are currently delivered. With over 26,000 WTE staff within the Acute Services Division of NHS Greater Glasgow and Clyde (NHSGG&C), accounting for three quarters of the Board's workforce, this project will, ultimately, impact either directly or indirectly on all employees.

NHSGGC recognises that in order to deliver new models of care within the new hospital significant workforce development and engagement will be required. Over the last few years, NHSGGC has been responding to workforce modernisation and technological advances, in particular with the new Beatson Oncology Centre, the 2 new Ambulatory Care Hospitals and the new Laboratory on the South Campus and will continue with this approach in the wider Board area. The new hospital buildings will provide further opportunities to develop and modernise the way in which the workforce deliver services in response to the developing models of clinical care.

3D.1.1 *Workforce Engagement*

In developing new roles and redesigning service provision, NHSGGC has put in place arrangements for regular strategic engagement with staff representatives. In addition to regular updates through the Acute Partnership Forum, there are formal and regular engagement with employees and their representatives at Directorate level and at Division level through an overarching Acute Workforce Engagement Group.

This model of engagement provides staff and their representatives with meaningful opportunities to participate in the change programme from inception to implementation.

3D.2 Current Workforce Profile

3D.2.1 *Whole Time Equivalents*

During the summer of 2010, the Acute Services Division of NHS Greater Glasgow & Clyde employed 26003.9 WTE members of staff (see Table 9).

Table 9 - Current Workforce

Administrative Services	4046.4
Allied Health Profession	1754.6
Senior Management	169.1
Healthcare Sciences	1783.4
Medical and Dental	2599.0
Medical and Dental Support	307.5
Nursing and Midwifery	10812.2
Other Therapeutic	657.8
Personal and Social Care	52.9
Support Services	3820.8
Total	**26003.9**

3D.2.2 *Workforce Demographics*

The workforce within the Division is predominantly female (76.3%) with 34.7% of those between the ages of 41 and 55. A more detailed breakdown of the Division's workforce demographics is contained in Tables 20-22 at the end of this section.

Based on a default retirement age of 65 for both men and women, approximately 1,409 WTE staff will retire over the next five years. See Table 10 below.

Table 10 - Retirement Projections

	WTE
2011/12	298.3
2012/13	179.8
2013/14	311.3
2014/15	293.5
2015/16	326.2
Total	**1409.1**

3D.3 Workforce Redesign

The process of workforce design is already underway within our Directorates and Partnerships. By evaluating the ways in which our workforce skills and practices can be modified we can ensure we are developing the best practice pathways and at the same time ensuring best practice is applied consistently across the Division and wider Board.

In the Rehabilitation and Assessment Directorate there were two pilot schemes funded by the Scottish Government Health Directorate. The first considered the practicability of establishing more skilled support workers to assist Allied Health Professionals, thereby shifting our skill mix by increasing the number of Band 4 posts

in order to free registered Nursing and AHP time to perform tasks more appropriate to their skills and experience. The second pilot explored the development of an advanced practitioner role to assist with assessment of patients within medical receiving, thus freeing the time of medical staff.

Within the Diagnostics Directorate work has commenced to consider the competencies required in laboratories and the educational pathways required providing greater flexibility in accessing careers in laboratory medicine. This work is being undertaken in partnership with our local higher education establishments.

A significant piece of the redesigned workforce will be in the greater use of trained workers on levels three and four of the NHS Careers Framework which should allow a shift in skill mix of 10% from Band 5 to Bands 3/4. These posts will operate in a support worker role across a range of disciplines. To this end, we are working in partnership with a number of further and higher education establishments to develop a curriculum to facilitate recruitment to these new roles. The first students from the new courses are expected to qualify in 2012. The curriculum has been developed in conjunction with the colleges using nationally agreed core competencies to ensure the qualifications are both nationally and officially recognised.

The creation of this new pathway into a career in the NHS will assist the Board in not only enhancing the skills of some of our existing staff but also in promoting opportunities in the local communities of which our hospitals are often the main employer in the area. This is particularly important as it is predicted that over the next five years (see Table 23), within the Board's area the proportion of the population at working age will decrease whilst the number of over 65 will increase. Through our partnership arrangements with local regeneration agencies and local education services we aim to make the NHS an employer of choice for pupils and students of all disciplines which will help deliver the aims of *a Force for Improvement.*

A considerable amount of work has been on-going over the previous three years in shaping the medical workforce for the new hospitals in 2014/15 taking account of Modernising Medical Careers and the announced Scottish Government intention to move towards a trained medical workforce. This work coincided with CEL 28 (2009) which asked Health Boards to review the shape of their medical workforce for 2014 and to use a number of key assumptions which were taken into account in our medical workforce modelling.

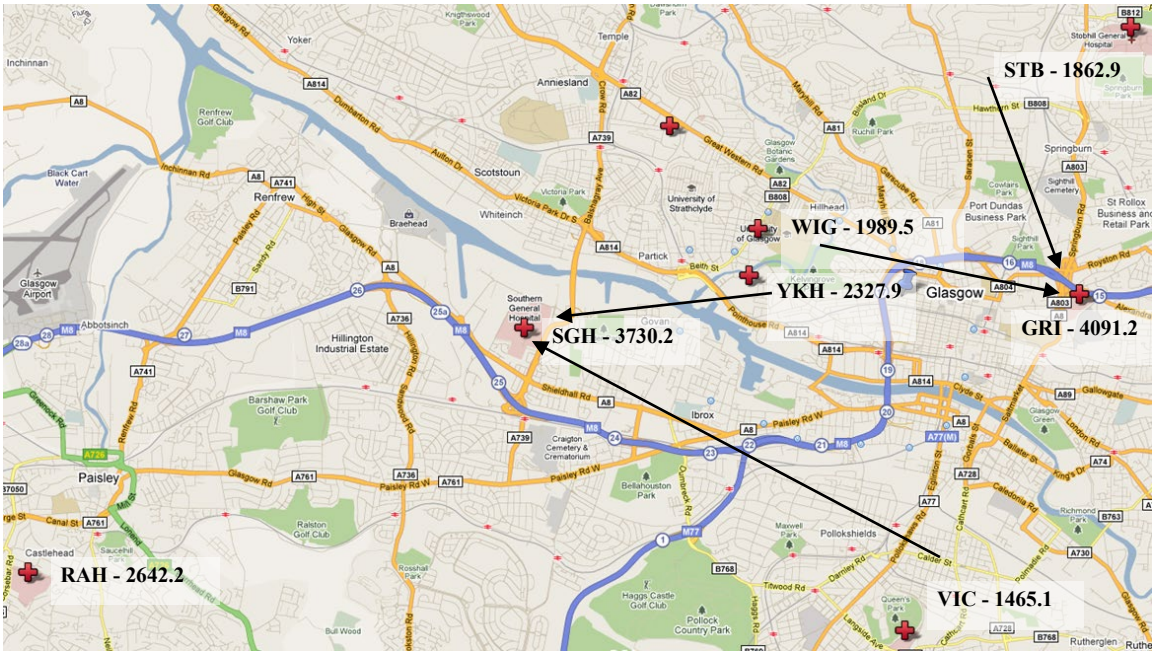
Some significant rota remodelling was undertaken for senior and trainee medical staff creating new rotas which help determine the numbers of new staff required, i.e. Acute Care Physicians in Medicine and in Emergency Medicine to determine the numbers of specialty doctors and consultants needed. These rotas have been designed on a real life basis, with the assumption (also in anaesthesia) that consultant staff will be expected to undertake shift work on a 24/7 basis shared amongst substantial numbers of consultants.

3D.4 Site Consolidation

As part of the consolidation of the acute sites approximately 6250 staff will be affected by moving site. The majority are on four existing hospital sites; Yorkhill Hospital, the Western Infirmary, Stobhill Hospital and the Victoria Infirmary. A proportion of staff on the Western Infirmary and Stobhill Hospital sites will move to the existing Glasgow Royal Infirmary as part of the wider Acute Services Strategy.

The complexity and scope of the relocation of such significant numbers of staff from the four major sites in the north, north-west and south-east of the city to north-east and south-west localities is well understood and it is recognised that good communications will be key to the successful delivery of workforce re-location. Extensive and in-depth consultation at all levels will take place with staff and staff representatives, together with regular meetings and newsletters. Consultation has already commenced with those affected by the relocation of laboratory services within the city to the new laboratory building on the Southern General Hospital site, which is due to open in 2012.

The map below shows the locations of the Glasgow city hospitals affected by the relocation of services to the new South Glasgow Hospital site.



3D.5 Workforce Change

As previously indicated, the development of the new South Hospital provides an opportunity to redesign the way current services are delivered and for a thorough review of potential new roles to support service delivery issues. The Organisational Development and Learning and Education Teams of Human Resources are working with Directorates to provide appropriate levels of change management and leadership development support to underpin the change programme. The detailed work, thus far, on the implications for the workforce due to the new hospitals has been underpinned by working completely in partnership with our trade union and professional association colleagues from the outset. The use of standard workforce planning and workforce tools together with comprehensive staff involvement has been instrumental in ensuring patient care is at the forefront of the proposed workforce change.

3D.5.1 *Allied Health Professions*

The Allied Health Professions (AHP) workforce within adult is split into a number of professions, as shown in Table 11 below.

Table 11 – Allied Health Professions WTE as at Summer 2010

	WTE (all grades excl admin)
Dietetics	89.6
Speech and Language Therapy	66.41
Physiotherapy	394
Occupational Therapy	201.6
Podiatry	22.96
Orthotics	10.48
Prosthetics	21.5
TOTAL	**806.55**

An AHP redesign group has been working in Acute and across the Board's Community Health Partnerships over recent months and this will result in the transfer of the physiotherapy musculoskeletal outpatient service of 59.69 WTE to a Community Health Partnership, the podiatry service will also transfer to a Community Health Partnership. 87.81 AHP and support workers working in supported discharge and community disability services are also transferring to community management later this year. This will reduce AHP staffing in the Acute Division by 170.46 WTE during 2010 -11 resulting in a total workforce of 636.09 WTE.

The AHP workforce will experience significant changes over the coming years which include the introduction of 7 day working, alteration of skill mix and new service models.

AHPs traditionally have provided services within fixed hours on a Monday – Friday basis. Physiotherapy services have additionally provided a respiratory on call service to ensure 24hour cover on a 7 day basis. To assist reducing the time that patients spend in hospital some AHPs will be moving towards working longer days and at weekends.

It is anticipated that this will result in a reduction in the requirement for on-call services with a rationalisation from 5 separate on call services to 2 overnight services commencing at 9pm rather than from 5pm as at present. Initial work has indicated that the majority of calls are prior to 9pm.

Workforce redesign is ongoing to alter the existing skill mix. This redesign will increase the use of support workers at levels 2, 3 and 4. The rationalisation of sites will also offer the opportunity to reduce management overheads. It is anticipated that there will be a reduction of 20 Band 6 WTE which will be replaced with support worker posts with a resultant saving.

AHP services are currently managed across sites by profession, where appropriate a move to AHP team leads will be introduced rather than Profession specific Team Leads. This will result in a minimum reduction of three Band 7 WTE, with the potential of further reductions over the next five years.

Acute medicine is concerned with the immediate and early specialist management of adult patients. It is fundamental that specialist AHP management also occurs at this early stage. strong multi-professional working is pivotal to providing an integrated and coherent standard of service with rapid assessments and discharge planning.

Occupational Therapists and Physiotherapists play a central role in the preliminary assessments required for prevention of admission, early intervention and timely discharge and have a positive effect on efficiency and patient flow. It is proposed to introduce Band 7 AHP clinical decision makers from within existing resources to provide a service to the new Emergency Receiving Centres.

The overall reduction of 404 beds will not reduce the numbers of AHP staff required as inpatients will require speedier interventions by AHPs to ensure rapid discharge from hospital and surgical patients being treated as daycases will continue to require AHP input at pre-assessment and on treatment.

Within radiography, the implementation of a 4 tier structure continues. The Board has positively embraced the 4 tier structure, demonstrated by the recruitment and training of 8 assistant practitioners and 2 consultant sonographers. Overall the Board anticipate no significant changes to the diagnostic imaging workforce.

The overall changes within AHP staffing are shown in Table 12 (below).

Table 12 – Changes within AHP Staffing by 2015/16

AfC Band	Change (WTE)
Band 7	- 3
Band 6	-20
Band 4	+20
Band 3	- 8
Band 2	+ 8
Total	**-3**

3D.5.2 *Nursing & Midwifery*

The Nursing and Midwifery workforce will see some significant changes to workforce numbers due to the overall reduction in beds and the efficiency gains of working in the new hospitals, whilst retaining the current average nurse to bed ratio of 1.19. This will see a reduction of some 480 WTE nursing posts over the next five years.

The changes in bed numbers will see a reduction of 278 beds during 2011/12 with a further reduction of 126 being phased out over the following four years. The overall reduction of 404 beds includes an increase of 54 beds in General Medicine. The overall savings accruable are shown below at Table 13.

Table 13 – Nursing changes due to bed reductions

	Nursing Changes due to Bed Reductions	
	Bed Reduction	WTE Change
By 2011/12	-278	-330.8
By 2015/16	-404	-480.8

At the same time, nursing is undertaking workforce redesign to alter the existing skill mix. This redesign will increase the number of support workers at levels 3 and 4 of the NHS Career Framework to allow the professionally qualified workforce to focus their time to direct patient care. Overall the number of level 3 and level 4 support

workers is anticipated to increase by approximately 440 WTE across the Acute Services Division over the next five years. The national workload tools are being used to assist in predicting our future workforce numbers, with the Nursing and Midwifery Workload Tool being used to test the professional judgement used to predict the nursing numbers for the new South Glasgow Hospitals. The review of skill mix is being delivered in partnership with key staff side organisations through a structured Programme Board and Implementation Group.

Whilst the overall affect of the change in skill mix on nurse staffing numbers will be neutral, the associated savings of these changes are set out below at Table 14.

Table 14 - Nursing Workforce Skill mix change by 2015/16

NHS Careers Framework	Current WTE	New WTE
Level 3	876.4	1183.9
Level 4	39.4	171.1
Level 5	4393.0	3953.7
Total:	5308.8	5308.8

In addition to these savings there will be an additional 6.25 WTE of efficiencies from reduced nurse management overheads due to the reduction in beds.

3D.5.3 *Medical Workforce*

The Medical workforce will experience three significant changes over the next five years. First, the number of junior doctors is expected to decrease by 44 WTE, secondly the number of middle-grade doctors is expected to reduce by 82 WTE and lastly the number of consultant doctors is expected to increase by 16 WTE. This will assist NHSGGC in working towards an increasingly consultant-led service.

The following describes some of the specific changes under scope.

Anaesthesia

Anaesthesia is an on-call, on-site specialty, it is expected that rationalisation of the number of sites will produce a dramatic reduction in the number of staff required to be on-call. Virtually all elective work is now performed by consultants, and while a reduction in junior staff may reduce the capacity to flexibly cover annual leave, the capacity released by the reduction in acute sites, particularly consultants committed to day time on-call will assist in covering this. A detailed analysis of existing rotas revealed that only about 60% of a core trainee's, and around 66% of ST3+ trainees work is for service. On-call arrangements for consultants will include on-site working till 10 o'clock in the evening in both our major receiving sites, and within intensive care there will be two consultants present until 10pm and thereafter there will be a consultant presence on the floor on-site overnight.

General Surgery

General Surgery also benefits from substantial reduction in the on-site, on-call commitment by trainee staff. It is not proposed to increase the numbers of consultant staff, as in most sub-specialties the elective workload is such that the critical balance between the number of cases and retained practical skills has been reached already.

Acute Medicine

Within Acute Medicine, in both GRI and the new Southern General there will be a substantial redesign of the receiving arrangements for medicine. The current medical receiving model proposed for the new SGH (with some variation at GRI) is based on receiving driven by specialty teams supported by a general physician and an acute care physician. Bringing our acute units together will give us critical mass in two acute sites to give us the capacity to provide senior staff for these receiving teams. This model will see an increase of 14 acute care physicians (seven on each site).

In addition, on-call work already allocated in job plans will be redirected to the new model. The increase in consultant numbers of 14 posts will all be Acute Care Physicians. There will be two rotas of Acute Care Physicians, one on each site receiving and they will play a significant role in handling seriously ill medical receiving cases and running the medical HDU. This represents a substantial investment and will enable us to reduce the role of trainee medical staff in these areas. There is also an increase in specialty doctor numbers, but this is mainly to allow replacement in certain specialties of the elective component performed by ST trainees.

Emergency Medicine

Emergency Medicine will be re-aligned from four sites to two, and take cognisance of the previous decision to close the casualty at Stobhill Hospital and realign to Glasgow Royal Infirmary. It is also proposed to have a 24/7 presence of consultant staff in both of the remaining A&E departments, these departments will be amongst the busiest units in the UK and this 24/7 consultant model is already present in A&E departments in London where similar numbers of patients are seen.

The overall changes within medical staffing are shown below at Table 15.

Table 15 – Changes within Medical Staffing by 2015/16

Grade	Change (WTE)
Consultant	+16 *
Specialty Registrars	-82
Core Trainees	-44
Specialty Doctors	+38
Totals	-72

* Includes a reduction of 5 Consultant posts within Anaesthetics

3D.5.4 *Senior Management / Admin Support Staff*

As the Board continues to improve productivity and adopt new technologies to support administrative functions, the relocation of a significant volume of the Acute Division's activity on a single site and the associated rationalisation of services, together with the adoption of a paper-lite strategy, will allow deliver further economies of scale within both senior management and admin/clerical support staff.

Further information is set out below at Table 16.

Table 16 – Senior Management and Administration Staff Changes by 2015/16

Staff	Reduction (WTE)
Senior Management	7.0
Admin Support	30.75

3D.5.5 *Facilities – Support Services*

A rationalisation of hotel services is underway and will result in significant changes, particularly within catering which will see a reduction in production units across the Board to two sites. The closure of major parts of the Board's existing estate with the associated relocation of patient activity will further allow rationalisation within the portering and estates/maintenance functions. The move to 100% single rooms within the new hospital will, however, see an increase in domestic staff on the site.

The overall effect on Facilities staffing will see a reduction of some 170 WTE however work is continuing to identify further possible efficiencies.

3D.6 Consolidated Changes

The overall effect on current staffing due to changes to the current bed model, skill mix changes and associated rationalisation of services for each of the staff groups is shown below at tables 17 and 18.

Table 17 – Overall Effect of Skill Mix change on the workforce implemented by 2015/16

NHS Career Framework Level	AHPs (WTE)	Nursing (WTE)
Level 2	8	0
Level 3	-8	307.5
Level 4	20	131.8
Level 5	0	-439.3
Level 6	-20	0

Table 18 –Summary of Changes to Workforce by Job Family

Workforce	Current	By 2015/16	Difference
Administrative Services	4046.6	4016.4	-30.2
Allied Health Profession	1754.6	1751.6	-3.0
Senior Management	169.1	162.1	-7.0
Healthcare Sciences	1783.4	1783.4	0.0
Medical and Dental	2569.0	2527.0	-72.0
Medical and Dental Support	307.5	307.5	0.0
Nursing and Midwifery	10812.2	10325.2	-487.0
Other Therapeutic	657.8	657.8	0.0
Personal and Social Care	52.9	52.9	0.0

Support Services	3820.8	3648.8	-172.0
Job Family To be Assigned	194.3	194.3	0.0
Total	**26003.9**	**25232.2**	**-771.8**

3D.7 Linkage With Community Care Services

Within NHS Greater Glasgow and Clyde, the Acute Services Division together with CHCPs/CHPs and Mental Health Services are working together to look at different ways in which the balance of care can be shifted with more people receiving care within their own home supported through GP and community nursing input.

There are a number of areas of work focussing on how we can better improve care through Acute Services and community colleagues working more closely. The Collaborative for Planned Care, Unscheduled Care and for Diagnostics established a programme of joint working where Acute and CHCP/CHP colleagues have been working together to improve the interface between primary and secondary care, streamline the patient journey and deliver the access targets. The Board will continue to build on this approach as progress is made in the programme to deliver the 18 week referral to treatment standard. With the new Long Term Condition Programme both Acute and CHCP/CHPs are working together to consider new ways of delivering patient care and further development of existing schemes, which look to maintain patients at home, through anticipatory care models that seek to avoid admission and readmission as well as to support getting patients home earlier.

The planning process for the opening of the new Stobhill and Victoria Hospitals in 2009 saw a number of clinical specialty planning groups established involving representatives from the Acute Division and from CHCPs/CHPs. The role of planning groups will be built upon and they will consider new patient pathways between primary and secondary care allowing a shift in care. This redesign work was integral to the implementation of the Acute Services Review both in preparation for the recently opened Ambulatory Care Hospitals at the Victoria and Stobhill sites, but also sets the framework for the redesign of inpatient healthcare in Glasgow's acute sector in particular for the New South Glasgow Hospitals.

The shape of the workforce will need to support this transition. Work is already underway to redesign the workforce in Children's Services to develop integrated children's teams bringing health and social care professionals together. Specialist paediatric staff, many of whom are already managed within CHCP/CHPs, will be further augmented from the acute sector as services develop further. The Board are at an advanced stage in looking at the role of Health Visitors in this model.

The Long Term Conditions Programme will require a community based workforce which has the skills to maintain patients at home. This will require existing community nursing staff to acquire more specialist skills or for more specialist staff to be more readily accessible. The Board will continue to develop this based on the range of competencies necessary in line with the NHS Careers Framework.

Table 19 – Gender Breakdown by Age Range (At Summer 2010)

Age Range	F	M	Total	F	M	Total
<21	101.8	38.6	140.4	0.4%	0.1%	0.5%
21 - 25	1,433.5	319.3	1,752.8	5.5%	1.2%	6.7%
26 - 30	2,459.1	618.0	3,077.1	9.5%	2.4%	11.8%
31 - 35	2,124.2	745.0	2,869.2	8.2%	2.9%	11.0%
36 - 40	2,265.9	812.3	3,078.2	8.7%	3.1%	11.8%
41 - 45	2,894.2	892.9	3,787.1	11.1%	3.4%	14.6%
46 - 50	3,378.9	950.5	4,329.4	13.0%	3.7%	16.6%
51 - 55	2,750.3	782.2	3,532.5	10.6%	3.0%	13.6%
56 - 60	1,710.3	615.6	2,325.9	6.6%	2.4%	8.9%
61 - 65	613.6	330.5	944.1	2.4%	1.3%	3.6%
66>	115.1	52.1	167.1	0.4%	0.2%	0.6%
Totals	**19,846.9**	**6,157.0**	**26,003.9**	**76.3%**	**23.7%**	**100.0%**
	76.3%	**23.7%**	**100.0%**			

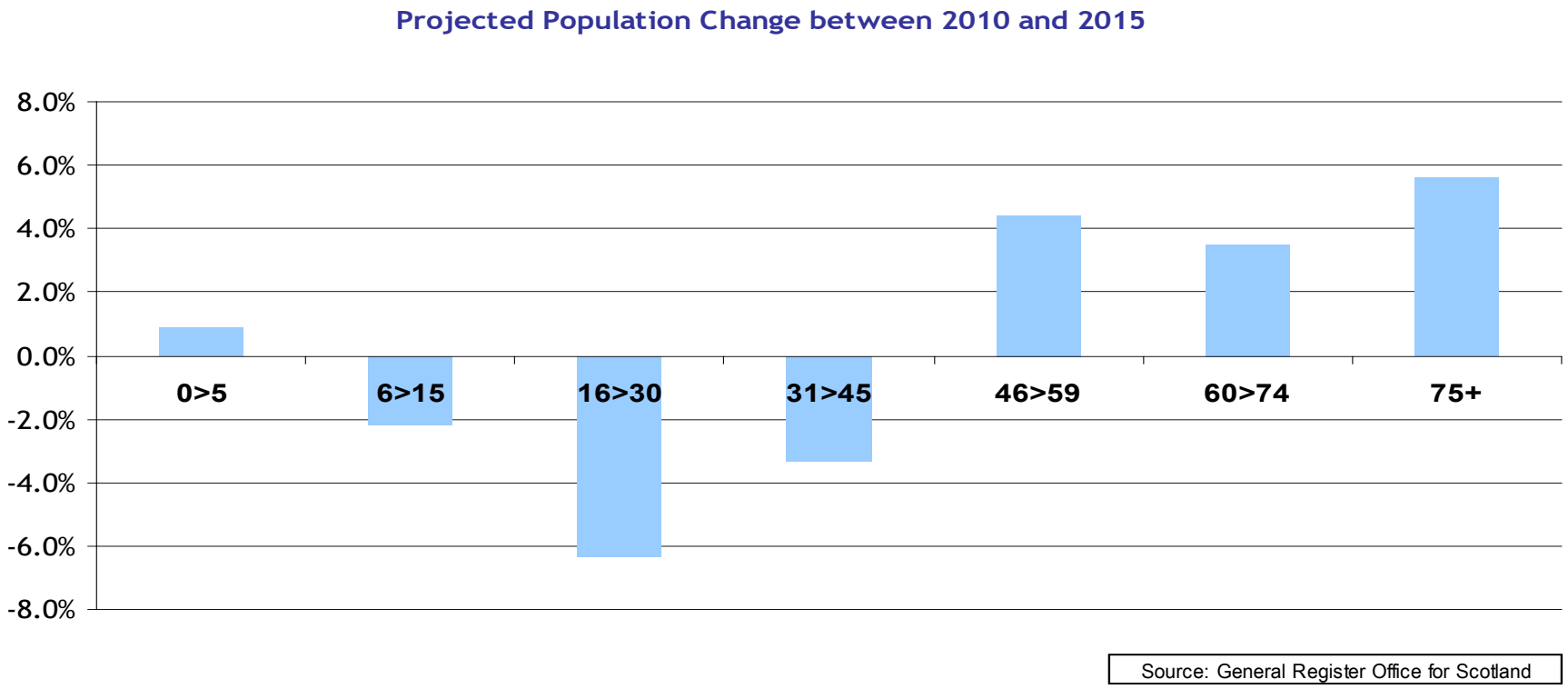
Table 20 – Gender Breakdown by Job Family (At Summer 2010)

Job Family	F	M	Totals	F	M	Totals
Administrative Services	3,397.0	619.4	4,016.4	13.1%	2.4%	15.4%
Allied Health Profession	1,520.8	220.7	1,741.5	5.8%	0.8%	6.7%
Senior Management	104.0	63.8	167.8	0.4%	0.2%	0.6%
Healthcare Sciences	1,083.9	686.1	1,770.0	4.2%	2.6%	6.8%
Medical and Dental	1,174.3	1,405.3	2,579.6	4.5%	5.4%	9.9%
Medical and Dental Support	277.2	28.1	305.3	1.1%	0.1%	1.2%
Nursing and Midwifery	9,711.0	1,020.3	10,731.4	37.3%	3.9%	41.3%
Other Therapeutic	508.6	1,44.3	652.9	2.0%	0.6%	2.5%
Personal and Social Care	41.0	11.5	52.5	0.2%	0.0%	0.2%
Support Services	1,883.6	1,908.6	3,792.2	7.2%	7.3%	14.6%
Job Family To be Assigned	145.4	49.0	1,94.3	0.6%	0.2%	0.7%
Totals	**19,846.9**	**6,157.0**	**26,003.9**	**76.3%**	**23.7%**	**100.0%**

Table 21 – Age Distribution by Job Family (At Summer 2010)

Job Family	<21	21 - 25	26 - 30	31 - 35	36 - 40	41 - 45	46 - 50	51 - 55	56 - 60	61 - 65	66>	Totals	
Administrative Services	52.1	199.7	348.3	352.0	433.9	580.0	676.7	662.0	516.9	175.0	19.8	4016.4	15.4%
Allied Health Profession	1.4	194.1	381.9	270.7	197.3	197.6	203.2	167.4	105.1	19.6	3.2	1741.5	6.7%
Senior Management			0.7	3.0	13.8	35.5	48.9	41.0	22.0	3.0		167.8	0.6%
Healthcare Sciences	8.4	100.9	236.7	203.1	185.9	215.2	276.3	276.9	188.2	65.9	12.6	1770.0	6.8%
Medical and Dental		221.0	434.5	499.9	428.5	312.7	295.1	198.4	138.9	43.3	7.3	2579.6	9.9%
Medical and Dental Support	14.4	60.2	54.4	43.9	29.5	27.6	29.0	27.1	14.6	4.2	0.5	305.3	1.2%
Nursing and Midwifery	27.8	748.0	1273.4	1132.7	1351.7	1752.9	1965.9	1400.6	747.1	294.6	36.7	10731.4	41.3%
Other Therapeutic	5.0	72.6	111.9	103.7	89.7	75.9	78.0	70.0	35.9	9.9	0.4	652.9	2.5%
Personal and Social Care		1.0	2.0	10.3	6.0	7.5	9.0	7.0	6.5	2.0	1.3	52.5	0.2%
Support Services	31.4	140.9	206.0	229.0	311.7	553.2	715.1	660.1	541.8	318.2	85.0	3792.2	14.6%
Grand Total	**140.4**	**1752.8**	**3077.1**	**2869.2**	**3078.2**	**3787.0**	**4329.4**	**3532.5**	**2325.9**	**944.1**	**167.1**	**26003.9**	**100.0%**
	0.5%	**6.7%**	**11.8%**	**11.0%**	**11.8%**	**14.6%**	**16.6%**	**13.6%**	**8.9%**	**3.6%**	**0.6%**	**100.0%**	

Table 22 – Projection of Population Change in NHSGGC Board Area



New South Glasgow Hospitals Project
Site Offices – Top Floor
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Glasgow
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NHS
Greater Glasgow and Clyde

Members of the New South
Glasgow Hospitals and Laboratory Project
Acute Services Strategy Board and Attendees

Date December 2010
Your Ref
Our Ref AS/Dec/AH

Enquiries to Alan Seabourne
Direct Line [redacted]
E-mail [redacted]

Dear Colleague

Further to the discussion at the Acute Services Strategy Board (ASSB) on Friday 3rd December 2010 regarding the "Instruction to Proceed" paper presented by Douglas Ross of Currie and Brown, it was agreed that Ernst & Young would be instructed to carry out a financial suitability check on Brookfield Construction and Brookfield Europe. This was to determine if there had been any material deterioration in their financial situation since they were accepted at the Pre Qualifying assessment in February 2009 which could affect their ability to complete the works of the New Adult and Children's Hospitals.

I enclose the report completed by Ernst & Young for your information. The report explains the work carried out by Ernst & Young. The ASSB Executive Sub-group has reviewed the report and are assured by its conclusion that no evidence has been found of any material financial deterioration which would hinder them completing the works.

Yours sincerely

[redacted]

Alan Seabourne
Project Director
New South Glasgow Hospitals and Laboratory Project

enc

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8 December 2010

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NEW SOUTH GLASGOW HOSPITALS
FILE REF 95 | ACTION BY
13 DEC 2010
ACTION

Dear Alan

NHS Greater Glasgow & Clyde – New South Glasgow Hospital Project Financial Standing update

Introduction

In accordance with your telephone conversation of December 6th with my colleague Michael McVeigh, this letter provides an update of the Financial Standing of Brookfield Europe LP ("the Company"). I understand that the purpose of this update is to ensure that that there has been no undue deterioration in the Company's trading position prior to the approval of the Final Business Case for the main hospital elements of the New Southern General Hospitals.

Our evaluation is based on the historical financial information that has been provided by the Company in relation to:

- Brookfield Europe LP
- Brookfield Construction (UK) Limited
- Brookfield Asset Management Inc

Please note that the position presented in this letter is based solely on the historical information.

The results of the evaluation indicate that the Company has a suitable financial standing for the Project.

Our Approach

In April 2009, Ernst & Young performed a financial evaluation of the PQQ responses which were received in respect of NHS Greater Glasgow & Clyde's New South Glasgow Hospital Project ("the Project").

Brookfield Europe LP was subsequently selected as the preferred bidder for the Project.

This letter sets out the financial evaluation position of Brookfield Europe LP, its construction subsidiary Brookfield Construction (UK) Limited and the ultimate parent company Brookfield Asset Management Inc updated for the recently received historical information.

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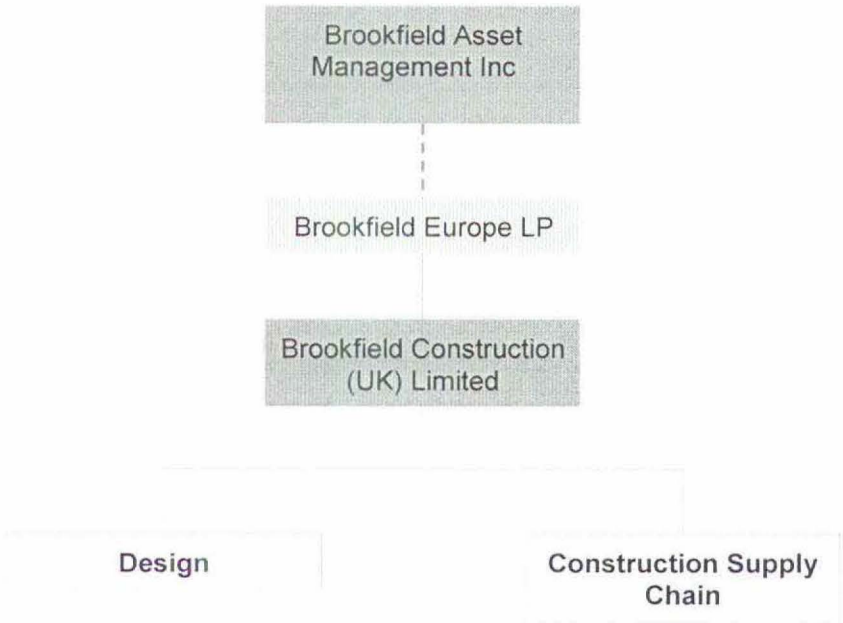
The relationship between the companies which are being evaluated is shown below:



We have performed a ratio analysis of the financial statements that have been prepared by the Company in the period since PQQ. We have based this analysis on the same financial parameters that were used to establish the initial view of the Company as a competent bidder in order to take a consistent approach to our analysis of financial standing.

Our consideration is limited to any material, adverse events or results that would prevent Brookfield continuing to perform the construction of the NSGH project.

Limitation of Scope

This review has been carried out within the agreed timescales. Please note that due to the short timescales we have been unable to provide a full review of the Company's position and the results are based solely on the historical information that has been provided by the Company.

This evaluation represents an update of our previous financial assessment and as such is subject to the same limitations of scope of our original report of 3 April 2009. For the avoidance of doubt, the work that has been performed in relation to this evaluation is of a different nature to that of an audit and we have not sought to verify the accuracy of the data that has been provided. As a result of these limitations, there may be issues that a fuller and lengthier review would have uncovered but which fall outside the scope of this report.

Updated Financial Evaluation

The following table shows the financial analysis of the bidder as represented in the three most recent annual reports.

Brookfield Europe LP was incorporated in September 2008 and therefore only two sets of financial information have been evaluated.

	Financial Information			Ratio analysis				
Period of Accounts (year end)	Unqualified audit opinion	Turnover (£000)	Net Assets (£000)	Net Assets/ Project Value	Ave annual capex/ Turnover	Gross Profit Margin	Interest cover	Current ratio
Brookfield Asset Management Inc†								
31-Dec-09	Yes	8,476,515	11,587,329	21.07	0.02	37.4%	0.73	0.98
31-Dec-08	Yes	9,056,723	8,501,070	15.46	0.02	35.8%	0.80	0.83
31-Dec-07	Yes	6,554,881	8,257,621	15.01	0.02	48.3%	1.33	0.87
Brookfield Construction (UK) Ltd								
31-Dec-09	Yes	178,147	65,766	0.12	0.77	8.6%	13.74	1.97
31-Dec-08*	Yes	268,356	57,216	0.10	0.51	4.5%	0.65	1.40
30-Jun-07	Yes	240,558	19,853	0.04	0.57	5.5%	(0.73)	0.87
Brookfield Europe LP								
31-Dec-09	Yes	187,309	517,382	0.94	0.73	33.1%	1.76	1.36
31-Dec-08**	Yes	27,628	550,316	1.00	4.98	44.5%	2.30	1.00

*These accounts cover the 18 month period from 1 July 2007 to 31 December 2008
**These accounts cover the 4 month period from incorporation to 31 December 2008
†The Brookfield Asset Management Inc accounts have been converted from USD at 1.42535. This is the rate that was used at the PQQ evaluation and has been maintained to ensure consistency.

The results of this evaluation indicate that:

- The Project continues to represent a significant financial undertaking relative to the size of Brookfield Europe LP and Brookfield Construction (UK) Limited;
- However, the Project value represents only 3% of the net assets of Brookfield Asset Management Inc and the average annual capex only 1% of total turnover;
- As was the case in the original evaluation, the ultimate parent company's position in respect of gearing and liquidity is slightly adversely impacted by an interest cover and a current ratio of less than 1.

ERNST & YOUNG

Conclusion

Based upon our review we have found no evidence of any materially adverse events or results that alter our original findings on the financial standing of Brookfield Europe LP or its related companies under the ownership of Brookfield Asset Management Inc.

Should you require any additional clarification of this evaluation please do not hesitate to contact me or my colleague Michael McVeigh on 0141 626 5104.

Yours sincerely

[redacted]

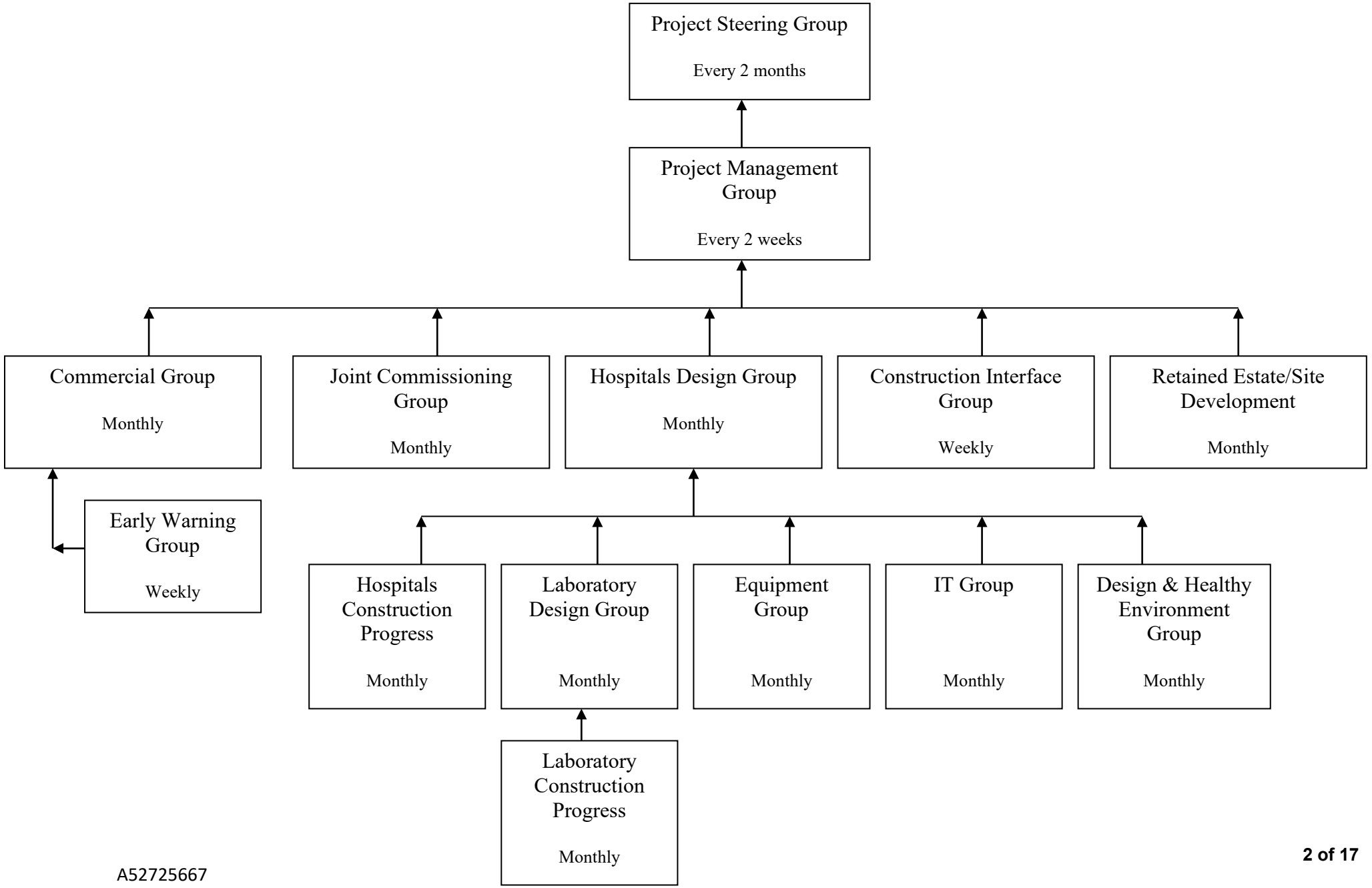
Neil Thomson, Director
Ernst & Young LLP
United Kingdom

New South Glasgow Hospitals and Laboratory Project

Management Structure

Last Updated: January 2011

New South Glasgow Hospitals and Laboratory Project Management Structure



New South Glasgow Hospitals and Laboratory Project

Project Steering Group

Frequency	Every 2 months	
Membership	**NHS Board**	**Brookfield**
	Alan Seabourne *(Chair)*	Ross Ballingall
	Peter Moir	Paul Serkis
	Alan McCubbin	Tim Bicknell
	Douglas Ross	Mike Sharples
Administration	Shiona Frew	

Role/Remit

- Summary of monthly reports (including Capita Assessments)
- Summary of Commercial Group (progress and exceptions)
- Summary of Project Management Group (progress, issues, exceptions)
- Other critical issues (eg programme, costs, risk etc)
- Strategic look-ahead

The role of the group is to achieve an overview of all aspects of the project at a strategic level to ensure that planned progress is being made. The group will also be responsible for making key links to senior management of their respective organisations and enabling solutions to any specific problems/issues being encountered within the project.

New South Glasgow Hospitals and Laboratory Project

Project Management Group

Frequency	Every 2 Weeks	
Membership	**NHS Board**	**Brookfield**
	Alan Seabourne *(Chair)*	Ross Ballingall
	Peter Moir	Paul Serkis
	Mark McAllister	David Bower
	Currie & Brown	Darren Smith
		Darren Pike
		Grant Wallace
		Mike Sharples
		Alan Keeley
	Other relevant attendees by invitation	
Administration	Shiona Frew	

Role/Remit

- Report on construction/design programme
- Monitor all aspects of the project, including:
    - Structural/civil/M&E/drainage/landscape
    - Planning/building issues
    - Hospital interface
    - Design progress/issues
    - Sub-contractor progress/issue
    - Quality and compliance
    - Commercial
- Address any issues raised by the Project Supervisor team
- Oversee progress on community engagement/benefits
- Consider proposals on innovation – value engineering – scope change
- Monitor Equipment/IT strategy and roll out plan
- Monitor and approve all sign-off issues

New South Glasgow Hospitals and Laboratory Project

Commercial Group

Frequency	Monthly	
Membership	**NHS Board**	**Brookfield**
	Alan Seabourne	Paul Serkis
	Peter Moir	Grant Wallace
	Alan McCubbin	Derek McFarlane
	Douglas Ross *(Chair)*	Mike Sharples
Administration	Douglas Ross	

Role/Remit

- Manage payment and assessment process
- Manage/monitor and control all aspects of risk including regular update of the contract risk registers
- Oversee early warning process (receiving a monthly update on EW's/PMI's/CE's)
- Report critical issues to Project Management Group
- Oversee all contractual issues and make recommendations on any proposed changes
- Approve changes to brief and manage their impact
- Monitor cash flow and consider/approve any potential changes
- Procurement overview
- To conduct a full risk review every 2 months

New South Glasgow Hospitals and Laboratory Project

Construction Interface Group

Frequency	Weekly		
Membership	**NHS Board**	**Barr**	**Brookfield**
	Hugh McDerment *(Chair)*	Steven Gunn	Alan Keeley
	Sam Suddese		Paul McGuinness
	Alistair Maclean		William Gingell
	Ronnie Clinton		
	Paul Allan		
	Howard Carter		
	James Magee		
	Bernie McCulloch		
Administration	Liane McGrath		

Role/Remit

- Identify short term works on or out with the site particularly any that may impact upon the current Hospital activities
- Identify short term Hospital activities that may impact upon the construction works
- Communicate construction activities to relevant third parties
- Monitor impact of works on surrounding area
- Report key issues to the Project Management Group

New South Glasgow Hospitals and Laboratory Project

Hospitals Design Group

Frequency	Monthly	
Membership	**NHS Board**	**Brookfield**
	Peter Moir	Darren Smith *(Chair)*
	Frances Wrath	Darren Pike
	Heather Griffin	Emma White
	Mairi Macleod	Steve Pardy
	Karen Connelly	Manny Ajuwon
	Fiona McCluskey	
	Jackie Stewart	
	David Hall	
	Eleanor McColl	
Administration	Shiona Frew	

Role/Remit

- Ensure that planning and building warrant issues and events are fully addressed and concluded
- Monitor design compliance with the ER's and CP's.
- Monitor design sign off/RDD
- Monitor progress of key design strategies – fire, access control, acoustics etc
- Manage any alternative compliance proposals between the ER's and the CP's
- Manage any clarifications required against ER's and CP's
- Monitor design programme
- Manage Mock up and samples programme and signoff
- Report any key issues to the Project Management Group

New South Glasgow Hospitals and Laboratory Project

Joint Commissioning Group

Frequency	Monthly	
Membership	**NHS Board**	**Brookfield**
	Heather Griffin *(Chair)*	Darren Pike
	Mairi Macleod	Mike Sharples
	Fiona McCluskey	
	Karen Connelly	
	Lorraine Peebles	
	Paul Fairie	
	Eleanor McColl	
	Jackie Stewart (as required)	
	Supervisor (from mid2011)	
Administration	Carol Craig	

Role/Remit

- Manage commissioning of the Laboratories and Hospitals on both a Clinical and Technical basis
- Monitor the production of a Project Commissioning Plan (incl sub-plans)
- Ensure move sequences are integrated and managed
- Monitor the production of a Project Commissioning Programme including operational commissioning
- Review the design for “commissionability”
- Manage specialist validations required e.g. pharmacy, CSSD, mortuary, MRI, ROW
- Ensure equipment installation programme co-ordinated with main commissioning programme
- Report any key issues to the Project Management Group

New South Glasgow Hospitals and Laboratory Project

IT Group

Frequency	Monthly	
Membership	**NHS Board** Alan Seabourne Hugh McDerment Eleanor McColl Mark Greig Lorraine Peebles David Hall *(Chair)* Fiona McCluskey Jackie Stewart (as required)	**Brookfield** Norman Sutherland Tony Duddy Michael Frain Darren Pike Mike Sharples
Administration	Allyson Hirst	

Role/Remit

- Deliver the IT aspects of the project per the Employer's Requirements
- Ensure that Equipment IT is identified sufficiently early to integrate with the Contractor's design/programme
- Report any issues to the Hospitals Design Group

New South Glasgow Hospitals and Laboratory Project

Equipment Group

Frequency	Monthly	
Membership	**NHS Board**	**Brookfield**
	Mairi Macleod *(Chair)*	David Bower
	Heather Griffin	Darren Smith
	Karen Connelly	Manny Ajuwon
	Sam Suddese	Grant Wallace
	Lorraine Peebles	Derek MacFarlane
	Robert Stewart	Darren Pike
	Frances Wrath	Phil Biginton
	Paul Fairie	
	John McGarrity	
	Eleanor McColl	
	Jackie Stewart (as required)	
Administration	Liane McGrath	

Role/Remit

- Ensure that equipment spatial and technical information is provided to meet the design programme
- Ensure that equipment selection and procurement is carried out in time to meet the design and construction programme
- Manage the approval of equipment selection
- Manage change control in relation to Equipment provisions
- Ensure that equipment installation and commissioning is integrated into the Joint Commissioning Group
- Develop an equipment strategy which identifies current and future analysis of equipment to transfer into new hospitals.
- Provide detailed equipment plan for every room within new hospitals.
- Ensure all equipment complies with decontamination guidelines.
- Report key issues to the Hospitals Design Group

New South Glasgow Hospitals and Laboratory Project

Design and Healthy Environment

Frequency		
Membership	**NHS Board**	**Brookfield**
	Peter Moir *(Chair)*	Liz Petrovitch
	Mairi Macleod	Darren Smith
	Heather Griffin	Neil Murphy
	Frances Wrath	Chris Freemantle
	Anna Baxendale	
	Jackie Stewart (as required)	
Administration	Shaziah Latif	

Role/Remit

- Identify how art can best be incorporated into the scheme
- Agree and deliver a Project Art Strategy
- Provide to the design process the spatial and technical requirements for art
- Ensure compliance with infection control guidance
- Report any key issues to the Hospital Design Group

New South Glasgow Hospitals and Laboratory Project

Laboratory Construction Progress

Frequency	Monthly	
Membership	**NHS Board**	**Brookfield**
	Peter Moir *(Chair)*	David Jordan
	David Hall	David Bower
	Sam Suddese	Derek McFarlane
	Graeme Thomson	Manny Ajuwon
	John Redmond	Malcolm Ross
	Willie Roxburgh	
Administration	Liane McGrath	

Role/Remit

- Monitor and manage progress and decision making in relation to the Laboratories construction phase
- Ensure relevant monthly progress reporting of agenda items – including site safety/CDM-C issues
- Interact and engage with the Construction Interface, Commissioning, Equipment and IT Groups as necessary
- Report any key issues to the Laboratory Design Group

New South Glasgow Hospitals and Laboratory Project

Hospitals Construction Progress

Frequency

Membership	**NHS Board**	**Brookfield**
	Peter Moir *(Chair)*	David Bower
	Frances Wrath	Grant Wallace
	Hugh McDerment	Alan Keeley
	David Hall	Darren Pike
	Supervisor	
Administration	Shiona Frew	

Role/Remit

- Monitor and manage progress and decision making in relation to the Hospitals construction phase
- Ensure relevant monthly progress reporting of agenda items – including site safety/CDM-C issues
- Interact and engage with the Construction Interface, Commissioning, Equipment and IT Groups as necessary
- Report any key issues to the Hospitals Design Group

New South Glasgow Hospitals and Laboratory Project

Laboratory Design

Frequency	Monthly	
Membership	**NHS Board**	**Brookfield**
	Peter Moir	David Jordan
	Lorraine Peebles	David Bower
	Graeme Thomson	Derek McFarlane
		Manny Ajuwon
		Darren Pike
		Malcolm Ross
		Darren Smith
Administration	BMJ	

Role/Remit

- Ensure that planning and building warrant issues and events are addressed and concluded fully
- Monitor design compliance with the ER's and CP's.
- Monitor design sign off/RDD
- Manage any clarifications required against ER's and CP's
- Monitor design programme
- Report any key issues to the Hospitals Design Group

New South Glasgow Hospitals and Laboratory Project

Project Supervisor Interface

Frequency	Monthly
Membership	**NHS Board** Peter Moir Alan Seabourne David Hall John Redmond Willie Roxburgh
Administration	Liane McGrath

New South Glasgow Hospitals and Laboratory Project

Retained Estate/Site Development

Frequency	Monthly
Membership	**NHS Board** Alan Seabourne *(Chair)* Mark Baird Heather Griffin Mairi Macleod Frances Wrath Others from Project Tean as necessary
Administration	Allyson Hirst

Role/Remit

- Strategic analysis and planning of retained estate and associated schemes
- Development of options and workplans to support development of retained estate activity

New South Glasgow Hospitals and Laboratory Project
Project Team

Frequency	Weekly
Membership	**NHS Board** Alan Seabourne *(Chair)* Peter Moir Mairi Macleod Heather Griffin Fiona McCluskey Karen Connolly Frances Wrath Jackie Stewart Hugh McDerment Sam Sudesse Mark McAllister Liane McGrath Shiona Frew Jane Peutrell Stephen Gallacher
Administration	Liane McGrath

Consideration of Plate Heat Exchangers versus Thermal Wheels at the New Southern General Hospital

Report produced by Ecoteric Ltd

April 2011

Version Final 01

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Background

During the competitive dialogue stage, use of ventilation heat recovery by thermal wheels was proposed by Brookfield Multiplex. This was accepted for all areas except the wards, where plate heat exchangers were required by the Board on advice from Health Facilities Scotland.

The reason for this is understood to be that a small amount of air is carried from extract back to the supply air stream. There is therefore a theoretical risk of cross infection and as the air plants to the wards serve more than one ward and one level, there could be transmission between wards and levels.

However, plate heat exchangers are 55% efficient compared to thermal wheels which are 65% efficient.
The energy used to heat air is :

- over 9,000,000 kWh per annum,
- 39% of the total thermal energy use of the new hospital
- 16% of the total energy use of the new hospital[1]
- Contributes 10kg Carbon to the overall target[2]

A 10% saving in this energy is therefore significant and it was agreed at the low carbon meeting of 1/2/12 that the issue would be reconsidered.

The issue is time critical as the procurement process for air handling units for the tower will be underway in the near future.

Literature search

A review of the data reveals that older documentation refers to thermal wheels cross contamination before the advent of the purge section.

The purge sector filters out most impurities in the air.

A purge sector, a small area that the wheel rotates into between the incoming and outgoing ducts, blows any exhaust air from the wheel media before it rotates into the supply air duct. Purge sectors have helped lower cross-contamination from 4 or 6 percent to 0.04 percent, and have made enthalpy (and thermal) wheels suitable for sensitive environments such as chemical laboratories and hospitals.

SHTM 03-01 therefore concludes that
“Thermal wheels may be used providing they are fitted with a purge sector. The small amounts of air leakage across those devices are not considered significant.”

It is generally acknowledged in literature that evidence based risk assessment relating to ventilation is difficult, for example:
Scottish Health Facilities Note 30 concludes that in terms of evidence based risk assessment for the various choices and sophistication of ventilation equipment, “the evidence on which to base the risk analysis is usually either absent or controversial. Where air movement is induced by mechanical ventilation, the flow of air must be from clean to dirty areas (where these can be defined) Hoffman et al (1999) state that “investment in mechanical air systems is large and as with many other areas of infection control, it is difficult to measure their true effectiveness when such a measure would be the absence of sporadic event s implicating a failure of the system”” This publication refers back to the relevant (S)HTMs in terms of engineering services.

[1] Before the effect of CHP is taken into consideration
[2] Before the effect of CHP is taken into consideration

Conclusion on Literature Search

In terms of risk, the risk is known for a thermal wheel and deemed not significant. A plate heat exchanger is theoretically nil risk but at some stage in the plate heat exchanger's life may become an unquantifiable risk should any pin hole develop or a joint fail.

There is an argument therefore that over the life of the plant, should the purge fail in the thermal wheel, this would be readily detected and rectified, and could be alarmed via the BMS, whereas a failure in the plate heat exchanger may go undetected as there virtually no way of inspecting or testing the component without removing it from the air handling unit.

On balance, it is suggested for consideration that the matter is reconsidered to allow the use of thermal wheels to the ward plant.

Technical appraisal

Information has been provided from ZBP as follows:

1. The total air volume for the AHU's with plate heat exchangers is in the order of 75 m3/s.
2. The current peak heating load for the 75 m3/s of air to raise it from -5 to 19 degC is around 2,300 kW.
3. Using the energy model, and inputting these AHU's in isolation from the thermal wheel AHU's, the total annual energy required from fossil fuels to run the plate heat exchanger AHU's is around 2,500,000 kWh. This is before the CHP calculation is applied.
4. FlaktWoods have indicated that on the same AHU that the pressure drop across a plate heat exchanger is around 100Pa and a thermal wheel around 50Pa.
5. Current AHU numbers are as follows:

- AHU's with plate heat exchangers - 33
- AHU's with thermal wheels - 148
- Note: there are a further 36 AHU's which serve the isolation rooms which have no heat recovery.

Fossil Fuel:

The following calculation has been undertaken based on the above information:

The average annual mean temperature for Glasgow is 9.4 -9.7C.
Taking the higher of these, the typical annual temperature pick up at 50% efficiency assuming an exhaust temperature of 22C is 22-9.7/2 = 6.15C
The heat content of 6.15C is approximately 75 x1.2x 6.15 = 553.5kW
Assuming the plate heat exchanger works for 24 hours per day and 30 weeks per year, the heat recovered is 553.5 x 24 x 7 x 30 = 2,789,640 kWh – this correlates reasonably with the model figures.

If a thermal wheel is used, the heat pick up at 60% efficiency assuming an exhaust temperature of 22C is (22-9.7) x 0.6 = 7.36C
The heat content of 7.36C is 75x1.2 x 7.36 = 662.4 kW
Assuming the plate heat exchanger works for 24 hours per day and 30 weeks per year, the heat recovered is 662.4 x 24 x 7 x 30 = 3,338,496 kWh

The additional energy saved is 3,338,496 kWh - 2,789,640 kWh = 548.856 kWh

Electrical Energy

Electrical energy savings are based on the reduction in resistance of 50Pa for a thermal wheel. Energy required to overcome 50Pa:

The absorbed power of a fan is Pe = (air volume x pressure differential) / overall efficiency of the fan and motor system x 1000

Assumed efficiency is 85%

The additional absorbed power as result of the higher resistance is therefore
Pe = 75 x 50 / .85 x 1000 = 4.41 kw

Assuming the bypass to the exchanger is the same resistance, the additional energy is

4.41 x 24 x 365 = 38,647kWh per annum

Cost and Carbon appraisal

Carbon and Cost Savings

The fossil fuel saving would be 548.856 kWh x £0.026 = £14,270 per annum
The carbon saving would be 548.856 kWh x 0.194 = 106,478 kgCO2 per annum
This equates to 0.622 kgCO2 per annum/m^2

The electrical saving would be 38,647kWh x £0.10 = £3865 per annum
The carbon saving would be 38,647kWh x 0.422 = 16,309 kgCO2 per annum

The combined benefit is therefore £18,135 saving per annum.
If VAT on fuel is allowed, this rises to £21,762 saving per annum.
122,878 kgCO2 per annum carbon saved

Effect on Operational Energy Target

The combined effect is:

0.719 kgCO2 per annum/m^2 saving on the operational energy target

Simple Payback

The extra over capital cost is reported to be £50,000. Allowing 6% OHP and VAT, this amounts to £63,600

The simple payback on this basis is £63,600/£18,135 = 3.5 years

Recommendations

Based on the above, the measure appears to be worthwhile and over the life of the plant, of 15years, will save a total of approximately £250,000, allowing for additional maintenance given the increase in moving parts.

SIXTH CONTRACT ISSUE meeting of 4/5/11 General information and Documents – to be read in conjunction with Appendix M&E4 and Section 10.00 of ERs								
FORWARD MEETING SCHEDULE								
	19/1/11	16/2/11	16/3/11	6/4/11	4/5/11	1/6/11	6/7/11	10/8/11,
MEETING PURPOSE	Meeting rescheduled from 8/12/10 – update on model and facade issues	Model and facade issues	Model and facade issues/ vent review	Model and facade issues/ vent review General Tracker update	Close off all stage 2 issues +lighting General Tracker update	Energy Centre review General Tracker update	Equipping review	BMS General Tracker update Forward dates – agenda to be agreed 7/9/11, 5/10/11, 2/11/11, 7/12/11
ATTENDEES				As previous meetings	As previous meetings + lighting designer	As previous meetings	As previous meetings + Board procurement	As previous meetings +BMS

Circulation

Brookfield Multiplex Ken Hall Darren Pike, Darren Smith
Currie & Brown David Hall
Glasgow NHS Board Shiona Frew, Peter Moir, Alan Seabourne
Mercury Engineering (Ireland) Robert O'Donovan
Nightingale Associates : John Wiggett
ZBP Guy Willis Robb, Steve Pardy

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SECTION 1 EARLY DESIGN ISSUES							
ISSUE/ REFERENCE COMPLETED NOT COMPLETE	SUB ISSUES	ISSUE OWNER	ACTION/QUERY/ISSUE	DATE OR DESIGN STAGE REQUIRED	ACTION TAKEN / ONGOING ISSUES	RECORD OF MEETINGS AND COMPLETED ACTION	Action by
FOR RECORD OF SECTION 1 COMPLETED ITEMS SEE ISSUE 3. OUTSTANDING ISSUES ONLY RECORDED FOLLOWING							
Involve operational energy manager		NHS GGC	Consult and involve operational energy manager in process		Invite to meetings periodically – Ian Powrie, Trust Energy manager and/or site energy manager BCL will use a	To be invited to future meetings - dates to be discussed and agreed - carried forward to next stage	
Site wide energy strategy		NHS GGC	Whole site energy strategy – need to have master plan for energy use on retained as well as new development and optimise plant selection in new energy centre.	Jan 2011	Commission study from energy specialist Establish a clear trail of calculations and modelling to highlight basis.	Strategy with Board – any actions required to be advised	
User operational requirements		NHSG GC				Confirmed that there is to be a master environmental conditions sheet and	

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SECTION 1 EARLY DESIGN ISSUES							
						that ADB sheets will not contain environmental information. Provide sheet for review by Ecoteric – carried forward to next stage	
Audits	Low carbon Audits	BCL	Appendix K information to be submitted to auditor for comment	Prior to FBC	See appendix K review documents	Responses appended – individual issues now added to next stage tracker	
						Carbon filtration to be decided – see next stage tracker	
	Facade development	BCL/NA	Provide optimisation study looking at daylighting/ shading /extent of glazing/ summertime temperature/ room height/ opening types/ ventilation options.	Urgent – for FBC	Facade study has been provided but fails to meets ER requirements as summarised in review. Major issue with U values of cladding identified	Presentation of proposed U values from 4/5/11 refers. (hard copy in file) Confirm option 3B now adopted and is current design, and that the proposals meet Building Warrant requirements	BCL/NA
	Systems development – ventilation	BCL/ ZBP	Options studies on proposed ventilation and energy supply strategies, integrating supply and demand side.	Urgent – for FBC	Basic ventilation rate to wards – status quo of 4 ac/hr now implemented	Non e	

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SECTION 1 EARLY DESIGN ISSUES							
	Wind studies	BCL/NA	Commission studies on wind effects to determine optimum cladding and detailing for air tightness, wind effects at entrances and avoidance or pollutants being drawn into air intakes	Early design stage	See wind study review. Issues identified are wind speeds to entrances and in atria, design of external planting to break up air flow and design of intakes/exhausts on upper floors	Needs to be followed up at next stage with respect to entrances and atria – ERs 0.2m/s across entrances to be achieved – carried forward to next stage	
Energy Model		BCL/ZBP	Provide sketch scheme energy models based on options considered at FBC	Urgent – for FBC	See ZBP stage 2 energy report and Ecoteric response	Detail items carried forward to next stage	BCL/ZBP
The above studies and options must be summarised into a stage report with all key decisions recorded and whole life cost and carbon model optimised. The energy model must at this stage show compliance with design target and development towards operational target. The report must be audited and corrective action taken before proceeding to next stage							

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BUILDING SERVICES SYSTEMS								
General Systems	Energy sub metering	ZBP/WSP/ NHSGGC	Agree and record logical cost and ownership centres, site strategy for metering and monitoring and then provide drawings indicating appropriate departmental meters. Check BREEAM requirements met	30/4/11	Metering strategy drawing and performance specification – develop through meetings with site and trust energy Manager. Structured discussion document to be prepared. Metering strategy agreed at log stage to be provided to Ecoteric	Meeting still to be arranged	NHSGGC/Ecoteric/BM. ZBP to provide highlighted item	3
	Choice of internal design conditions	ZBP/WSP	Have all internal design temperatures and humidities been specified with agreed	30/4/11	Schedule of summer and winter design internal conditions and humidities – see action from section	Provided and reviewed – attached with highlighted areas to be discussed at meeting of 1-6-11	BM	3

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			tolerances to ensure lowest energy consumption and avoidance of reheat? See also ADB sheets section		1			
Ventilation Issues from review	Choice of filtration	ZBP	Have filter clean and dirty resistances been specified to optimise energy cost versus filter cost Similarly , the final filter should be selected to provide low initial resistance – 85Pa and final resistance of 2x initial. There is evidence that F9 is a better standard for human health and	4/5/11	Sample calculations – see AHU review	Need to consider combined filtration for all units –info from Camfil Farr received 20/5/11 – to be reviewed	Ecoteric	2

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			reduces ductwork cleaning and resistance					
			Can carbon filters be omitted or bypassed? Note that F7 required to protect not G4 as currently scheduled.	30/4/11	WLC for no filtration, full filtration, part filtration to be prepared for Board. Must include labour and cost of pre filtration and carbon filtration changes and future price risk.	Savings paper still awaited – agreed that partial option should include theatres/ITU/CCU/isolation rooms/aseptic suite/kitchen	ZBP	1
			Overall, have Eurovent EN13053 energy ratings been specified - should be at least B rated		yes			
	Isolation rooms	ZBP	Shut down/set back when not in use, with room ready indication	30/4/11	Agreement to do this is still needed. Appendix K Vent review refers.		ZBP/NHSGGC	1

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					Problem is air distribution which may be resolved. Report from ZBP received. Post meeting note: Belfast Trust have a number of isolation rooms using very high efficiency direct drive fans and magnahelic pressure indication. They are happy to let any of our team visit - I have seen these fans and would strongly recommend further evaluation			
			Is fan to be sized for future HEPA – if so, how does this affect		Fan change suggested as a strategy – to be	Units to be sized without HEPA and belt and pulley change if		

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			efficiency and would it be better to accept a future fan change if very inefficient selection likely?		agreed with wider design team	filer added- most efficient solution at handover		
	Zoning	ZBP	Daytime only areas served from 24 hour plant - e.g. children's wards	30/4/11 for mark ups	Zoning mark up needed	. All adult wards 24 hours. Lift lobbies and stairs not on ward plant. Going forward, each department to be marked up with plant zone and occupancy hours and agreed with board prior to detail design. carry forward to next stage		2
			Set back to theatres		Confirmed as included to all but emergency. Review detailed design at next stage .			
			Set back to other areas		awaiting confirmation of		C&B	2

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					ability to set back areas in radiology and children's departments			
	System zones	ZBP	Drawings, schematics and system description indicating how different heating and cooling requirements (time /temp/gains) can be controlled separately	30/5/11	See vent review. Needs final resolution. Will be discussed at BMS meeting and	Need to review when environmental mark ups available	ZBP/BM/Ecoteric	3
	Direct drive motor /belt drive/ motors in airstream		Strategy for each type of AHU – provide a typical comparison of the energy implications of a direct driven/belt driven/in	4/5/11	See air handling unit review. Aerofoil fans preferred. Direct drive does not show major advantage over belt drive on smaller		ZBP	1

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			airstream /not in airstream		plant although needs to be checked on final fan selections and long term performance may be better as direct drive. Also need to consider larger plant where outcome may be different . Post meeting note – direct drive fans available up to 2500Pa for smaller duties seen in Belfast hospital – needs to be considered urgently before decision taken to go for belt drive – look at http://ebmpapst.co			

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					.uk			
	Fresh air rates	ZBP/WSP	Confirmation of HTM 03-01compliance Check BREEAM requirements have been met	End stage D prior to FBC	Include in design statement with sample compliance calculations	4 ac/hr in bedroom has been agreed. Elsewhere as ERs	Ventilation	
	Air conditioning avoidance	ZBP	Can full air-conditioning be avoided to • Circulation/ stairs and lift lobbies • stores	End stage D prior to FBC	Need to ensure adequate fresh air to control temperature to these areas. ZBP to look at control with fresh air in detail design		ZBP	3
			Regenerations kitchens - design and heat recovery still to be considered. Mechanical and electrical designs and layout of areas needed	4/5/11	Need to ensure heat gain in area does not impose undue load on air conditioning and preferably that the areas are served from uncooled dedicated		BM	2

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					ventilation plant – layout of area and equipment required to assess			
			IT hubs and server – consider avoidance of mechanical cooling – schematics and positions of areas needed.	4/5/11	Need to look at economics of running chilled water to these areas and if carbon savings can be made by natural cooling		ZBP	2
			Atrium and FM core	30/4/11	Workshop to review ventilation strategy to atrium due to take place on 20/4/11. Need to consider options for natural ventilation to bridge link , using		ZBP/Ecoteric	2

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					solar warmed air for intakes and night cooling to bridge link			
	Heat recovery	ZBP	Heat recovery strategy to be produced demonstrating opportunities and viability.	End stage D prior to FBC	See vent review.	Opportunities generally taken except as noted below		
			Confirm ethos for thermal wheel/Plate heat exchanger selection	8/4/11	Check re risk on ward plant (in patient) – this was determined in the ERs	65% thermal wheel efficiency, 55% PHX, thermal wheels used where no risk of cross contamination.		
	VSD		How is VSD configured?	20/4/11	consider along with zoning issues			3
					all air plant - potential for savings not viable as mostly internal			

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			VSDs- performance spec to consider efficiency and losses – what is best and worst on market and suppliers to be chosen on WLC	8/4/11	Agreed to add to performance schedules	ZBP to issue when completed		
	Dampers in air handling units		Are these for maintenance only? If so are these necessary as motorised – isolation plates decrease airstream resistance – for discussion	8/4/11	To be discussed 8/4/11	Dampers on inlet modulate.		
	Air handling unit spare capacity		Have we now confirmed that the motors and fans are not to be oversized		Confirmed - AHU face velocity to be reduced to 1.0m/s to allow for increase to 1.25m/s. Fans and motors not oversized			

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			Coli design – compare pressure drops between manufacturers which can vary considerably for the same performance		Agreed to be on performance schedules			
			Overall what is target SFP_v ?		Agreed to be on performance schedules			
			Confirm High efficiency motors will be specified throughout.		Agreed to be on performance schedules			
			What are economics for heat reclaim from dirty extract?		Proposal would have yielded significant carbon savings but not			

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					acceptable to HFS. Issue closed			
Heating and cooling review	Mains and insulation		Consider heat transfer between the chilled and heating mains – how will heat gain in the ducts and corridors be controlled and how far will the mains be separated ?		Pipe in pipe mains have been specified for heating and chilled mains. Basement valve room is ventilated. Maximum temperature – 30C estimated	Maximum temperature – 30C estimated		
	Mains and insulation		What is thermal insulation thickness - heating and chilled – need to undertake calculation - base on present energy cost and present + 10% and 25% – see ERs		ZBP require clarification - Relevant ERs - Heat gains to chilled water mains must be calculated and minimized when calculating running loads. Externally run unshaded	ZBP to supply heat loss and heat gain annual energy demand from heating and chilled water mains as a function of total energy input per month to estimate % losses	ZBP	1

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					mains or mains run adjacent to hot services in unventilated spaces will not be considered acceptable. Designers are expected to calculate and specify economic thickness of insulation and continuity of vapour barriers to all chilled services.			
	Mains and insulation		What is water velocity in mains and has an evaluation of energy cost for pumping versus pipe size been			Pipe sizing parameters are 100-200Pa for mains 1-2m/s velocity but as mains are duplicated , will be half.		

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			undertaken - suggest this is done for the primary mains at least as WLC may indicate a pipe size change.					
	Mains and insulation		Noted that there are two sets of mains presumably for resilience. If each of these are sized at 100% demand, is there any mileage in running one set live and isolating the other set at the valve room to reduce losses particularly in summer? It would also reduced pumping			Not operationally acceptable to change this		

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			loads,					
	Heating to ensuites		I thought that heating had been taken out of the en suites as the heat pick up from supply air extracted via the ensuites would be sufficient to offset heat loss. How is temperature in ensuite controlled?			Heating remains due to losses through cladding. Each radiant panel has individual TRV – location to be advised		
	Heating load		475 w/m2 heating load seems very high – can we discuss?		Resolved –refers to radiant panel output			
	Valves		Noted that the control valves to MTHW/LTHW heat exchangers are 2 port,			3 ports are there to provide minimum flow as determined by pump manufacturer. The amount of minimum		

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			but why are the valves to the HWS 3 port – VSDs to pumps will control pump speed when demand light, particularly in summer when there is no heating load.			flow varies across manufacturers from 15%-40% - to be incorporated into performance schedule		

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	Chilled water temperatures		Given that all the chilled water goes through heat exchangers other than the computer room, are we sure the distribution temperatures are the most economical – what are the economics of either running the computer rooms off higher temp CHW or off natural cooling systems or even separate plant? The lower the distribution temperature, the higher the mains		ZBP comment that The chilled water temperatures are scheduled to outside conditions to reduce energy input. See:ZBP-XX-XX-SP-660-403/ 6-12 used for peak design. chilled water temperature is scheduled to increase when external temperature drops.	To be reviewed –look at using evaporative coolers associated with absorption chiller for winter process cooling loads	ZBP	2

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			gains.					
	Seasonal shut down of chilled water		Related to the above, if only computer	30/4/11	ZBP comment that cooling will be	See above		2

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			rooms require cooling in winter, the pumping energy resulting from pumping CHW during this season could outweigh the carbon saved by using the absorption cooling – I think we need to look at this in more detail		required all year round (considering imaging and other large equipment, internal rooms etc).Separate plant involves more capital cost.- it may well but what are the long term costs of operating chilled water mains in winter? Need to evaluate when loads more defined			
	Chilled water pumping		Chilled water pumping generally – is there a point at which, when the pressure rises / external temperature			No because of process loads and internal areas		

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			drops/most valves <10% open that the pumps turn off?					
	Chilled beams circuit		Chilled beam circuit – does this have automated off mode?			Yes this will be scheduled		
	CHW distribution		What is the rational for the various secondary chilled water circuits and can they be rationalised to reduce the amount of mains?		ZBP comment this is due to spatial restrictions – please expand answer	Secondary circuits are provided for resilience – on proviso that secondary resistances are minimised		
	Fan/pump speeds		Statement regarding criteria for specifying VSD's and plant schedules indicating where	End stage D prior to FBC	See heating /cooling review. To be followed up at meeting of 8/4/11	To be kept under review with control strategy at next stage		

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			specified – provide schematics and design details for evaluation					
	PLATE HEAT EXCHANGERS		Confirm these are sequenced to avoid high losses at part load			Not sequenced but run at 50% at full duty therefore low pressure loss. insulated to lessen standing loss		
	HEATING AND COOLING PUMPS		High Efficiency motors are not specified – these are required in ERs		ZBP confirmed included	Include in plant schedules		
BMS Issues	Local controls	ZBP	Develop strategy for local controls. Check BREEAM requirements	To be resolved at worksho p august	To be reviewed with BMS strategy	Move to next stage		
			Where AHUS serve rooms with varying heat gain, how is individual room temperature control		To be reviewed with BMS strategy	Move to next stage		

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			achieved					
	Wasteful heating /cooling		Reheat arrangements – can room temp sensors reschedule off coil to prevent wasteful reheat?		To be reviewed with BMS strategy	Move to next stage		
			Are cooling and main reheat coils in ahu interlocked to prevent simultaneous operation?		To be reviewed with BMS strategy	Move to next stage		
			How is simultaneous heating and cooling prevented (in rooms)		ZBP comment that this does not occur. Where heating and cooling chilled beams are provided the unit controls the space temperature. Where radiant panels and FCU's are provided then	Move to next stage		

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					there is a dead zone in temperature to avoid heating and cooling simultaneously			
			Is supplementary heating or cooling proposed in spaces served?	30/4/11	It was agreed that this was hard to follow across the various drawings issued to date. A marked up set of drawings is to be prepared which demonstrates the control heating cooling and ventilation strategy to each space – this can be colour coded and initially cover the 5	To be shown on environmental drawings – will evolve into detail design at next stage	ZBP	1

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					designed departments			
	Zoning		Is there zoning of the VT heating in terms of 12/24 hour circuits – if areas are not used for 24 hours how is heating turned off when the area is not in use – same applies to chilled water.			ZBP confirm – single circuits with zone valves and optimum start/stop/frost protection. Chilled beam circuit and fan coil circuits to have zone valves		
			Similarly, where there are distributed fan coil units, what is the control for intermittently used areas?		ZBP confirm but detail to be discussed	Fan coils will be time controlled individually. Fan coils to have EC fans		
Lighting Issues	High efficacy internal lighting	Mercury	Overall, the choice of fittings does not appear to have been	4/5/11	The review highlights areas where energy	See detailed review in this section. Much improved from	Mercury	1

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			made with regard to maximum efficiency of lighting- there are a number of instances where more connected load is specified than is necessary. See lighting review for further detail and examples		savings are possible and these typical areas are reproducible throughout the development. The ERs in respect to lighting energy efficiency have not been met and attention is needed in the detailed design. To be reviewed at meeting of 4/5/11	appendix K submission and now generally meeting ERs. Some residual issues as noted below		
	DEER	Mercury	DEER calculations need to be undertaken in accordance with the NHS guidance and the ERs to demonstrate that A rated fittings have	4/5/11	Submit DEER calculations	DEER calculations part of Whitecroft presentation – supply copy for record. Indicated DEER A rating is being achieved to all but specialist areas.	BM	1

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			been specified.					
	Lighting power density	Mercury	Figures not known		Reported that the average power density for lighting is now 10.5w/m^2, this compares well to recent scheme at Barts which achieved 12.5w/m^2, Discussed if this could be reduced further but lighting designers felt that this would require significant increase in LED which is not within cost plan. Noted that LED is included to staff bases, MRI, X ray/touchdown area	Supply confirmation for the record. ZBP to confirm that power density equates to model assumptions.	BM/ZBP	
	Lighting	Mercur	Ward corridor	4/5/11	Consider	Lighting reduces to 25%		

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	control corridors	y	presence/absence detection		automated dimming to reduced levels	for night time under nurse control – agreed at design meeting.		
	Ward daylight linking	Mercury	Confirm if included and how these will work in conjunction with blinds	4/5/11	Detailed proposals awaited. DALI system believed to be included	Confirmed that DALI is included throughout entire development but the mode of daylight linking to bedrooms is still to be resolved	Mercury/BM	1
	Utility areas	Mercury	Presence detection has been incorporated to the pantries and kitchen but not the clean and dirty utilities or disposal hold	4/5/11	Considerable savings could be made by using lighting control to these areas. Safety considerations would be much the same for a ward kitchen as for a utility area. Note that PIR shown for utility areas on acute assessment ward	Presence detection to all intermittent core areas.	BM	

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	Public toilets	Mercury	Whitecroft queried blue lighting as inefficient		Confirmed at design meeting as required for public safety to prevent intravenous drug use	Issue closed		
	Corridor lighting	Mercury	Appendix K review highlighted inefficiency of linear/downlight solution		Revised design standardises in asymmetric linear.	Queried at design meeting if lighting design was to be differentiated between street and sub corridors for way finding reasons but this was not felt to be necessary. Agreed to proposed design. Agreed that presence detection of negligible benefit to ward corridors.		
	Lamp types and colour rendering	Mercury	Query on lamp types proposed		Confirmed that Philips Eco lamps to be used throughout,	Agreed and welcomed. Exceptions noted for areas requiring RA90 for patient observation		

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					standardising on 26W	(theatres/recovery/high dependency) RA85 elsewhere with the Eco lamps		
	Bedhead lighting	Mercury	Options proposed for type integrated with trunking or wall mounted		BM prefer trunking integrated type for ease of installation however as light is lower, light distribution is worse and increase lamp power needed- from 39W to 54W -38% increase, across 1000 beds, if used for 4 hours per day this equates to 21900 kwh/annum, 0.06kgCO_2/m^2 annum	Preferred solution is wall mounted – needs to be resolved as soon as possible	BM	1
	Wall zone calculation	Mercury	Inclusion of 0.5m wall zone in uniformity		For most rooms, inclusion makes no	Need to agree if wall zone should or should	Capita/C&B	3

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			calculation		difference – for some inclusion adds fittings and therefore energy use	not be included – Capita will verify lighting - opinion sought		
	FM lobbies	Mercury						
	High efficacy external lighting		Schedule of design illuminances, proposed light fittings and schedule of lumens per cct watt achieved (typical per area acceptable).	4/5/11	Review not yet undertaken - awaiting external lighting proposals		Ecoteric	3

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	Security lighting controls		Description of operation of proposed lighting controls and drawings indicating where each type of control is used. Strategy for low energy lighting required for evaluation. Check BREEAM requirements	4/5/11	As above		ZBP/Gillespies	3
Electrical systems	LOW VOLTAGE DISTRIBUTION		No mention is made of optimising cable sizing for energy losses – the ERs require: “Cable installations should be specified according to the guidance of British Standard 7450:199120, equivalent to IEC		ZBP are aware of this requirement and confirm that it has been included in the design - Supply sample calculations demonstrating compliance with BS.		ZBP	2

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			1059:1991, 'Economic Optimisation of Power Cable Size', which gives useful guidance on the optimum costing of cable installations.					
	UNINTERRUPTIBLE POWER SUPPLIES		The specification should state that the UPS system is to be selected from products on the ETL list and comparable systems should be compared by means of whole life cost as there can be 3% variance in energy consumed between the best and worst		ZBP comment that Mercury will need to confirm their intended supplier. However all the major suppliers are on the list. ECA778 refers to VFI as 'on-line- this is included in this document under	Monitor at selection		

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			equipment . VFI type preferred for this reason. See CT leaflet ECA778 UPS for more detail		clause 310 of V44. Double conversion shown on schematics drawing number ZBP-XX-XX-SC-539-002 and 003. WLC still needed for comparable suppliers/			
Energy Centre	Renewables. Central energy supply and Combined heat and power (CHP)	ZBP	Business case to be provided if necessary. Provide confirmation that recommended measures identified in feasibility are now implemented in the design.	End stage D prior to FBC	Provide schematics and confirmation of funding	CHP included. Small scale wind turbines confirmed as not included		
	Borehole water			1/6/11	Potential uses are Atrium underfloor	Information required re borehole to assess –	ZBP/BM/Ecoteric	1

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					heating, food disposal system, thermal store? Some visual display could be incorporated. PV cladding to chimney	see mail of 18/5/11		
	Grant funding	BCL	Grant funding applied for and in place	End stage D prior to FBC	Funding applications and confirmation	Grant funding not applied for but some tariff advantage may be possible – will be incorporated in borehole/PV feasibility		
	Bio gas/ alternative fuels	NHSGGC	Continue feasibility investigation on use of biogas and negotiations with Sustainable Glasgow	1/6/11	Decide if there is likely to be any impact on the design - any progress?	Nothing currently included. Review at energy centre review meeting. Biogas not in current planning phases at Sustainable Glasgow.	Ecoteric	2
	Boiler efficiency		No boiler efficiency has been specified. There are options for economisers which		Confirm and specify. Needs to be consistent with stage 2 energy	90% basic efficiency confirmed. Confirm economiser selections and boiler selection on		

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			vary from 3.5%-7% energy reclaimed from the exhaust – the highest option commercially available needs to be selected here and boilers/economisers selected should be on the ETL list		report	WLC at next stage .		
	Boiler controls		Boiler controls are not comprehensively specified - is there O2 trim control? VSD to fans ? digital combustion controls? Boiler and burner management systems?	1/6/11	O2 trim included. To be discussed at energy centre review			2
	Burner specification		Consider also specification for burner power consumption – this can vary considerably	1/6/11	To be discussed at energy centre review			2

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			between manufacturers particularly on low NOx application s					
			What will be burner turndown ratio? And how will cycling be prevented?	1/6/11	To be discussed at energy centre review			2
Hot water			How will controls ensure peak efficiency when operating two or more boilers - consider unequal sharing of the load so that the combined load operates at peak efficiency	End stage D prior to FBC	System schematics –reviewed at meeting of 8/4/11. Consider omission of standby calorifier – reduces standing losses – reduces legionella risk		ZBP / escalate to design meeting	2
OVERALL BUILDING ISSUES								

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Fabric	U values	NA	Schedule of U values. Look in particular at overall frame and glass U values for curtain walling.	6/4/11	Awaiting outcome of facade review and subsequent discussions	U values reviewed and confirmed – just need confirmation of option 3B and compliance with Building warrant. All other U values acceptable	BM/NA	1
	U values in stage 2 energy report	NA	See modelling report for detail		Overall the data is raw and it is impossible to work out the U value to any particular area. This needs some refinement	Report confirms and ok except as noted above	BM/NA	1
	Glazing light transmittance	NA	Consider high performance glazing with similar solar transmission but better light transmission than described in facade report	6/4/11	As above	Please confirm solution in current design	BM/NA	1
	North facade	NA	Consider enhanced	6/4/11	Confirm if being			2

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			insulation to this facade		considered and outcome		BM/NA	
	Entrances		The areas of concern identified on the south east and south west corners contain entrances – the effect of wind speeds up to 20m/s could have a profound effect on the functionality, design and comfort of the atria and entrance lobbies as well as the energy use		Needs to comply with ERs 0.2m/s across entrances – advise how this will be achieved. m	Escalated to design group	BM/NA	1
	Air permeability	BCL	Confirmation of air permeability and the standards to which the building will be designed AND tested	End stage D prior to FBC	Air permeability confirmed at design stage Clarification 005 as 5m3/hr/m2@50Pa.	Confirmed and agreed		
Modelling	Net CO2 emission	BCL	Detailed model to be produced based on	End stage D	Model produced. See model review.	See below		

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			stage D design. Corrective action if needed to be undertaken before scheme proceeds	prior to FBC	Outstanding actions listed below			
		BCL	Output from energy calculation, along with schedule of input data and occupancy/usage/internal gain defaults Must produce model and comparison with both design and operational targets	End stage D prior to FBC	Model produced. See model review. Outstanding actions listed below l	See below		
	General Assumptions on which the model is based as listed in stage 2 model report		See modelling report for detail	1-6-11	Needs revising and amending in stage 2 report (purple section)	Revised report received. Ecoteric to undertake final review for next meeting	Ecoteric	2

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	Dynamic modelling		See modelling report for detail		Needs revising and amending in stage 3 report – resolution and clarification of response needed. ZBP report that discussions have been held with IES and that they are now reviewing their proposals – will be further reviewed at meeting with IES. Will close out when addendum received	As above		1
	Model result		See modelling report for detail		Summary calculation required- not yet provided	As above		2
	Weather file		See modelling report for detail		Addendum awaited	As above		2
	Degree days		See modelling report for detail		Revise carbon model and confirm	As above		1

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					base temperature – not yet provided			
	Total estimated load		See modelling report for detail		Report gives incorrect totals	As above		3
	Lighting diversities		See modelling report for detail		ZBP have reviewed the lighting and made some adjustments, both up and down. Diversity has been removed but included within the W/m2 load (same overall figure). Still not transparent – agreed to use just connected load and UF for model	As above		2
	General detail IES modelling queries		See modelling report for detail	10/5/11	Meeting with IES and CT/Ecoteric to be arranged to discuss	IES wish to charge for meeting – BM to challenge	BM	2

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SECTION 2 STAGE C-D DESIGN to FBC MAIN and CHILDRENS HOLSPITALS								
ISSUE/ REFERENCE COMPLETED NOT COMPLETE INFORMATION ONLY REQUIRED	SUB ISSUES	ISSUE OWNER	ACTION/QUERY/ISSUE	DATE OR DESIGN STAGE REQUIRED	ACTION TAKEN / ONGOING ISSUES	RECORD OF MEETINGS AND COMPLETED ACTION	Action by	PRIORITY
	Historic data to check carbon model		See modelling report for detail	4/5/11	Data from Peterborough awaited especially electrical		BM	1
	pumps		Whether energy modelled reflects control proposals as UF of 25% used but minimum duty is 40% - response needs clarification – to be discussed at meeting of 8/4/11		ZBP respond that Multiple pumps are provided cascading to suit the load. UF of 0.25 relates to one A&B pump running at low demand. No account has been taken for further speed reduction below this	Ok as stated		
	CHP		Incorrect load figures used in model		ZBP respond that This should be	Ok as stated		

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					1000kW for each of the three building models. This will only have a minor effect on the BER and will not affect the result			
	External temperatures				ZBP respond that This should be 30oC as the ERs. Does not affect results	Ok as stated		
	lifts				ZBP respond that BM are to obtain up to date lift energy use from Schindler.	ZBP report that this has been obtained and does not affect results . actual data will be included in stage 3 report		
	Key target efficiencies		See modelling report for detail	30/4/11	Please prepare a schedule of major items procurement		ZBP/BM	1

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					with target efficiencies and provide sample tender returns incorporating whole life costs etc. for agreement.			
	Diversities and usage factors for lighting and small power		See modelling report for detail	18/4/11	Addendum awaited	Discussed at meeting of 8/4/11 and agreed to revise connected loads in line with Peterborough and omit diversification factor	ZBP	2
	Model results		Asset rating of 36 (B) for the England & Wales EPC, which is better than the maximum requirement of 40 for BREEAM Excellent. The model achieved a rating of 40 (C) for the	18/4/11	Reconfirm kg/CO2 /m2/annum as a result of above changes. Confirm what needs to change to meet Scottish B EPC	Revised report indicates that 79kgCO2/m2/annum, all other targets and in particular Scottish EPC B will be achieved but will be monitored in next phase – move to		1

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			Scottish EPC. Building's energy consumption at 40 GJ/100m3/year against NHS target of 55 Building's energy consumption at 40 GJ/100m3/year CO2 emissions at 80 kg CO2/m2/year.		rating	next phase tracker		
	Risks		As highlighted – accuracy of air/fabric heating calculations EPC rating as 6.2 above U value to tower cladding as detailed elsewhere – this may yet prove to be more significant in terms of energy consumption Failure to procure equipment to		Monitor through design stage	Check through next stage		

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			efficiencies assumed Scottish B EPC rating					
Operational energy monitoring	Matrix of responsibilities and actions in the operational phase	C&B	Draft matrix has been issued		comments and agreement awaited		BM/C&B	1
	System assumptions, efficiencies and conflicts		See modelling report for detail Sections 17-18		Check and revise. Feed back into model results			3
WLC	Whole life cost model	BCL	Update model and check that cost plan includes for lowest whole life cost and carbon design. Check BREEAM requirements have been met	End stage D prior to FBC	WLC re air handling has been produced. Has overall WLC model been updated and based on latest energy and FM model ?		BM/Doig +Smith	2
ADB	ADB Sheets	BCL/NHSGGC	Create master set of ADB sheets embracing low carbon	End stage D prior to	Debate on maximum internal temperature.	Now on master environmental sheet but review with BMS		

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			objectives and ensure these are used on all ADB sheets generated for the project with a definition sheet	FBC	Temperature set in ERs at 26C to drive a solution where cooling was included but there may be flexibility in set points and humidity to allow for lower carbon in use. Need to review master environmental condition sheets.			
INTERNAL ENVIRONMENT								
Daylighting and Glare	Daylighting	ZBP/WSP	Provide daylighting calculations	4/5/11	As above	Action as section 1	ZBP/NA	2
	Glare control	ZBP/WSP	Check that design avoids lights on blinds down issues	4/5/11	As above	To be carried over to next stage		
NON SYSTEM RELATED ENERGY ISSUES								
Equipment	Energy consuming	BCL	Create a generic schedule of	1/6/11	Schedule including energy	To be considered at meeting in July– action	NHSGGC	2

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	equipment		energy consuming equipment and including realistic assessments of energy consumption and heat emission to the space		consumption and heat emissions	all, procurement adviser to be invited		
		BCL	Formulate procedures and documents for procuring energy efficient equipment and get agreement from client on process and timetable. Check BREEAM requirements have been met for Ene 15 which requires procurement on WLC and carbon issues	6/7/11	Provide schedule of new equipment and specifications, which should incorporate whole life costing element including assessment of energy consumption.	Generic schedule received for review	Ecoteric	1
IT	PUE		Is target PUE of 1.6 likely to be achieved?	4/5/11	Supply initial calculations , arrange to meet with IT		C&B/BM	1

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LABS								
General	Opportunities for energy saving	BCL	Are there any remaining opportunities for energy/carbon saving - e.g. equipping, controls ?	TBA	Undertake joint review – Ecoteric/BCL?		NHSGGC/Ecoteric	2
At the end of the design stage leading to FBC, all the above issues should have been addressed and a design statement prepared. The low carbon auditor will need to have seen all above listed detail, commented on the issues and be able to confirm to the Carbon Trust and the Board that the design meets the objectives in the employers requirements and targets.								

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SECTION 3 FBC APPROVAL TO END OF DESIGN PHASE MAIN and CHILDRENS – not yet commenced						
ISSUE/ REFERENCE	SUB ISSUES	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED NOT COMPLETE	RECORD OF MEETINGS AND OUSTANDING ACTIONS
General systems options	Energy sub metering	ZBP/WSP/ NHSGGC	Check BREEAM requirements met. Specification for BMS/AMT to be provided	FBC approval to end stage E	Agree detail of how metering will monitor and report	
	Choice of filtration	ZBP	Have filter clean and dirty resistances been specified to optimise energy cost versus filter cost	FBC approval to end stage E	Sample technical schedules from suppliers	
	System zones	ZBP	Drawings, schematics and system description indicating how different heating and cooling requirements (time /temp/gains) can be controlled separately Detailed drawing sample checking	FBC approval to end stage E	Final Schematics and detail drawings auditors comments	
	Local controls	ZBP	Develop strategy for local controls. Check BREEAM requirements, Provide descriptions of operation for each system	FBC approval to end stage E	Descriptions of operation and auditors comments	
	Heat	ZBP	Heat recovery strategy to be	FBC approval	Sample of Detail	

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	recovery		produced demonstrating opportunities and viability.	to end stage E	drawings and Schematics and auditors comments	
	High efficacy internal lighting	ZBP	Schedule of design illuminance, proposed light fittings and schedule of lumens per cc watt achieved (typical per area acceptable). Strategy for low energy lighting required for evaluation	FBC approval to end stage E	Provide final detail if changed from previous stage	
	Lighting control	ZBP	Description of operation of proposed lighting controls and drawings indicating where each type of control is used. Strategy for low energy lighting required for evaluation. Check BREEAM requirements	FBC approval to end stage E	Sample final design drawings and auditors comments	
	High efficacy external lighting	ZBP	Schedule of design illuminances, proposed light fittings and schedule of lumens per cct watt achieved (typical per area acceptable).	FBC approval to end stage E	Provide final detail if changed from previous stage	
	Security lighting controls	ZBP	Description of operation of proposed lighting controls and drawings indicating where each type of control is used. Strategy for low energy lighting required for evaluation. Check	FBC approval to end stage E	As above	

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			BREEAM requirements			
	Fan/pump speeds	ZBP	Statement regarding criteria for specifying VSD's and plant schedules indicating where specified	FBC approval to end stage E	Provide confirmation of specification	
	Fan and pump selection	ZBP	Provide confirmation of fan a pump efficiencies – demonstrating use of HE motors and most efficient fan configuration.	FBC approval to end stage E	Provide indicative fan and pump schedules and details	
	Fan and pump WLC	ZBP	Demonstrate that selections made on best WL carbon performance	FBC approval to end stage E	Provide WL carbon calcs	
	Renewables. Central energy supply and Combined heat and power (CHP)	ZBP	Provide confirmation that recommended measures identified in feasibility are now implemented in the design.	FBC approval to end stage E	Provide detailed drawings	
	Grant funding	BCL	Grant funding applied for and in place	FBC approval to end stage E	Funding applications and confirmation if not available at previous stage	
	Building energy management	ZBP	Detailed BMS specifications, proposals for head end and maintenance and training	FBC approval to end stage E	Provide confirmation of arrangement and	

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	systems (BMS)		contracts in place		acceptability to Board end users	
	Heat recovery	ZBP	Schedule of heat recovery devices	FBC approval to end stage E	Provide sample detailed heat recovery efficiencies	
	Hot water efficiency	ZBP	Confirmation that systems with best carbon profile/WLC have been specified	FBC approval to end stage E	final schematics and sample detailed drawings	
OVERALL BUILDING ISSUE						
Fabric	U values	BCL	No further action at this stage unless there are changes			
	Air permeability	BCL	No further action at this stage unless there are changes			
Modelling	Net CO2 emission	BCL	Updated model to be produced based on final design. Corrective action if needed to be undertaken before scheme proceeds	FBC approval to end stage E	Model and interpretative report confirming design objectives have been met or corrective action needed if not.	
	Model results		Asset rating of 36 (B) for the England & Wales EPC, which is better than the maximum requirement of 40 for BREEAM Excellent. The model achieved a rating of 40 (C)	18/4/11	Reconfirm kg/CO2 /m2/annum as a result of above changes.	Revised report indicates that Scottish EPC B will be achieved but will be monitored

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			for the Scottish EPC. Building's energy consumption at 40 GJ/100m3/year against NHS target of 55 Building's energy consumption at 40 GJ/100m3/year CO2 emissions at 80 kg CO2/m2/year.		Confirm what needs to change to meet Scottish B EPC rating	in next phase – move to next phase tracker
		BCL	Updated model and comparison with both design and operational targets	FBC approval to end stage E	Update full design model at this stage and update operational model with detailed equipping consumption	
WLC	Whole life cost model	BCL	Update model and check that cost plan includes for lowest whole life cost and carbon design. Check BREEAM requirements have been met	FBC approval to end stage E	Update detail of WLC cost exercise in relation to major systems	
ADB	ADB Sheets	BCL/NHSGGC	Check ADB sheets before sign off	FBC approval to end stage E	Confirm all ADBs meet low carbon objectives before sign off. Provide representative cross section for record purposes.	
INTERNAL ENVIRONMENT						
Facade	Passive	ZBP/WSP	No further action at this stage unless			

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ISSUE/ REFERENCE	SUB ISSUES	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED NOT COMPLETE	RECORD OF MEETINGS AND OUSTANDING ACTIONS
	ventilation and facade engineering		there are changes			
Ventilation	Fresh air rates	ZBP/WSP	No further action at this stage unless there are changes			
Acoustics	Acoustics	ZBP/WSP	No further action at this stage unless there are changes			
Daylighting and glare	Daylighting	ZBP/WSP	No further action at this stage unless there are changes			
	Glare control	ZBP/WSP	No further action at this stage unless there are changes			
Internal areas		BCL	No further action at this stage unless there are changes			
NON SYSTEM RELATED ENERGY ISSUES						
Equipment	Energy consuming equipment	BCL	Generic schedule should now be replaced by actual equipping schedule and variances affecting design resolved	FBC approval to end stage E	Schedule including energy consumption and heat emissions	
		BCL	Provide tender and selections documentation confirming equipment has been selected on WLC and carbon considerations as well as performance	FBC approval to end stage E	Provide selection infromation	
Whole site energy strategy	Renewables	ZBP	No further action at this stage unless there are changes			
	Implementation of site/building energy strategy		No further action at this stage unless there are changes			
At the end of the detail design phase, all the above issues should have been addressed and any outstanding items						

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ISSUE/ REFERENCE	SUB ISSUES	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED NOT COMPLETE	RECORD OF MEETINGS AND OUSTANDING ACTIONS
from earlier phases cleared. The low carbon auditor will need to have seen all above listed detail, commented on the issues and be able to confirm to the Carbon Trust and the Board that the design meets the objectives in the employers requirements and targets.						

SECTION 4 CONSTRUCTION PHASE MAIN and CHILDRENS HOSPITALS						
ISSUE/ REFERENCE	SUB ISSUES	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED NOT COMPLETE	RECORD OF MEETINGS AND OUSTANDING ACTIONS
BUILDING SERVICES SYSTEMS						
General systems options	Energy sub metering	ZBP/WSP/ NHSGGC	No further action at this stage unless there are changes			
	Choice of filtration	ZBP	No further action at this stage unless there are changes			
	System zones	ZBP	No further action at this stage unless			

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SECTION 4 CONSTRUCTION PHASE MAIN and CHILDRENS HOSPITALS						
ISSUE/ REFERENCE	SUB ISSUES	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED NOT COMPLETE	RECORD OF MEETINGS AND OUSTANDING ACTIONS
BUILDING SERVICES SYSTEMS						
			there are changes			
	Local controls	ZBP	No further action at this stage unless there are changes			
	Heat recovery	ZBP	No further action at this stage unless there are changes			
	High efficacy internal lighting	ZBP	No further action at this stage unless there are changes			
	Lighting control	ZBP	No further action at this stage unless there are changes			
	High efficacy external lighting	ZBP	No further action at this stage unless there are changes			
	Security lighting controls	ZBP	No further action at this stage unless there are changes			
	Fan/pump speeds	ZBP	No further action at this stage unless there are changes			
	Fan and pump selection	ZBP	No further action at this stage unless there are changes			
	Fan and pump WLC	ZBP	No further action at this stage unless there are changes			
	Renewables. Central energy supply and Combined heat and power (CHP)	ZBP	No further action at this stage unless there are changes			
	Grant funding	ZBP	No further action at this stage unless			

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SECTION 4 CONSTRUCTION PHASE MAIN and CHILDRENS HOSPITALS						
ISSUE/ REFERENCE	SUB ISSUES	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED NOT COMPLETE	RECORD OF MEETINGS AND OUSTANDING ACTIONS
BUILDING SERVICES SYSTEMS						
			there are changes			
	Building energy management systems (BMS)	ZBP	No further action at this stage unless there are changes			
	Heat recovery	ZBP	No further action at this stage unless there are changes			
	Hot water efficiency	ZBP	No further action at this stage unless there are changes			
OVERALL BUILDING ISSUES						
Fabric	U values	NHSGGC clerk of works	Check insulation continuity through construction period	Up to building weather tight		Site report
	Air permeability	NHSGGC clerk of works	Checking integrity of building sealing	Up to building weather tight		Site report
Modelling	Net CO2 emission	BCL	Prepare as built model	Before practical completion		Final EPC
		BCL	Prepare final operational model	Before practical completion		Update operational model at this stage including any known changes in operational policy, operating hours
WLC	Whole life cost model	BCL	No further action at this stage unless there are changes			
ADB	ADB Sheets	BCL/NHSGGC	No further action at this stage unless there are changes			
INTERNAL ENVIRONMENT						

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SECTION 4 CONSTRUCTION PHASE MAIN and CHILDRENS HOSPITALS						
ISSUE/ REFERENCE	SUB ISSUES	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED NOT COMPLETE	RECORD OF MEETINGS AND OUSTANDING ACTIONS
BUILDING SERVICES SYSTEMS						
Facade	Passive ventilation and façade engineering	ZBP/WSP	No further action at this stage unless there are changes			
Ventilation	Fresh air rates	ZBP/WSP	No further action at this stage unless there are changes			
Acoustics	Acoustics	ZBP/WSP	No further action at this stage unless there are changes			
Daylighting and Glare	Daylighting	ZBP/WSP	No further action at this stage unless there are changes			
	Glare control	ZBP/WSP	No further action at this stage unless there are changes			
Internal areas		BCL	No further action at this stage unless there are changes			
NON SYSTEM RELATED ENERGY ISSUES						
Equipment	Energy consuming equipment	BCL	Generic schedule should now be replaced by actual equipping schedule and variances affecting design resolved	FBC approval to end stage E		Complete any outstanding actions from previous section
		BCL	Provide tender and selections documentation confirming equipment has been selected on WLC and carbon considerations as well as performance.	FBC approval to end stage E		Complete any outstanding actions from previous section
Whole site energy strategy	Renewables	ZBP	No further action at this stage unless there are changes			
	Implementation		No further action at this stage unless			

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SECTION 4 CONSTRUCTION PHASE MAIN and CHILDRENS HOSPITALS						
ISSUE/ REFERENCE	SUB ISSUES	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED NOT COMPLETE	RECORD OF MEETINGS AND OUSTANDING ACTIONS
BUILDING SERVICES SYSTEMS						
	of site /building energy strategy		there are changes			
At the end of the construction phase, all the above issues should have been addressed and any outstanding items from earlier phases cleared. The low carbon auditor will need to have seen all above listed detail, commented on the issues and be able to confirm to the Carbon Trust and the Board that the design meets the objectives in the employers requirements and targets.						

SECTION 5 COMMISSIONING PHASES MAIN and CHILDRENS HOSPITALS						
ISSUE/ REFERENCE	SUB ISSUES	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED NOT COMPLETE	RECORD OF MEETINGS AND OUSTANDING ACTIONS
BUILDING SERVICES SYSTEMS						

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SECTION 5 COMMISSIONING PHASES MAIN and CHILDRENS HOSPITALS						
ISSUE/ REFERENCE	SUB ISSUES	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED NOT COMPLETE	RECORD OF MEETINGS AND OUSTANDING ACTIONS
General systems options	Energy sub metering	ZBP/WSP/ NHSGGC	Metering should now be set up and all software installed. Users trained and reporting systems installed	Prior to handover	Signed off report sheets and written method of operation, all points which will need to be measured for operational energy reporting set up and agreed. All cost and function areas set up and agreed. Users fully familiar with the system and able to derive reports.	
	Choice of filtration	ZBP	No further action at this stage unless there are changes	Prior to handover		
	System zones	ZBP	Systems zones set up and proved to operate without simultaneous heating and cooling	Prior to handover	Report sheets and written method of operation, time and temperature and	

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SECTION 5 COMMISSIONING PHASES MAIN and CHILDRENS HOSPITALS						
ISSUE/ REFERENCE	SUB ISSUES	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED NOT COMPLETE	RECORD OF MEETINGS AND OUSTANDING ACTIONS
					settings recorded for each zone.	
	Local controls	ZBP	Operation of local controls checked and representative sample of rooms checked under load conditions	Prior to handover	Report sheets and written method of operation, time and temperature and settings recorded for each zone.	
	Heat recovery	ZBP	Performance testing	Prior to handover	All heat recovery to be tested to prove rated performance is achieved in situ – test sheets	
	High efficacy internal lighting	ZBP	No further action at this stage unless there are changes			
	Lighting control	ZBP	Lighting control proved to operate under varying daylight conditions, occupancy sensing proved and operational.	Prior to handover	Report sheets and written mode of operation, end users trained	
	High efficacy external lighting	ZBP	No further action at this stage unless there are changes	Prior to handover		
	Security lighting	ZBP	No further action at this stage unless	Prior to		

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SECTION 5 COMMISSIONING PHASES MAIN and CHILDRENS HOSPITALS						
ISSUE/ REFERENCE	SUB ISSUES	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED NOT COMPLETE	RECORD OF MEETINGS AND OUSTANDING ACTIONS
	controls		there are changes	handover		
	Fan/pump speeds	ZBP	Inverter and speed control set up and proved under varying load conditions	Prior to handover	Report sheets and written method of operation, inverter settings recorded for each system	
	Fan and pump selection	ZBP	No further action at this stage unless there are changes	Prior to handover		
	Fan and pump WLC	ZBP	No further action at this stage unless there are changes	Prior to handover		
	Renewables. Central energy supply and Combined heat and power (CHP)	ZBP	Central plant and renewable energy systems commissioned and under maintenance contract . performance testing proves operation and carbon savings to be achieved.	Prior to handover		
	Grant funding	BPL	No further action at this stage unless there are changes			
	Boigas/ alternative fuels		Conclusion and timescale for any future installation	Prior to handover	Need to provide statement of intent or outcome of negotiations	
	Building energy management systems (BMS)	ZBP	Commissioning to be undertaken which optimises energy performance, sets up exception reporting for systems left in hand or disconnected and graphical	Prior to handover	Report sheets and demonstration to auditor	

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SECTION 5 COMMISSIONING PHASES MAIN and CHILDRENS HOSPITALS						
ISSUE/ REFERENCE	SUB ISSUES	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED NOT COMPLETE	RECORD OF MEETINGS AND OUSTANDING ACTIONS
			interfaces fully set up and commissioned. Systems proved under load. BREEAM requirements have been met re man 1			
	Hot water efficiency	ZBP	No further action at this stage unless there are changes			
OVERALL BUILDING ISSUES						
Fabric	U values	NHSGGC clerk of works	No further action			
	Air permeability	NHSGGC clerk of works	Airtightness testing	Prior to handover	Site report	
Modelling	Net CO2 emission	BCL	No further action			
WLC	Whole life cost model	BCL	No further action			
ADB	ADB sheets	BCL/NHSGGC	No further action			
INTERNAL ENVIRONMENT						
Facade	Passive ventilation and façade engineering	BCL	No further action			
Ventilation	Fresh air rates	ZBP/WSP	Commissioning to demonstrate that air systems have been set up to correct flow rates and that systems are optimised for required ventilation rates	Prior to handover	Report sheets and proof of operation under load	

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SECTION 5 COMMISSIONING PHASES MAIN and CHILDRENS HOSPITALS						
ISSUE/ REFERENCE	SUB ISSUES	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED NOT COMPLETE	RECORD OF MEETINGS AND OUSTANDING ACTIONS
			and free cooling.			
Acoustics	Acoustics	ZBP/WSP	Acoustic testing undertaken			
Daylighting and Glare	Daylighting	ZBP/WSP	No further action			
	Glare control	ZBP/WSP	No further action			
Internal areas		BCL	No further action			
NON SYSTEM RELATED ENERGY ISSUES						
Equipment	Energy consuming equipment	NHSGGC	Energy consuming equipment set up to optimum performance	FBC approval to end stage E	Manufacturer's set up of major items to be witnessed and evgaluated	
Whole site energy strategy	Renewable	ZBP	No further action at this stage unless there are changes			
	Implementation of site/building energy strategy		No further action at this stage unless there are changes			
At the end of the commissioning phase, all the above issues should have been addressed and any outstanding items from earlier phases cleared. The low carbon auditor will need to have seen all above listed reports, commented on the issues and be able to confirm to the Carbon Trust and the Board that the completed building meets the objectives in the employers requirements and targets.						

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SECTION 6 OPERATIONAL PHASE MAIN and CHILDRENS HOPITALS Note ! where joint responsibility noted, this shall generally be BCL in contractual defects phase and undertaken where excess or unexpected energy use has been noted and NHSGGC beyond this phase						
ISSUE/ REFERENCE	SUB ISSUES	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED NOT COMPLETE	RECORD OF MEETINGS AND OUSTANDING ACTIONS
ALL SYSTEMS						
General Issues	Energy sub metering	ZBP/WSP	Metering should now be set up and all software installed. Users trained and reporting systems installed	First 3 years of operat	ace	
	audits	NHSGGC	6 monthly audit procedure set up to monitor progress and reconcile any difficulties	First 3 years of operation	Audit report	
	Appointments	BCL	Suitably qualified and experienced energy specialist as specified (e.g. CIBSE Low Carbon Consultant, Carbon Trust registered consultant, chartered member of the Energy Institute, all with knowledge and experience of operational energy use in large acute hospitals allocated to the project for the three years and beyond until targets are met and remedial action completed, with sufficient time allocation to	First 3 years of operation	Confirm appointment and hours allocated to scheme. Provide progress reports	

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ISSUE/ REFERENCE	SUB ISSUES	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED NOT COMPLETE	RECORD OF MEETINGS AND OUSTANDING ACTIONS
			undertake the identified actions, working in conjunction with the Boards own energy manager			
	Remedial actions	BCL	If remedial actions identified, prepare method statement and timescale for action	First 3 years of operation	Action plan	
	Heat recovery	BCL/NH SGGC	Performance testing	First 3 years of operation /Life of building	Periodic check that operation is satisfactory	
	external lighting	BCL/NH SGGC	External lighting not on during day	First 3 years of operation /Life of building	Periodic check that operation is satisfactory	
	Fan/pump speeds	BCL/NH SGGC	Inverter and speed control set up and proved under varying load conditions	First 3 years of operation /Life of building	Periodic check that operation is satisfactory	
	Renewables. Central energy supply and Combined heat and power (CHP)	BCL/NH SGGC	Central plant and renewable energy systems commissioned and under maintenance contract . performance testing proves operation and carbon savings to be achieved.	First 3 years of operation /Life of building	Periodic check that operation and performance is satisfactory	
	Grant funding	NHSGG	Monitor funds for any further	First 3 years of	Annual check	

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		C	opportunities e.g. PV	operation /Life of building		
	Biogas/ alternative fuels	NHSGGC	Conclusion and timescale for any future installation	TBA	Need to provide statement of intent or outcome of negotiations	
	Hot water efficiency	BCL/NHSGGC	Performance testing	Life of building	Periodic check that operation is satisfactory	
Fabric	U values	BCL	Thermography to ensure integrity of insulation	First 3 years of operation	Recommended if any empirical evidence of bridging/condensation	
Modelling	Net CO2 emission	NHSGGC	Periodically update operational model as circumstances change	every 5 years	Update to reflect heated area and any major operational changes	
Lighting	Lighting controls	BCL/NHSGGC	Monitor departmental use monthly through exception reporting via BMS – i.e. any department which uses +10% of monthly target. Note target needs to be set related to proportion of internal	First 3 years of operation	Interaction with department to identify usage patterns, check	

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			and daylit rooms and available daylight hours.		on correct operation of lighting controls and any occupant action to disable them. If cause isolated at higher hours of usage, uplift target	
	Behaviour and operating hours	NHSGGC	As above	First 3 years of operation	As above	
Small power	Clinical need	NHSGGC	Monitor departmental use monthly through exception reporting via BMS – i.e. any department which uses +10% of monthly target. Target set by adding up all connected equipment and applying diversity factors	First 3 years of operation	Interaction with department to identify usage patterns and connected equipment. If found to be necessary, target can be uplifted.	
	Rating of new purchased	NHSGGC	As above	First 3 years of operation /Life	Ensure equipment purchased has low	

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	equipment			of building	energy use, record any new equipment and notify energy manager. Implement purchasing policy	
	behaviour	NHSGGC	As above	First 3 years of operation /Life of building	Interaction with department to identify usage patterns and connected equipment. If found to be necessary, target can be amended	
Heating	External conditions	BCL/NHSGGC	Record profile through BMS. Set target based on 20 year average weather file and projected occupancy	First 3 years of operation /Life of building	No action unless energy use exceeds + 10% . Undertake weather normalisation by agreed method if +10%	

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					energy use of heating energy over target detected.	
	Controls and zoning	BCL/NHSGGC	Metering - Monitor departmental or zone use monthly through exception reporting via BMS – i.e. any department or zone which uses +10% of monthly target.	First 3 years of operation /Life of building	Check controls operation. Check for simultaneous heating and cooling. Check that set points have not been altered outside allowable tolerance.	
	Maintenance and behaviour	BCL/NHSGGC	As above	First 3 years of operation/Life of building	Check that set points have not been altered outside allowable tolerance. Interact with department to check windows not opened in peak heating season to relieve overheating	

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ISSUE/ REFERENCE	SUB ISSUES	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED NOT COMPLETE	RECORD OF MEETINGS AND OUSTANDING ACTIONS
					etc. If cause isolated at higher hours of usage, uplift target	
cooling	External conditions	BCL/NH SGGC	Record profile through BMS. Set target based on 20 year average weather file and projected occupancy.	First 3 years of operation /Life of building	No action unless energy overall exceeds + 10%. Undertake weather normalisation by agreed method if +10% energy use of cooling energy over target detected.	
	Controls and zoning	BCL/NH SGGC	As above	First 3 years of operation /Life of building	Check that window and blinds are as designed and blinds/shading use is as intended. If all other explanations for excess use have	

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					been eliminated, independent consultant to undertake further analysis, calculation and detailed room monitoring via BMS of room conditions and recommended remedial action	
	Internal gains	BCL/NH SGGC	As above	First 3 years of operation /Life of building	Interact with department to monitor and record occupancy levels. Correlate with equipment usage and lighting usage. If significant variance in expected occupancy	

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					level, hours of use and /or equipment use is agreed cause, uplift target.	
HWS	demand	BCL/NH	Metering - Monitor departmental use monthly through exception reporting via BMS – i.e. any department or zone which uses +10% of monthly target	First 3 years of operation/ Life of building	Interact with department to establish water use patterns. Ensure no avoidable waste or leakage. If usage reasonable, uplift target	
Central plant and distribution	Plant and system selection and efficiency	BCL/NH SGGC	Metering – monitor plant and system efficiencies monthly through exception reporting via BMS – i.e. any plant item deviating by 5% of design quoted efficiency or overall change in system distribution losses against target of +10%	First 3 years of operation /Life of building	Check plant conditions and if necessary employ specialist independent consultant to undertake detailed logging. Undertake remedial action	

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					recommended by specialist	
	Controls and zoning	BCL/NHSGGC	As above	First 3 years of operation /Life of building	Check controls operation, Check that set points have not been altered outside allowable tolerance. Check for deviation from commissioned values. If no apparent cause action as above	
	maintenance	NHSGGC		Life of building	physical checks for hand operation, leakage, closed vales, breakdown of insulation	
At the end of each of the first three years of the operational phase, all the above issues should have been addressed and any outstanding items from earlier phases cleared. The low carbon auditor will need to have seen all above listed reports, commented on the issues and be able to confirm to the Carbon Trust and the Board that the completed building meets the objectives in the employers requirements and targets.						

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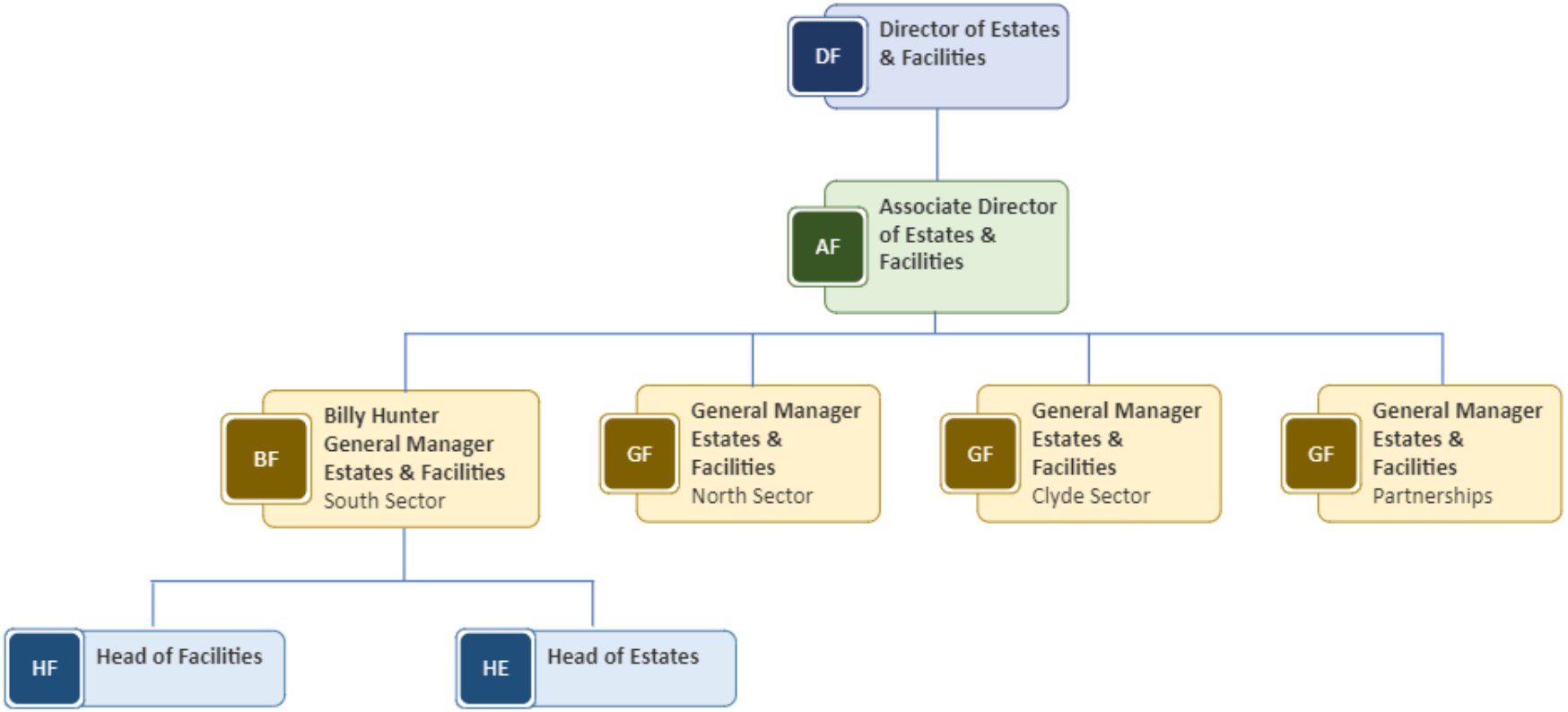
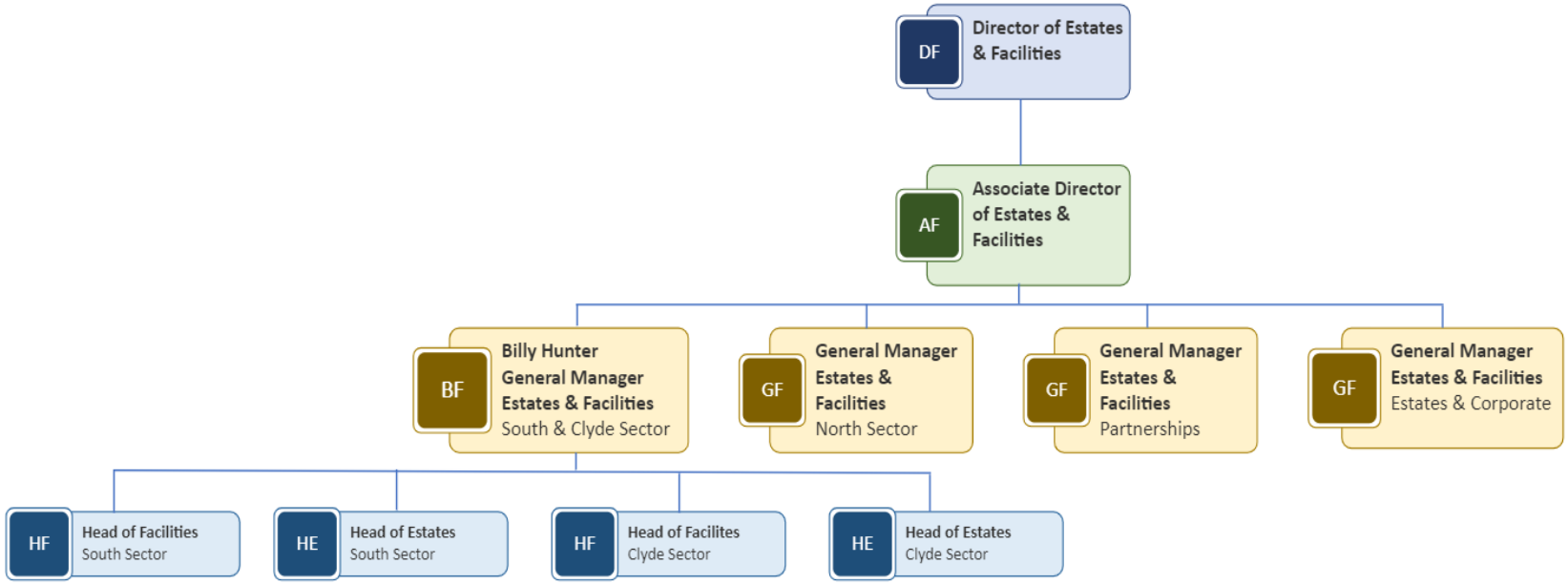
Estates & Facilities Organisational Structure from August 2011

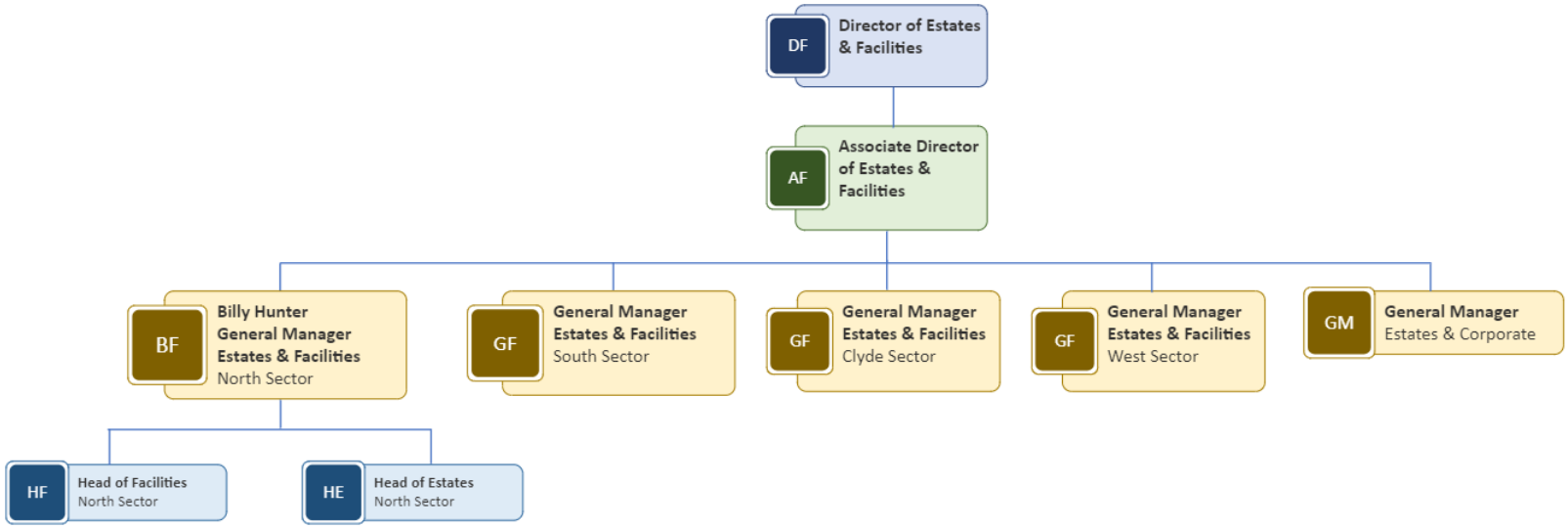


Estates & Facilities Organisational Structure from October 2012



N.B at some point between 2012 and 2015 the Head of Estates for South & Clyde merged into one post following the appointment of General Manager for Estates

Estates & Facilities Organisational Structure
Jan 2018 - Aug 2019



EIGHTH CONTRACT ISSUE meeting of 15/8/11 General information and Documents – to be read in conjunction with Appendix M&E4 and Section 10.00 of ERs								
FORWARD MEETING SCHEDULE								
	6/7/11	15/8/11,	7/9/11	5/10/11	2/11/11	7/12/11	4/1/12	1/2/12
MEETING PURPOSE	Equipping review 1 – procurement package presentation BM	General Tracker update Metering	RDD + Whole Site energy and renewables review	RDD + tracker update	Energy model stage 3 review	BMS?	Provisional dates please confirm Labs commissioning review?	Provisional dates please confirm
ATTENDEES	As previous meetings + Board procurement	As previous meetings +BMS	As previous meetings	As previous meetings	As previous meetings	As previous meetings		
Circulation Brookfield Multiplex Ken Hall Darren Pike, Darren Smith Currie & Brown David Hall Glasgow NHS Board Shiona Frew, Peter Moir, Alan Seabourne, Alistair Smith Mercury Engineering (Ireland) Robert O'Donovan Nightingale Associates : John Wiggett ZBP Guy Willis Robb, Steve Pardy								

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SECTION 1 EARLY DESIGN ISSUES
Early design issues now closed off. Refer to seventh contract issue tracker for record of actions

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SECTION 2 STAGE C-D DESIGN to FBC MAIN and CHILDRENS HOLSPITALS								
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BUILDING SERVICES SYSTEMS								
General Systems	Energy sub metering	ZBP/WSP/ NHSGGC	Agree and record logical cost and ownership centres, site strategy for metering and monitoring and then provide drawings indicating appropriate departmental meters. Check BREEAM requirements met	30/4/11	Metering strategy drawing and performance specification – develop through meetings with site and trust energy Manager. Structured discussion document to be prepared.	Meeting of 15/8/11 discussed metering. Metering review refers in detail outstanding actions are carried into next section	NHSGGC/Ecoteric/BM	3
	Choice of internal design conditions	ZBP/WSP	Have all internal design temperatures and humidities been specified with agreed tolerances to ensure lowest energy consumption and avoidance of reheat?	30/4/11	Schedule of summer and winter design internal conditions and humidities – see action from section 1	Provided and reviewed and to be incorporated in ADB process	BM	3
Ventilation Issues from review	Choice of filtration	ZBP	Have filter clean and dirty resistances been specified to optimise energy cost versus filter cost Similarly , the final filter should be selected to provide low initial resistance – 85Pa and final resistance of 2x initial. There is evidence that F9 is a better standard for human health and reduces ductwork cleaning and resistance	4/5/11	Sample calculations – see AHU review	Report from Camfill Farr dated 13/5/11 refers. Combined filtration show major energy and life cycle advantage over separate filtrations as well as an improvement in air quality. Specification exceeds the SHTM, Two stage combined filtration is also considered as the arrestance is even better but energy advantage is not as good. Specification of this option is well beyond SHTM requirements.	Specify combined filtration to all plant? Confirm which plants would be single stage plus G4 and which two stage. Please confirm filter spec for theatre plant	2
			Can carbon filters be omitted or bypassed? Note that F7 required to protect not G4 as currently	30/4/11	WLC for no filtration, full filtration, part filtration to be prepared	All carbon filters now omitted to ANC. Air handling units to include section where carbon	ZBP	1

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			scheduled.		for Board. Must include labour and cost of pre filtration and carbon filtration changes and future price risk.	filters can be retrofitted but fan not to be sized for this – belt/pulley change may be needed in future.		
			Overall, have Eurovent EN13053 energy ratings been specified - should be at least B rated		yes			
	Isolation rooms	ZBP	Shut down/set back when not in use, with room ready indication	30/4/11	Agreement to do this is still needed. Appendix K Vent review refers. Problem is air distribution which may be resolved. Report from ZBP received.	Agreed that set back would not be provided but key operated on/off would be provided in lobbies to rooms	ZBP/NHSGGC	1
			Is fan to be sized for future HEPA – if so, how does this affect efficiency and would it be better to accept a future fan change if very inefficient selection likely?		Fan change suggested as a strategy – to be agreed with wider design team	Units to be sized for supply and extract HEPA – extract HEPA avoids long run and high pressure discharge 3m above tower roof for adult isolation rooms. All safe change.		
	Zoning	ZBP	Daytime only areas served from 24 hour plant - e.g. children's wards	30/4/11 for mark ups	Zoning mark up needed	All adult wards 24 hours. Lift lobbies and stairs not on ward plant. Going forward, each department to be marked up with plant zone and occupancy hours and agreed with board prior to detail design. carry forward to next stage		2
			Set back to theatres		Confirmed as included to all but emergency. Review detailed design at next stage .			
			Set back to other areas		awaiting confirmation	Carry to next stage	C&B	2

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					of ability to set back areas in radiology and children's departments			
	System zones	ZBP	Drawings, schematics and system description indicating how different heating and cooling requirements (time /temp/gains) can be controlled separately	30/5/11	See vent review. Needs final resolution.	Need to review when environmental mark ups available – carry to next section	ZBP/BM/Ecoteric	3
	Direct drive motor /belt drive/ motors in airstream		Strategy for each type of AHU – provide a typical comparison of the energy implications of a direct driven/belt driven/in airstream /not in airstream	4/5/11	See air handling unit review. Aerofoil fans preferred. Direct drive does not show major advantage over belt drive on smaller plant although needs to be checked on final fan selections and long term performance may be better as direct drive. Also need to consider larger plant where outcome may be different .	Notes from vent review • EC fans not considered – this was discussed at last meeting • Could also consider twin fan applications • Conclusions appear to be based on capital cost not long term performance - Acknowledges that belt drive likely to perform worse in the long run • Appears to be based on a single supplier Close out note : 3 manufacturers selections show belt drive as most efficient selection - accepted	ZBP	1
	Fresh air rates	ZBP/W SP	Confirmation of HTM 03-01compliance Check BREEAM	End stage D prior to FBC	Include in design statement with	4 ac/hr in bedroom has been agreed. Elsewhere as ERs	Ventilation	

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			requirements have been met		sample compliance calculations			
	Air conditioning avoidance	ZBP	Can full air-conditioning be avoided to • Circulation/ stairs and lift lobbies • stores	End stage D prior to FBC	Need to ensure adequate fresh air to control temperature to these areas. ZBP to look at control with fresh air in detail design	Stairs and lobbies not heated only. Only stores with medical requirements have conditioned ventilation	ZBP	3
			Regenerations kitchens - design and heat recovery still to be considered. Mechanical and electrical designs and layout of areas needed	4/5/11	Need to ensure heat gain in area does not impose undue load on air conditioning and preferably that the areas are served from uncooled dedicated ventilation plant – layout of area and equipment required to assess	To be discussed at RDD meetings – carry to next stage	BM	2
			IT hubs and server – consider avoidance of mechanical cooling – schematics and positions of areas needed.	4/5/11	Need to look at economics of running chilled water to these areas and if carbon savings can be made by natural cooling	Confirmed that these are to be served from chilled water but dry cooler now incorporated	ZBP	2
			Atrium and FM core	30/4/11	Carried to next stage		ZBP/Ecoteric	2
	Heat recovery	ZBP	Heat recovery strategy to be produced demonstrating opportunities and viability.	End stage D prior to FBC	See vent review.	Opportunities generally taken except as noted below		
			Confirm ethos for thermal wheel/Plate heat exchanger selection	8/4/11	Check re risk on ward plant (in patient) – this was determined in the ERs	65% thermal wheel efficiency, 55% PHX, thermal wheels used where no risk of cross contamination.		
	VSD		How is VSD configured?	20/4/11	Carried to next stage			3

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					all air plant - potential for savings not viable as mostly internal			
			VSDs- performance spec to consider efficiency and losses – what is best and worst on market and suppliers to be chosen on WLC	8/4/11	Agreed to add to performance schedules	ZBP to issue when completed		
	Dampers in air handling units		Are these for maintenance only? If so are these necessary as motorised – isolation plates decrease airstream resistance – for discussion	8/4/11	To be discussed 8/4/11	Dampers on inlet modulate.		
	Air handling unit spare capacity		Have we now confirmed that the motors and fans are not to be oversized		Confirmed - AHU face velocity to be reduced to 1.0m/s to allow for increase to 1.25m/s. Fans and motors not oversized			
			Coli design – compare pressure drops between manufacturers which can vary considerably for the same performance		Agreed to be on performance schedules			
			Overall what is target SFP_v ?		Agreed to be on performance schedules			
			Confirm High efficiency motors will be specified throughout.		Agreed to be on performance schedules			

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			What are economics for heat reclaim from dirty extract?		Proposal would have yielded significant carbon savings but not acceptable to HFS. Issue closed			
Heating and cooling review	Mains and insulation		Consider heat transfer between the chilled and heating mains – how will heat gain in the ducts and corridors be controlled and how far will the mains be separated ?		Pipe in pipe mains have been specified for heating and chilled mains. Basement valve room is ventilated. Maximum temperature – 30C estimated	Maximum temperature – 30C estimated		
	Mains and insulation		What is thermal insulation thickness - heating and chilled – need to undertake calculation - base on present energy cost and present + 10% and 25% – see ERs			Carried to next stage	ZBP	1
	Mains and insulation		What is water velocity in mains and has an evaluation of energy cost for pumping versus pipe size been undertaken - suggest this is done for the primary mains at least as WLC may indicate a pipe size change.			Pipe sizing parameters are 100-200Pa for mains 1-2m/s velocity but as mains are duplicated , will be half.		
	Mains and insulation		Noted that there are two sets of mains presumably for resilience. If each of these are sized at 100% demand, is there any mileage in running one set live			Not operationally acceptable to change this		

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			and isolating the other set at the valve room to reduce losses particularly in summer? It would also reduced pumping loads,					
	Heating to ensuites		I thought that heating had been taken out of the en suites as the heat pick up from supply air extracted via the ensuites would be sufficient to offset heat loss. How is temperature in ensuite controlled?			Heating remains due to losses through cladding. Each radiant panel has individual TRV – location to be advised		
	Heating load		475 w/m2 heating load seems very high – can we discuss?		Resolved –refers to radiant panel output			
	Valves		Noted that the control valves to MTHW/LTHW heat exchangers are 2 port, but why are the valves to the HWS 3 port – VSDs to pumps will control pump speed when demand light, particularly in summer when there is no heating load.			3 ports are there to provide minimum flow as determined by pump manufacturer. The amount of minimum flow varies across manufacturers from 15%-40% - to be incorporated into performance schedule		
	Chilled water temperatures		Given that all the chilled water goes through heat exchangers other than the computer room, are we sure the distribution temperatures are the most economical – what are the economics of either running the computer rooms off higher		ZBP comment that The chilled water temperatures are scheduled to outside conditions to reduce energy input. See:ZBP-XX-XX-SP-660-403/ 6-12 used for peak design.	See energy centre review. Dry cooler considered but electrical energy to drive fans (55kW) increased carbon over conventional cooling at part load therefore omitted.	ZBP	2

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			temp CHW or off natural cooling systems or even separate plant? The lower the distribution temperature, the higher the mains gains.		chilled water temperature is scheduled to increase when external temperature drops.			
Chilled water – use for dehumidification			Queried which air plants run at lower chilled water temperatures for dehumidification	6/7/11	Check environmental matrix re humidity limits	Agreed that dehumidification control would be used to aseptic suite with high limit control to theatres, interventional labs and MRI	Ecoteric	
	Seasonal shut down of chilled water		Related to the above, if only computer rooms require cooling in winter, the pumping energy resulting from pumping CHW during this season could outweigh the carbon saved by using the absorption cooling – I think we need to look at this in more detail	30/4/11	ZBP comment that cooling will be required all year round (considering imaging and other large equipment, internal rooms etc).Separate plant involves more capital cost.- it may well but what are the long term costs of operating chilled water mains in winter? Need to evaluate when loads more defined	Dry coolers were considered to address this but proved to have higher carbon impact than mains losses. Issue closed		2
	Chilled water pumping		Chilled water pumping generally – is there a point at which, when the pressure rises / external temperature drops/most valves <10% open that the pumps turn			No because of process loads and internal areas		

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			off?					
	Chilled beams circuit		Chilled beam circuit – does this have automated off mode?			Yes this will be scheduled		
	CHW distribution		What is the rational for the various secondary chilled water circuits and can they be rationalised to reduce the amount of mains?		ZBP comment this is due to spatial restrictions – please expand answer	Secondary circuits are provided for resilience – on proviso that secondary resistances are minimised		
	Fan/pump speeds		Statement regarding criteria for specifying VSD's and plant schedules indicating where specified – provide schematics and design details for evaluation	End stage D prior to FBC	See heating /cooling review. To be followed up at meeting of 8/4/11	To be kept under review with control strategy at next stage		
	Total chiller loads		Ensure chiller loads are correct		As a cross check on chiller capacity , worth a simple cross check of room loads + air loads – this will ensure double counting has not occurred	Carried to next stage	ZBP	
	PLATE HEAT EXCHANGERS		Confirm these are sequenced to avoid high losses at part load			Not sequenced but run at 50% at full duty therefore low pressure loss. insulated to lessen standing loss		
	HEATING AND COOLING PUMPS		High Efficiency motors are not specified – these are required in ERs		ZBP confirmed included	Include in plant schedules		
BMS Issues	Local controls	ZBP	Develop strategy for local controls. Check BREEAM requirements	To be resolved at workshop august	To be reviewed with BMS strategy	Move to next stage		

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			Where AHUS serve rooms with varying heat gain, how is individual room temperature control achieved		To be reviewed with BMS strategy	Move to next stage		
	Wasteful heating /cooling		Reheat arrangements – can room temp sensors reschedule off coil to prevent wasteful reheat?		To be reviewed with BMS strategy	Move to next stage		
			Are cooling and main reheat coils in ahu interlocked to prevent simultaneous operation?		To be reviewed with BMS strategy	Move to next stage		
			How is simultaneous heating and cooling prevented (in rooms)		ZBP comment that this does not occur. Where heating and cooling chilled beams are provided the unit controls the space temperature. Where radiant panels and FCU's are provided then there is a dead zone in temperature to avoid heating and cooling simultaneously	Move to next stage		
			Is supplementary heating or cooling proposed in spaces served?	30/4/11	It was agreed that this was hard to follow across the various drawings issued to date. A marked up set of drawings is to be prepared which demonstrates the control heating cooling and ventilation strategy	To be shown on environmental drawings – will evolve into detail design at next stage Environmental drawings still awaited – requried	ZBP	1

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					to each space – this can be colour coded and initially cover the 5 designed departments			
	Zoning		Is there zoning of the VT heating in terms of 12/24 hour circuits – if areas are not used for 24 hours how is heating turned off when the area is not in use – same applies to chilled water.			ZBP confirm – single circuits with zone valves and optimum start/stop/frost protection. Chilled beam circuit and fan coil circuits to have zone valves		
			Similarly, where there are distributed fan coil units, what is the control for intermittently used areas?		ZBP confirm but detail to be discussed	Fan coils will be time controlled individually. Fan coils to have EC fans		
Lighting Issues	High efficacy internal lighting	Mercury	Overall, the choice of fittings does not appear to have been made with regard to maximum efficiency of lighting- there are a number of instances where more connected load is specified than is necessary. See lighting review for further detail and examples	4/5/11	The review highlights areas where energy savings are possible and these typical areas are reproducible throughout the development. The ERs in respect to lighting energy efficiency have not been met and attention is needed in the detailed design. To be reviewed at meeting of 4/5/11	See detailed review in this section. Much improved from appendix K submission and now generally meeting ERs. Some residual issues as noted below	Mercury	1
	DEER	Mercury	DEER calculations need to be undertaken in accordance with the NHS guidance and the ERs to demonstrate that A rated fittings have been specified.	4/5/11	Submit DEER calculations	DEER calculations part of Whitecroft presentation – supply copy for record. Indicated DEER A rating is being achieved to all but	BM	1

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						specialist areas.		
	Lighting power density	Mercury	Figures not known		Reported that the average power density for lighting is now 10.5w/m^2, this compares well to recent scheme at Barts which achieved 12.5w/m^2, Discussed if this could be reduced further but lighting designers felt that this would require significant increase in LED which is not within cost plan. Noted that LED is included to staff bases, MRI, X ray/touchdown area	Supply confirmation for the record. ZBP to confirm that power density equates to model assumptions.	BM/ZBP	
	Lighting control corridors	Mercury	Ward corridor presence/absence detection	4/5/11	Consider automated dimming to reduced levels	Lighting reduces to 25% for night time under nurse control – agreed at design meeting.		
	Ward daylight linking	Mercury	Confirm if included and how these will work in conjunction with blinds	4/5/11	Detailed proposals awaited. DALI system believed to be included	Confirmed that DALI is included throughout entire development but the mode of daylight linking to bedrooms is still to be resolved. Carried to next stage Post meeting note –Board staff to be trained to commission DALI HF gear	Mercury/BM	1
	Utility areas	Mercury	Presence detection has been incorporated to the pantries and kitchen but not the clean and dirty utilities or disposal hold	4/5/11	Considerable savings could be made by using lighting control to these areas. Safety considerations would be much the same for a ward kitchen as for a	Presence detection to all intermittent core areas.	BM	

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					utility area. Note that PIR shown for utility areas on acute assessment ward			
	Public toilets	Mercury	Whitecroft queried blue lighting as inefficient		Confirmed at design meeting as required for public safety to prevent intravenous drug use	Issue closed		
	Corridor lighting	Mercury	Appendix K review highlighted inefficiency of linear/downlight solution		Revised design standardises in asymmetric linear.	Queried at design meeting if lighting design was to be differentiated between street and sub corridors for way finding reasons but this was not felt to be necessary. Agreed to proposed design. Agreed that presence detection of negligible benefit to ward corridors.		
	Lamp types and colour rendering	Mercury	Query on lamp types proposed		Confirmed that Philips Eco lamps to be used throughout, standardising on 26W	Agreed and welcomed. Exceptions noted for areas requiring RA90 for patient observation (theatres/recovery/high dependency) RA85 elsewhere with the Eco lamps		
	Bedhead lighting	Mercury	Options proposed for type integrated with trunking or wall mounted		BM prefer trunking integrated type for ease of installation however as light is lower, light distribution is worse and increase lamp power needed- from 39W to 54W -38% increase, across 1000 beds, if used for 4 hours per day this equates to 21900 kwh/annum, 0.06kgCO_2/m^2 annum	Preferred solution is wall mounted. Agreed and issue closed	BM	1

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	Wall zone calculation	Mercury	Inclusion of 0.5m wall zone in uniformity calculation		For most rooms, inclusion makes no difference – for some inclusion adds fittings and therefore energy use	Wall zone to be included – agreed and issue closed	Capita/C&B	3
	High efficacy external lighting		Schedule of design illuminances, proposed light fittings and schedule of lumens per cct watt achieved (typical per area acceptable).	4/5/11	Review not yet undertaken - awaiting external lighting proposals	Carry to next stage	BM	3
	Security lighting controls		Description of operation of proposed lighting controls and drawings indicating where each type of control is used. Strategy for low energy lighting required for evaluation. Check BREEAM requirements	4/5/11	As above		ZBP/Gillespies	3
Electrical systems	LOW VOLTAGE DISTRIBUTION		No mention is made of optimising cable sizing for energy losses – the ERs require: "Cable installations should be specified according to the guidance of British Standard 7450:199120, equivalent to IEC 1059:1991, 'Economic Optimisation of Power Cable Size', which gives useful guidance on the optimum costing of cable installations.		ZBP are aware of this requirement and confirm that it has been included in the design - Supply sample calculations demonstrating compliance with BS.	BS reported to increase cable sizes – please supply calculations and implications - added to RDD in next stage	ZBP	2
	UNINTERRUPTIBLE POWER SUPPLIES		The specification should state that the UPS system is to be selected from products on the ETL list and comparable systems		ZBP comment that Mercury will need to confirm their intended supplier. However all	Monitor at selection – move to next stage		

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			should be compared by means of whole life cost as there can be 3% variance in energy consumed between the best and worst equipment . VFI type preferred for this reason. See CT leaflet ECA778 UPS for more detail		the major suppliers are on the list. ECA778 refers to VFI as 'on-line- this is included in this document under clause 310 of V44. Double conversion shown on schematics drawing number ZBP-XX-XX-SC-539-002 and 003. WLC still needed for comparable suppliers/			
	Voltage optimisation	BM	Consider optimum tapped voltages on transformers and what savings can be made over standard		Carried to next stage		Mercury	
	Monitored Power factor correction	BM	Confirm this is included		Carried to next stage		Mercury	
Energy Centre	Renewables. Central energy supply and Combined heat and power (CHP)	ZBP	Business case to be provided if necessary. Provide confirmation that recommended measures identified in feasibility are now implemented in the design.	End stage D prior to FBC	Provide schematics and confirmation of funding	CHP included. Small scale wind turbines confirmed as not included		
	Borehole water			1/6/11	Potential uses are Atrium underfloor heating, food disposal system, thermal store? Some visual display could be incorporated.	Information required re borehole to assess – carried to next stage	ZBP/BM/Ecoteric	1

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					PV cladding to chimney			
	Grant funding	BCL	Grant funding applied for and in place	End stage D prior to FBC	Funding applications and confirmation	Grant funding not applied for but some tariff advantage may be possible – will be incorporated in borehole/PV feasibility		
	Bio gas/ alternative fuels	NHSGGC	Continue feasibility investigation on use of biogas and negotiations with Sustainable Glasgow	1/6/11	Decide if there is likely to be any impact on the design - any progress?	Nothing currently included. Biogas not in current planning phases at Sustainable Glasgow.	Ecoteric	2
	Boiler efficiency		No boiler efficiency has been specified. There are options for economisers which vary from 3.5%-7% energy reclaimed from the exhaust – the highest option commercially available needs to be selected here and boilers/economisers selected should be on the ETL list		Confirm and specify. Needs to be consistent with stage 2 energy report	90% basic efficiency confirmed. Confirm economiser selections and boiler selection on WLC at next stage .		
	Boiler controls		Boiler controls are not comprehensively specified - is there O2 trim control? VSD to fans ? digital combustion controls? Boiler and burner management systems?	1/6/11	O2 trim included. To be discussed at energy centre review	Agreed that boiler selection would be based on WLC and that technical evaluation would be shared with client team before procurement decisions are made – please provide when available – carried to next stage		2
	Burner specification		Consider also specification for burner power consumption – this can vary considerably between manufacturers particularly on low NOx application s	1/6/11	To be discussed at energy centre review	As above		2
			What will be burner turndown ratio? And how will cycling be	1/6/11	To be discussed at energy centre review	As above		2

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			prevented?					
Hot water			How will controls ensure peak efficiency when operating two or more boilers - consider unequal sharing of the load so that the combined load operates at peak efficiency	End stage D prior to FBC	System schematics – reviewed at meeting of 8/4/11. Consider omission of standby calorifier – reduces standing losses – reduces legionella risk	Confirmed that standby calorifier has been omitted	ZBP / escalate to design meeting	2
	CHP quality Index		This should be calculated and stated			Provided and is 105 which is acceptable	ZBP	
OVERALL BUILDING ISSUES								
Fabric	U values	NA	Schedule of U values. Look in particular at overall frame and glass U values for curtain walling.	6/4/11	Awaiting outcome of facade review and subsequent discussions	U values reviewed and confirmed –option 3B confirmed and compliance with Building warrant expected. All other U values acceptable.	BM/NA	1
	U values in stage 2 energy report	NA	See modelling report for detail		Overall the data is raw and it is impossible to work out the U value to any particular area. This needs some refinement	Report confirms and ok	BM/NA	1
	Glazing light transmittance	NA	Consider high performance glazing with similar solar transmission but better light transmission than described in facade report	6/4/11	As above	Carried to next stage	BM/NA	1
	North facade	NA	Consider enhanced insulation to this facade	6/4/11	Confirm if being considered and outcome	Not implemented	BM/NA	2

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	Entrances		The areas of concern identified on the south east and south west corners contain entrances – the effect of wind speeds up to 20m/s could have a profound effect on the functionality, design and comfort of the atria and entrance lobbies as well as the energy use		Needs to comply with ERs 0.2m/s across entrances – advise how this will be achieved. m	Escalated to design group and carried to next stage	BM/NA	1
	Air permeability	BCL	Confirmation of air permeability and the standards to which the building will be designed AND tested	End stage D prior to FBC	Air permeability confirmed at design stage Clarification 005 as 5m3/hr/m2@50Pa.	Confirmed and agreed		
Modelling	Net CO2 emission	BCL	Detailed model to be produced based on stage D design. Corrective action if needed to be undertaken before scheme proceeds	End stage D prior to FBC	Model produced. See model review. Outstanding actions listed below	See below		
		BCL	Output from energy calculation, along with schedule of input data and occupancy/usage/internal gain defaults Must produce model and comparison with both design and operational targets	End stage D prior to FBC	Model produced. See model review. Outstanding actions listed below l	See below		
	General Assumptions on which the model is based as listed in stage 2 model report		See modelling report for detail	1-6-11	Needs revising and amending in stage 2 report (purple section)	Revised report received. Ecoteric to undertake final review for next meeting. Stage 2 report now signed off	ZBP/ Ecoteric	2
	Dynamic modelling		See modelling report for detail		Needs revising and amending in stage 3 report – resolution and clarification of response	Queries sent to BM to raise with IES – carried to next stage	BM	1

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					needed. ZBP report that discussions have been held with IES and that they are now reviewing their proposals – will be further reviewed at meeting with IES. Will close out when addendum received			
	Model result		See modelling report for detail		Summary calculation required- not yet provided	Signed off at stage 2		2
	Weather file		See modelling report for detail		Addendum awaited	Signed off at stage 2		2
	Degree days		See modelling report for detail		Revise carbon model and confirm base temperature – not yet provided	Signed off at stage 2		1
	Total estimated load		See modelling report for detail		Report gives incorrect totals	Signed off at stage 2		3
	Lighting diversities		See modelling report for detail		ZBP have reviewed the lighting and made some adjustments, both up and down. Diversity has been removed but included within the W/m2 load (same overall figure). Still not transparent – agreed to use just connected load and UF for model	Signed off at stage 2		2
	General detail IES modelling queries		See modelling report for detail	10/5/11	Meeting with IES and CT/Ecoteric to be arranged to discuss	Carried to next stage	BM	2
	Historic data to check carbon model		See modelling report for detail	4/5/11	Data from Peterborough awaited especially electrical	Has not proved useful but has confirmed load profiles	BM	1

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	Pumps		Whether energy modelled reflects control proposals as UF of 25% used but minimum duty is 40% - response needs clarification – to be discussed at meeting of 8/4/11		ZBP respond that Multiple pumps are provided cascading to suit the load. UF of 0.25 relates to one A&B pump running at low demand. No account has been taken for further speed reduction below this	Ok as stated		
	CHP		Incorrect load figures used in model		ZBP respond that This should be 1000kW for each of the three building models. This will only have a minor effect on the BER and will not affect the result	Ok as stated		
	External temperatures				ZBP respond that This should be 30oC as the ERs. Does not affect results	Ok as stated		
	lifts				ZBP respond that BM are to obtain up to date lift energy use from Schindler.	ZBP report that this has been obtained and does not affect results . actual data will be included in stage 3 report		
	Key target efficiencies		See modelling report for detail	30/4/11	Please prepare a schedule of major items procurement with target efficiencies and provide sample tender returns incorporating whole life costs etc. for agreement.		ZBP/BM	1
	Diversities and usage		See modelling report for detail	18/4/11	Addendum awaited	Discussed at meeting of	ZBP	2

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	factors for lighting and small power					8/4/11 and agreed to revise connected loads in line with Peterborough and omit diversification factor		
	Model results		Asset rating of 36 (B) for the England & Wales EPC, which is better than the maximum requirement of 40 for BREEAM Excellent. The model achieved a rating of 40 (C) for the Scottish EPC. Building's energy consumption at 40 GJ/100m3/year against NHS target of 55 Building's energy consumption at 40 GJ/100m3/year CO2 emissions at 80 kg CO2/m2/year.	18/4/11	Reconfirm kg/CO2 /m2/annum as a result of above changes. Confirm what needs to change to meet Scottish B EPC rating	Revised report indicates that 79kgCO2/m2/annum, all other targets and in particular Scottish EPC B will be achieved but will be monitored in next phase – move to next phase tracker		1
	Risks		As highlighted – accuracy of air/fabric heating calculations EPC rating as 6.2 above U value to tower cladding as detailed elsewhere – this may yet prove to be more significant in terms of energy consumption Failure to procure equipment to efficiencies assumed Scottish B EPC rating		Monitor through design stage	Check through next stage		
Operational energy monitoring	Matrix of responsibilities and actions in the operational phase	C&B	Draft matrix has been issued		Agreed in principle	Carried to next stage	BM/C&B	1
	System assumptions, efficiencies and conflicts		See modelling report for detail Sections 17-18		Check and revise. Feed back into model results	Signed off at stage 2		3
WLC	Whole life	BCL	Update model and check that	End stage D	WLC re air handling has	Carried to next stage	BM/Doig +Smith	2

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	cost model		cost plan includes for lowest whole life cost and carbon design. Check BREEAM requirements have been met	prior to FBC	been produced. Has overall WLC model been updated and based on latest energy and FM model ?			
ADB	ADB Sheets	BCL/N HSGG C	Create master set of ADB sheets embracing low carbon objectives and ensure these are used on all ADB sheets generated for the project with a definition sheet	End stage D prior to FBC	Debate on maximum internal temperature. Temperature set in ERs at 26C to drive a solution where cooling was included but there may be flexibility in set points and humidity to allow for lower carbon in use. Need to review master environmental condition sheets.	Now on master environmental sheet but review with BMS		
INTERNAL ENVIRONMENT								
Daylighting and Glare	Daylighting	ZBP/W SP	Provide daylighting calculations	4/5/11	As above	Now fixed- no further action possible	ZBP/NA	2
	Glare control	ZBP/W SP	Check that design avoids lights on blinds down issues	4/5/11	As above	To be carried over to next stage		
NON SYSTEM RELATED ENERGY ISSUES								
Equipment	Energy consuming equipment	BCL	Create a generic schedule of energy consuming equipment and including realistic assessments of energy consumption and heat emission to the space	1/6/11	Schedule including energy consumption and heat emissions	Schedule received, carried to next stage	NHSGGC	2
		BCL	Formulate procedures and documents for procuring energy efficient equipment and get agreement from client on	6/7/11	Provide schedule of new equipment and specifications, which should	As above	Ecoteric	1

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			process and timetable. Check BREEAM requirements have been met for Ene 15 which requires procurement on WLC and carbon issues		incorporate whole life costing element including assessment of energy consumption.			
IT	PUE		Is target PUE of 1.6 likely to be achieved?	4/5/11	Supply initial calculations , arrange to meet with IT	Carried to next stage	C&B/BM	1
LABS								
General	Opportunities for energy saving	BCL	Are there any remaining opportunities for energy/carbon saving - e.g. equipping, controls ?	TBA	Undertake joint review – Ecoteric/BCL?	Carried to next stage	NHSGGC/Ecoteric	2
At the end of the design stage leading to FBC, all the above issues should have been addressed and a design statement prepared. The low carbon auditor will need to have seen all above listed detail, commented on the issues and be able to confirm to the Carbon Trust and the Board that the design meets the objectives in the employers requirements and targets.								

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RDD	List of RDD	BM	Agreed that the following would be part of ongoing RDD process and issued to Board/Ecoteric/Capita Boiler selection Chillier selection BMS strategy and description of operation WLC Transformer selections CHP Sample lighting to departments Zoning master set of drawings Catering IT a/c Atrium External lighting Cabling calculations Ongoing Insulation calculations Sample AHU selections Metering proposals Group 1 equipment Sample pump and inverter selections	FBC approval to end stage E	Ongoing – issued raised from process detailed in tracker as they arise			1
Energy sub metering		ZBP/W SP/ NHSG GC	Check BREEAM requirements met. Specification for BMS/AMT to be provided	FBC approval to end stage E	Agree detail of how metering will monitor and report	Reporting format still to be detailed and agreed	ZBP/BM	1
	Electrical metering of areas	ZBP	Electrical metering to tower does not permit metering by floor plate/ward	7/9/11	Consider metering by ward/floor as distribution permits, Ene 2 credit must be complied with. Noted that all IT hubs are metered but if wards metered and riser metered the IT load	Confirm and issue revised schematics Confirm if Ene 3 targeted and check all metering with assessor as her	ZBP/BM	1

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					can be calculated as difference Each retail unit should have meter	interpretation may vary.		
	Mechanical metering by end use	ZBP	Gas meters OK. Oil meters OK. Water meters – see comment	FBC approval		Potentially sub let catering areas should have water meters.	ZBP/BM	2
	Heat meters – plate heat exchangers	ZBP	Have been provided to each PHX – cooling, heating and HWS	to end stage E		Agreed that one meter per parallel set is acceptable - show on revised schematic – saving possible which may permit additional meters elsewhere.	ZBP/BM	3
	Boilers	ZBP	Need Heat meter from each boiler plus flue gas analysis. Some means of continuous monitoring of boiler efficiency is needed.	FBC approval to end stage E	Either heat meter or continuous calculation based on flow and temperatures required- confirm which is proposed	Agreed that flue gas analysis will be included.	ZBP/BM	1
	Chillers	ZBP	Electrical meter to each chiller needed plus some means of establishing COP on a continuous basis – all chillers including absorption	FBC approval to end stage E	Either heat meter or continuous calculation based on flow and temperatures required- confirm which is proposed	Electrical meters agreed.	ZBP/BM	1
	DEC excludables	all	Are excludables to be metered?	FBC approval to end stage E	Agreed that metering would have to be added if DEC requirements implemented in Scotland			

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	CHP	ZBP	Must be able to read CHP input and outputs continuously to BMS	FBC approval to end stage E	Agreed to investigate interface as manufacturers selected	Confirm when CHP supplier selected	ZBP/BM	1
	AHUs and heat meters to areas		25% of departments and 10% of air handling units to have heat meters	FBC approval to end stage E	Agreed that although this would not pick up exceptions, it would enable estimates of heating and cooling seasonal consumption to be made by extrapolation and would be useful.	Some modifications were made to schedule of departments and AHUs covered – please reissue as agreed. Marked up set of drawings showing meter coverage(heat and electrical to be issued)		2
Zoning	24 hour areas	ZBP	Daytime only areas served from 24 hour plant - e.g. children's wards	1/9/11 for mark ups	Zoning mark up needed	Each department to be marked up with plant zone and occupancy hours and agreed with board prior to detail design.	ZBP/BM	2
	Intermittent areas		Set back to other areas	1/9/11 for mark ups	set back intermittent areas	Show on marked up plan for RDD as listed above for next meeting	ZBP/BM	2

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	System zones	ZBP	Drawings, schematics and system description indicating how different heating and cooling requirements (time /temp/gains) can be controlled separately	1/9/11 for mark ups	Needs final resolution. Will be discussed at BMS meeting and be part of RDD. Include VSD configuration	Need to review when environmental mark ups available	ZBP/BM	3
Catering design			Regeneration kitchens - design and heat recovery still to be considered. Mechanical and electrical designs and layout of areas needed	FBC approval to end stage E	Review in RDD process		BM	3
			Main kitchen and satellite kitchens – equipping and services solutions to be reviewed for carbon saving opportunities	FBC approval to end stage E	Review in RDD process		BM	3
Atrium design			Atrium and FM core	FBC approval to end	Need to consider options for natural ventilation to bridge link , using solar warmed air for intakes and night cooling to bridge link	Please provide details of thermal modelling to this area and proposed design	ZBP/Ecoteric	2

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				stage E		when available.		
Mains and insulation			What is thermal insulation thickness - heating and chilled – need to undertake calculation - base on present energy cost and present + 10% and 25% – see ERs		Heat gains to chilled water mains must be calculated and minimized when calculating running loads. Externally run unshaded mains or mains run adjacent to hot services in unventilated spaces will not be considered acceptable.	Economic thickness calculation has been undertaken and is acceptable. ZBP to supply heat loss and heat gain annual energy demand from heating and chilled water mains as a function of total energy input per month to estimate % losses	ZBP	1
Environmental matrix- outstanding issues from previous stage	Chilled water – use for dehumidification		Queried which air plants run at lower chilled water temperatures for dehumidification	FBC approval	Check environmental matrix re humidity limits	Add agreed humidities to ADB sheets	Ecoteric	3
Total chiller loads			Ensure chiller loads are correct	to end stage E	As a cross check on chiller capacity , worth a simple cross check of room loads + air loads – this will ensure double counting has not occurred		ZBP	3
HEATING AND COOLING PUMPS			High Efficiency motors are not specified – these are required in ERs	FBC approval	ZBP confirmed included. Check in plant schedules through RDD		Mercury/BM	2
Chiller operating temperatures			Selection of chillers at 30/28/26C external temperature – this can affect COP particularly at part load – need to evaluate	to end stage E	Chiller selection to be undertaken looking at power input at varying selections for outside temperature		ZBP/BM	2
BMS Issues	Local controls	ZBP	Develop strategy for local controls. Check BREEAM requirements	FBC approval	To be reviewed with BMS strategy		ZBP/BM	3
			Where AHUS serve rooms with varying heat gain, how is individual room temperature	FBC approval to end	To be reviewed with BMS strategy		ZBP/BM	3

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			control achieved	stage E				
	Wasteful heating /cooling		Reheat arrangements – can room temp sensors reschedule off coil to prevent wasteful reheat?	FBC approval to end stage E	To be reviewed with BMS strategy		ZBP/BM	3
			Are cooling and main reheat coils in ahu interlocked to prevent simultaneous operation?	FBC approval to end stage E	To be reviewed with BMS strategy		ZBP/BM	3
			Is supplementary heating or cooling proposed in spaces served?	30/4/11	It was agreed that this was hard to follow across the various drawings issued to date. A marked up set of drawings is to be prepared which demonstrates the control heating cooling and ventilation strategy to each space – this can be colour coded and initially cover the 5 designed departments	To be shown on environmental drawings Environmental drawings still awaited as noted above	ZBP	1
Lighting	High efficacy internal lighting	ZBP	Schedule of design illuminance, proposed light fittings and schedule of lumens per cc watt achieved (typical per area acceptable). Strategy for low energy lighting required for evaluation	FBC approval to end stage E	Provide final detail if changed from previous stage – RDD. Supply DEER calculations for record and power densities as per previous stage		Mercury	1
	Lighting control	ZBP	Description of operation of proposed lighting controls and drawings indicating where each type of control is used. Strategy for low energy lighting required for evaluation. Check BREEAM requirements	FBC approval to end stage E	Sample final design drawings and auditors comments - RDD		Mercury	2
	Ward daylight linking	Mercury	Confirm if included and how these will work in conjunction with blinds	FBC approval to end stage E	Detailed proposals awaited. DALI system included throughout	The mode of daylight linking to bedrooms is still to be resolved.	Mercury/BM	1
	High efficacy external	ZBP	Schedule of design illuminances,	FBC approval	Provide final detail as principle paper only received so far which does not give and		Mercury	3

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	lighting		proposed light fittings and schedule of lumens per cct watt achieved (typical per area acceptable).	to end stage E	indication of the amount and spacing of fittings			
	Security lighting controls	ZBP	Description of operation of proposed lighting controls and drawings indicating where each type of control is used. Strategy for low energy lighting required for evaluation. Check BREEAM requirements	FBC approval to end stage E	As above		Mercury	3

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Electrical systems	LOW VOLTAGE DISTRIBUTIO N		No mention is made of optimising cable sizing for energy losses – the ERs require: "Cable installations should be specified according to the guidance of British Standard 7450:199120, equivalent to IEC 1059:1991, 'Economic Optimisation of Power Cable Size', which gives useful guidance on the optimum costing of cable installations.		ZBP are aware of this requirement and confirm that it has been included in the design - Supply sample calculations demonstrating compliance with BS.	BS reported to increase cable sizes – please supply calculations and implications - added to RDD	ZBP	2
	UNINTERRUP TIBLE POWER SUPPLIES		The specification should state that the UPS system is to be selected from products on the ETL list and comparable systems should be compared by means of whole life cost as there can be 3% variance in energy consumed between the	FBC approval to end stage E	ZBP comment that Mercury will need to confirm their intended supplier. However all the major suppliers are on the list. ECA778 refers to VFI as 'on-line- this is included in this document under clause 310 of V44.	Monitor at selection	Mercury	3

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			best and worst equipment . VFI type preferred for this reason. See CT leaflet ECA778 UPS for more detail		Double conversion shown on schematics drawing number ZBP-XX-XX-SC-539-002 and 003. WLC still needed for comparable suppliers/			
	Voltage optimisation	BM	Consider optimum tapped voltages on transformers and what savings can be made over standard				Mercury	2
	Monitored Power factor correction	BM	Confirm this is included	FBC approval to end stage E			Mercury	2
Energy Centre/renewables	PV	BM	Quote received for PV array .	7/9/11	Need to confirm savings and payback		Ecoteric/BM	1
	Energy from Waste	NHSGGC	Proposal provided to import energy from waste. Carbon impact positive and cost of energy significantly less than gas.	FBC approval to end stage E	Need to take forward with provider and evaluate • Contract detail • Confirm cost per kwh • How mains can be brought onto site			1
	CHP	ZBP	Configuration and selection	FBC approval to end stage E	Profiles issued based on Peterborough and accepted as reasonable. Ongoing dialogue taking place with manufacturers – issue as RDD in due course. Confirmed as thermal led unit. Need to work on connection configuration re A+B boilerhouses so that CHP units “see” maximum thermal load and do not drop out frequently.		ZBP	1
	Borehole water	BM		7/9/11	Potential uses are Atrium underfloor heating, food disposal system,	Information to be finalised on yield and quality of water	ZBP/BM/Ecoteric	1
	Boiler		Boiler controls are not	1/6/11	O2 trim included. To be discussed at energy	Agreed that boiler	ZBP/BM	2

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	controls		comprehensively specified - is there O2 trim control? VSD to fans ? digital combustion controls? Boiler and burner management systems?		centre review	selection would be based on WLC and that technical evaluation would be shared with client team before procurement decisions are made		
	Burner specification		Consider also specification for burner power consumption – this can vary considerably between manufacturers particularly on low NOx application s	1/6/11	RDD	As above		2
			What will be burner turndown ratio? And how will cycling be prevented?	1/6/11	RDD	As above		2
OVERALL BUILDING ISSUE								
Fabric	Glazing	BM	Choice of Glass	7/9/11	Still awaiting final choice of glazing – need to see characteristics and effect on model, particularly if differentiation of type between north and other facades is lost		Nightingales/BM	1
Entrance doors		BM	Choice of doors and velocity		Agreed that 0.2m/s could be relaxed. Confirmed that revolving doors likely to be necessary to main adult entrance due to need to restrict wind effect. Still outstanding issues with children's atrium especially exit to garden. Modelling to be undertaken and issued as RDD		Nightingales/BM	1
Modelling	Net CO2 emission	BCL	Updated model to be produced based on final design. Corrective action if needed to be undertaken before scheme proceeds	1/11/11	Model and interpretative report confirming design objectives have been met or corrective action needed if not.		ZBP	1
	Model results		Asset rating of 36 (B) for the England & Wales EPC, which is better than the maximum	1/11/11	Reconfirm 80 kg/CO2 /m2/annum as a result of above changes.		ZBP/BM	1

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			requirement of 40 for BREEAM Excellent. The model achieved a rating of 40 (C) for the Scottish EPC. Building's energy consumption at 40 GJ/100m3/year against NHS target of 55 Building's energy consumption at 40 GJ/100m3/year CO2 emissions at 80 kg CO2/m2/year.		Confirm meets Scottish B EPC rating Provide an outline of contents for comment System assumptions to be part of RDD and paper to be provided on these issues			
		BM	Updated model and comparison with both design and operational targets	FBC approval to end stage E	Update full design model at this stage and update operational model with detailed equipping consumption		ZBP	1
		ZBP	IES queries raised by Ecoteric	1/9/11	Resolve all outstanding queries with IES before next stage model commenced		ZBP	1
WLC	Whole life cost model	BM	Update model and check that cost plan includes for lowest whole life cost and carbon design. Check BREEAM requirements have been met	FBC approval to end stage E	Update detail of WLC cost exercise in relation to major systems		BM	
Operational energy monitoring	Matrix of responsibilities and actions in the operational phase	C&B	Draft matrix has been issued	FBC approval to end stage E	Agreed in principle but on agenda for detailed discussion for 7/9/11		BM/C&B	1
ADB	ADB Sheets	BM/N HSGG C	Check ADB sheets before sign off	FBC approval to end stage E	Confirm all ADBs meet low carbon objectives before sign off. Provide representative cross section for record purposes.		BM/N HSGG	2
INTERNAL ENVIRONMENT								
All issues closed off see tracker version 8 for record								
NON SYSTEM RELATED ENERGY ISSUES								

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Equipping		Ecoteric/C+B	Equipping procurement	7/9/11	Provide a paper based on group 1/2 list and principles of procurement for each generic group		Ecoteric	1
		BM	Provide tender and selections documentation confirming equipment has been selected on WLC and carbon considerations as well as performance	FBC approval to end stage E	Provide selection information			
IT	PUE		Is target PUE of 1.6 likely to be achieved?	FBC approval to end stage E	Supply calculations and proposals as RDD		BM	1
Whole site energy strategy		BM/Ecoteric	Look at retained estate and viability of connecting buildings to energy centre	5/10/11	BM to survey as agreed and look at physical connection and likely cost Ecoteric to obtain energy data and work out building profiles and viability of connection		BM/Ecoteric	1
LABS								
General	Opportunities for energy saving	BCL	Are there any remaining opportunities for energy/carbon saving - e.g. equipping, controls ?	TBA	Review of mode of control and technical commissioning plan – BM to provide information		NHSGGC/Ecoteric/BM	2
At the end of the detail design phase, all the above issues should have been addressed and any outstanding items from earlier phases cleared. The low carbon auditor will need to have seen all above listed detail, commented on the issues and be able to confirm to the Carbon Trust and the Board that the design meets the objectives in the employers requirements and targets.								

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SECTION 4 CONSTRUCTION PHASE MAIN and CHILDRENS HOSPITALS						
ISSUE/ REFERENCE	SUB ISSUES	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED NOT COMPLETE	RECORD OF MEETINGS AND OUSTANDING ACTIONS
BUILDING SERVICES SYSTEMS						
General systems options	Energy sub metering	ZBP/WSP/ NHSGGC	No further action at this stage unless there are changes			
	Choice of filtration	ZBP	No further action at this stage unless there are changes			
	System zones	ZBP	No further action at this stage unless there are changes			
	Local controls	ZBP	No further action at this stage unless there are changes			
	Heat recovery	ZBP	No further action at this stage unless there are changes			
	High efficacy internal lighting	ZBP	No further action at this stage unless there are changes			
	Lighting control	ZBP	No further action at this stage unless there are changes			
	High efficacy external lighting	ZBP	No further action at this stage unless there are changes			
	Security lighting controls	ZBP	No further action at this stage unless there are changes			
	Fan/pump speeds	ZBP	No further action at this stage unless there are changes			
	Fan and pump selection	ZBP	No further action at this stage unless there are changes			
	Fan and pump WLC	ZBP	No further action at this stage unless there are changes			
	Renewables. Central energy supply and Combined heat and power (CHP)	ZBP	No further action at this stage unless there are changes			
	Grant funding	ZBP	No further action at this stage unless there are changes			
	Building energy management systems (BMS)	ZBP	No further action at this stage unless there are changes			

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BUILDING SERVICES SYSTEMS						
	Heat recovery	ZBP	No further action at this stage unless there are changes			
	Hot water efficiency	ZBP	No further action at this stage unless there are changes			
OVERALL BUILDING ISSUES						
Fabric	U values	NHSGG C clerk of works	Check insulation continuity through construction period	Up to building weather tight		Site report
	Air permeability	NHSGG C clerk of works	Checking integrity of building sealing	Up to building weather tight		Site report
Modelling	Net CO2 emission	BCL	Prepare as built model	Before practical completion		Final EPC
		BCL	Prepare final operational model	Before practical completion		Update operational model at this stage including any known changes in operational policy, operating hours
WLC	Whole life cost model	BCL	No further action at this stage unless there are changes			
ADB	ADB Sheets	BCL/NH SGGC	No further action at this stage unless there are changes			
INTERNAL ENVIRONMENT						
Facade	Passive ventilation and façade engineering	ZBP/WS P	No further action at this stage unless there are changes			
Ventilation	Fresh air rates	ZBP/WS P	No further action at this stage unless there are changes			
Acoustics	Acoustics	ZBP/WS P	No further action at this stage unless there are changes			
Daylighting and Glare	Daylighting	ZBP/WS P	No further action at this stage unless there are changes			
	Glare control	ZBP/WS P	No further action at this stage unless there are changes			
Internal areas		BCL	No further action at this stage unless there are changes			
NON SYSTEM RELATED ENERGY ISSUES						
Equipment	Energy	BCL	Generic schedule should now be	FBC approval to		Complete any

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BUILDING SERVICES SYSTEMS						
	consuming equipment		replaced by actual equipping schedule and variances affecting design resolved	end stage E		outstanding actions from previous section
		BCL	Provide tender and selections documentation confirming equipment has been selected on WLC and carbon considerations as well as performance.	FBC approval to end stage E		Complete any outstanding actions from previous section
Whole site energy strategy	Renewables	ZBP	No further action at this stage unless there are changes			
	Implementation of site /building energy strategy		No further action at this stage unless there are changes			
At the end of the construction phase, all the above issues should have been addressed and any outstanding items from earlier phases cleared. The low carbon auditor will need to have seen all above listed detail, commented on the issues and be able to confirm to the Carbon Trust and the Board that the design meets the objectives in the employers requirements and targets.						

SECTION 5 COMMISSIONING PHASES MAIN and CHILDRENS HOSPITALS						
ISSUE/ REFERENCE	SUB ISSUES	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED NOT COMPLETE	RECORD OF MEETINGS AND OUSTANDING ACTIONS
BUILDING SERVICES SYSTEMS						
General systems options	Energy sub metering	ZBP/WS P/ NHSGG C	Metering should now be set up and all software installed. Users trained and reporting systems installed	Prior to handover	Signed off report sheets and written method of operation, all points which will need to be measured for operational energy reporting set up and agreed. All cost and function areas set up and agreed. Users fully familiar with the system and able to derive reports.	
	Choice of filtration	ZBP	No further action at this stage unless there are changes	Prior to handover		

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SECTION 5 COMMISSIONING PHASES MAIN and CHILDRENS HOSPITALS						
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	System zones	ZBP	Systems zones set up and proved to operate without simultaneous heating and cooling	Prior to handover	Report sheets and written method of operation, time and temperature and settings recorded for each zone.	
	Local controls	ZBP	Operation of local controls checked and representative sample of rooms checked under load conditions	Prior to handover	Report sheets and written method of operation, time and temperature and settings recorded for each zone.	
	Heat recovery	ZBP	Performance testing	Prior to handover	All heat recovery to be tested to prove rated performance is achieved in situ – test sheets	
	High efficacy internal lighting	ZBP	No further action at this stage unless there are changes			
	Lighting control	ZBP	Lighting control proved to operate under varying daylight conditions, occupancy sensing proved and operational.	Prior to handover	Report sheets and written mode of operation, end users trained	
	High efficacy external lighting	ZBP	No further action at this stage unless there are changes	Prior to handover		
	Security lighting controls	ZBP	No further action at this stage unless there are changes	Prior to handover		
	Fan/pump speeds	ZBP	Inverter and speed control set up and proved under varying load conditions	Prior to handover	Report sheets and written method of operation, inverter settings recorded for each system	
	Fan and pump selection	ZBP	No further action at this stage unless there are changes	Prior to handover		
	Fan and pump WLC	ZBP	No further action at this stage unless there are changes	Prior to handover		
	Renewables. Central energy supply and Combined heat and power	ZBP	Central plant and renewable energy systems commissioned and under maintenance contract . performance testing proves operation and carbon savings to be achieved.	Prior to handover		

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SECTION 5 COMMISSIONING PHASES MAIN and CHILDRENS HOSPITALS						
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	(CHP)					
	Grant funding	BPL	No further action at this stage unless there are changes			
	Boigas/ alternative fuels		Conclusion and timescale for any future installation	Prior to handover	Need to provide statement of intent or outcome of negotiations	
	Building energy management systems (BMS)	ZBP	Commissioning to be undertaken which optimises energy performance, sets up exception reporting for systems left in hand or disconnected and graphical interfaces fully set up and commissioned. Systems proved under load. BREEAM requirements have been met re man 1	Prior to handover	Report sheets and demonstration to auditor	
	Hot water efficiency	ZBP	No further action at this stage unless there are changes			
OVERALL BUILDING ISSUES						
Fabric	U values	NHSGG C clerk of works	No further action			
	Air permeability	NHSGG C clerk of works	Airtightness testing	Prior to handover	Site report	
Modelling	Net CO2 emission	BCL	No further action			
WLC	Whole life cost model	BCL	No further action			
ADB	ADB sheets	BCL/NH SGGC	No further action			
INTERNAL ENVIRONMENT						
Facade	Passive ventilation and façade engineering	BCL	No further action			
Ventilation	Fresh air rates	ZBP/WS P	Commissioning to demonstrate that air systems have been set up to correct flow rates and that systems are optimised for required ventilation rates and free cooling.	Prior to handover	Report sheets and proof of operation under load	
Acoustics	Acoustics	ZBP/WS	Acoustic testing undertaken			

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		P				
Daylighting and Glare	Daylighting	ZBP/WS P	No further action			
	Glare control	ZBP/WS P	No further action			
Internal areas		BCL	No further action			
NON SYSTEM RELATED ENERGY ISSUES						
Equipment	Energy consuming equipment	NHSGGC	Energy consuming equipment set up to optimum performance	FBC approval to end stage E	Manufacturer's set up of major items to be witnessed and evgaluated	
Whole site energy strategy	Renewable	ZBP	No further action at this stage unless there are changes			
	Implementation of site/building energy strategy		No further action at this stage unless there are changes			
At the end of the commissioning phase, all the above issues should have been addressed and any outstanding items from earlier phases cleared. The low carbon auditor will need to have seen all above listed reports, commented on the issues and be able to confirm to the Carbon Trust and the Board that the completed building meets the objectives in the employers requirements and targets.						

SECTION 6 OPERATIONAL PHASE MAIN and CHILDRENS HOPITALS Note ! where joint responsibility noted, this shall generally be BCL in contractual defects phase and undertaken where excess or unexpected energy use has been noted and NHSGGC beyond this phase						
ISSUE/ REFERENCE	SUB ISSUES	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED NOT COMPLETE	RECORD OF MEETINGS AND OUSTANDING ACTIONS
ALL SYSTEMS						
General Issues	Energy sub metering	ZBP/WS P	Metering should now be set up and all software installed. Users trained and reporting systems installed	First 3 years of operat	ace	
	audits	NHSGG	6 monthly audit procedure set up to	First 3 years of	Audit report	

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ISSUE/ REFERENCE	SUB ISSUES	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED NOT COMPLETE	RECORD OF MEETINGS AND OUSTANDING ACTIONS
		C	monitor progress and reconcile any difficulties	operation		
	Appointments	BCL	Suitably qualified and experienced energy specialist as specified (e.g. CIBSE Low Carbon Consultant, Carbon Trust registered consultant, chartered member of the Energy Institute, all with knowledge and experience of operational energy use in large acute hospitals allocated to the project for the three years and beyond until targets are met and remedial action completed, with sufficient time allocation to undertake the identified actions, working in conjunction with the Boards own energy manager	First 3 years of operation	Confirm appointment and hours allocated to scheme. Provide progress reports	
	Remedial actions	BCL	If remedial actions identified, prepare method statement and timescale for action	First 3 years of operation	Action plan	
	Heat recovery	BCL/NH SGGC	Performance testing	First 3 years of operation /Life of building	Periodic check that operation is satisfactory	
	external lighting	BCL/NH SGGC	External lighting not on during day	First 3 years of operation /Life of building	Periodic check that operation is satisfactory	
	Fan/pump speeds	BCL/NH SGGC	Inverter and speed control set up and proved under varying load conditions	First 3 years of operation /Life of building	Periodic check that operation is satisfactory	
	Renewables. Central energy supply and Combined heat and power (CHP)	BCL/NH SGGC	Central plant and renewable energy systems commissioned and under maintenance contract . performance testing proves operation and carbon savings to be achieved.	First 3 years of operation /Life of building	Periodic check that operation and performance is satisfactory	
	Grant funding	NHSGG C	Monitor funds for any further opportunities e.g. PV	First 3 years of operation /Life of building	Annual check	
	Biogas/	NHSGG	Conclusion and timescale for any future	TBA	Need to provide	

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SECTION 6 OPERATIONAL PHASE MAIN and CHILDRENS HOPITALS Note ! where joint responsibility noted, this shall generally be BCL in contractual defects phase and undertaken where excess or unexpected energy use has been noted and NHSGGC beyond this phase						
ISSUE/ REFERENCE	SUB ISSUES	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED NOT COMPLETE	RECORD OF MEETINGS AND OUSTANDING ACTIONS
	alternative fuels	C	installation		statement of intent or outcome of negotiations	
	Hot water efficiency	BCL/NH SGGC	Performance testing	Life of building	Periodic check that operation is satisfactory	
Fabric	U values	BCL	Thermography to ensure integrity of insulation	First 3 years of operation	Recommended if any empirical evidence of bridging/condensation	
Modelling	Net CO2 emission	NHSGG C	Periodically update operational model as circumstances change	every 5 years	Update to reflect heated area and any major operational changes	
Lighting	Lighting controls	BCL/NH SGGC	Monitor departmental use monthly through exception reporting via BMS – i.e. any department which uses +10% of monthly target. Note target needs to be set related to proportion of internal and daylit rooms and available daylight hours.	First 3 years of operation	Interaction with department to identify usage patterns, check on correct operation of lighting controls and any occupant action to disable them. If cause isolated at higher hours of usage, uplift target	
	Behaviour and operating hours	NHSGG C	As above	First 3 years of operation	As above	
Small power	Clinical need	NHSGG C	Monitor departmental use monthly through exception reporting via BMS – i.e. any department which uses +10% of monthly target. Target set by adding up all connected equipment and applying diversity factors	First 3 years of operation	Interaction with department to identify usage patterns and connected equipment. If found to be necessary, target can be uplifted.	
	Rating of new purchased equipment	NHSGG C	As above	First 3 years of operation /Life of building	Ensure equipment purchased has low energy use, record any new equipment and notify energy manager. Implement purchasing policy	
	behaviour	NHSGG C	As above	First 3 years of operation /Life of building	Interaction with department to identify usage patterns and connected equipment. If	

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SECTION 6 OPERATIONAL PHASE MAIN and CHILDRENS HOPITALS Note ! where joint responsibility noted, this shall generally be BCL in contractual defects phase and undertaken where excess or unexpected energy use has been noted and NHSGGC beyond this phase						
ISSUE/ REFERENCE	SUB ISSUES	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED NOT COMPLETE	RECORD OF MEETINGS AND OUSTANDING ACTIONS
					found to be necessary, target can be amended	
Heating	External conditions	BCL/NH SGGC	Record profile through BMS. Set target based on 20 year average weather file and projected occupancy	First 3 years of operation /Life of building	No action unless energy use exceeds + 10% . Undertake weather normalisation by agreed method if +10% energy use of heating energy over target detected.	
	Controls and zoning	BCL/NH SGGC	Metering - Monitor departmental or zone use monthly through exception reporting via BMS – i.e. any department or zone which uses +10% of monthly target.	First 3 years of operation /Life of building	Check controls operation. Check for simultaneous heating and cooling. Check that set points have not been altered outside allowable tolerance.	
	Maintenance and behaviour	BCL/NHSGGC	As above	First 3 years of operation/Life of building	Check that set points have not been altered outside allowable tolerance. Interact with department to check windows not opened in peak heating season to relieve overheating etc. If cause isolated at higher hours of usage, uplift target	
cooling	External conditions	BCL/NH SGGC	Record profile through BMS. Set target based on 20 year average weather file and projected occupancy.	First 3 years of operation /Life of building	No action unless energy overall exceeds + 10%. Undertake weather normalisation by agreed method if +10% energy use of cooling energy over target detected.	
	Controls and zoning	BCL/NH SGGC	As above	First 3 years of operation /Life of	Check that window and blinds are as designed	

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SECTION 6 OPERATIONAL PHASE MAIN and CHILDRENS HOPITALS Note ! where joint responsibility noted, this shall generally be BCL in contractual defects phase and undertaken where excess or unexpected energy use has been noted and NHSGGC beyond this phase						
ISSUE/ REFERENCE	SUB ISSUES	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED NOT COMPLETE	RECORD OF MEETINGS AND OUSTANDING ACTIONS
				building	and blinds/shading use is as intended. If all other explanations for excess use have been eliminated, independent consultant to undertake further analysis, calculation and detailed room monitoring via BMS of room conditions and recommended remedial action	
	Internal gains	BCL/NH SGGC	As above	First 3 years of operation /Life of building	Interact with department to monitor and record occupancy levels. Correlate with equipment usage and lighting usage. If significant variance in expected occupancy level, hours of use and /or equipment use is agreed cause, uplift target.	
HWS	demand	BCL/NH	Metering - Monitor departmental use monthly through exception reporting via BMS – i.e. any department or zone which uses +10% of monthly target	First 3 years of operation/ Life of building	Interact with department to establish water use patterns. Ensure no avoidable waste or leakage. If usage reasonable, uplift target	
Central plant and distribution	Plant and system selection and efficiency	BCL/NH SGGC	Metering – monitor plant and system efficiencies monthly through exception reporting via BMS – i.e. any plant item deviating by 5% of design quoted efficiency or overall change in system distribution losses against target of +10%	First 3 years of operation /Life of building	Check plant conditions and if necessary employ specialist independent consultant to undertake detailed logging. Undertake remedial action recommended by	

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SECTION 6 OPERATIONAL PHASE MAIN and CHILDRENS HOPITALS Note ! where joint responsibility noted, this shall generally be BCL in contractual defects phase and undertaken where excess or unexpected energy use has been noted and NHSGGC beyond this phase						
ISSUE/ REFERENCE	SUB ISSUES	ISSUE OWNER	EVIDENCE AND/OR ACTION REQUIRED	DATE OR DESIGN STAGE REQUIRED	OUTCOME, DATE COMPLETED NOT COMPLETE	RECORD OF MEETINGS AND OUSTANDING ACTIONS
					specialist	
	Controls and zoning	BCL/NH SGGC	As above	First 3 years of operation /Life of building	Check controls operation, Check that set points have not been altered outside allowable tolerance. Check for deviation from commissioned values. If no apparent cause action as above	
	maintenance	NHSGG C		Life of building	physical checks for hand operation, leakage, closed vales, breakdown of insulation	
At the end of each of the first three years of the operational phase, all the above issues should have been addressed and any outstanding items from earlier phases cleared. The low carbon auditor will need to have seen all above listed reports, commented on the issues and be able to confirm to the Carbon Trust and the Board that the completed building meets the objectives in the employers requirements and targets.						

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MAIL TYPE	MAIL NUMBER	REFERENCE NUMBER
Meeting Minutes	BMCE-MM-000605	BMCE-MM-000605

1:50 Meeting 06.03.12 London

From	Mr Ken Hall - Brookfield Multiplex Construction Europe
To (6)	Mr Brendan Rooney - Mercury Engineering (Ireland)
	Ms ANNIE CHEUNG - NIGHTINGALE ASSOCIATES
	Mr Justin Liebenberg - NIGHTINGALE ASSOCIATES
	Ms Sonja Von Maltzahn - NIGHTINGALE ASSOCIATES
	Ms EMMA WHITE - NIGHTINGALE ASSOCIATES
	Mr Zisman NSGH - Zisman Bowyer and Partners
Cc (6)	Mr Phil Biginton - Brookfield Multiplex Construction Europe
	Mr Gavin Burnett - Brookfield Multiplex Construction Europe
	Mr Darren Pike - Brookfield Multiplex Construction Europe
	Mr Andrew Richardson - Brookfield Multiplex Construction Europe
	Mr Jim Murray - Brookfield Multiplex Construction Europe
	Mr Darren Smith - Brookfield Multiplex Construction Europe
Sent	Wednesday, 7 March 2012

MESSAGE

Attendees:

Andrew Richardson, BM
Ken Hall, BM
Gavin Burnett, BM
Phil Biginton, BM

Neil Ross, ZBP
Gareth Turner , ZBP

Emma White, Nightingale
Sonja Von Maltzahn , Nightingale
Justine Liebenberg, Nightingale
Annie Cheung, Nightingale

Summary of Key Points

1.0 Nightingale tabled coloured drawings that reflect the production zone programme. Action: Nightingale to circulate to all attendees.

2.0 Mercury rodding eye hand mark up drawings tabled. Action: Mercury to CAD up and issue to Nightingale by 09.03.12. Review both zone G and D completed. 300 x 200mm clear space allowance to be annotated.

3.0 Discussion on fire layout drawings and the requirement to show on Nightingale drawings. Action: Mercury to issue CAD drawings, vendor details on actual sizes and verify fixing heights by 09.03.12.

4.0 Nightingale noted Boards comments were being incorporated and drawings being reissued. Action: Requirement for Mercury /ZBP to review clouded changes for impact on M+E design.

5.0 Nightingale tabled Standard Mounting Heights drawing, NA-XX-XX-SC-400-002 Rev 02. Action: Mercury to review and feed back any changes / additions by 09.03.12.

6.0 Door Access layout drawings tabled. Action: Mercury to provide Nightingale with layout drawings detailing location of proposed units both sides doors by 09.03.12.

7.0 ZBP outlined small power design agreement between ZBP/Mercury. Nightingale drawings used to circuit small power / Mercury pulling together installation drawings. ZBP reviewing drawings and adding power provision to Nightingales drawings.

8.0 Cleaners Sockets. BM requested raised above lower bump rail. Action: Nightingale.

9.0 Defib sockets shown as TRO 310 to be shown at 1100mm not 400mm. Action: Mercury to identify separately within installation drawings.

10.0 Lift Call buttons. BM requested coordination with wall protection. Action: Nightingale.

11.0 IPS Clarification. Astins / Mercury gap. Action: Mercury to confirm cost plan issued and typical detail of wall panel elevation available.

12.0 Mercury IPS drawings debated. Action: Mercury to confirm proposed date of issue.

13.0 Meigan Provision debated. Action: ZBP to review / mark up 1:50 drawings with provision.

14.0 Fire Dampers debated. Action: ZBP to provide clarification / review access issues within clinical areas.

15.0 MRI debated. BM requested review of rooms and magnet removal not impacting on M+E services on walls ie one wall clear. Action: Nightingale to review and feedback.

16.0 Nurse bases debated. BM noted combined solution alternative subject to Board approval via a pending presentation. Action: Mercury to confirm panel sizes after agreed way forward.

17.0 PTS Power and layout debated. Action: Mercury to clarify power provision requirements from Swislog. Nightingale to review ceiling layouts coordinated with PTS rising into ceilings.

18.0 ADB Code required for power pole associated with island seating. Peterbourgh used 2 compartment 100 x 100 for power and data. Action: Mercury to issue information based on Peterbourgh to Nightingales.

19.0 "Room In Use" signage. Action: Nightingale to review if applicable door being controlled is specifically identified / over door to avoid the issues at Peterbourgh.

20.0 Sensor Taps. Board letter stated removal from clinical areas, Nightingale raised concerns over impacting on SHBN. Action: BM to provide clarity to the design team.

21.0 Nurse Call Indicators emergency call system. ZBP noted no requirement to provide same system as Peterbourgh, and no performance specification available.

22.0 IT Hub Packs / Elevations debated. Action: Mercury to confirm package of information being issued.

23.0 Lift Drawings. Nightingale noted Lift drawings / finishes not reviewed yet. Action: BM to clarify status / relevant workflow.

24.0 Gullies - BM requested check be made for each AHU had drain point coordinated. Action: ZBP to confirm.

25.0 Retail Spaces debated. Action: Mercury to confirm sprinkler provision.

26.0 Water points within courtyards. BM stated preference for ground rather than wall mounted due to render damage. Action: ZBP to review Scottishwater approvals obtained and confirm mounting details.

27.0 Aseptic Suite. Action: ZBP to confirm cooling strategy / assumptions.

28.0 MRI Design. Mercury assessing on GEC 3 T machines. ZBP confirmed impedance of cabling had been noted. Actions: Mercury to note relocation of one MRI from existing hospital and review info already issued by Board as guidance.

29.0 Alignment of switchroom AAW-333 (0-525 ZG, level 0). Action: ZBP reviewing duct(s) impact and clarification to be issued to Nightingale.

30.0 Shower areas show wall lights (0-523). Action: Mercury to review drawings and mark up accordingly.

31.0 Future zones - drawing layers to be sent in advance to Nightingale. Action: ZBP/Mercury

32.0 Art strategy debated. Action: Mercury to review against lighting design.

33.0 Public Health debate CCW 020 Pantry. 600mm depth for dishwasher affecting depths. Action: ZBP to carry out review with drainage location(s) in corner of rooms.

34.0 Vertical trunking on walls. TRU 1000, typically nearest to door. Action: Mercury to review and mark all vertical runs on walls with "L" or "R". New code required for double banked. Mercury to confirm trunking strategy for sockets on wall not currently detailed as trunking.

35.0 BM noted a RFI had been issued to Mercury to clarify Astins on sizes gas panels / recess. Review of recess, any implication 30min / 60min fire rating. Action: Mercury to respond.

36.0 BMS Sensors debate. Action: Mercury to review environmental drawings and mark up thermostat locations / changes and feed into Nightingale by 09.03.12

37.0 Pressure Stabilisers eg Theatre, Isolation rooms, Aspectic Suite etc. Action: ZBP to confirm spatial coordination carried out, confirm areas where stablisers being provided and how this information is being relayed to Mercury and recorded within 1:50 elevations being prepared by Nightingales.

38.0 Sprinkler Zonal Valves Debate. Action: Mercury to confirm all of ZBP comments on location have now been closed out.

New Southern General Hospitals

Project Management Instruction Report

Notify

ID	1109	**Notified by**	GGC01.sfrew on 22/06/2012 15:03:30
Notified to	BCL01-Brookfield Construction Limited	**Date notified**	22/06/2012
Date response required	06/07/2012		
Title	PMI 173 - A&C Hospitals - Sensor Taps		
Description	The Board advise BMCL that they require all taps to be non-sensor with the exception of those taps previously identified to meet the BREEAM criteria.		
Instruction	As above		
Status	None	**Cancel PMI**	None

Meeting

Documents

Notes

This document states the correct information at time of production (Thursday 22th June @15:38).
Content is subject to change at any moment in time and cannot be used as evidence of current information
Sypro takes no responsibility for out of date information.

MAIL TYPE	MAIL NUMBER	REFERENCE NUMBER
Early Warning Notice	NA-EWN-000165	NA-EWN-000165

NSGH: Sensor Taps - Alternative Compliance

From	Ms Liane Edwards - NIGHTINGALE ASSOCIATES
To (24)	Mr Stuart Andrews - Brookfield Multiplex Construction Europe
	Mr Gavin Burnett - Brookfield Multiplex Construction Europe
	Mr Alasdair Fernie - Brookfield Multiplex Construction Europe
	Mr Nigel Hollowell - Brookfield Multiplex Construction Europe
	Mr Stuart Jackson - Brookfield Multiplex Construction Europe
	Mr George McLatchie - Brookfield Multiplex Construction Europe
	Mr George Miller - Brookfield Multiplex Construction Europe
	Mr Jim Murray - Brookfield Multiplex Construction Europe
	Mr Jamie Philip - Brookfield Multiplex Construction Europe
	Mr Darren Smith - Brookfield Multiplex Construction Europe
	Mr Grant Wallace - Brookfield Multiplex Construction Europe
	Ms Ceara Pimley - Gillespies Landscape Architect
	Ms Laura Scott-Simmons - Gillespies Landscape Architect
	NSGH Document Control - Mercury Engineering
	Mr Brendan Rooney - Mercury Engineering
	Ms Liane Edwards - NIGHTINGALE ASSOCIATES
	Mr Justin Liebenberg - NIGHTINGALE ASSOCIATES
	Mr JASON TRUSCOTT - NIGHTINGALE ASSOCIATES
	Ms EMMA WHITE - NIGHTINGALE ASSOCIATES
	Mr JOHN WIGGETT - NIGHTINGALE ASSOCIATES
	Mr Pete Dunbar - WSP Buildings
	Mr Neil McGarry - WSP Buildings
	Mr Michael Woods - WSP Buildings
	Mr Zisman NSGH - Zisman Bowyer and Partners
Cc (2)	Mr David Cartwright - Brookfield Multiplex Construction Europe
	Mr Andrew Richardson - Brookfield Multiplex Construction Europe
Sent	Thursday, 12 July 2012

MESSAGE

EARLY WARNING NOTICE

The following matters could:
*(delete as appropriate)

- Increase the total of the prices
- Delay Completion
- Delay meeting a Key Date
- Impair performance of the works in use
- change the *Accepted Programme*
- affect the work of the *Employer*, an *Employer's* contractor or another consultant.

***DETAILS OF EARLY WARNING NOTIFICATION (Please attach relevant documents)**

Further to PMI 173 where it is noted that all sensor taps are to be removed except for those required to achieve BREEAM credit.

NA note a series of non-compliances for this proposal - sensor taps are required under a series of HBNs as follows:

SHTM-64 Sanitary Assemblies

2.26 When selecting taps for clinical procedures, and certain activities in food-preparation and laboratory areas, taps and supply fittings will be required to be operated without the use of hands.

2.27 Fittings actuated by a proximity sensor are now a preferred alternative to lever-action taps.

2.28 The design team should select the appropriate combinations of basins and taps illustrated on the assembly data sheets for:
clinical procedures (see Sheet 7);
personal washing (see Sheet 8);

2.40 For infection control reasons sensor-controlled fittings are generally required for controlling the flow of water at scrub-up troughs and these can also offer the additional benefit of controlled run times. The relationship between the taps and the trough is critical in order to avoid splashing.

HBN-52 Endoscopy

4.43 The endoscopy room should be provided with.....a clinical hand wash basin...

HBN-57 Critical Care

3.20 Each bedspace should have a designated clinical wash hand basin....fitted with non-touch taps.

7.25 Each single bedroom should have a designated clinical wash hand basin.....automatic taps or foot control.

7.27 Multibeds should have a designated clinical wash hand basin.....automatic taps or foot control.

HBN-26 Operating Theatres

4.30 Each consulting/changing room will require a clinical hand-wash basin with non-touch taps, desk with computer facilities, and internal telephone.

4.46 A clinical hand-wash basin with non-touch taps should be provided. It should be sited at the end of the room opposite to the normal position of the patient's head.

A52725667

4.57 Non-touch taps, scrub solution and nailbrush dispensers are required. Sensor taps are now available that allow a sufficient run-on time for the scrub protocol to be completed. The recommended length of the tap is 250 mm with a sensing range of 200–250 mm, and the run-on time should be a minimum of 20 seconds. An access panel should be sited to the side of the scrub sink to provide ease of maintenance of the thermostatic mixer valves and sensor controls to the taps.

5.10 Each WC will require a hand-wash basin with nontouch taps and a WC with a non-touch flush valve. Extract ventilation should be provided.

6.44 All basins should have curved sides with no plugs, have no overflows, and be fitted with infrared non-touch taps which should not be placed over the waste outlet. Mixer taps should be used, as very hot or very cold water discourages hand-washing. There should be sufficient space around the basin to wall-mount alcohol gel, liquid soap, hand disinfectant and paper towels. The splashback should be a single waterproof sheet or seal mounting with polyurethane or wallglaze.

HBN-4 Isolation Facilities

3.2 Enhanced single rooms with en-suite facilities...clinical hand wash basin, with non-touch.....tap

HBN-54 Cancer Services

7.9 hand wash basins should be ceramic with lever or sensor operated taps.

Rooms with WHBs requiring sensor taps are as follows to achieve BREEAM credit:

Restaurant (Level01)

RES-018 Disabled WC (1x Wash hand basin)
RES-034 Disabled WC (1x Wash hand basin)
RES-014 Female WC (2x Wash hand basins)
RES-019 Male WC (2x Wash hand basins)

NSGH Main Entrance:

ENT-052 Male hand wash area (3x wash hand basins)
ENT-041 Female hand wash area (3x wash hand basins)
ENT-048 Staff WC (1x wash hand basin)
ENT-046 Disabled WC (1x Wash hand basin)
ENT-047 Disabled WC (1x Wash hand basin)
ENT-054 Adult WC/Change/Shower (1x Wash hand basin)
ENT-021 Cafe Snack Bar- specialist fit out

NCH Main Entrance:

ENT-040 WC (1x wash hand basin)
ENT-041 WC (1x wash hand basin)
ENT-042 WC (1x wash hand basin)
ENT-043 WC (1x wash hand basin)
ENT-019 Assisted WC (1x Wash hand basin
ENT-037 Disabled Change (1x Wash hand basin
ENT-046 Assisted WC (1x Wash hand basin
ENT-047 Assisted WC (1x Wash hand basin
ENT-034 Snack Bar\Seating – specialist fit out

Basement:

KIT-038 Male Change (1x wash hand basin)
KIT-004 Female Change (1x wash hand basin)
FMB-013 WC (1x wash hand basin)
FMB-014 WC (1x wash hand basin)

This list was based on letter from NHS stating that all other areas are for clinical use. However, they have now commenced (conclusion imminent) confirmation of WCs for staff use. ie there are a number of WCs which are for use by the public. There may be a risk therefore, that BRE request sensor taps to these WCs.

*The following works may be affected:

- Services design
- 1:50 T3 issues (some already issued)
-

***PROPOSALS REQUIRED (Assumptions to be noted if any)**

BM to confirm alternative compliance with NHS.

BM to confirm if public accessed WCs are to have sensor taps incorporated. (BM to conclude ID of staff WCs first!)

BM to confirm definitively by w/e 27.07.12 so that T3s can be updated as part of the sweep up 1:50 process commencing in August.

You are instructed to attend a risk reduction meeting on *(13/07/12) to discuss the above.

MAIL TYPE	MAIL NUMBER	REFERENCE NUMBER
Request For Information	NA-RFI-000365	NA-RFI-000365

NSGH: SENSOR TAPS

From	Ms Liane Edwards - NIGHTINGALE ASSOCIATES
To (3)	Mr Gavin Burnett - Brookfield Multiplex Construction Europe Mr Colin Grindlay - Brookfield Multiplex Construction Europe Mr Darren Smith - Brookfield Multiplex Construction Europe
Cc (2)	Ms Lindsay Gibbon - NIGHTINGALE ASSOCIATES Mr JASON TRUSCOTT - NIGHTINGALE ASSOCIATES
Sent	Monday, 24 September 2012
Respond by	**28/09/2012**

MESSAGE

Darren, Gavin, Colin

Our NA colleagues in Wales have highlighted an issue with the omission of sensor taps which we strongly recommend BM discuss further with the NHS.

NA (Cardiff) are currently working on Health Vision Swansea (large outpatients hospital).The Health Board there changed all the taps to the Horne mixer tap (same as NSGH). We understand that this type of tap has now been **prohibited** for use in Wales. We understand that the insides of the tap are rough cast rather than machine cast which leads to infection control issues. All Welsh Health Boards have now had a tap demonstration from Ideal Standard and they feel that the **sensor taps are now safer to use**.

We understand that Glasgow NHS are not minded to keep sensors, however in light of this information, and the implications for the servicing of the build should they later change their minds back to sensors, surely it would be wise to raise this with them and ensure they are fully aware of the potential risks.

Regards
LE

Enc 1

PROJECT STEERING GROUP: 25th September 2012

ACTION NOTE

Present:	Alan Seabourne (AS)	Alan McCubbin (AMc)	Mike Sharples (MS)	Peter Moir (PM)
Ross Ballingall (RB)	Tim Bicknell (TB)	Douglas Ross (DR)	Allyson Hirst (Notes)	
Apologies:	John Ballantyne (JB)	Paul Serkis (PS)		

Item No	Item	Discussion/Information	Action	Action by Whom
1.	Action note from previous meeting	Accepted as an accurate record.	-	-
2.	Matters Arising			
	PAH	A compensation event was raised to extend the monitoring timeline. DSmith /AS and WSP will continue to review the monitored results	Continue monitoring	AS/DS/WSP
	Inflation	TB/JB/AS/DR had met to discuss and TB was preparing a proposal for consideration by the Board	Proposal from TB	TB
2.	Monthly Project Report			
	Programme	PM reported that programme was progressing well and on schedule – good reports were being received from Capita Symonds.		
	Construction/Logistics	Laboratory detects are being addressed. Cleaning of façade at laboratory is progressing. Sedum roof – programme to rectify detects is required to be worked up. PM reported that he planned to meet with Prater and BMC to review and to agree the way forward. It is likely that results will not be seen until next years growing season therefore this will continue to be monitored until August 2013 It was noted that additional project team staff would be walking through the construction site on a daily basis to monitor progress. So far reports back have been largely positive.		
	Remedial Piling	Piling will be complete by the end of w/c 1st October as there are only 3 piles to completed and carry out final assessments.		
	External	It was noted that the Biochemistry Building demolition was now completed and soil testing commenced. Results of these tests have indicated hydrocarbons and asbestos in the ground. Soil testing will also check surrounding area. Star pipe work was progressing		
	Design Development	This is a work in progress with 1:50 almost entirely up to date and RDD samples are being signed off		
	Drainage	Some 1:50 issues but these are being dealt with as they arise.		
	Area D	Well advanced – ceilings are scheduled to commence next week with Capita Symonds participating in the IDMS programme of review.		

Item No	Item	Discussion/Information	Action	Action by Whom
	Wet System Pipe Testing *'A' Side Energy Centre*	AS/DP will discuss this further outwith this meeting – the initial thoughts were to test with air but now considering water tests. This method of testing could have implications on the conditions of the pipework on commissioning and will require a sterilisation of the pipes. MS noted that there will be no water in the pipes until March 2013 and that testing will progress area by area and with completion heat will be introduced to the areas albeit it at a very low level. DP is preparing a high level programme for the commissioning works of these services. This is programmed for handover at the end of October 2012 – AS noted that he would require a testing programme, H&S details, training etc to be closed out for this work being completed		
4.	Project Supervisors Report	Defects as noted within the report. Good feeback on progress to date. AS noted that the project team walk through site regularly and compile a report which is reported at Fridays project meeting and issues are taken forward with Capita Symonds to resolution		
5.	Project Management Group *Piling* *Laboratory leaks* *Laboratory BREEAM*	Piling discussed as before and sedum roofing issues as before Laboratory leaks – AS asked for an update on the situation Laboratory BREEAM – it was noted that this still required to be closed off. Metering issue has been noted - not sufficient metering for each of the supplies – D.Pike and S.logan are working to resolve this in order to sign off. AS planned to catch up with DP later to discuss.	Update to AS	BMC
6.	Commercial	DR reported on cashflow and noted that it was down on previous submission for the year end. MS agreed to review the reasons behind this. All other issues were progressing well including weather monitoring	MS to check on cashflow	MS
7.	Community Benefits	It was reported that the recent surveys carried out on 10 properties on the adjacent housing scheme were now back the BMC with only minor issues found. It was noted that monitoring equipment was now installed and recording any vibrations with cameras to catch the activity at the time in case of further reports of excessive vibration from hospital or residents		
8.	Car Park 1	AS reported that the FBC had been approved by the NHS GG&C Board but was now being taken to CIG on 9th October for final approval.		
9.	Inflation	TB reported that he would provide an update to the meeting in October – this will consider 2 options – proposal or defer		
10.	Risks	Union issues raised from Unite - MS reported that several meetings and telephone conversations had taken place and offers of resolution put forward. To date none of the offers have been accepted. MS noted that UCATT representatives would be happy to hear any issues and pass these to the relevant union representative. MS agreed to update AS if any issues arose	Update AS as appropriate	MS
11	Strategic Issues	AS reported that he was keen to start planning the commissioning and migration process of the building and the handover arrangements. The project team are currently working with colleagues to determine the best way forward. The outcome of this work will be part of the liaisons with BMC for handover period. Equipment and IT discussions have already started. AS noted that he had planned to have the hospital running for 12 weeks with no patients in order to give an opportunity to provide orientation and testing of all system fully and to allow users to become settled with the building before moving in to work.		

Item No	Item	Discussion/Information	Action	Action by Whom
12.	AOCB	There were no further items for discussion and the meeting was closed	-	-
13.	Date and time of next meeting	27th November 2012 at 11am, Board Room, project offices	For noting	All

340 WASH BASINS *WHBN1000; WHBN1006* - CLINICAL HAND WASH, WALL HUNG

- Manufacturer: Armitage Shanks or equal approved.
  - Standards : SHTM64 (LB H M)
  - Product reference: S2154 Contour 21 back outlet washbasin.
- Size: 500 x 400 mm.
- Material: vitreous china.
- Tap/ Chainstay/ Overflow holes:
  - No tap holes;
  - No chainstay hole; and
  - No overflow hole.
- Water supply fittings: SHTM64 (TBH6) bib mixer taps with integral thermostat and proximity sensor.
  - Water supply temperature (maximum): in accordance with SHTM 04-01 The Control of Legionella.
  - Manufacturer: As Wash basin.
    Product reference: ~~A4554 Markwik 21 panel mounted mixer taps, integral thermostat, horizontal outlet:~~ – HORNE TAP.
  - ~~Operation: Proximity sensor mixer.~~ – REMOVED.
- Wastes: back waste.
  - Standards: To BS EN 274-1, -2 and -3.
  - Manufacturer: As Wash basin.
    Product reference: S8750 outlet adaptor for Contour 21 basin, .
  - Traps: Bottle.
  - Standards: To BS EN 274-1, -2 and -3. SHTM 64 (TRR1/P)
  - Manufacturer: As Wash basin.
    Product reference: S8920 1¼" Bottle trap,, multi-purpose outlet.
  - Size: 75 mm seal.
  - Material: plastics, white.
  - Depth of seal (minimum): 75 mm.
- Accessories: S9112 panel mounted toggle bolts and clips for Contour basins.

NEW SOUTH GLASGOW HOSPITALS & LABORATORY PROJECT
NEW ADULT & CHILDRENS HOSPITALS - DOCUMENT REVIEW

Representative Name	Date	Category	Signature
[redacted]	8/11/12	A	[redacted]

Comment

A No Comment
B Processed Subject to Amendment
C Subject To Amendment and Resubmit
D Rejected Amend the Submitted Item and Resubmit

NHS

Brookfield MULTIPLEX BM

CONTRACTOR DOCUMENT REVIEW
NEW SOUTH GLASGOW HOSPITAL
Brookfield Multiplex Received Date:

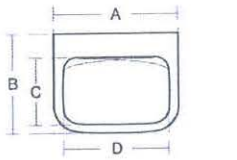
A ☑ No Comment
B ☐ Noted subject to comments: correct and resubmit within 7 Business Days
C ☐ Rejected – correct and resubmit within 7 Business Days

BMCL CHECKED BY: [redacted]
DATE: 13.11.12

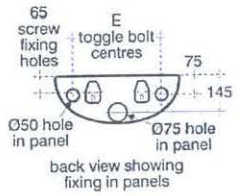
Brookfield Multiplex review status does not absolve the Consultant of its obligations with regard to cooperation and compliance with the other Consultants and specialist Subcontractor's design and the Project Agreements, Employer's Requirements and the cost Plan and for ensuring that there are no ambiguities, discrepancies, inconsistencies or omissions within this document or between it and any other design document.

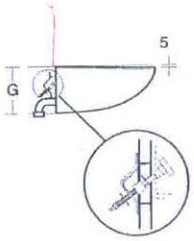
Product Data Sheet BAS 101

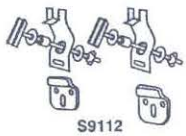
Contour 21 Washbasin 50cm No Taphole No Chainstay Hole or Overflow - General Use



A	B	C	D	E	G
500	400	270	425	360	185
~~600~~	~~450~~	~~340~~	~~560~~	~~450~~	~~195~~







Illustrated

S2154	Contour 21 back outlet washbasin, 50cm, no tapholes, no overflow, no chainstay hole
S8750	Waste 1 1/4in outlet adaptor for all Contour back outlet washbasins
S8920	Trap 1 1/4in plastic resealing bottle, 75mm seal
S9112	Concealed hangers pressed Steel, toggle bolts and clips for Contour washbasins

Configuration options

- ~~S8746 Plastic strainer for back outlet washbasins~~
- ~~S8745 Washbasin waste grating, plug and chain for back outlet washbasin~~
- ~~S7422 Contour 2 washbasin mixer wall mounted single control concealed, ceramic disc operation, 150mm projection spout with alternative aerator or flow straightener outlet, flexible inlet tails integral combined filter and regulating valves~~
- ~~S7435 Nuastyle 1/2in thermostatic blending valve, anti tamper shield, inlets and outlet for 15mm copper~~
- ~~S8910 Trap 1 1/4in plastic bottle, 75mm seal~~
- ~~S0006 Isolating valve 1/2in with screwdriver control, inlet for 15mm copper, outlet with 1/2" BSP female swivel coppnut~~
- ~~S0005 Volume Control valve 1/2in with screwdriver control, inlet and outlet for 15mm copper~~
- ~~S7241 Avon bib tap, non concussive self closing~~

Material

Vitreous China

Weights

S2154	12.750KG
S8750	0.020KG
S8920	2KG
S9112	0.470KG

Colours

White (01)

Standards

Vitreous china to BS 3402

Special Notes

Suggested rim heights; 780-800 for ambulant users 680-700 for wheelchair users. Washbasin wall mounted using S9112 hangers or panel mounted using S9112 hangers, toggle bolts & clips. Toggle bolts and outlet adaptor suitable for maximum panel thickness of 18mm

Designer

Robin Levien, RDI

Frequently used applications

Education	Factory
Hotels	Office
Public Building	Pubs and Clubs
Retail	Sports and Leisure

Armitage Shanks
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HORNE®

HORNE OPTITHERM Thermostatic Medical Tap

Description

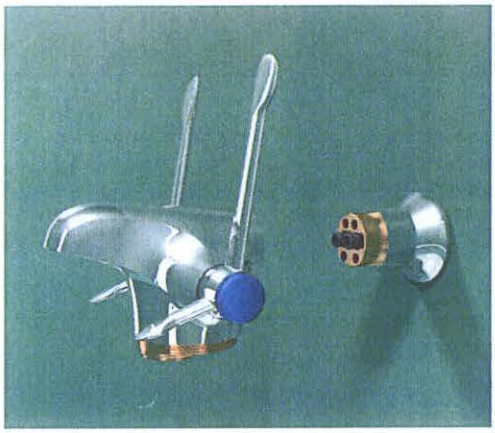
Bib mounted, dual function tap delivering thermostatically controlled hot water and dedicated cold water for use in healthcare and clinical applications.

Features & Benefits

- Integral TMV3 Approved thermostatic mixing valve complete with easy-access* isolation valves, check valves, strainers and thermostatic cartridge
- Robust and reliable design ensures optimum performance over extended lifetime
- Integral combined flow regulator (6 l/m) conditioner on outlet for water economy and comfort
- Dual lever operation - elbow shut off avoids hand recontamination after washing
- Clutch mechanism on levers prevents accidental or intentional breakage
- Safe surface temperature (≤ 42°C) ensured during and after operation
- Cold water bypass for dedicated cold water delivery
- Hard, polished and continuously smooth chromium plated surface fully accessible for thorough and effective cleaning
- Modular design facilitates rapid removal for change-over and in-situ servicing

* with correct tools

Clinical hand wash under thermostatically controlled warm water



Modular design for easy installation and servicing

WRAS APPROVED PRODUCT

TMV3 SCHEME

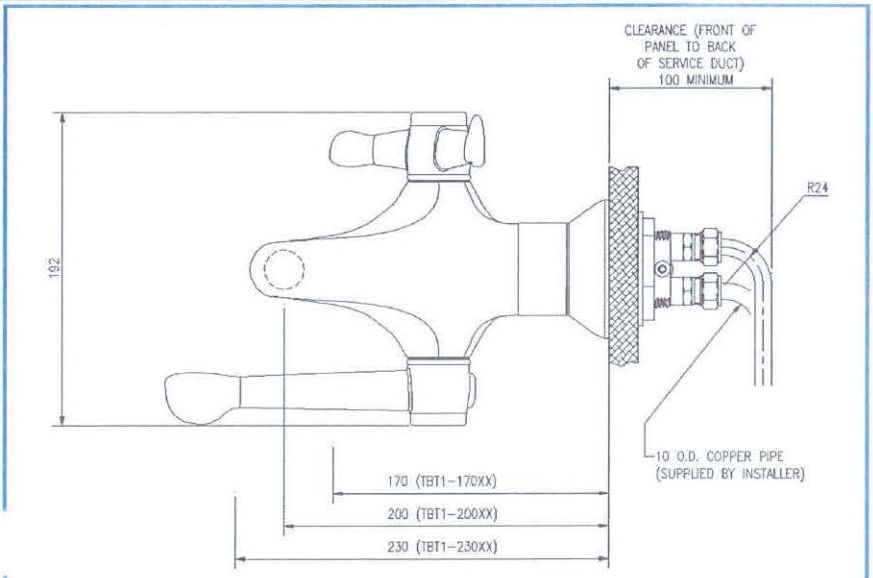
Certificate No. FM12345

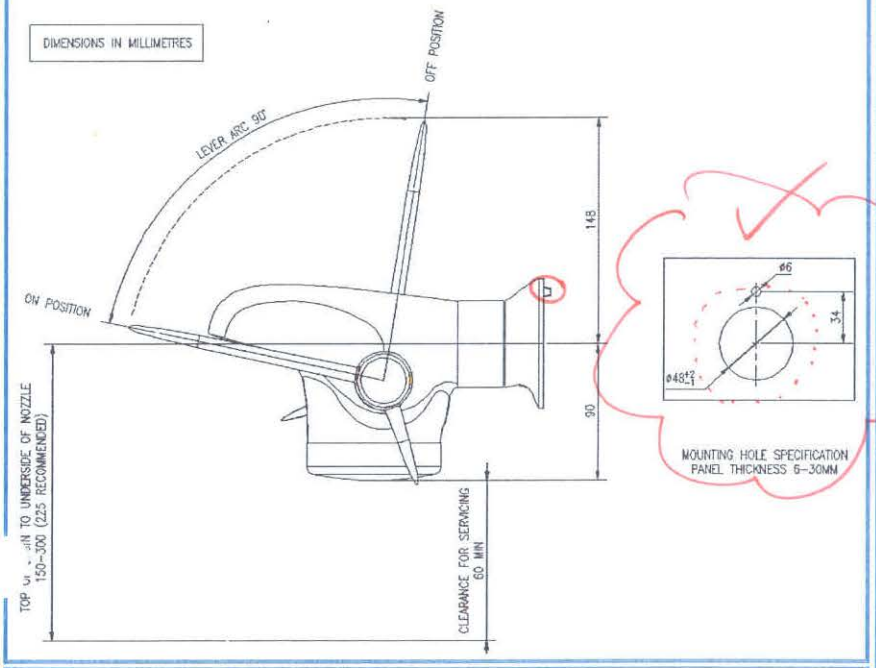
Visualisation by www.showthempictures.com

A52725667

HORNE®

HORNE OPTITHERM
Thermostatic Medical Tap





Operating Parameters

Hot and cold water supply pressures do not need to be equal.

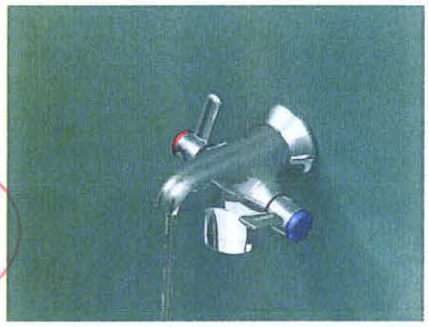
Temp. setting at factory	41°C
Range of temp. adjustment	35 - 44°C
Range of hot water supply temp.	55 - 85°C
Minimum differential between H & C water temperatures and mixed water temperature.	12°C
Maximum static pressure	10 bar
Range of maintained water supply pressures	1 - 5 bar

Variants

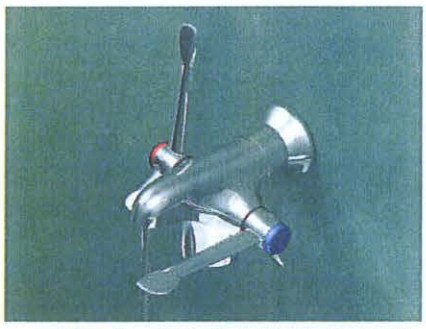
Lever options: Dual lever **(DL suffix)** aids prevention of infection for clinical & surgical hand wash. Single short levers **(SL suffix)** for patient or bath-fill use.

Extension pieces: The distance from the wall to the outlet can be increased from the standard **170**mm to **200**mm or **230**mm using the 30mm or the 60mm extension piece.

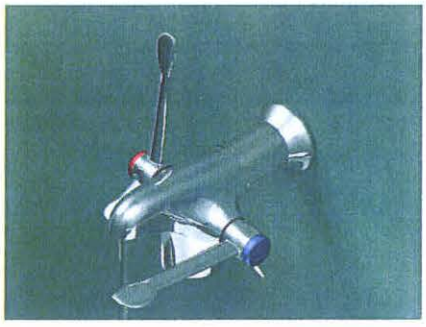
Product Ref: TBT1-170DL



Product Ref: TBT1-170SL



Product Ref: TBT1-200DL



Product Ref: TBT1-230DL

HORNE ENGINEERING Ltd, PO Box 7, Rankine Street, Johnstone, PA5 8BD
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A52725667

Horne Engineering Ltd reserves the right to alter design and specification without notice.

Product Data Sheet

WAS 1000

1 1/4in x75mm Plastic Resealing Bottle Trp

Illustrated

S8920 (TRR1/P) Trap 1 1/4in plastic resealing bottle, 75mm seal

Configuration options

Weights

S8920 2KG

Special Notes

Multi-purpose outlet suitable for plastic and BS copper pipe

Colours

Neutral / No Finish (67)

Frequently used applications

Education
General Healthcare
Hotels
Public Building
Residential
Sports and Leisure
Factory
Hospitals (HTM64)
Office
Pubs and Clubs
Retail

Features

HTM

Armitage Shanks
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Web: www.idealspec.co.uk

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BMCE-XX-XX-DC-029

340C WASH BASINS *WHBN1003*; MEDIUM, 1 TAP HOLE
Standard: SHTM64 (LB G M)

- Manufacturer: Armitage Shanks or equal approved.
  - Product reference: S2254 Portman 21.
- Size: 500 x 400 mm.
- Material: Vitreous china, white.
- Tap/ Chainstay/ Overflow holes:
  - One tap hole, right hand;
  - No chainstay hole; and
  - No overflow hole.
- Water supply fittings: SHTM 64 (TP6) lever action thermostatic mixer tap.
  - Water supply temperature (maximum): in accordance with SHTM 04-01 The Control of Legionella.
  - Manufacturer: Armitage Shanks or equal approved.
    Product reference: A4169 Contour 21.
  - Operation: Lever handle.
- Wastes: recessed grated waste, plug and chain with CP link chain and screw bolt/stay.
  - Standards: To BS EN 274-1, -2 and -3. SHTM 64 WT 3.
  - Manufacturer: As Wash basin.
    Product reference: S8715.
  - Size: 1¼".
  - Material: Brass, chrome plated.
  - Tail: unslotted tail.
- Traps: Bottle.
  - Standards: To BS EN 274-1, -2 and -3. SHTM64 (TRR1/P)
  - Manufacturer: As Wash basin.
    Product reference: S8920.
  - Size: 1¼".
  - Material: Plastics, white.
  - Depth of seal (minimum): 75 mm.
- Accessories: S913767 concealed bracket with centre waste support and fixing clamps.

NEW SOUTH GLASGOW HOSPITALS & LABORATORY PROJECT
NEW ADULT & CHILDRENS HOSPITALS - DOCUMENT REVIEW

Representative Name	Date	Category	Signature
[redacted]	8/6/12	A	[redacted]

Comment

A No Comment
B Processed Subject to Amendment
C Subject To Amendment and Resubmit
D Rejected. Amend the Submitted Item and Resubmit

NHS

Brookfield MULTIPLEX BM [redacted]

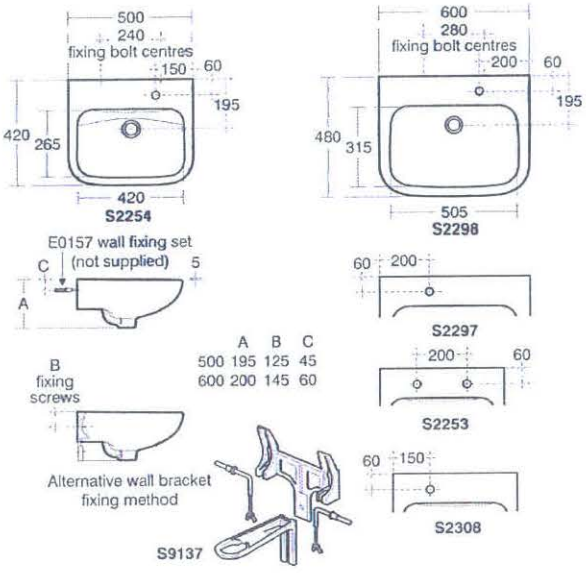
CONTRACTOR DOCUMENT REVIEW
NEW SOUTH GLASGOW HOSPITAL
Brookfield Multiplex Received Date:
A ☑ No Comment
B ☐ Noted subject to comments, correct and resubmit within 7 Business Days
C ☐ Rejected – correct and resubmit within 7 Business Days

BMCL CHECKED BY [redacted]
DATE: 13.11.12

Brookfield Multiplex review status does not absolve the Consultant of its obligations with regard to coordination and conformity with the other Consultants and specialist Subcontractor's design and the Project Agreements, Employer's Requirements and the cost Plan and for ensuring that there are no ambiguities, discrepancies, inconsistencies or omissions within this document or between it and any other design document

BAS 106

Product Data Sheet



Portman 21 Washbasin 50cm RH Taphole, No Overflow or Chainstay Hole

Illustrated

S2254 ✓	(LB G M) Portman 21 washbasin 50cm, 1 right hand taphole, no overflow, no chainstay hole
S9137	Bracket concealed with clamps and centre waste support for Portman 21, 60 and 50cm washbasins
A4169	(TP6) Contour 21 washbasin mixer thermostatic 1 hole, single sequential long lever, copper tube inlet
S8715	(WT3) Waste 1 1/4in waste with bead chain & plug 80mm unslotted tail, screw stay
S8920	(TRR1/P) Trap 1 1/4in plastic resealing bottle, 75mm seal

Configuration options

~~B8263 Avon 21 washbasin mixer 1 hole, self closing push button, variable temperature control with 15mm female connector flexible hoses on inlets~~

~~G7435 Nuastyle 1/2in thermostatic blending valve, anti tamper shield, inlets and outlet for 15mm copper~~

~~S8734 Waste 1 1/4in brass swivel plug waste, 80mm unslotted tail~~

~~S8720 (WT1) Waste 1 1/4in brass strainer waste, 80mm unslotted tail~~

~~S8900 Trap 1 1/4in metal bottle, 75mm seal, outlet screwed 1 1/4in BSP male with compression nut and ring~~

~~E0157 Wall fixing set~~

~~E0062 Basin fixing set for IPS panels or block walls~~

Material

Vitreous China

Weights

S2254	12.640KG
S9137	0.74KG
A4169	2.700KG
S8715	0.250KG
S8920	2KG

Colours

White (01)

Special Notes

Consideration should be given to safe hot water delivery and the use of an appropriate temperature reduction device. For use in connection with personal washing (face, forearms and hands etc.) not for use in clinical areas. Suggested rim height 780-800mm. Washbasin wall mounted using E0157 wall fixing set or panel mounted using E006267 fixing set

Frequently used applications

Hospitals (HTM64)

General Healthcare

Features

HTM

Armitage Shanks
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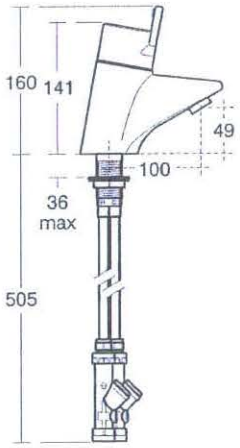
TAP 289

Product Data Sheet



Contour 21 Washbasin Mixer Therm. Single Lever Sequential Copper Tails

Illustrated

A4169 (TP6) Contour 21 washbasin mixer thermostatic 1 hole, single sequential long lever, copper tube inlet

Configuration options

Material

Chrome Plated Metal

Designer

Robin Levien, RDI

Weights

A4169 2.700KG

Colours

Chromium plated (AA)

Frequently used applications

Education
General Healthcare
Hotels
Public Building
Retail
Vandal Risk
Factory
Hospitals (HTM64)
Office
Pubs and Clubs
Sports and Leisure

Features

DocM
HTM

Accreditations

TMV3
WRAS

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WAS 101

Product Data Sheet

1 1/4in Unslotted Chain Waste Screw Stay

Illustrated

S8715 (WT3) Waste 1 1/4in waste with bead chain & plug 80mm unslotted tail, screw stay

Configuration options

Material

Steel

Weights

S8715 0.250KG

Colours

Chromium plated (AA)

Frequently used applications

Factory
Hospitals (HTM64)
General Healthcare
Office

Features

HTM

Armitage Shanks

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WAS 107.

Product Data Sheet

1 1/4in x75mm Plastic Resealing Bottle Trp

Illustrated

S8920 (TRR1/P) Trap 1 1/4in plastic resealing bottle, 75mm seal

Configuration options

Weights

S8920 2KG

Special Notes

Multi-purpose outlet suitable for plastic and BS copper pipe

Colours

Neutral / No Finish (67)

Frequently used applications

Education
General Healthcare
Hotels
Public Building
Residential
Sports and Leisure
Factory
Hospitals (HTM64)
Office
Pubs and Clubs
Retail

Features

HTM

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BREEAM Healthcare FAQs

June 2013

The BREEAM New Construction 2011 scheme has replaced BREEAM Healthcare 2008 as the current BREEAM version for new buildings. As BREEAM 2011 is aimed at new construction projects, there is the option to assess fit-out or major refurbishment projects under the BREEAM Healthcare 2008 scheme until the BREEAM Non Domestic Refurbishment scheme is launched. Further information on the BREEAM Non Domestic Refurbishment scheme can be found at the following link: http://www.breeam.org/page.jsp?id=381

Please note that all requirements and thresholds set by health authorities in the UK are applicable for building's assessed under either BREEAM 2011 or BREEAM Healthcare 2008.

1. Which healthcare buildings require a BREEAM assessment?

As of the 1st of July 2008, all health authorities in the UK (Department of Health, NHS Wales, Health facilities Scotland and the Department of Health Social Services and Public Safety of Northern Ireland) require that new healthcare buildings seeking Outline of Business Case (OBC) approval commit to achieving an EXCELLENT rating and all refurbishments commit to achieving a VERY GOOD.

In Scotland, project specific requirements in relation to the BREEAM assessment will be dealt with by Health Facilities Scotland as part of the NHS Scotland Design Assessment Process.

2. I have a building which is part refurbishment and part new build, in this case what target rating is required?

If the refurbishment part accounts for less than 10% of the total floor area of the building assessed, the requirement is to achieve 'Excellent'. If the refurbishment part accounts for 10% or more, the requirement is to achieve 'Very good'.

Please note: Only major refurbishment, as defined in the BREEAM New Construction 2011 Technical Manual (see scope section), can be assessed.

3. Are there any thresholds below which an assessment is not required?

Yes, the UK health authorities have imposed the following capital cost thresholds:

– England and Scotland: Assessment not required where capital cost* is <£2M.

– Northern Ireland: Assessment not required where capital cost* is <£2M.

– Wales: There are no minimum capital cost thresholds, however the Welsh Governments Planning Policy for all non –residential development applies.

The following exceptions also apply:

– In Wales, new Primary Care developments are not required to achieve an Excellent rating. However, all developments which will either have a floorspace of 1,000 sqm or more, or will be carried out on a site having an area of one hectare or more, are required to achieve a VERY GOOD rating and achieve the mandatory credits for Excellent under issue Ene1 - Reduction of CO2 Emissions (in line with Welsh Government Planning Policy for all non-residential developments).

– In Northern Ireland, listed buildings do not require assessment.

Please note that where the capital cost falls below the relevant threshold, a Pre-Assessment should still be undertaken (at the OBC stage) to determine whether a BREEAM assessment is viable.

* Total Capital Cost for Publicly Funded Build Schemes includes all the items contained in the Capital Investment Manual Cost Forms OB1/ FB1 (i.e. Construction Works, Fees, Non-Works Costs, including Land Purchase, Statutory and Local Authority Charges, Decanting, Enabling and Temporary Works etc., Equipment, Contingencies, including Optimism Bias, and VAT, as applicable). The Total Capital Cost for Privately Funded Schemes includes all the same items as for Publicly Funded Schemes plus the cost of Financing the Capital (i.e. rolled up Interest, Banking Fees - Arrangement, Due Diligence, Lawyers etc. - Third party Equity Costs).

For NHS Scotland Boards, reference should be made to the Scottish Capital Investment Manual (available on http://www.scim.scot.nhs.uk/), especially the business case guide, which sets out the BREEAM requirements for Healthcare buildings, available on: http://www.scim.scot.nhs.uk/PDFs/Manuals/BC/BC_Guide_Full.pdf

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BREEAM Healthcare FAQs

June 2013

4. How can I access the BREEAM New Construction 2011 and BREEAM Healthcare 2008 Manuals?

The BREEAM Manuals are publicly available, and can be downloaded from the BREEAM website, in the resources section, without charge.

5. What training is required to become a qualified BREEAM assessor to assess healthcare buildings?

Individuals will need to attend a four-day course provided by BRE Global. The course requires completion of pre-course work followed by an assessment of competence before starting training. Training will consist of three days with a follow-up examination day that takes place four weeks after the initial training. The three days training will cover in detail the technical basis of completing a BREEAM assessment to the required level of competency. The examination day will consist of a BREEAM foundation exam which covers the core content of BREEAM, followed by an exam covering Public (Education and Healthcare) and Commercial (Offices, Retail and Industrial) sector buildings.

6. Is BRE Global offering training to become a BREEAM assessor to assess healthcare buildings?

Yes, courses are running on a monthly / bimonthly basis. If you are interested in attending please visit www.breeam.org/events to book your place.

7. Why does the NHS need to use BREEAM?

BREEAM is a Government requirement under:

- Government Construction Clients - Achieving Sustainability in construction procurement - Sustainability Action Plan 2012-2015, November 2012
- UK Government Sustainable Procurement Action Plan
- BERRs (now BIS) Strategy for Sustainable Construction
- Government Buying Standards
- Common Minimum Standards for the procurement of built environments in the public sector
- Sustainable Procurement in Government: guidance to the flexible framework
- Scottish Government's Construction Procurement Manual
- Planning Policy Wales

The Department of Health supports the Governments' commitment to the sustainable development agenda and recognises the importance of delivering on this agenda through the design and build process. As the successors to NEAT BREEAM Healthcare 2008, and going forward BREEAM New Construction (which incorporates Healthcare buildings), are the continuation of that process to ensure standards continue to improve. This is further reinforced through HTM 07-07 Sustainable health and social care buildings: Planning, design, construction and refurbishment (note any reference to this document being archived means that it has not recently been updated, but it is still fit for purpose).

8. Do the requirements to use BREEAM apply to GP owned developments?

Whenever GPs work with their PCT in providing healthcare facilities for the community, the development will be expected to also comply with the requirement for BREEAM Healthcare 2008 / BREEAM New Construction 2011 (where the above 'thresholds' are met). This is in line with the fact that the Department of Health supports the Governments' commitment to the sustainable development agenda (through the strategies listed above) and recognises the importance of delivering on this agenda through the design and build process. This will typically apply to all GP owned developments across the UK, but the devolved administrations may have their own requirements.

In Scotland, project specific requirements in relation to the BREEAM assessment will be dealt with by Health Facilities Scotland as part of the NHS Scotland Design Assessment Process.

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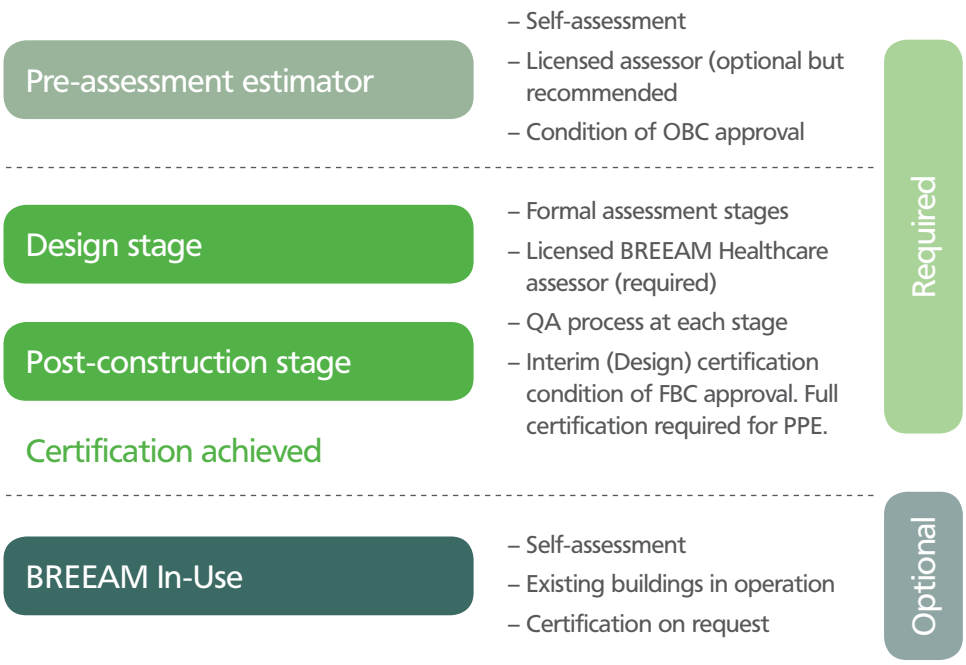
BREEAM Healthcare FAQs

June 2013

9. What are the required stages of assessment?



The requirement from the Department of Health (and the other health authorities) is set so that BREEAM is embedded in the design right from the beginning of the design process: indeed, the target rating should be demonstrated in a Pre-Assessment for the purposes of Outline Business Case (OBC) approval or at RIBA stage A (Inception). Appointing a licensed assessor at this point will ensure the assessment process is well planned and proceeds smoothly. This will also ensure the delivered buildings are sustainable without resorting to the 'engineering fixes' that are often a very expensive last resort. The Design Stage assessment should then be carried out by a licensed assessor and the report submitted to BRE Global for Interim certification. This Interim certification would therefore demonstrate the purposes of Full Business Case (FBC) approval, or equivalent. Finally, the mandatory Post Construction Stage report should then be completed after practical completion and the final certification demonstrated as part of the Post Project Evaluation (PPE).

10. Are there any related publications/reports which might help in addition to the BREEAM New Construction and BREEAM Healthcare Manuals?

Yes, Health Technical Memorandum (HTM) 07-07 'Sustainable health and social care buildings: Planning, design, construction and refurbishment' answers the why/when/who/what/how of sustainable development by taking key issues through a building's life highlighting key actions, commitments and responsibilities at every stage. It also explores early consideration of reuse of existing buildings and provides advice on possibilities for sustainable refurbishment.

bre

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BREEAM Healthcare FAQs

June 2013

11. Why should a project strive to achieve the required BREEAM rating?

There are many reasons why organisations wish to achieve the required BREEAM rating:

– BREEAM addresses a wide-range of environmental and sustainable issues to enable designer, developers and building managers to demonstrate their environmental credentials to clients, planners and other parties.

– Provides market recognition for low environmental impact buildings

– Demonstrates an organisation's commitment to sustainable building practices and its interest in its community, staff, patients and the general public

– BREEAM has a positive influence on the design, construction and management of buildings, demonstrating a good management approach with efficiency and effectiveness at its heart

– The BREEAM rating provides a transparent reflection on the performance of the building to denote those buildings that have performed better than the regulatory baseline

– A tool to help reduce running costs and improve working and living environments.

NEAT

12. What was NEAT?

NEAT was the NHS Environmental Assessment Tool, developed in 2002 by BRE on behalf of the NHS Estate (for use in England and Wales). It was a self-assessment tool to establish the environmental performance of healthcare buildings, both new build and existing buildings in operation. Since the 1st of July 2008, NEAT was superseded by BREEAM Healthcare 2008 and more recently BREEAM New Construction 2011 which incorporates Healthcare building types, and is no longer available to download.

13. What are the main differences between BREEAM Healthcare and NEAT?

NEAT was developed in 2002 by BRE and had not been updated since its creation. NEAT was a self assessment tool, therefore there was not a quality control procedure at the end of the assessment. BREEAM Healthcare is a robust certification scheme which follows the structure and processes of the other BREEAM schemes. Only public sector licensed BREEAM assessors are able to register and carry out Healthcare assessments. BREEAM New Construction 2011 will be regularly updated to follow Building Regulations, Health Technical Memorandums and current best practice. BREEAM also provides training to assessors, extensive guidance, customer care support, a quality assurance procedure in line with ISO9001 and a third party certification that ensures transparency of processes and a more robust assessment.

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CONTRACT: NSGH, ADULT & CHILDRENS HOSPITAL – PLANTROOM 21

SYSTEM: 21 – 15/EF01 ISOLATION ROOM

WITNESSING OF TESTING AND BALANCING

	Client Representative / Commissioning Manager	Client
Witnessed By:	Julie Miller	
Representing:	Brookfield Multiplex	
Signature:	[redacted]	
Date:	02/08/13	
Witnessed By:		
Representing:		
Signature:		
Date:		

Remarks:

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SYSTEM: 21 – 15/EF01 ISOLATION ROOM (1ST FLOOR)

	AIR SYSTEMS PRE COMMISSIONING SHEET	✓	X	N/A
1.	Check Fan for damage and that all the components are secure	✓		
2.	Check the transit straps have been removed, if applicable			✓
3.	Check pulleys are secure, tight, aligned and belts are correctly tensioned, if applicable			✓
4.	Check with the controls engineer that the system is available to run and that plant rotation is correct	✓		
5.	Check all ductwork/air terminals are fitted and that air regulating dampers are open	✓		
6.	Check louvres are fitted and clear from obstructions, if applicable	✓		
7.	Check fire dampers are open, if applicable			✓
8.	Check the motor overloads are suitable and set			✓
9.	Check VAV or CAV boxes are installed correctly and ready for use.			✓
10.	Check the floor plenums are complete, if applicable			✓
11.	Complete commissioning test sheets.	✓		

COMMENTS

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DIRECT DRIVE FAN TEST SHEET

SYSTEM: 21 – 15/EF01 ISOLATION ROOM (1ST FLOOR)

FAN										
AHU Manufacturer		Not Applicable		Fan Size			252			
Fan Manufacturer		Dynair		Fan Serial No			12012578			
Fan Type		Centrifugal		Fan Model N°.			PSL 252 TLG0			
		Design		**Test**				**% Design**		
Air Volume	(L/S)	230		246				107		
External Static Pressure	(Pa)	700		Inlet	254	Outlet	18	Total	272	
Filter Test Data	Pre Filter (Pa)	Inlet	*	Outlet	*			ΔP	**	
	Sec Filter (Pa)	Inlet	*	Outlet	*			ΔP	75	
MOTOR										
Manufacturer		SM Motors		Output kW			0.37			
Serial N°		08056264G		Motor Full Load Current			0.94		Amps	
Voltage		400		Motor Running Current			0.45		Amps	
		Design		**Test**						
Rotational Speed	R.P.M	2760		1932						
DRIVE DETAILS										
Variable Speed Drive			Yes	Set Point			35Hz			

Comments: *Filter pressures taken from magnehelic gauges. **No filter fitted at time of test.

Instrument Used (Ref N°.) HV03/1, HV03/4 & HV03/5

Date: 29/07/13	Engineer: Graeme Duncan & Stephen Murdoch	Sheet 3 of 6

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DUCT VOLUME TEST SHEET

SYSTEM: 21 – 15/EF01 ISOLATION ROOM (1ST FLOOR)

VELOCITY PROFILE (taken facing air flow) **TEST HOLE LOCATION: PLANTROOM 21**

Test Hole Ref		Duct Dia (mm)		Duct Size (mm)		Duct Area		Design Air Volume		Design Air Velocity	
				Width x Height		M2		L/S		M/S	
TH Main		400				0.1257		230		1.83	
1.70	2.20										
1.70	2.20										
1.80	2.10										
1.90	2.20										
1.90	2.10										
1.80	1.90										
Velocity Sub Totals											
10.80	12.70										

Total Velocity	Number of Readings	Average Velocity	Measured Air Volume	% Design	Static Pressure
M/S		M/S	L/S		Pa
23.5	12	1.96	246	107	25

Remarks: Test Volume = 246 l/s ÷ Balometer Volume = 225 l/s = 1.09 Factor

Instrument Used: HV03/1

Date: 29/07/13 | Engineer: Graeme Duncan & Stephen Murdoch | Sheet 4 of 6

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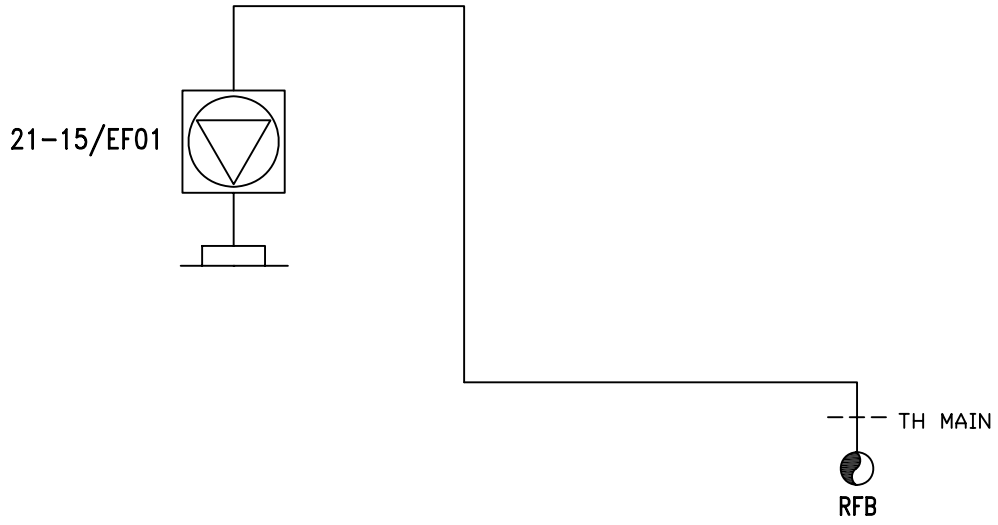
GRILLE TEST SHEET **SYSTEM: 21 – 15/EF01 ISOLATION ROOM (1ST FLOOR)**

Design Data		Initial Test Data		Final Test & Regulation Data		
Terminal or Ref No	Design Air Volume l/s	Balometer Initial Air Volume l/s	Balometer Final Air Volume l/s	Balometer Factor	Balometer Final Air Volume l/s	% Design
EG020	230	317	225	1.09	245.25	107

Remarks: Grille pre-fixed with 525-

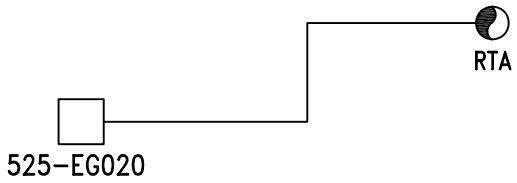
Instrument Used: HV03/15

Date: 29/07/13	Engineer: Graeme Duncan & Stephen Murdoch	Sheet 5 of 6



2ND FLOOR PLANTROOM 21

1ST FLOOR



SHEET: 6 OF 6

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CONTRACT:
NSGH, ADULT & CHILDREN'S HOSPITAL - PLANTROOM 21

CLIENT:
MERCURY ENGINEERING UK

TITLE:
SCHEMATIC LAYOUT OF

21-15/EF01 - ISOLATION ROOM (1ST FLOOR)

DRAWN: LH/GD

DATE: 29/07/13

DRG. No.: 5902/V32

PROJECT SUPERVISOR INTERFACE MEETING: No35

Notes from meeting held on 8th August 2013 at 2pm in the Boardroom, Top Floor

Action Note

Present:	Peter Moir (PM)	Hugh McDerment (HMc)	Alastair Smith (AGS)	David Hall (DH)
	Ian Barnes (IB)	John Redmond (JR)	Douglas Wilson (DW)	
Apologies:	Graeme Thomson (GT)	Willie Roxburgh (WR)	David Loudon (DWL)	

Item No	Item	Discussion / Information	Action	Action by whom
1.	Apologies	Noted above	-	-
2.	Action Note from Previous meeting	Accepted as an accurate record.	-	-
3.	Matters Arising	It was noted that the following items had been closed out since the last meeting: • Floor cracking – No 132 • LTHW pumps vibration issue – No 123 • Fire rated ductwork damaged – No 136 • Filtration bag grading to standard throughout • Void detectors – No 90 • Detector heads obstructed – No 93 • Void detectors in clean area – No 112 • Protected duct mounted heater – No 127 • Floors at atrium bridges – No 120 • Exposed pneumatic tube end covered – No 130 • Insulation missing at vertical SFS NCH windows – No 129 • Duct access hatch by chilled water pipe – No 56 • Duct obstructed by modular frame – No 14 • Restricted access to ductwork – No 48 • Access to hatches – No 53 • 11th floor atrium repairs to intumescent fire coating – No 55 • Failed partitions and floortrack identified – No 58 • Air Test procedure and programme – No 22	Item closed Item closed	- -
4.	Work In Progress	• Water for wet system and tank tests – water being used for this purpose was metered so that NHS would be aware of amount being used. For tank testing a large amount of water will be used and if this had to be fully jettisoned it would be wasteful. There may be issues with contamination if the systems remained charged until brought into use, Capita will check and issue communication to confirm position with Brookfield. • Forticrete facing blockwork and pointing on south and east elevations – Board remain concerned with quality, Brookfield have confirmed they intend letting the work 'weather' to see if the position improves, BMCL has NCR against their sub-contractor for this work. • Adult atrium bridge – deflection checks have been made and confirmed within design tolerance and signed off by WSP. While this closes out No 120 and compliance with SR2, Brookfield require to provide proposals of how		JR JR

		they intend dealing door openings, skirtings and ceilings. Response required from BMCL, Capita to raise communication.		JR
5.	Capita Report	Air Handling raised at PMG – deregations – none noted Power readings – AGS had agreed to record all sub-station readings and compare with costs arising from Brookfield. Steel Washers – Capita received comprehensive reports but concern raised over a week point – BMCL reported rigorous testing of bolts and not issues with shearing MTHW – DH had reported that this had been walked through with IP and a route had been identified to a vacant room. This now required to be tested by design review and would place a proposal to the board to take this forward. Zone completion - Progressing as expected with QA and compliance checks continuing. JR noted minor defects such as blind handles stiff, nurse call pull cords in the incorrect position all have been reported to BMCL and project team. A communication has been raised about the incorrect position of smoke detectors in relation to supply vents and the requirement to have these relocated. It was noted that due to the congested ceiling spaces it may prove difficult but it was noted that it only required to be moved to a minimum 1000mm away from vent. 85 point checks continuing to be carried out and fed back on missing insulation on level 0 Car Park 2 Piling – although this work is now complete the final reports are still awaited. Highlights of the report - • Steel fixings of 1st floor composite deck at Zone A within NCH - check that to specification and report is awaited from BMCL. • Two internal RHS columns in NCH at Zone B held up by adjoining steel work – BMCL to confirm final detail of connection to concrete. • Paint damage to steel works in Zone B of NCH – remedial works to be carried out and rechecked. • Air Leakage Tests – drawings now received on 9th August and locations agreed. • Missing bolts at parapet of NCH –Capita raised with BMCL and WSP have offered a solution – formal response is awaited. • Insufficient nut connection to bolt thread – WSP to provide a design response. • Floating plate either missing concrete or edge distances are minimal to prevent HD bolt fixing – WSP asked to provide a response and BMCL will report back. • Drainage – SC raised 116 – response received but will require a further walkthrough. • Storm drainage access unsuitable – BMCL require a walkthrough to check but confirm installed as per construction issued approved drawings. • Sprinkler heads too close to duct work – issue raised with BMCL and response awaited. • Trip hazard in plant room 21 – BMCL developing a system to ensure safe. • Access to valves for medical gases – BMCL and Mercury developing a strategy for access. ISandford noted issues with valves being high in the void and away from ceiling. BMCL to provide a list of all valves and positioning which will be reviewed by Estates and project team. • Pipework connections above unistrut and difficult to access – Capita have identified access difficulties and have raised communication. Access difficulties above ceiling BMCL/Mercury are preparing and access tracker.	Capita to check process	DH JR/DW/IB

		• Fire Alarm points void reducing access for maintenance – Mercury/BMCL preparing Access Tracker – JR asked if estates to be involved in the process. • Pipework support being bent under the weight of prefab pipework module in plant room PR31 – BMCL to investigate • Sprinkler system pipe clashing with electrical trunking on level 2 – BMCL addressing. • AHU not in compliances with HVAL resulting in high pressure loss – item to be replaced. • Assurances required from BMCL on the fire retardant properties of the flexible fixing connections in PR31 also within HEPA filter plant. • Fan discharge velocity issues have had diffuser plate fitted to alleviate this. Reassurance required that adequate for purpose. • Reduced fan power issues raised. BMCL confirm compliant with ZBP design but assurance required and listing of minor to major to be listed. • Access via access hatches being blocked on level 2 will be investigated and reported on the access tracker. • Communication cables for the sub-station are to be relocated. • Infill board not to same standard as other board ie not lead lined. Review of design will be required to have NHS approval before being cleared off Capita's supervisors instructions. • Ducting access within room EMC-012 to be confirmed by BMCL. • Brickwork poor workmanship issues have been raised with BMCL and brickwork contractor – progress will be fed back via the Hospital Construction meeting and if necessary will be actioned by PM. • Issues with en-suites on level 0 and level 3 cut outs – Capita raised the question of there being adequate fire protection – BMCL to respond. • Pull cords within some en-suites are located in unsuitable positions – Mercury will investigate and relocate where possible to a more suitable position. • Screw fixings too close to the edge of boarding feed back is awaited from BMCL. • Insulation to upper sections of partitioning missing – BMCL addressing before further inspections are undertaken PM noted that some of these issues have been noted for some time and required to have resolutions and closed off Some other issues noted during walk rounds were – ensuite doors in coronary care being hung incorrectly – BMCL have been informed and it was noted that staff completing area checks would be asked to watch out for such issues.	Estates Involvement	PM
	Car Park	This will be reported as a separate section of Capita's Report	Capita to note	Capita
6.	Weekly Report	Items noted from Weekly Site Report – Insulation damage Concerns on the refrigeration units – how should these be closed off, kept air tight and clean	Capita agreed to check manufacturers instructions	Capita
7.	Information Requirements	Nothing to report	-	-
8.	AOCB	AGS noted that medical gas outlets had end caps missing and need to be sealed to prevent ingress of dirt and debris Trunking required to be positioned in order to allow sealing off ends and to allow cleaning of the area to be undertaken	Capita will follow up	Capita
9.	Date and Time of Next Meeting	6th September at 2pm in the Project Offices. In PMs absence DH agreed to chair	To note	All

HOSPITALS CONSTRUCTION PROGRESS MEETING: No 39

Notes from meeting held on Monday 4th August 2014 at 3.30pm in the Boardroom, Top Floor

Action Note

Present:	Peter Moir (PM)	Alasdair Fernie (AFe)	Darren Pike (DP)	David Hall (DH)
Fergus Shaw (FS)	Grant Wallace (GW)	Jeff Murdoch (JM)	Hugh McDerment (HMc)	John Redmond (JR)
John Wales (JW)	Shiona Frew (SF) (Notes)			
Apologies:	Darren Smith (DS)	Jim Murray (JMu)	John Ballantyne (JB)	Graeme Thomson (GT)
Gavin Burnett (GB)	Andrew Bebbington (AB)	David Loudon (DL)	Douglas Wilson (DW)	Willie Roxburgh (WR)
Frances Wrath (FW)				

Item No	Item	Discussion / Information	Action	Action by whom
1.	Action Note from Previous meeting	Accepted as an accurate record.	-	-
2.	Matters Arising			
	Neuro cladding link bridge works	PM suggested that a meeting to discuss with the works between PM and AFe to understand the impacts however he understood that AFe had met with GForsyth (GF). AFe confirmed that a meeting with GForsyth had been held noting that AFe had been advised by GF that the Board reqired the link bridge to be complete by end March 2015. AFe advised that BMCL would need to tie in with BAM regarding works and that BMCL were programming the start date on the basis of the end March date however would want to do the break in as soon as possible. AFe noted that he would ask PMcG to liaise with HMc to discuss dates for the works. AFe noted that he understood that there is an issue retaining the fire escape. PM noted that he had looked at the retention of the fire escape and he had been unable to identify any real options. AFe suggested that a containerised fire escape could be a potential solution noting that the fire escape is into the new construction site. AFe concurred that a solution to the fire escape matter would need to be identified. AFe proposed to provide the NHS with the detail of the fire escape issue noting that the NHS would need to be shown how BMCL had priced the works. AFe noted that an end October start date was optimistic and dependent on concluding the planning matters then an early November start date may be more realistic. AFe stressed that November was not a good time of year to be commencing piling works. AFe stressed that he did not believe that completion of the neuro in time for the 'big visit' would be possible. PM advised that he would relay the information re March 2015 completion date as being unachievable. AFe nted that the works had identified a timeline of 56 weeks.	PMcG to liaise with HMc Provide info re fire escape issue to PM	AFe AFe
	Surveys	HMc advised that L&M had surveyed at the Neuro and also at the rear of the Maternity. The survey reports received had been provided to PMcG. HV suggested that there was an HV cable with the site location and HMc suggested that a diversion would be required. AFe noted that he though the NHS would be dealing with the HV diversion. HMc advised that he hadn't realised that BMCL had expected the NHS to do services/diversion works and that he would discuss this with PM. GW advised that BMCL would not normally carry out diversion works and that the costs had been based on receiving a clean site free of services. GW reported that BMCL could carry out the diversion	Review surveys and discuss way forward re diversion works	PM/HMc

		works but that this would impact the BMCL programme. HMc noted that the survey had also identified something else in this area and suggested that BMCL may want to do a hand dig in the area to investigate. PM advised that he had provided a PMI to BMCL to do hand digs and suggested that it may be the foundations of the old duck pond. AFe advised that he would have a look at the survey and identify what hand dig investigations would need to be carried out. PM advised that he would review the survey information and confirm to BMCL the way forward re the HV diversion works.	Confirm way forward with BMCL	HMc
	Group 5 Equipment	DP advised that he had met with FW and DH to discuss Group 5 equipment programme. The programme were generally in line with previous discussions. There are a couple of rooms that need to be considered and a meeting to be reconvened i.e. DR rooms which have a reasonable amount of work to be done in them. DP had sent back a programme which had been marked up to advise when the environmental proving for each room will be completed. BMCL would require method statements for each of the suppliers to be provided in the next week or so. DH advised that the NHS had met with MIS earlier that morning to discuss scoping, floor cutting, etc. MIS are familiar with working on live sites and have experience of using wet and dry vacuums to minimize dust. MIS Had been asked to provide their exact proposals for the trunking so this can be checked with WSP as MIS will be cutting into the floor. AFe enquired about the cutting that was required and DH advised that it was expected to be 50-60mm into the screed not the slab. Drawing from MIS were expected to be received by close of business on 6th August 2014. MIS had been asked to highlight any works that they are unable to do i.e. there are a couple of locations where this is a sprinkler head or wireless access point which may need to be moved to the next along ceiling tile. The contractor will then return for a site visit so that they can double check details, etc and thereafter (circa 1 week) will provide their method statements and risk assessments.	Provide method statements and risk assessments to BMCL when received from suppliers	FW/DH
	Neuro-entrance works	PM noted that there had been a joint NHS/BMCL meeting to discuss the plans, etc. There were a couple of minor changes to be made to the plans however it had been decided that the planning application should be lodged so that it is registered and that any matters which arise could be dealt with as conditions to the application. A VE meeting had taken place and the focus of the meeting had been on the access doors at the main screen. PM was happy to consider any further VE options. AFe advised that the piling design had been amended and that the number of piles required had been reduced. The design was not the stage where BMCL would want at this time. There was potential to save some time on the piling due to the reduction in piles. AFe suggested that the design was circa 8 weeks behind where BMCL would want the design to be in order to commence works. BMCL were pushing on the design works so that the works can be started asap. AFe advised that if any time could be made back then it would be.	-	-
	Snagging items – long lead items/lead in times	AFe advised that BMCL had carried out a recheck on certain items i.e. lead glass. BMCL have a fortnightly meeting with their sub-contractors whereby the snags are reviewed and the subcontractor asked to advise how they propose to close off the snags. AFe acknowledged that more snags are being identified as works are progressed however items on the snagging list are being closed off.	-	-

Item No	Item	Discussion / Information	Action	Action by whom
2.	Matters Arising (cont'd)			
	Zutec	JW advised that he had put the pie chart into the report however had a handout of the full Zutec uploads. It was agreed that JW should provide an update on this item under the agenda.	-	-
	AGV Delivery dates	DP confirmed that 22 AGVs were due to be delivered to site on 8th August 2014.	-	-
	Equipment List CE	PM advised that he had received the appropriate schedules and would issue a nil cost CE event later that week.	-	-
	Atrium point load	AFe advised that the point load was 5knewtons per m^2.	-	-
	Fire extinguisher drawing references	DP advised that he would liaise with FW to ensure that she had the drawing series numbers.	Liaise with FW re drawing series for fire extinguishers	DP
	Bus Shelters	PM advised that he had issued an updated PMI and revised drawings to BMCL in order that BMCL can provide cost information. The NHS are meeting with SPT and will confirm the way forward regarding the shelters asap thereafter however it was known that the shelter size will be reduced.	Coonfirm way forward re bus shelters	PM
	Stage 3a	PM advised that a joint NHS/BMCL meeting had taken place to discuss the stage 3a works and it was understood that BMCL may have some further review to be carried out.	-	
		PM noted that he would liaise with DLoudon regarding retaining one of the buildings for joint use and re-phasing the demolitions.	Liaise with DL	PM
	Site car parking	PM note that the MSCP would be brought into use at the beginning of September for site car parking.	-	-
3.	A&C Hospital Design Issues	It was noted that there was no BMCL design rep present at the meeting to provide an update on design issues.	-	-
4.	Contractors Progress Report	The contractors report was circulated in advance of the meeting and the following information highlighted:	-	-
	Health and Safety (AFe)	• There had been no reportable incidents within the reporting period.	-	-
		• Back to basics campaign being pushed and being well received by the operatives as good feedback being received	-	-
		• BMCL will be installing some water fountains in the building due to the heat levels being experienced in the building by the operatives. A chill out zone had also been set-up. BMCL proposed to put more fans into the building	-	-
		• 2 red cards had been issued in the period (1 due to operative being aggressive/abusive to H&S Manager and 1due to operative working in an unsafe manner).	-	-
		• Focus on permit to work and checking that Mercury permits are being issued appropriately as had an electrocution on site – operative was ok. Making sure that people do not work in a live zone .	-	-

		BMCL did not understand why the operative had not carried out initial checks. • Other H&S Matters being addressed through the back to basics campaign on site include: o Operatives surfing on a pallet truck o Operatives climbing out of MEWPs o Removal of edge protection (Prater) • Drug & Alcohol screening – no screening had been carried out in the reporting period • Audits - as listed in the report. PMooney is putting a lot of work into the audits and feedback indicates that voices are being heard. Have won a HWL RoSPA award. The H&S team have done well. • Principles meeting – Contractor directors presented their commitment to the Back to Basics Campaign and have responsibility for feeding back to their company.	- - - - -	- - - - -
	High Risk Activities	• External- maintaining segregation between works and the public. Making sure that barriers are being set-up appropriately and securely. • Bridge installation at Maternity – works progressing well. BMCL had an issue re the overclad so will delay so can do the planting in that area. • Underfloor heating inch - ongoing • Canopies at South elevation – have taken these down as BMCL do not consider that they were manufactured correctly • Big push on the amount of mobile traffic on site at the North elevation and monitoring of the interface with the landscaping works ongoing AFe noted that some of the landscaping dates will be out of programme.	- - - - -	- - - - -
	Non conformances	• 704 NCRs raised to date with 605 NCRs closed out. Continuing to meet with Capita to progress closeout of items. • 6 week lookahead – as detailed in the report • Audits – continuing with desktop audits (Aconex) • QA packs continue to be provided to Capita • Communications- 210 communications raised overall(including 3 in July). 197 communications have been closed and 9 are ongoing to achieve close out. • Defects – 80 defects raised and 78 defects have been closed. Initial responses to the 2 defects have been issued. • Inspections – as detailed in the Capita report • Snagging – over 25,000snags identified and 13,000 snags are currently outstanding • Zone Inspections – a further 14 areas were inspected within the month – 116 areas in total. This accounts for 4402 rooms with 558 room exclusions i.e. 4960 in total. Of the 558 room exclusions 215 excluded rooms have now been inspected therefore 4600 rooms inspected to date. • Above ceiling inspections continues • Further atrium inspections were carried out in the period • Inspections of courtyards and elevations have begun by the sub-contractors. • Zutec – the print out of the Zutec uploads was tabled. The print out provides an indication of progress to date. The information uploads appear to be positive for the main build project and	- - - - - - - - - - -	- - - - - - - - - - -

		uploads in relation to the car park are underway. DH noted that the Zutec schedule only covered fabric. JW acknowledged that only fabric was contained in the tabled schedule. DP advised that the M&E Zutec uploads were positive. The subcontractors had been issued with a quarterly deliverables schedule and the schedule is being maintained. JW advised that a copy of the M&E schedule will be provided to the NHS on 5th August 2014. PM requested that the schedule information/update is provided to the NHS on a monthly basis as the NHS Have a focus on the completion criteria. JW noted that a meeting with IP and Zutec was scheduled to take place on 13th August 2014.	Provide M&E schedule to NHS	DP/JW
		• A meeting is scheduled for later next week with JMurdoch to discuss the H&S file.	-	-
		• Design consultants – joint meetings being held. A lot of work is taking place in the background to pull together the as built drawings.	-	-
		• Completion criteria – a further meeting had been held to discuss the completion criteria. It was anticipated that the information flow will commence soon.	-	-
	Construction Progress Update	***Construction Update (AFE)*** AFe provided a presentation advising of the progress on each floor of the hospitals. The podium areas are work in progress. Focus is currently on the main atrium and getting the mast climbers down, sanctuaries completed and commencing the tiling. BMCL are repricing the cleaning works and as previously advised have directly employed the cleaners. PM enquired about the pigeon issue and BMCL advised this would be sorted. AFe advised that there had been a fox captured within the building however the fox had caused a lot of damage to rooms in the stroke ward which would need to be remediated.	-	-
		AFe noted that on the podium levels there were no matters causing concern. PM enquired about the area at the dental rooms noting that he was due to inspect this areas and it did not appear to be in a condition suitable for inspection. FS advised that the final decoration to area 515 was due to be completed and the final decoration was due to commence to area 513. DP advised that progress in both areas had suffered slightly as was unable to get the lights on in this area as early as would have wanted.	-	-
		AFe reported that he would review the Capita inspection dates for the tower. There had been some issues re TDSL doors which was now improving however he did not want inspections of areas taking place if there was door missing. BMCL were ensuring that the ceiling tiles and grilles are installed so that the M&E commissioning can take place.	-	-
		AFe advised that the majority of the plantrooms in the adult hospital are nearing completion . The installation of the glazed units had been halted and would commence later and that there was circa 40 panels left to be installed.	-	-
		AFe noted that the underfloor heating to the NCH is in the drying out process and that the tiling was due to commence that day.	-	-
		In relation to the externals, AFe advised that the Prater works are getting closer to completing. Works are focused on the front door area. The main entrance door installation will commence after the wall climbers are removed however there are no programming issues regarding the front doors.	-	-

Item No	Item	Discussion / Information	Action	Action by whom
4.	Contractors Progress Report (cont'd)	***M&E Update (DP)*** DP advised that M&E commissioning activities are progressing well. • Plantroom 31 – commissioning progressing well. • Plantrooms 32 & 33 – pushing through the water and vent systems. • Plantrooms 41 & 42 – LTHW systems being flushed and cleaned. Panel power on – 127 live out of 143 areas • Lifts installation – no matters and on track. Focus is on getting the services up and running and phone lines in so can commission • AGV Survey – survey recommencing later that day. 22 AGVs to be delivered 8th August 2014 • Air systems – 120 completed out is 356 • IT hubs – all live • Fire alarm panels – 30 out of 69 have been commissioned In general, commissioning activities are hitting the programme dates. DH enquired about level 12 zone H as the programme shows a12 week slippage. DP suggested that this was a glitch. AFe noted that zone H is ready for a walkthrough and that anything which moves by 2 weeks is red flagged by AB. DP advised that Plantroom 41 had been moved forward as was tied into the theatres. • Witness testing – going well. A couple of niggles have been identified but are being resolved i.e. lighting at static bedheads not switching properly DW noted that there had been 5 cancellations and these needed to be picked up. DP advised that a lot of testing had been left behind as had been tied into doors interfaces. DW suggested that there was a lot of activity which would be coming together and asked BMCL to provide a programme identifying when activities will be taking place. AFe advised that Capita should have a programme. DH advised that the programme shows blocks not specific dates and then sometimes there ends up being a couple of tests on the same day. DW advised that he was conscious that there is a lot of witness testing to be done and as Capita are also involved in quality inspections it would be helpful to have a programme which identified dates so that workload can be planned. • Energy Centre – finishing off the CHP on the gas side. Getting electrical panels ready for testing mid August 2014. In general, Energy Centre commissioning progress is in a good position. Final commissioning to be to be carried out to generators before the CHPs are commissioned. DH enquired about the BMCL proposals re ensuring no corrosion to the pipework/no infection control issues. DP advised that the domestic hot water is stainless steel pipework so there should be no corrosion issues. In relation to infection control concerns BMCL will ensure that a major sterilization process is undertaken to clean out the pipework. The sterilization process will commence September and go through to January 2015. BMCL had taken the view to fill the systems and do major sterilization programme as could not wait to fill the systems.	- - - - - - - - Review level 12 programme - Consideration to be given to ensuring no witness testing and compliance inspection clashes - -	- - - - - - - - DP/AFe - AFe/DP/JW - -

Item No	Item	Discussion / Information	Action	Action by whom
4.	Contractors Progress Report (cont'd)	***Externals (AFe)*** AFe noted that the externals are not going as quick as would have liked however there is no major impact on the programme. BMCL will push on the works .	-	-
		Site Car Parking (AFe) AFe that information would be provided in due course regarding parking in the MSCP and parking permits. AFe reported that AHirst had requested additional car parking spaces and this had been refused. DH advised that there is more NHS staff that car park spaces and enquired whether these staff would still be able to park and AFe advised that the existing arrangements for the Ogilvie site would be transferred to the MSCP.	-	-
		VIE Compound DH suggested that there was a discussion to be concluded with Ian Powrie re gas. DP advised that he would ensure that DW progresses the discussion on IPs return from leave.	Discussions to be progressed between DW and IP	DP
		Procurement • GW advised that the tenders had been received for the demolition works and GW would meet with AKerr later that week to go through the tenders. 3 demolition tenders had been received in total – Demaster had not submitted a tender.	-	-
		• The car park price was awaited from Land Eng.	-	-
		• There are only small bits and pieces of procurement remaining and these would be dealt with through existing supply chain.	-	-
		PM suggested that a meeting to go over the overclad proposals was to be set-up so that the NHS can sense check the proposals i.e. how will BMCL replace windows.	Meeting to discuss overclad proposals to be arranged	AFe
		Generally AFe noted that the last 3 months had been a particularly busy period and a lot of rooms had been inspected. AFe noted that he would be reviewing the tower programme.	-	-

Item No	Item	Discussion / Information	Action	Action by whom
5.	Project Supervisors Report (Capita) (cont'd)	JR provided the following highlights from the Project Supervisor's report:	-	-
		• Works continue to be in accordance with the ERs	-	-
		• Testing and inspections – quality generally good throughout	-	-
		• Capita continue to receive Q&A packs for their inspections.	-	-
		• Inspections being carried out to areas on levels 1- 8 – identifying doors and windows missing. Minor snags being identified i.e. tertiary glazing not installed, doors not installed, damage to doors, etc.	-	-
		• Back checks to rooms on the ground floor had been carried out – only minor issues identified	-	-
		• Inspections to courtyards 1 and 5 – quality good	-	-
		• Inspection carried out to 4th floor atrium link – vinyl satisfactory	-	-
		Neo-natal link bridge connections to existing building – response awaited from BMCL to close out communication. AFe advised that he was progressing the responses.	Provide responses re neonatal link bridge	AFe
		• MSCP – generally to a good standard with only minor snags identified. AFe advised that BMCL will be changing the signage.	-	-
		BMCL have addressed the issue in relation to the northwest stairwell plate. BMCL have yet to address the issue re the NCH Level 4 door to plantroom	Resolve outstanding issue re NCH level 4 door	AFe
		• Landscaping – progressing well		
		M&E (DW)		
		• Installation continues to be to a good industrial standard	-	-
		• Generally satisfied that installation is in compliance with the exception of those items highlighted to BMCL	-	-
		• Installation of specific specialist areas is ongoing – installation generally good	-	-
		• Commissioning and Testing – levels 0 to 3 most advanced	-	-
		• 2nd fix installation – continuing on all levels	-	-
		• Levels 4-11 – installations work in progress	-	-
		• Plantroom 21 – installations nearing completion	-	-
		• Testing and commissioning ongoing to other plantrooms	-	-
		• Level 12 plantroom equipment installation in progress	-	-
		• Lighting controls – wip	-	-
		• Witness testing carried out in the period included: lighting controls within the basement, sprinkler system pressure testing to the ground and third floor, nurse call on 1st and 4th floors, fire alarm system on ground floor, IT activity tests to ground floor computer room and hub on level 5, electrical circuitry tests in NCH, etc.	-	-
		DW was keen to try and avoid a rush of dates as Capita are carrying out both compliance inspections and witness testing.	-	-

		General (JR) • 3 communications were issued during July. It was expected that the number of communications being raised would drop to 0 very shortly. • Capita continue to be assisted by the BMCL Project Team PM noted that in relation to the pictures of the Car Park stairwell he understood this was an outstanding communication. GW advised that PMcGuinness is progressing the Car Park issues.	- - Conclude car park issues/communications	- - PMcG/AFe
7.	Early Warnings	It was noted that there were no early warnings requiring discussion which were not already being dealt with in other fora	-	-
8.	RFI's	It was noted that there were no RFIs requiring discussion/outstanding.	-	-
9.	Equipment Co-ordination	DH noted that the endoscopy washer dryer procurement process was nearing completion. 3 suppliers have been shortlisted for the supply of the washers and they would be on site on 2nd August to see the room. GW enquired about the steel plinth and DH reported that the suppliers have advised that the plinth is not required as their washers come with detachable legs. DH noted that the infill is to be done by the suppliers and they will be informed of this via a clarification.	-	-
10.	AOCB			
	PPC	DH suggested that the wall within the SUDS had been designed and the drawing for this needed to be circulated.		
	Lift controls	DH enquired about progress re the lift controls positions etc and DP advised that he would push this on and that he would confirm the bed lift controls in the same communication.	-	-
11.	Date and Time of Next Meeting	Monday, 8th September 2014 at 3.30pm in the Boardroom, Top floor, Construction Site offices.	To Note	All

Brookfield MULTIPLEX BM

Client Training & Familiarisation Register

System Description	Domestic & Trade Water service
Nature of Training	Detailed Training, System & Equipment
Date	24th November 2014

I hereby confirm that I have received training on the aforementioned systems

NAME:	SIGNATURE:	Site
R. FREEL	[redacted]	N.H.S
C JOHNSTON		N.H.S
D. SMEATON		NHS
M. MCINALLY		NHS
J. GUTHRIE		NHS.
T. ROMEO		NHS.
G. HARVEY		NHS
B LAVERY		NHS
D FRASER		N.H.S
S THOMSON		NHS.
IAN POWRIE		NHS.

Topics: Training on Domestic and trade water services as per Agenda
Handout: Water Services Training Presentation

Client Training Agenda

Project:	NSGH – Adults & Children's Hospital – FM / Estates Training	**Date**	24-11-14
System:	Domestic Water Services		

Classroom Session Topics

1. System Description & Orientation
    a. Basement tank room, filtration plant & booster sets
    b. Distribution routes
    c. Calorifier skids locations and areas served

2. Key Components
    a. Cold water storage tanks
    b. Float valves
    c. Booster Sets
    d. Filtration Plant
    e. Calorifier Skids
    f. Hot water return pumps
    g. Thermal Balancing valves
    h. Pressure reducing valves
    i. Water Meters
    j. Dump Valves
    k. Sentinal Points

3. Operation & Maintenance of system equipment
    a. Cold water storage tanks
    b. Booster sets
    c. Filtration plant
    d. Calorifier skids

On Site Session

1. Orientation - Basement Tank room & Plant rooms
2. Risers & typical hot and cold water to rooms
3. Trade Water
4. Equipment Maintenance
    a. Booster Sets & hot water return pumps – Wilo
    b. Filtration Plant – Elga

Brookfield MULTIPLEX BM

Client Training & Familiarisation Register

System Description	MTHW and LTHW Heating
Nature of Training	Detailed training – Systems & Equipment
Date	16th December 2014

I hereby confirm that I have received training on the aforementioned systems

NAME:	SIGNATURE:	Site
G. HARVEY	[redacted]	N.H.S.
D. Smeaton		NHS
R. FREEL		NHS
S THOMSON		NHS.
C JOHNSTON		NHS
M. MACMILLAN		NHS.
M. McINALLY		NHS
T. ROMEO		NHS
D. Comes		NHS
IAN POLLOCK		NHS
PAUL ALLAN		NHS
CYRIL JOHNSON		NHS.

Topics: Project Training on MTHW & LTHW system & equipment as per Agenda
Handout: MTHW & LTHW Training Presentation

Brookfield MULTIPLEX BM

Client Training Agenda

Project:	NSGH – Adults & Children's Hospital – FM / Estates Training	Date	16-12-14
System:	MTHW / LTHW Systems		

Classroom Session Topics

1. System Description & Orientation
    a. MTHW System
    b. LTHW System

2. Key Components
    i. MTHW Boilers / Burners
    ii. CHPs - Combined Heat and Power plant
    iii. Absorption Chillers & Heat Rejection unit
    iv. Plate Heat Exchangers
    v. Circulating Pumps
    vi. Pressurisation units & Expansion
    vii. Wilo-mat pressurisation units
    viii. Degassers
    ix. Flowcon automatic balancing valves (Wafers)
    x. Flowcon Assemblies
    xi. Terminal Units
        1. Radiant Panels
        2. Fan coil units
        3. Chilled Beams
    xii. Reverse acting by-pass valves
    xiii. Strainers
    xiv. Flamco Automatic air vents

3. Operation & Maintenance of system equipment

On Site Session

1. Orientation – Plantrooms and pipework routes
2. Equipment Operation Maintenance
    a. MTHW Boilers
    b. MTHW Pressurisation Units
    c. Pumps
    d. Heat Exchangers
    e. Pipework & Fittings
    f. LTHW Pressurisation Units

Brookfield MULTIPLEX BM

Client Training & Familiarisation Register

System Description	Critical Care
Nature of Training	User training – Systems & Equipment
Date	28th April 2015

I hereby confirm that I have received training on the aforementioned systems

NAME:	SIGNATURE:	Site
CARLENE ROBINSON	[redacted]	CCU
JOANNE MASSON		CCU
RUTH MCLAUGHLIN		ITU 21-30
JOYCE REYNOLDS		ITU 21-30
LOUISE MOORES		SHDU 1-10
PAULINE PATERSON		ITU 21-30
LINDA GOUDIE		HDU 50-60
Amanda Walmsley		ITU 31-40
Karen O'Leary		CCU
GILL HEINZ		CCU.
Margaret Colhan		HDU

Topics: As Agenda

Brookfield MULTIPLEX BM

Client Training Agenda

Project:	NSGH – Adults & Children's Hospital – FM / Estates Training	**Date**	28/04/15
System:	Critical Care		

Training Topics

1. General Critical Care Overview – (Ventilation, Environment / Lighting)
2. Isolation Rooms – Ventilation / Room Pressure
3. Medical pendant - Operation
4. Isolated Power Supply – Panel / Alarms
5. Medical Gas – AVSU, Alarms,
6. Pneumatic Tube System - Operation
7. Nurse Call System operation, call transfer and Alarms (Fire, AVSU, PTS, IPS)
8. Video Entry

Chief Nursing Officer Directorate
Fiona McQueen, Chief Nursing Officer

T: [redacted] F: [redacted]
E: [redacted]

The Scottish Government

LEGACY 2014
XX COMMONWEALTH GAMES
SCOTLAND

Chief Executives
All NHS Boards

DL (2015) 19

14 July 2015

Dear Colleague

Healthcare Associated Infection (HAI) and Antimicrobial Resistance (AMR) Policy Requirements

The **purpose** of this letter is to confirm the mandatory HAI and AMR policy requirements that require to be adopted and implemented in all NHS healthcare settings and deemed best practice (where relevant) in all non NHS healthcare settings.

1. Introduction

1.1 The Scottish Government Health and Social Care Directorates (SGHSCD) remain committed to controlling, reducing and preventing Healthcare Associated Infections (HAI) and Antimicrobial Resistance (AMR) across NHSScotland in order to maintain individual safety within our healthcare settings.

1.2 Despite the successes in reducing HAIs over recent years, the threat from new and old infectious agents, and AMR continues to increase. Therefore it is important at both a national and NHS Board level, that there is ongoing and increased monitoring for accurate, and as far as is possible real time, current and emerging threat assessments. Data at both national and local levels are essential for planning and evaluation of interventions. Most importantly, the collection of surveillance data with local feedback is an evidenced based approach that can achieve HAI reductions.

1.3 Antimicrobial resistance (AMR) remains a major public health issue and is a threat to the future of health and healthcare in Scotland. The scale of the threat from antimicrobial resistance and the case for action is set out in the UK Five Year Antimicrobial Resistance Strategy 2013-2018. The SGHSCD is committed to delivering on this agenda and will do so via the Controlling Antibiotics in Scotland (CARS) agenda that is aligned to the UK AMR Strategy.

Addresses

For action

Chief Executives

For information
Medical Directors
SENDs
HAI Executive Leads
Infection Control Managers
Infection Control Doctors
Infection Control Nurses
Directors of Pharmacy
Directors of Public Health
Estate and Facilities Leads
Health Protection Scotland
Health Facilities Scotland
NHS Education Scotland
Healthcare Improvement Scotland
Care Inspectorate
Scottish Care
Infection Prevention Society (Scottish Branch)
Scottish Microbiology and Virology Network
Scottish Intensive Care Audit Group
Royal College of Nursing
SAPG
Assoc Scottish Antimicrobial Pharmacists

Enquires to:
Abigail Mullings,
HAI Professional Adviser
Alistair Leanord,
HAI Medical Adviser

Tel: [redacted]

NHSScotland has achieved huge success in the prevention and control of HAI and we would like to thank all staff for their efforts in achieving and sustaining these results.

2. National HAI Surveillance Framework

2.1 *Staphylococcus aureus* bacteraemia

Staphylococcus aureus (S. aureus) bacteraemia remains an important HAI. All NHS Boards are required to continue to collect data on both meticillin resistant *S. aureus* (MRSA) and meticillin sensitive *S. aureus* (MSSA) bacteraemias as per the HPS protocol for *Staphylococcus aureus* bacteraemia surveillance.

It is the expectation that all NHS Boards will continue to participate in the enhanced SAB surveillance project as per the HPS protocol for Enhanced *Staphyloccus aureus* bacteraemia surveillance.

2.2 MRSA Screening

NHS Boards are required to monitor locally, and report nationally to Health Protection Scotland (HPS) compliance with the Clinical Risk Assessment (CRA) as a key HAI Level 3 Indicator as per CNO (2013) 01.

2.3 *Clostridium difficile* infection

Mandatory surveillance for *Clostridium difficile* infection (CDI) for patients, aged 15-64 and >65 remains a requirement as per the HPS protocol for CDI. It is expected that NHS Boards follow the national guidance on Prevention and Control of CDI in Healthcare Settings in Scotland and the recommended HPS protocol for diagnosis of CDI.

2.4 Hospital Level Reporting

All NHS Boards are required to submit hospital level ***Staphylococcus aureus* bacteraemia and *Clostridium difficile* infection** data to ECOSS by end September 2017 following the development of a national reporting system.

2.5 *Escherichia coli* bacteraemias

In recognition of the increasing burden of disease of *Escherichia coli* bacteraemias, national surveillance will be mandatory from 2016. NHS Boards should collect data on *E. coli* as per the HPS protocol for *E. coli* bacteraemia surveillance.

2.6 Carbapenemase-producing Enterobacteriaceae (CPE)

In 2013, a joint Chief Medical Officer (CMO)/Chief Nursing Officer(CNO)/Chief Pharmaceutical Officer (CPO) letter described the emerging threat from CPE and the requirements for an acute hospital admission screening programme for CPE. HPS are currently supporting NHS Boards to implement CPE screening. It is the expectation that NHS Boards will inform HPS of confirmed cases as per the current guidance.

2.7 Antimicrobial Resistance

NHS Boards are required to implement surveillance of antimicrobial use as described by the Scottish Antimicrobial Prescribing Group Local Surveillance of Antimicrobial Use guidance. This guidance describes the mandatory minimum dataset required of NHS Boards for the surveillance of both Primary and Secondary Care antimicrobial use.

2.8 Urinary Tract Infection Snapshot Surveillance

Boards are required to report the national Urinary Tract Infection **(**UTI) snapshot surveillance programme as per the protocol for Surveillance of Antimicrobial Resistance in Urinary Isolates in Scotland.

2.9 Local surveillance of Alert Organisms and Alert Conditions

To detect and prevent outbreaks, and to minimise infections resulting from healthcare NHS Boards are required to implement Local Surveillance of Alert Organisms and Alert Conditions as per HPS guidance.

2.10 Surgical Site Infection Surveillance

All NHS Boards are required to undertake surgical site infection (SSI) surveillance of hip arthroplasty and caesarean section surgical procedures as per the HPS protocol. HPS are currently scoping an approach for both Colorectal and Vascular Surgery SSI surveillance. It is the expectation that NHS Boards will participate in this surveillance as per the agreed protocol.

2.11 HAI in Intensive Care Units

All NHS Boards are required to undertake surveillance of HAI within Intensive Care Units as per the HPS/SICSAG protocol.

2.12 National Point Prevalence Survey (PPS) of HAI

To inform future national policy and provide NHS Boards with an epidemiological evidence base for local priority setting and demonstrate NHS Healthcare Quality Strategy HAI outcome measures, all NHS Boards are required to participate in the 2016 ECDC National PPS Survey as per the HPS protocol.

3. National HAI Guidance

3.1 HAI Compendium

The HAI compendium contains a list of all current national policy, guidance and supporting materials on HAI produced since 2001 by the Scottish Government Health and Social Care Directorate, National Services Scotland, other stakeholders and any additional HAI guidance that is applicable for use in NHSScotland for example, Department of Health and specialist advisory bodies.

The purpose of the HAI compendium is to provide NHSScotland staff and healthcare providers/workers with an overview of all current HAI guidance, as well as the key messages from the guidance and all the associated supporting materials e.g. checklists, care bundles, patient information leaflets and training scenarios.

3.2 National Infection Prevention and Control Manual

All NHS Boards are required to adopt the National Infection Prevention and Control Manual (NIPCM). All non NHS healthcare settings are required to consider the NIPCM as best practice. It is expected that NHS Boards maintain local assurance of implementation through continuous monitoring in all healthcare settings.

NHS Boards are required to demonstrate that they have adopted, implemented and monitor compliance of the NIPCM as part of their Healthcare Environment Inspections.

3.3 HAI Standards (2015)

The revised HAI Standards (2015) specify the minimum level of HAI performance for NHS Boards and apply to all healthcare organisations and practitioners in Scotland, including independent healthcare providers. These HAI Standards detail what patients and the public can expect of healthcare services in Scotland.

NHS Boards are required to demonstrate that they have met or are working towards meeting HAI Standards (2015) as part of their Healthcare Environment Inspections.

3.4 CNO HAI Support Algorithm (2015)

The CNO HAI Support Algorithm is mandatory for use in all NHS Boards and is complementary to the Hospital Infection Incident Assessment Tool (HIIAT) process.

3.5 HAI Outbreak Reporting

All HAI-ORT reports are required to be reported to HPS and collected in an outbreak system.

To support current infection threat assessments and preparedness activities, and enhance the sharing of lessons learnt across healthcare settings, NHS Boards are required to report all HIIAT Green (Non-Norovirus) assessed reports to HPS from April 2016 following the establishment of a national reporting system.

NHS Boards are required to report the number of hospital wards affected by norovirus outbreaks and the number of positive laboratory reports of norovirus in Scotland.

3.6 HAI SCRIBE

It is a requirement for NHS Boards to adopt and implement:

- SHFN 30 Part A: Manual Information for Design Teams, Construction Teams, Estates & Facilities and Infection Prevention & Control Teams (replaces SHFN 30 Version 3); and
- SHFN 30 Part B: HAI-SCRIBE Implementation strategy and assessment process (replaces HAI-SCRIBE Version 2).

4. Summary

NHS Boards must implement the requirements by the requested timescales. Therefore, we request that you immediately draw this letter to the attention of Consultant Microbiologists, HAI Executive Leads, Pharmacy Leads, Antimicrobial Management Team Leads, Infection Prevention Control Teams, Estate and Facility Leads, Directors for Public Health, Senior Charge Nurses, Clinical Governance and Risk Management committees.

We greatly appreciate your support and cooperation in ensuring that these mandatory requirements are put into effect within your NHS Board.

Yours sincerely

Fiona McQueen
Chief Nursing Officer

Dr Catherine Calderwood
Chief Medical Officer

Rose Marie Parr
Chief Pharmaceutical Officer

MEETING TO DISCUSS BMT UNIT RHC
Monday 7 September 4.45pm to 6:15PM
Held in Dr Alan Mathers Office Ground Floor RHC

In Attendance	Apologies
Dr Jennifer Armstrong (Chair) - JA Dr Alan Mathers - AM Mr Billy Hunter - BH Mr Jamie Redfern - JR Mr Grant Archibald (by telephone) - GA Prof. Brenda Gibson - BG Prof. Craig Williams – CW Mr. David Brattey - DW	Mr. David Loudon - DL

1.Purpose of the meeting:

This meeting was brought together to identify the progress made in resolving the Bone Marrow Transplant (BMT) room estates issues in RHC and determine position for the paediatric haematology oncology service in being able to start new cases. JA acknowledged the clinical frustration about progress and the need to plan for patients currently waiting transplant. Group were reminded that the two rooms / suites currently under scrutiny were 18 and 19. There are a further 6 rooms / suites which over time should reach the level of BMT specification / performance required. These are room / suites 17, 20, 22, 23, 24 and 25.

2. Agenda

The meeting was informed by the Agenda set earlier and circulated by JA and a stepwise debate took place around:

1. Previous situation at the old RHSC / Yorkhill unit for baseline (CW/DL/ BH)
2. Current position of the new unit in terms of build and recent sealing etc (CW/DL)
3. Further proposed work (BH/ DL)
4. Position of patients (BG)
5. Risk assessment (all)
6. Agreed way forward and conclusion. ALL

3. RHSC and RHC transplant rooms / suites specifications and Performance	BH/ DL were tasked with
1. BH described the former BMT unit rooms within RHSC, it was noted that the suite configuration was consistent with the 18 / 19 rooms / suites within Ward 2A of the RHC: i.e. lobby/in-patient room and en-suite. 2. Air pressure within the former RHSC BMT suites achieved 10 pascals of positive pressure and this was provided by an air handing unit - input within the lobby and patient room, with extract located within the en-suite. 3. The air handing units within the suites of the new RHC provide air input within the lobby and there is extract within	1. Formally writing up a summary document which compared old RHSC and current RHC unit in terms of specification and performance. The purpose of this was to provide formal audit trail that the new arrangements for transplanting children in current RHC were as good if not better than the previous arrangements in old RHSC / Yorkhill. This document also needed to formally confirm that the specification in RHC was built to all appropriate building note regulations and clearly reference these. The document needed to confirm that there was no technical / engineering

the patient room and ensuite. This is available in all 8 rooms / suites. 4. Air pressure monitoring of the new RHC BMT rooms /suites 18 and 19 has taken place four times per day since Wednesday 2nd September and reading consistently measure 9.5/10 pascals. Readings have been taken at six hourly intervals by Estates staff (i.e. 03:00/09:00/15:00/21:00) 5. BH confirmed that the two BMT suites (RHC) have been sealed (which should safely last one year) to avoid air penetration from a source outwith the air handling unit. 6. Recent air permeability testing took place week commencing 31st August 2015 and satisfactory results. This process was undertaken by Lead Consultant Microbiologist/Brookfield colleagues & Estates Management. 7. BH indicated that from an engineering perspective, the BMT suite conditions within the new RHC provided no lesser standard by comparison to the former RHSC transplant suites. 8. BH confirmed that Brookfield could retro fit air handling unit modifications to the 8 BMT room / suites (in accordance with the design parameters of Leeds) at an approx cost of [redacted] per room - (excluding VAT). Timeline for the completion of one BMT suite is estimated to take 4 – 6 weeks and depending upon access, two suites could be done at the same time. The group agreed to explore this option in more detail. 9. BH confirmed that he saw no technical/ engineering risk to providing transplants in the identified rooms / suites 18 and 19 based on comparison to RHSC and recent test results of RHC rooms /suites. Also noting specifications met all relevant building note regulations.	risk to transplanting in rooms 18 and 19 based on test results to date and comparison specification to old RHSC. **BH Response** . RHSC BMT Suites were designed to meet SHTM 03-01 Verification for Healthcare Premises. . Air pressure achieved 10 pascals. . BMT Suite design features a) lobby, b) patient room & c) en-suite facility. . Lobby & patient room had positive pressure & en-suite had negative pressure. RHC BMT Suites are designed to meet SHTM 03-01 which was the design brief stipulated by NHSGGC. . Air pressure achieves 10 pascals within suites 18 & 19. . The lobby has positive pressure. . The patient room has neutral pressure. . The en-suite has negative pressure - Air permeability testing undertaken on Friday 21st August 2015 (Bed 18) and Wednesday 26th August 2015 (Bed 19) by Risk Environmental Ltd on behalf of Brookfield Multiplex Europe achieved acceptable levels of air permeability and comply with the reqired criteria laid down in HBN04 Supplement 1. - The environmental conditions of RHSC & RHC are comparable and there are no indicators to suggest that the BMT suites within RHC pose any clinical risk from an engineering

	perspective, based on the present situation at this point in time. 2. Circulating the air pressure results for new RHC. These pressure tests should continue with an agreed forward reporting mechanism in place and described by estates. Process for escalation identifying any problems with the test results and impact on room performance to 10 pascals should be described and implemented. **BH Response** BMT suite pressure monitoring will be reviewed and linked to the Building Management System (BMS) which will automatically monitor air pressure levels within BMT suites. In the event that air pressure falls outwith an acceptable tolerance (to be agreed) the BMS will alarm and Estates staff will respond. A protocol will be developed week commencing 14TH September 2015 to identify response arrangements. 3. Liaising with Brookfield colleagues to seal two further rooms/ suites. In doing this the aim was to meet the same standard of air permeability within the two BMT suites currently fully sealed. Further to this there should be further work undertaken to fully seal the remaining 4 BMT rooms/ suites. On completion of this work plan service would have an incremental uplift of 2 – 4 – 8 fully performing BMT suites over an agreed project time. Project plan for taking this work forward to be drafted between service, estates and Brookfield. Noted that completion of this work plan will be linked to ongoing clinical activity and use of cubicles

	BH Response Brookfield and clinical colleagues have agreed a programme of access to allow the remainder of suites within 2A to be sealed in accordance with the two BMT suites, to achieve satisfactory levels of air permeability. Please find attached programme which has been agreed (Appendix 3) 4. Liaising with Brookfield around a work plan which would on completion provide service with at least 2 rooms which matched specification used in Leeds. In taking this work plan forward there needed to be clarity on any impact it would have on clinical services within the unit. **BH Response** Brookfield have confirmed that further retrospective modifications to the air handing units within two BMT suites could be undertaken at an agreed time. The cost of these works will total [redacted] (excluding VAT) per suite. The programme of work will take six to eight weeks (per suite), however it is feasible to work on two suits at the same time if this is clinically acceptable.
Cleaning in ward area: 1. Due to the high level of pedestrian activity in Ward 2A corridor, and as part of risk mitigation, it was agreed that increased cleaning of the wards circulation areas would take immediate effect and with a chlorine based solution.	BH was tasked with 1. Implementing the proposed changes to cleaning for BMT cubicles and corridor in the unit as described. A standing operating procedure for domestic services should be in place with robust reporting lines regarding daily compliance. This should be implemented with immediate effect. **BH Response** Revised cleaning SOP has been agreed between Facilities, Lead ICN and Lead Nurse. This

	has resulted in higher frequency of cleaning tasks be undertaken and the use of hypochlorite cleaning solution. Once the updated SOP is complete, this will be shared colleagues.
Microbiology 1.CW updated on recent microbiology testing in rooms / cubicles 18 and 19. He confirmed that testing from 31st August showed 1 colony growing at 22C in the ensuite, further sealing has been undertaken in Rm 19 since the testing and sampling repeated on 4th September. After 3 days incubation Room 18 - ensuite at 30 degrees incubation - 1 colony - main at 22 degrees incubation - 1 colony Room 19 - ensuite at 22 degrees incubation - 2 colonies - main at 30 degrees incubation - 1 colony	CW was tasked with 1. Providing the outcome of sampled testing when results became available between Wednesday 9th and Friday 11th September and clarifying implication of results re performance of rooms / suites 18 and 19 suitability to begin transplanting.
Clinical Services 1. BG confirmed that there was a standard operating procedure in place and used by staff for when BMT cubicles were in use 2. BG noted there were 3 patients awaiting transplant. 3. BG confirmed patient1 from Aberdeen (acute relapse) was described as urgent and needed to start treatment within circa 2 weeks. BG confirmed it was not clinically possible to transfer patient 1 to another unit for transplant noting capacity issues, waiting lists and clinical work up etc. 4. BG confirmed that patient 2 (Thalassaemia) was not clinically urgent. However this patient had experienced a cancelled transplant date previously because of room / suite difficulties. Parents of this child were anxious that the transplant was completed as soon as possible. 5. BG updated on patient 3 who had received news recently of a suitable donor and was also now classed as clinically urgent with a start date for	Clinical team were tasked with providing 1. Providing a copy of the standard operating procedure used by nurses and other clinical / support staff when BMT room/ cubicle in use 2. Provisional transplant start times for patient 3 and patient 2. This work would be carried out in conjunction with ongoing estate work and clinical timelines. 3. A standard operating procedure for transfer of any transplant patient between cubicles if problems with a sealed room/ other microbiology results emerge which cause concern. CW would also have to be involved in draft and implementation of this SOP.

treatment required within the next 4 weeks 6. All agreed that patient 1 should be transplanted immediately subject to pending microbiology test results being satisfactory. Subject to estate work (sealing of additional rooms / cubicles) being carried out timeously and any further ongoing microbiology testing plans should also be set for patients 2 and 3 to be transplanted over next few weeks.	
Conclusions 1. On completion of the relevant engineering / microbiology documentation there is a need for 3 way Directorate sign off for patient 1 to be transplanted within the next 2 weeks.	1. Three way Directorate agreement sign of being JA, DL and GA.

Draft V2 2015-09-09
Jamie Redfern General Manager HPN/ Acting Director W&Cs

H & V COMMISSIONING SERVICES LTD Est 1975
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Childrens Ward 2A – Room 20

PPIR (Positively Pressurised Isolation Room)

CRITICAL VENTILATION COMMISSIONING & VALIDATION REPORT

NHS Greater Glasgow and Clyde

Area:	Ward 2A Children's	**AHU/Room Ref.:**	41AHU30/ Room 20
Client:	Morris & Spottiswood	**Client Contact:**	David Carmichael
Site Address:	1345 Govan Rd, Glasgow. G51 4TF	**Report No:**	A11505B
		Date of Test:	15th February 2018
Test Engineer & Report Preparation:	Ian McKenzie	**Signature:**	[redacted]
H&K Approval:	John McEwan	**Signature:**	[redacted]
Client Reviewed by:		**Signature:**	

QUEEN ELIZABETH UNIVERSITY HOSPITAL
CHILDRENS WARD 2A – ROOM 20

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7. HEPA Filter Integrity Test.
8. Schematic Layout of Isolation - Room 20
9. Test Equipment Used
10. Calibration Certificates

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CHILDRENS WARD 2A – ROOM 20

Section 1.0 – Scope of Works

Commission & Validate Room 20 new Isolation PPIR (Positively Pressurised Isolation Room) within the Children's ward 2A at the QEUH.

To commission and validate the operation of the afore mentioned rooms critical path ventilation systems in accordance with - *Scottish Health Planning Note 04 In-patient Accommodation & SHTM03-01 (Neutropenic patient ward)

**Options for Choice Supplement 1: Isolation Facilities in Acute Settings*

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CHILDRENS WARD 2A – ROOM 20

Section 2. Executive Summary/Observations:

Final commissioned detail relayed to Schneider controls both supply and extract set to operate in automatic condition.

The following criteria is not achieved as per SHPN 04-01

1. Control of Isolation Room AHU supply with HEPA filter fitted – (As the original supply control strategy is currently AHU discharge absolute static pressure, dirty filter condition strategy is being changed under a separate order)

2. All sinks and flush units (En-suite WC) to be non-touch flush and wash basins to have single tap with flow and temperature control.

3. Noise level recorded at 39.6db(A) target NR30 or 35db(A) – noise levels recorded in a fully operational ward – background noise was a factor in recording the room levels.

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CHILDRENS WARD 2A – ROOM 20

Section 3 Supply & Extract Fan Test Sheet

CONTRAC: RHC - WARD 2A ISOLATION ROOMS

SYSTEM: 41 - 30/EF01 2ND FLOOR ISOLATION ROOM 20

DIRECT DRIVE FAN TEST SHEET

FAN DETAILS								
AHU Manufacturer	Not Applicable				**Fan/AHU Serial No.**	1039711-00019		
Fan Manufacturer	Dynair				**Fan/AHU Model No.**	AL255/4T055KLG		
Fan Type	Centrifugal				**Fan Size**	225/4		
Air Volume		**External Static Pressure (Pa)**			**Pre Filter Test Data (Pa)**		**Sec Filter Test Data (Pa)**	
Design (m³/s)	0.145	**Design**	**Inlet**	256	**Inlet**	N/A	**Inlet**	N/A
Test (m³/s)	0.154	230	**Outlet**	32	**Outlet**	N/A	**Outlet**	N/A
% of Design	106%		**Total**	288	**ΔP**	N/A	**ΔP**	N/A
Fan Rotational Speed (rpm)			**Design Data**		1400	**Test Data**	1400	
MOTOR DETAILS								
Motor Manufacturer	Cantoni					**Output (kW)**	0.55	
Motor Serial No.	1436027					**Motor FullLoad Current (amps)**	1.90	
Voltage	400					**Motor Running Current (amps)**	1.1	
Motor Rotational Speed (rpm)			**Design Data**		1400	**Test Data**	1400	
DRIVE DETAILS								
VSD	Yes				**Set Point**	50Hz		
NO STANDBY PLANT								

Remarks:

Engineer: Ian McKenzie & D. Kane	**Date:** 15/02/2018

A52725667

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CHILDRENS WARD 2A – ROOM 20

Section 3: *Cont...*

CONTRACT: RHC - WARD 2A ISOLATION ROOMS

SYSTEM: 41 - AHU 30 SUPPLY 2ND FLOOR ISOLATION ROOM 20

DIRECT DRIVE AHU TEST SHEET

AHU DETAILS								
AHU Manufacturer		Barkell			**Fan/AHU Serial No.**		200336902	
Fan Manufacturer		Flakt Woods			**Fan/AHU Model No.**		GPEB-1-00-022-08-0	
Fan Type		Plug In			**Fan Size**		No Detail	
Air Volume		**External Static Pressure (Pa)**			**Pre Filter Test Data (Pa)**		**Sec Filter Test Data (Pa)**	
Design (m³/s)	0.207	**Design**	**Inlet**	35	**Inlet**	*	**Inlet**	*
Test (m³/s)	0.207	800	**Outlet**	211	**Outlet**	*	**Outlet**	*
% of Design	100%		**Total**	279	**ΔP**	*20	**ΔP**	*150
Fan Rotational Speed (rpm)			**Design Data**		2840		**Test Data**	2045
MOTOR DETAILS								
Motor Manufacturer		Flakt Woods					**Output (kW)**	0.75
Motor Serial No.		130426042					**Motor FullLoad Current (amps)**	1.78
Voltage		400					**Motor Running Current (amps)**	1.0
Motor Rotational Speed (rpm)			**Design Data**		2840		**Test Data**	2045
DRIVE DETAILS								
VSD		Yes			**Set Point**		58Hz	
NO STANDBY PLANT								

Remarks:

*Filter static pressures taken from Magnehelic Gauges.

Controls static pressure 211Pa.

Engineer:	Ian McKenzie & D.Kane	**Date:**	15/02/2018

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CHILDRENS WARD 2A – ROOM 20

Section 4. Supply & Extract Airflow Volumes.

CONTRACT: WARD 2A PPIR

SYSTEM: ISOLATION ROOM 20 SUPPLY & EXTRACT - 41AHU30

GRILLE TEST SHEET

Design Data		Initial Test Data		Final Test & Regulation Data		
Terminal or Reference No.	**Design Air Volume**	**Balometer Initial Air Volume**	**Balometer Final Air Volume**	**K Factor**	**Balometer Final Air Volume**	**% of Design**
	l/s	l/s	l/s		l/s	
SG Room 20	300.00	253.00	188.00	1.10	207.00	N/A
Corridor Extract	100.00	265.00	109.00	1.00	109.00	N/A
En-suite Extract RM 20	45.00	23.00	45.00	1.00	45.00	N/A

Remarks: N/A - Not Applicable. Supply and extract grilles volumes set to achieve Neutropenic room compliance in accordance with SHTM03-01 Part A (Feb 2014)

Engineer: Ian McKenzie & D. Kane	**Date:** **14/02/2018**

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CHILDRENS WARD 2A – ROOM 20

Section 5.0 – Supply & Extract Airflow Rates & Air Change Rates

Isolation Room 20 – AHU Ref.: 41AHU30					
Room Reference	**Design Volume m³/Hr**	**Recorded Air Volume m³/Hr**	**Room Volume m³**	**Recorded AC/HR**	**SHTM ACRs (AC/HR)**
Bedroom (Supply)	***1080**	**744**	**44.0**	**16.92**	**10**
Toilet (Extract)	**162**	**162**	**15.19**	**10.66**	**10**
Corridor (Extract)	**360**	**392**	**N/A**	**N/A**	**N/A**
Comments: *Room supply air volume to be set to achieve a minimum of 10ac/hr and a door barrier pressure of 10Pa.					

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CHILDRENS WARD 2A – ROOM 20

Section 6.0 – Room Pressure Differentials, Temperature & Noise Levels

Isolation Room 20 – AHU Ref.: 41AHU30			
Room Reference	**Target Room Pressure (Pa)**	**Recorded Room Pressures (Pa)**	**Digital Gauge pre reading (Pa)**
Bedroom to Lobby	**10Pa to 12Pa**	**10Pa**	**N/A**
Lobby to Corridor	**N/A**	**7Pa**	**N/A**
Bedroom to Toilet	**-ve**	**5Pa**	**N/A**
Room to Corridor	**>10Pa**	**17Pa**	**16.9Pa**

Isolation Room 20 – AHU Ref.: 41AHU30				
Room Reference	**Door TAG Ref.:**	**Temperature**	**Noise db(A)**	**Noise Target db(A)**
Bedroom	**SCH-075(Lobby)**	**21.4**	**39.6**	**35**

Section 7.0 - HEPA Filter Integrity Tests

This test is performed to confirm that the final high efficiency air filter system is properly installed by verifying the absence of bypass leakage in the installation, and that the filters are free of defects (small holes and other damages in the filter medium and frame seal) and leaks (bypass leaks in the filter frame and gasket seal, leaks in the filter bank framework).

These tests do not check the efficiency of the system. The tests are performed by introducing an aerosol challenge upstream of the filters and scanning downstream of the filters and support frame or sampling in a downstream duct.

The System will be checked to ensure that only HEPA filtered outlets are supplied to avoid excess smoke contamination of the area. Ondina EL test Aerosol will be thermally generated, using a smoke generator, and injected at an appropriate point for testing requirements. Homogenous dispersal of the challenge within the airstream, upstream of the filter, is required. This uniform challenge concentration is to be between 10mg/m^3 to 100mg/m^3 and be across the high efficiency filter and sealing frame.

Provided the System only serves HEPA filtered outlets, the preferred injection point will always be at the air handling unit fan downstream of any filtration in the plant. Where this is not feasible one or more pre-filters will be removed to ensure an adequate challenge and aerosol introduced on the suction/return-air side of the fan. If the filters are removed the AHU volume will be rechecked to ensure that it is at design.

Scan each filter cell by holding the photometer probe approximately 3cm from the downstream filter face or the frame structure and passing the probe in slightly overlapping strokes, at a traverse rate in line with BS EN ISO 14644-3:2005 B.6.2.5, so the entire downstream face is sampled. Make separate passes with the photometer probe around the entire periphery of the filter, along the bond between the filter medium and the frame and along all other joints in the installation through which leakage might bypass the filter medium, including the grid structure.

Challenge aerosol penetration through the filter will be regarded as acceptable if a maximum percentage leak is less than 0.01% in accordance with BS EN ISO 14644-3:2005 for H13 and H14 grade filters. Any excursions from criteria stated above should be subject to investigation and or filter replacement.

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CHILDRENS WARD 2A – ROOM 20

7.0 - HEPA Filter Integrity Test Continued…..

HEPA FILTER INTEGRITY TEST			
Test instrument used:	TDA-2G Photometer	**Calibration Date:**	March 2017
Serial Number:	11200	**Calibration Due:**	March 2018
Area:	2A Room 20	**Date of Test:**	18th January 2018
AHU/Fan No:	41AHU30	**Challenge:**	ONDINA EL

Location	HEPA Filter Ref.	HEPA Filter Serial Number	Upstream Challenge (10-100mg/m^3)	Penetration Reading (%)	Results (Pass/Fail)
Isolation Room	Bedroom Grille	Certificate Held by NHS (S/N: TBC)	16mg/m^3	0.0006%	Pass

Comments: New H14 HEPA Filter Fitted

Acceptance Criteria:

Test Method: BS EN ISO 14644-3:2005 - BS PD 6609:2007 'Insitu Aerosol testing of HEPA Filter'
(Maximum Allowable Penetration = <0.01%)

Engineer (Print):	Daniel Kane
Signature:	[redacted]
Date:	18thJanuary 2018

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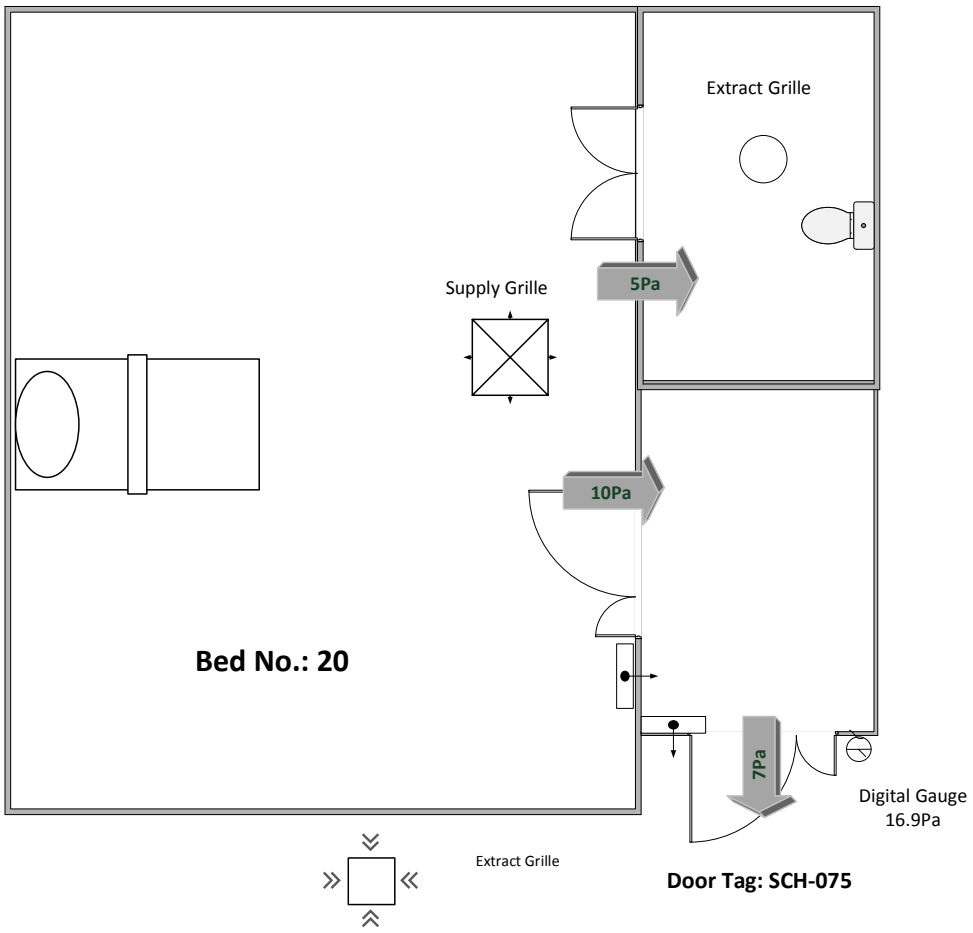
CHILDRENS WARD 2A – ROOM 20

Section 8.0 - Schematic Layout of Isolation Room 20

Level: 2

Ward: Children's 2A



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CHILDRENS WARD 2A – ROOM 20

Section 9.0 - Test Equipment Used

Type of Equipment	Serial No	Cal Due Date
Micromanometer	PVM620909005	September 2018
Environmental Meter	160506299	September 2018
Balometer	90526046	September 2018

QUEEN ELIZABETH UNIVERSITY HOSPITAL
CHILDRENS WARD 2A – ROOM 20

Section 10.0 - Calibration Certificates

CERTIFICATE OF CALIBRATION

Issued By IRC Ltd

Date of Issue 19 September 2017

Certificate Number
224854

Instrument Repairs & Calibration
7 Howard Court Industrial Estate
East Kilbride, G74 4QZ
Tel: 01355 264120 Fax: 01355 264150
www.instrument-repairs.com

Approved Signatory
[redacted]
Digitally signed by Keith Low
DN: cn=Keith Low, o=IRC Ltd, ou=IRC Ltd, email=[redacted] c=GB
Date: 2017.09.19 11:21:41 +01'00'

☐ N.Anderson ☐ K.Low ☐ C.Moore ☐ A.Rae

Customer : H&V Commissioning Services Ltd
Kilknowe Offices, 16 Barrmill Road
Galston KA4 8HY

Date Received : 07 September 2017

Instrument -

System ID :	IRC02204	Job Number :	R87915
Description :	Balometer	Ref. Number :	AC-C-06
Manufacturer :	Alnor	Site :	
Model Number :	EBT-721	Location :	
Serial Number :	90526046	Last Certificate Number :	
Procedure Version :	2592	Last Calibration Date :	

Environmental Conditions

Temperature :	23°C +/- 2°C	Mains Voltage :	230V +/- 10V
Relative Humidity :	50% +/- 20%	Mains Frequency :	50Hz +/- 1Hz

Comments

A. All prime parameters found to be within specification.
Results at the time of test carry no long term stability of the instrument.
This certificate records the ON RECEIPT calibration status.
Recalibration period 52 weeks by customer request.

Traceability Information

Instrument description	*Serial number*	*Certificate number*	*Cal. Date*	*Cal. Period*
Mensor CP6000	610020	13027/8/9/30/33	09/11/2015	104

Calibrated By : K Low **Date of Calibration :** 19 September 2017

This is to certify that the above instrument was fully calibrated. Work carried out was in accordance with procedures laid down in BS EN ISO/IEC 17025:2005.
The accuracies of the standards used are traceable to National Standards,via UKAS approved laboratories.
The copyright of this certificate is owned by IRC Ltd and may not be reproduced except with the prior written approval of the issuing laboratory.
The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2 providing a level of confidence of approximately 95%.

CERTIFICATE OF CALIBRATION

Certificate Number
224854

Test Title	Tolerance	Applied Value	Reading	Pass/Fail
Pressure				
Pascals	2.8pa	249.0pa	250.0pa	Pass
	22.9pa	1 992.0pa	1 995pa	Pass
	40.4pa	3 736.0pa	3 737pa	Pass

End of Results

Uncertainties

Pressure TE69	0- 1000mBar +/- 0.01% of reading

CERTIFICATE OF CALIBRATION

Issued By **Cuthbertson Laird Group**
Date of Issue **04 September 2017**
Date Received **31 August 2017**

Certificate Number
HAM18771

Page 1 of 2

Cuthbertson Laird Group
Parkburn Court
Glasgow Road
Hamilton
ML3 0QQ

[redacted]

Approved Signatory
D. Semple

Electronically Signed

Customer : H & V Commisioning
16 Barmill Road
Ayrshire

Galston
KA4 8HH

Instrument -

System ID :	ID23629
Description :	Environment Meter
Manufacturer :	Precision Gold
Model Number :	N09AQ
Serial Number :	160506299
Customer Ref:	
Procedure Version	2491

Environmental Conditions

Temperature :	20°C ± 1°C	Mains Voltage :	240V ± 10V
Relative Humidity :	50%RH ± 15%RH	Mains Frequency	50Hz ± 1Hz

Comments
This Certificate Records The On Receipt Calibration Status Of The Instrument.

Traceability Information

Instrument Description	*Serial Number*	*Certificate Number*	*Cal. Date*	*Cal. Period Weeks*
Pulsar P100B	035219	G002819	14/09/2016	52
Vaisala HMI41 Indicator	S1330009	A22418029-1	29/08/2017	52
Vaisala HMP41/45 Probe	J3215002	A22418029-1.	29/08/2017	52

Calibrated By : **D Semple**

Date of Calibration : **04 September 2017**

This is to certify the above instrument was fully tested and calibrated. Work carried out was in accordance with procedures laid down in BS EN ISO/IEC 17025:2005. The accuracies of the standards used are traceable to National Standards, via UKAS approved laboratories.

CERTIFICATE OF CALIBRATION

Certificate
HAM18771

Test Title	Applied Value	Reading	Uncertainties
Sound Level Meter			
Lo C	94dB	92.8dB	0.6dB
Hi C	94dB	93.5dB	0.6dB
Hi C	104dB	103.3dB	0.6dB
Humidity Meter			
%Rh	47.2%Rh	44.8%Rh	1.6%Rh
Temperature Meter			
°C	21.1°C	21.3°C	0.33°C

End Of Results

CERTIFICATE OF CALIBRATION AND TESTING

TSI Instruments Ltd, Stirling Road, Cressex Business Park
High Wycombe Bucks HP12 3ST England
Tel: (Int +44) (UK 0) 1494 459200 Fax: (Int +44) (UK 0) 1494 459700
http://www.airflowinstruments.co.uk

ENVIRONMENT CONDITIONS		
TEMPERATURE	20.7	°C
RELATIVE HUMIDITY	44.96	%RH
BAROMETRIC PRESSURE	985.8	hPa

MODEL	**PVM620**
SERIAL NUMBER	**PVM620909005**

☒ AS LEFT ☒ IN TOLERANCE
☐ AS FOUND ☐ OUT OF TOLERANCE

– CALIBRATION VERIFICATION RESULTS –

DIFFERENTIAL PRESSURE			SYSTEM PRESSURE02-02				*Unit: Pa*
#	STANDARD	MEASURED	ALLOWABLE RANGE	#	STANDARD	MEASURED	ALLOWABLE RANGE
1	−1008.2	−1006.2	−1019.2~−997.2	3	1971.8	1971.3	1951.2~1992.5
2	540.3	539.1	533.9~546.8	4	3487.7	3488.0	3451.9~3523.6

TSI does hereby certify that the above described instrument conforms to the original manufacturer's specification (not applicable to As Found data) and has been calibrated using standards whose accuracies are traceable to members of the European co-operation for Accreditation (EA) (for example: UKAS, SWEDAC, DAkkS) or has been verified with respect to instrumentation whose accuracy is traceable to some member of EA, or is derived from accepted values of physical constants. TSI's calibration system is registered to ISO-9001:2015.

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
Pressure	E006187	09-05-17	09-05-18	DC Volts	E006185	09-05-17	09-05-18
Pressure	E006193	09-05-17	09-05-18	Temperature	E006006	05-04-17	05-04-18

[redacted]
CALIBRATED

14 September, 2017
DATE

Doc. ID: CERT_GEN_WCC

NHS Greater Glasgow and Clyde	NHS GREATER GLASGOW & CLYDE CONTROL OF INFECTION COMMITTEE STANDARD OPERATING PROCEDURE (SOP)	Page	1 of 31
		Effective From	2019
	OUTBREAK/INCIDENT SOP **FOR OUTBREAK/INCIDENTS OF COMMUNICABLE OR ALERT ORGANISMS IN HEALTHCARE PREMISES**	Review Date	2021
		Version	9
The most up-to-date version of this policy can be viewed at the following website: www.nhsggc.org.uk/your-health/public-health/infection-prevention-and-control/			

SOP Objective

To ensure that Healthcare Workers (HCWs) are aware of the actions and precautions necessary to minimise the risk of outbreak/incidents and the importance of diagnosing patients' clinical conditions promptly. To provide a framework for the identification and control of outbreak/incidents in healthcare premises.

This SOP relates solely to **OUTBREAKS/INCIDENTS IN HOSPITALS**.

This SOP applies to all staff employed by NHS Greater Glasgow & Clyde and locum staff on fixed term contracts and volunteer staff.

KEY CHANGES FROM THE PREVIOUS VERSION OF THIS SOP

- CNO (2019) HAI-related incidents, outbreak/incidents and data exceedance: Assessment, and reporting requirements and communication expectations – updated communications section.
- 2019 HPS HIIAT updated.
- Documentation in relation to the IMT updated to reflect principles outlined in the Civil Contingencies Act 2004.
- Problem Assessment Group added to process.
- Definitions updated.
- Staff screening section updated
- Recording of minutes and decisions template updated.
- Draft agenda updated
- HPS data collection template included.
- Role of IMT updated.

Document Control Summary

Approved by and date	Board Infection Control Committee
Date of Publication	October 2019
Developed by	Infection Prevention and Control Manager
Related Documents	National Infection Prevention and Control Manual NHSGGC Hand Hygiene SOP NHSGGC Staff Screening SOP NHSGGC Cleaning of Near Patient Equipment SOP NHSGGC Twice Daily Clean of Isolation Rooms SOP NHSGGC Terminal Clean of Isolation Rooms SOP NHSGGC Terminal Clean of Ward SOP
Distribution/ Availability	NHSGGC Infection Prevention and Control online Manual: www.nhsggc.org.uk/your-health/public-health/infection-prevention-and-control/
Lead Manager	Board Infection Control Manager
Responsible Director	Board Medical Director

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1. Responsibilities

Healthcare Workers (HCWs) must:

- Follow this SOP.
- Follow the advice of the Infection Prevention Control Team (IPCT) / Incident Management Team (IMT).
- Report to the IPCT/on call microbiology at any time when they suspect there may be an outbreak/incident.
- Communicate with patients and relatives, and document in clinical notes that this has taken place.
- Complete Outbreak/incident Module on Learnpro at least every three years.

Senior Charge Nurses / Managers must:

- Report suspected outbreak/incidents of infection (e.g. *Clostridium difficile*) to the Infection Prevention and Control Team – recommendation 16, Vale of Leven Hospital Enquiry Report.
- Implement decisions of the IMT and fully consider any additional advice of the IPCT or IMT.
- Support the IPCT / IMT in bringing the outbreak/incident to a halt.

IPCT / IMT must:

- Investigate all reports of possible outbreak/incidents in accordance with NIPCM Chapter 3.
- Review the need to close or open wards to control an outbreak/incident.
- Take all necessary actions to identify the cause of and bring the outbreak/incident to a close.
- Make recommendations to prevent recurrence. In all instances where there is a recommendation from the IMT which may have significant implications for service delivery, e.g. closure of a regional/national service, significant disruption to multiple patient services or significant financial resource, this must be discussed by the chair of the IMT with the Director for the Sector/Division/CHCP who may convene an Operational Management Support Team Meeting.
- Communicate both within and out with NHSGGC, as specified within the NHSGGC Outbreak/Incident SOP (Section 11 page 13 HIIAT).

- Communicate with Occupational Health regarding the treatment and potential staff screening during the outbreak/incident.
- Keep this SOP up-to-date through the NHSGGC Board Infection Control Committee (BICC).

Public Health Protection Unit (PHPU) NHSGGC must:

- Consider the need to chair the IMT.
- Support and advise the IMT as required.

Occupational Health Service (OHS) must:

- Support the implementation of the relevant NHSGGC SOP.
- Support and advise staff as required.
- Support and advise the IMT.
- Co-ordinate and collate staff screening results and ensure treatment and fitness for work advice is provided.

2. Reporting of incidents with the potential to cause outbreak/incidents

HCWs who suspect that an outbreak/incident may be occurring **must** contact a member of the IPCT without delay.

3. Outbreak/Incident Definitions (HPS NIPCM Chapter 3)

An exceptional infection episode

- A single case of any serious illness which has major implications for others (patients, staff and/or visitors), the organisation or wider public health e.g. infectious diseases of high consequence such as VHF or XDR-TB.

A healthcare associated infection outbreak

- Two or more linked cases with the same infectious agent associated with the same healthcare setting over a specified time period.

  or

- A higher than expected number of cases of HAI in a given healthcare area over a specified time period.

A healthcare infection exposure incident

- Exposure of patients, staff, public to a possible infectious agent as a result of a healthcare system failure or a near miss e.g. ventilation, water or decontamination incidents.

A healthcare infection data exceedance

- A greater than expected rate of infection compared with the usual background rate for that healthcare location.

Once an outbreak/incident is reported to a member of the IPCT, the IPCT will take the action detailed in Section 5.

4. Information for the IPCT

When reporting any of the above to a member of the IPCT, the following information should be available: patients name, CHI number, admission date and admission history, relevant information on drug treatment, symptom history (including date and time of onset) position / placement in the ward and specimens obtained.

5. Actions of the IPCT – Convene a Problem Assessment Group (PAG)

In some circumstances where it is unclear if there is an incident/outbreak the ICD may choose to convene a PAG to undertake and initial assessment and determine if an IMT is required. The outcome of this process may be one of the following:

- No significant risk to patients or the public (HIIAT assessment is green – section 11) – continue to monitor and PAG stands down.
- Potential or actual significant risk to patients or public and or media interest – IMT required.
- Potential for significant public and/or media interest – IMT required.
- Not possible to determine if there is a significant risk with current information – further investigation required. IPCT continues to review but no IMT at this stage.

6. IMT Required: IMT should:
Confirm that an outbreak/incident exists by carrying out the following:

6.1 Case finding

- Form a case definition and use it to estimate the magnitude of the problem. The case definition may change as new information is gathered, e.g. early case definition.
- Complete the HPS data collection tool (Appendix 4) and table at each meeting of the IMT.
- Identify all the patients with either, the same and / or related symptoms, diagnosis or micro-organism, within a particular timeframe.
- Compare current incidence with usual or baseline incidence.
- Form an opinion on the severity of the outbreak/incident/incident as per **Section 11 HIIAT**.

- If the most likely explanation is that there is an outbreak/incident/incident, implement the **Communication Chain** (Section 7.1) and decide on the need for an IMT based on the agreed outbreak/incident severity (**Section 11**).
- Obtain laboratory specimen results to identify specific agent responsible.

6.2 Institute control measures - IPCT

Based on the magnitude and nature of the problem the IPCT will institute control measures. The control measures may include, but are not limited to:

- Close ward to new admissions, transfers in and out. Patients may be discharged to their own home if asymptomatic or deemed medically fit for discharge. Clinical staff will discuss any possible risks with relatives and advise and document accordingly.
- Advise on isolation / cohort of cases in a designated area and stop admissions and transfers of symptomatic patients. (Exceptions would be outbreak/incidents of Norovirus when cohorting has a limited effect.) Doors to isolation rooms/cohort areas should be closed at all times.
- Advise on restricting HCWs movements between affected ward/cohort and other areas, as far as possible.
- Advise HCWs on the possible modes of spread, appropriate hand hygiene and Personal Protective Equipment (PPE).
- Advise increasing environmental cleaning to twice daily with chlorine based detergent, following SOP Twice Daily Clean of Isolation Rooms.
- Commence care plans/check lists, issue advice leaflets/fact sheets if available and advise staff to document their issue to patients / relative / carers.
- IPCN will visit and discuss with patients or their relatives / carers the specific alert organism or communicable disease identified (excludes Norovirus).
- Confirm what specimens have been taken and request new specimens as necessary. HCWs must ensure specimens are clearly labelled with patient information and relevant clinical history.

- Request other items that may be required for the investigation of source, e.g. food samples.
- Advise HCWs to keep the IPCT up-to-date of any change in the number of cases or deterioration in individual cases (including staff).
- Ensure HCWs are aware of control measures (leave documentation, i.e. complete and leave Section 8 Instructions for a closed ward: IPC advice of this SOP).
- Provide education sessions for staff on the modes of transmission, pathogenicity and epidemiology of the organism identified (excludes Norovirus) if required.
- Advise staff on communication with patients and relatives.
- Consider restricting visitors to affected wards.
- Consider immunisation of susceptible patients as appropriate.

6.3 Seek additional cases and collect data and specimens

- The IPCT should encourage immediate reporting of new cases, either clinically suspected or laboratory confirmed.
- The IPCT will consider the need to request screening of patients and /or HCWs. (The decision to screen HCWs will be made by the IMT). See Section 9 Staff Screening.
- The IPCT will consider contacting PHPU to determine if they are aware of any other cases in the community, and to discuss any other aspects of investigation and management if deemed necessary.

6.4 Formulate tentative hypothesis

- On the basis of analysis of cases (and other information if necessary) develop a hypothesis on the likely reservoir, sources and modes of transmission. There may be several reasonable hypotheses.
- If possible, test the hypothesis by sending appropriate samples or stopping interventions that are thought to have caused the outbreak/incident.
- If deemed necessary, the IMT will arrange for an appropriate analytical epidemiological study to be undertaken.

6.5 Ward closures

- Wards may be closed by the IPCT when there is suspicion of an outbreak/incident or where there is a definite outbreak/incident. The IPCT will inform the organisation as per Section 6.1 in the NHSGGC Outbreak/incident SOP.
- The decision to admit a patient to a closed ward against the advice of the IPCT should be approved by the relevant Director following discussion with the chair of the IMT (if one has been formed). The reason for this should be fully documented via the incident recording system, i.e. Datix. Out-of-hours the on-call duty manager should discuss any situation where there may be a decision to admit to a closed ward, with the on-call Director. It is accepted that any decision around this is based on the balance of risk. The Significant Clinical Incident Policy provides a framework for the investigation of significant clinical incidents and the supporting toolkit may be utilised to support investigation of specific cases identified through the outbreak/incident review process. IMT reports will be logged into Datix after the chair of the IMT has approved them (excluding Norovirus).

7. Communicate and facilitate hospital management of the outbreak/incident

A member of the IPCT will communicate all ward closures to all individuals listed in 7.1.

7.1 The Sector IPCT will inform (Acute inpatient sites) :

Designation	Who	Include in e-mails / Communication Group
SCN and Nurse in Charge in affected areas.	Sector IPCT	Green and above
Consultant in Charge (acute only)/ Receiving Consultant and Lead Clinician	Sector IPCT	Green and above
Bed Manager	Sector IPCT	Green and above
Chief of Medicine	Sector IPCT	Green and above
Chief of Nursing	Sector IPCT	Green and above
Lead Nurse	Sector IPCT	Green and above

General Manager	Sector IPCT	Green and above
Site Manager or Facilities Manager Domestic Services Manager Estates Manager	Sector IPCT	Green and above
Board Infection Control Manager	Sector IPCT	Green and above
Lead Infection Control Doctor	Sector IPCT	Green and above
NHSGGC Communications	IC Data Team ICM/CICD/ ANDIPC/ Chair of IMT	Green and above
Associate Director of Nursing , Infection Prevention and Control	Sector IPCT	Green and above
Public Health Protection Unit	Sector IPCT	Green and above
Nurse Bank	Sector IPCT	Green and above
Hospital at Night Co-ordinators	Sector IPCT	Green and above
Antimicrobial Pharmacists/Team	Sector IPCT	Amber and above
Occupational Health Service	Sector IPCT	Amber and above
Nurse Director (Acute)	Sector IPCT	Amber and above
Head of Microbiology	Sector IPCT	Amber and above
Risk Manager	Sector IPCT	Amber or above
Clinical Director (Service)	Sector IPCT	Amber and above
Associate Medical Director(S)	Sector IPCT	Amber or above

Out of Hours – The Consultant Microbiologist on-call will close the ward and inform the IPCNs but it will be the responsibility of the Nurse in Charge to inform the Site Co-ordinator and on-call Manager

7.1(b) The IPCT will inform (Partnerships In-Patient sites):

Designation	Who	Include in e-mails / Communication Group
SCN and Nurse in Charge in affected areas.	Sector IPCT	Green and above
Consultant in Charge/Medics	Sector IPCT	Green and above
Bed Manager	Sector IPCT	Green and above
Lead Nurse/ Inpatient Services Manager Professional Nurse Advisor (Sector) Professional Nurse Advisor (HAI Lead)	Sector IPCT	Green and above
General Manager	Sector IPCT	Green and above
Site Manager or Facilities Manager Domestic Services Manager Estates Manager/ Operations co-ordinator	Sector IPCT	Green and above
Board Infection Control Manager	Sector IPCT	Green and above
Lead Infection Control Doctor	Sector IPCT	Green and above
NHSGGC Communication	IC Data Team ICM, CICD/ ANDIPC/ Chair of IMT	Green and above
Associate Nurse Director, Infection Prevention and Control	Sector IPCT	Green and above
Public Health Protection Unit	Sector IPCT	Green and above
Nurse Bank	Sector IPCT	Green and above
Antimicrobial Pharmacists/ Team	Sector IPCT	Amber and above
Occupational Health Service	Sector IPCT	Amber and above
Board Nurse Director and Nurse Director (Partnerships)	Sector IPCT	Amber and above
Risk Manager	Sector IPCT	Amber and above
Clinical Director (Service)	Sector IPCT	Amber and above
CHP Director	Sector IPCT	Amber and above

Out of Hours – The Consultant Microbiologist on-call will close the ward and inform the IPCNs but it will be the responsibility of the Nurse in Charge to inform the Site Co-ordinator and on-call Manager.

7.2 Board Infection Control Manager / Lead Infection Control Doctor or Associate Nurse Director Infection Prevention and Control will inform:

NHSGGC Directors and External Agencies (AMBER and above)

Designation	**Who:**
Director of Public Health	by PHPU
Medical Director / CEO / COO (Acute)/ CHCP Director/Director of Nursing	ICM / CICD / ANDIPC
Health Protection Scotland	ICM / CICD / ANDIPC
Sector/Directorate Director	ICM / CICD / ANDIPC
Others as necessary: Food Standards Scotland (FSS), Scottish Water/Drinking Water Quality Regulator, Health & Safety Executive (HSE), Local Authority etc	PHPU

7.3 NHSGGC Communications Officer will:

Liaise with the Press Offices at Scottish Government Health and Social Care Directorates (SGH and SCD) and any other agencies as appropriate e.g. HPS.

7.4 IMT

From those informed in Section 7.1 an IMT will be convened. The IMT is an independent, multi-disciplinary group with responsibility for investigating and managing the incident. Dependent on the nature of the outbreak/incident/incident the IMT may include representatives from other agencies. The IMT provides a framework, response and resources to enable the NHS board and other statutory agencies to fulfil their remits.

The IMT is not simply an advisory group but an independent group set up specifically to investigate and manage the response to an outbreak/incident or incident.

The primary goals of the IMT are to:

- Control the outbreak/incident.
- Prevent further spread of the disease.
- Investigate the cause and identify factors that contributed to the outbreak/incident, in order to develop and implement measures to prevent similar outbreak/incidents in the future.
- Communicate information to patients and the public as required.
- For Norovirus, an IMT would only be convened after three ward closures at the same time in any one hospital site.

The IMT may require to set up sub groups to consider specific aspects of the incident/outbreak. These sub groups should report to the IMT. In some instances where there is a recommendation from the IMT which may have significant implications for service delivery, e.g. closure of a regional/national service, significant disruption to multiple patient services or significant financial resource, the director of the service may convene an Operational Management Support Team Meeting. The conclusions/recommendations from this group should also be reported into the IMT.

Occasionally there will be indication that the IMT is not working as effectively as required. In such instances, the lead NHS Board Officer for assessing IMT performance should take steps with senior management counterparts in the other agencies participating in the IMT to assess and remedy any shortcomings (Managing Public Health Incidents 2017).

7.5 IMT Meetings

The IMT will hold meetings regularly until the outbreak/incident ceases. If there is any crossover of cases between sites/sectors the IMT will meet at the primary site/sector of the outbreak. The team will review the hypothesis, control measures, HIIAT and other actions initiated by the IPCT. Each meeting will have an action log and a data collection tool presented at each meeting (appendices 5 & 4). Each agenda item will be listed in the action log and must document the discussion and rationale for each decision made. It is not enough to record actions; the relative risks and options and why the final decision was made must also be part of the documentation of the event (Civil contingencies Act 2004).

7.6 Chairing the IMT

In a healthcare setting, the CPH(M) the Infection Control Doctor (ICD) will chair the IMT depending on the circumstances and this should be agreed in advance and documented. The ICD will usually chair the IMT, lead the investigation and management of incidents limited to the healthcare site, where no external agencies are involved and where there are no implications for the wider community. The CPH(M) would normally chair the IMT where there are implications for the wider community e.g. during TB or measles incidents.

Where there is an actual or potential conflict of interest with the hospital service, it may be preferable for the CPH(M) to chair the IMT in discussion with the DPH and the HAI Executive Lead.

The IMT Chair will decide on the composition of the IMT and invite members to attend. The IMT Chair should ensure that the findings of the initial investigation; timing and content of communications; outcome of initial risk assessment; decisions

taken and all other relevant matters are carefully documented. This documentation should also include reasons why certain actions were not taken/appropriate as well as why actions were taken/appropriate. A formal record of decisions agreed at each IMT will be kept and circulated to IMT members. It is the responsibility of the chair of the IMT to follow up on any actions recommended in the debrief documents.

7.7 Reporting the Outbreak/incident

The lead IPCN for the sector will be responsible for logging any outbreak/incidents that require the convening of an IMT onto the Significant Incident Reporting System (Datix) (excluding Norovirus) when the outbreak/incident is declared over and the IMT report has been approved.

7.8 Formal report of the IMT

The outbreak/incident report will be written by the Chair of the IMT and approved by the IMT (hot debrief or full Incident Management Team Report). Once the report is approved by the IMT it should be disseminated to the members of the IMT and to: Acute Infection Control Committee (AICC) / Partnership Infection Control Support Group (PICSG), Director of the Service or CHP affected, and the Board Infection Control Manager and Board Infection Control Committee (BICC) as appropriate. The IMT Chair, in discussion with the IMT, should determine whether further reporting on the incident and the incident management is required. SBAR Report and full IMT report templates are available via the National IPC Manual resource section. The recommendations from the IMT following review of the incident will be brought to the attention of the Senior Management Team (SMT) for the service affected and the relevant Control of Infection Committee. Any report should provide sufficient details of the key factors in the spread of infection to allow a proper audit of any recommendations/remedial actions to be carried out. Any outstanding actions should

be reviewed by the chair of the IMT and the relevant ICC within 6 months of the submission of the first hot debrief/report.

7.9 Role of Individual IMT members.

All members of the IMT must recognise their individual roles as a member of the IMT and that they should be in a position to commit to act on behalf of their clinical area. If representing a group e.g. clinical staff it is the responsibility of that individual to communicate discussion, actions and output form the IMT with those they repres

nstructions for a closed ward: Infection Prevention Control Advice

Due to a possible outbreak/incident of _____ Ward _____ has been closed to admissions and transfers effective from _____ and will remain closed until a member of the IPCT re-opens it. **Please follow the advice that has been ticked**

1	Do not transfer any patient out of the ward to nursing home or other clinical area without discussing with a member of the IPCT.	☐
2	Arranged visits / appointments to other departments and with other specialties, e.g. social workers, should be discussed with a member of the IPCT.	☐
3	If a patient requires emergency admission or transfer to another clinical area please inform and discuss with a member of the IPCT.	☐
4	Discharges home are permitted provided the patient's family is aware of all the necessary precautions and any risk to themselves. This should be documented in patient notes.	☐
5	Limit HCWs movement between this ward and other wards and departments.	☐
6	Remind all HCWs the importance of compliance with the Hand Hygiene SOP. Advise relatives on the importance of hand hygiene precautions.	☐
7	Complete an IPC Care Checklist if available.	☐
8	HCWs coming into contact with symptomatic patients and / or their environment must wear appropriate Personal Protective Equipment (PPE). Decontaminate hands after removing PPE.	☐
9	All equipment used on symptomatic patients should be cleaned in between patients and at least twice daily using chlorine based detergent.	☐
10	Patients should be nursed in isolation or in designated cohort areas on advice of the IPCT. Patients if possible should be allocated their own equipment, e.g. commode or toilet.	☐
11	Record all symptoms in relevant nursing documentation, e.g. stool chart (diarrhoea should be assessed using the Bristol Stool Chart), fluid balance chart, wound assessment charts, etc.	☐
12	Inform the IPCT of any new patients or HCWs with symptoms.	☐
13	Complete and update Patient Lists as requested by the IPCT.	☐
14	Environmental Cleaning should be increased to twice daily as per SOP. Domestic staff should pay particular attention to frequently touched surfaces, e.g. bed tables, lockers and toilet areas.	☐
15	Patients should be offered hand hygiene facilities after using the toilet and before meals.	☐
16	Ensure specimens are clearly labeled with relevant patient information including clinical history.	☐
17	Provide patients and relatives with information as appropriate, and document in nursing / medical notes.	☐

Your ward will be reviewed daily by a member of the IPCT. Should you need any further advice the IPCT are available Monday to Friday, normal working hours, and can be contacted on extension _____ or page _____ Outwith these hours, advice can be obtained from the on-call Microbiologist.

Issued by _____ **Date** _____
Received by _____ **Date** _____
IPCN Name (print) _____
SCN Name (print) _____

9. Staff Screening

Decisions to screen staff will be taken by the IMT after careful consideration of all risks and benefits. Incidents or outbreak/incidents of infection are particularly stressful and challenging for all staff. It is critical that staff are supported throughout this process and that a culture of blame has no place in NHSGGC.

In all instances where the IMT determine that it is necessary to screen staff, the Chief Executive, HAI Executive Lead, Director of Human Resources, and Employee Director will be informed as well as the trade unions/staff side and any other professional organisations considered by the IMT.

Rationale for Screening

The rationale for embarking on a staff screening programme must include one or more of the following:

- To characterise the epidemiology of the outbreak/incident – time, place, person.
- To check the full extent of the outbreak
- To assist with interrupting the chain of transmission of an outbreak/incident
- To confirm the eradication of the outbreak

The final decision to screen, including which staff group to be included, will rest with the IMT. The rationale for screening and staff groups to be screened must be stated in the minutes. View the NHSGGC Staff Screening SOP which MUST be followed.

10. The Hospital Infection Incident Assessment Tool (HIIAT)

The Healthcare Infection Incident Assessment Tool (HIIAT) should be used by the Infection Prevention and Control Team (IPCT) or Health Protection Team (HPT) to assess **every** healthcare infection incident i.e. all outbreak/incidents and incidents (including decontamination incidents or near misses) in any healthcare setting (that is, NHScotland, independent contractors providing NHS services and private providers of healthcare).

The HIIAT has two parts/functions:

Part 1: Assesses impact of a healthcare infection incident/outbreak/incident on patients, services and public health. the HIIAT should:

- Be utilised to assess the initial impact and monitor any ongoing impact (escalating and de-escalating the incident/outbreak/incident until declared closed).
- Remain assessed **'Amber'** or **'Red'** only whilst there is ongoing risk of exposure, new cases, or until all exposed cases have been informed.

An individual member of the IPCT or HPT may undertake the initial assessment. If a PAG/IMT is established then further assessments will be led by the chair of the PAG/IMT. **Part 1: Assessment**

	Severity of illness	**Impact on services**	**Risk of transmission**	**Public Anxiety**
Minor	Patients require only minor clinical interventional support as a consequence of the incident. There is no associated mortality as a direct result of this incident.	No or minor impact on services.	Minor implications for Public Health. Minor risk or no evidence of cross transmission or on-going exposure	No or minor public anxiety is anticipated. No, or minimal, media interest: no press statement.
Moderate	Patients require moderate clinical interventional support as a consequence of the incident. There is no associated mortality as a direct result of this incident.	Moderate impact on services e.g. multiple wards closed or ITU closed as a consequence of the control measures	Moderate implications for Public Health. Moderate risk or evidence of cross transmission or on-going exposure	Moderate public anxiety is anticipated. Media interest expected: prepare press statement
Major	Patients require major clinical interventional support as a consequence of the incident and/or Severe/life threatening/rare infection and/or there is associated mortality*	Major impact on services e.g. hospital closure(s) for any period of time as a consequence of the control measures	Major implications to Public Health or Significant risk of cross transmission, of a severe/life threatening/rare infection or significant on-going exposure	Major public anxiety anticipated. Significant media interest: prepare press statement

Calculate the Impact: All Minor = **GREEN;** 3 minor and 1 Moderate = **GREEN;**
No major and 2-4 Moderate = **AMBER;** Any Major = **RED.**

Part 2: Supports a single channel of infection incident/outbreak/incident assessment and information reporting both internally within a NHS Board area and externally to Health Protection Scotland (HPS) and Scottish Government Health and Social Care Department (SGHSCD).

Part 2: Communication

GREEN	AMBER	RED
Complete mandatory HIIAT Green reporting template and attach any prepared press statements. http://www.nipcm.hps.scot.nhs.uk/documents/hiiat-green-template/ A HIIORT is only required when HPS support is requested. Follow local governance procedures for assessing and reporting.	Report to HPS and complete HIIORT within 24 hours for onward reporting to SGHSCD. NHS board will be cited. Press statement (holding or release) must be prepared and sent to HPS Request HPS support as required. Follow local governance procedures for assessing and reporting. Review and report HIIAT **at least twice weekly** or as agreed between IMT and HPS The HIIAT should remain Amber only whilst there is ongoing risk of exposure to new cases or until all exposed cases have been informed	Report to HPS and complete HIIORT within 24 hours for onward reporting to SGHSCD. NHS board will be cited. Press statement (holding or release) must be prepared and sent to HPS. Request HPS support as required. Follow local governance procedures for assessing and reporting. Review and report HIIAT **daily** or as agreed between HPS and IMT **(a minimum of weekly)**. The HIIAT should remain Red only whilst there is significant ongoing risk of exposure to new cases or until all exposed cases have been informed.
The final decision to release a press statement irrespective of HIIAT assessment (colour) is the responsibility of the IMT chair. Following assessment by the NHS Board and HPS one collective HIIORT may be submitted for instances where multiple areas within a site are affected by the same infection such as seasonal influenza.		

*** Only HAI deaths which pose an acute and serious public health risk must be reported to the Procurator Fiscal (SGHD/CMO(2014)27).**

The full manual is available at www.nipcm.hps.scot.nhs.uk/

11. Evidence Base and Regulations

http://www.nipcm.hps.scot.nhs.uk/chapter-3-healthcare-infection-incidents-outbreaks-and-data-exceedance/

CNO (2010) 1 National Support Framework for NHS Boards.

CNO (2019) HAI-related incidents, outbreak/incidents and data exceedance: Assessment, and reporting requirements and communication expectations

Food Standards Agency (Scotland) / SEHD – Guidance on the Investigation & Control of Outbreak/incidents of Foodborne Disease in Scotland – May 2002. GUIDANCE 2002 - Amendment No.8 – May 2006.

Hospital Infection Incident Assessment (HIIA) Tool. Health Protection Scotland. 2019

Standard Operating Procedure for Using the NHSScotland Hospital Infection Incident Assessment (HIIA) Tool. Health Protection Scotland 2009.

Management of Public Health Incidents: Guidance on the Roles and Responsibilities of NHS led Incident Management Teams – October 2011 (updated July 2017)

NHS HDL (2006)31 Healthcare Associated Infection – Human Resource Policy for Staff Screening During Incidents and Outbreak/incidents. Scottish Government Health Directorates.

Public Inquiry into the outbreak/incident of Clostridium difficile in Northern Trust Hospitals, Northern Ireland. March 2011.

Vale of Leven Hospital Enquiry Report. November 2014

Public Health Scotland Act 2008

NHS GGC OUTBREAK/INCIDENT CONTROL PLAN: GASTROINTESTINAL ILLNESS (including FOOD- AND WATER-BORNE GI INFECTION) v3. Greater Glasgow and Clyde Public Health (Health Protection) Liaison Working Group; October 2015

Appendix 1 – Acute Division Ward Closure

When an outbreak/incident is identified the IPCT will close the ward to new admissions and transfers. In order that the potential effect of ward closure on the operational capacity of the hospital can be managed, the Bed Manager and Clinical Service Manager / General Manager of the relevant service need to be notified immediately. They will review capacity and if there are significant concerns, consult the on-call Consultant, Senior Nurse and the A&E Consultant. If necessary the Escalation Policy for identified bed pressures will be implemented in order to identify extra capacity to cope with emergency pressures.

In the event that insufficient capacity can be identified, the on-call Consultant and the A&E Consultant will review the status of patients in the system that have yet to be allocated a bed. If significant safety concerns are identified whereby a patient will be placed at risk by not being admitted to a bed, the on-call Consultant will liaise with the ICD / on-call Consultant Microbiologist and the relevant senior manager to discuss the risk/ benefit issues of admitting the patient to the closed ward. It is understood that the ICD / on-call Consultant Microbiologist will not be expected to change their advice regarding the closed status of the ward but where possible a decision will be reached that both doctors agree is reasonable under the circumstances. Where there is failure to agree the decision will be escalated to Director / Associate Medical Director level.

If a patient has to be admitted to a closed ward area the patient and relatives **must** be informed that the ward is closed and the risks explained before admission. This **must** be documented in the patient notes.

Appendix 2 - Managing patients with viral gastroenteritis in wards with 100% single side rooms with en-suite.

NHS Greater Glasgow and Clyde has a number of wards with 100% single side rooms with en-suite facilities. It is envisaged that on these wards, it may be possible to successfully contain the spread of certain pathogens such as viral gastroenteritis by implementing enhanced IPC precautions without ward closure.

Where 2 or more patients fit the case definition of HAI viral gastro-enteritis, the IPCT with the clinical team should determine if enhanced IPC precautions should be used rather than closing the ward. Consideration must be given to the following:

- The probability of the symptomatic patients having viral gastroenteritis

- The ability of staff to manage the two or more cases and apply TBP at all times

The enhanced precautions for symptomatic patients are as follows:

A) Twice daily clean of the isolation room with a chlorine based detergent. A terminal clean of the patient's room must be undertaken once the patient is 48 hours symptom free as a minimum. Other areas may require cleaning as advised by the local IPCT.

B) Dedicated equipment as far as practicable which is subject to cleaning twice per day with a chlorine based detergent.

C) Door to patient's room is closed at all times (or daily risk assessment documented in patient's notes) with door sign.

D) Patients are not transferred to any other ward until they have been asymptomatic for at least 48 hours OR on the advice of the IPCT.

E) If patient to be transferred on clinical grounds, staff should contact receiving department to inform them of patient's condition and need for single room if required prior to transfer.

F) Patient should be encouraged to use the ensuite in the room. If not possible, each patient should be given a dedicated commode which stays in their room.

G) Loose stools care plan and Bristol stool chart should be kept up to date while patients are symptomatic

H) As well as PPE and Hand Hygiene SOPs, the staff dress code and Uniform Policy should be implemented at all times.

I) All other patients in the ward should be closely monitored for signs and symptoms as per case definition by ward staff.

J) Visitors to affected patients should be provided with information as per the Loose Stools SOP. They must not be allowed to use other areas of the ward or visit other patients in the ward.

K) Causative organism: It is important to establish a causative organism by sending appropriate specimens i.e. separate samples for C&S and Virology, as early as possible. Stool samples should be sent for C&S and virology, vomit sample can be sent for virology only.

L) If staff cannot be allocated to specific patients, consideration should be given to ward closure (HPS, 2014). Staff on the affected ward must not be allocated to work on unaffected wards.

M) Ward and peripatetic staff should keep an up to date list of symptomatic patients as they would for an outbreak/incident.

N) The IPCT will report this ward as they would for a closed ward with daily updates until patients are no longer infectious.

O) Patients who are deemed a 'case' can be discharged home but not to a care home.

Observation by IPCT

The IPCT in conjunction with the clinical team will observe the ward and patients for at least 48 hours from start of symptoms of second case. If no new cases develop in this time, the enhanced precautions should continue with daily review by the IPCT until patients become asymptomatic or are discharged home. If a new case develops despite enhanced precautions in place, this may be evidence of ongoing transmission and consideration must be given to closing the ward as per NHS GGC Outbreak/incident SOP.

NB: The IPCT for NHS GGC will continue to monitor this strategy and review as part of the IPC Policy/SOP audit process.

Appendix 3: Draft Agenda for Incident Management Team

1. Introduction (Reminder of confidentiality and need for accurate records)
2. Appropriate membership
3. Declarations of conflicts of interest
4. Items not on the agenda
5. Minute of last meeting (if applicable) including review of actions agreed
6. Incident update:
    1. General situation statement
    2. Patient report
    3. Epidemiology
    4. Microbiology
    5. Environmental
    6. Other relevant reports
7. Case definitions
8. Risk assessment
9. Risk Management/Control Measures
10. Care of Patients - Hospital and Community
11. Further Investigation
12. Healthcare Infection Incident Assessment Tool (HIIAT)
13. Communications:
    - Public/patients
    - Staff
    - Media
    - Organisational/governmental
    - Datix reporting
14. AOCB
15. Action list with timescale and allocated responsibility
16. Date and time of next meeting

Health Protection Scotland

Outbreak/Incident Data Collection Tool

[To be completed by ICT on behalf of PAG/IMT]

NHS National Services Scotland

Date:

Confirmed/Suspected Infectious Agent:

Hospital/Clinical Area/Care Facility:

Case Definition:

Date of Ward/Area Closure (if applicable): **Date of Ward/Area Re-opening:**

Name/ Designation of person responsible for closure:

Name/ Designation of person responsible for Re-opening:

Patient Data									
Patient Name	CHI	Room/bed Number	Date of symptom onset	Symptoms	Colonisation/ Infection	Treatment/ antibiotic	Specimen	Specimen Result	Comments

Outbreak/ Incident Daily Update								
Date	Number of Confirmed Cases	Number of Probable Cases	Number of Possible Cases	Total Number of Cases	Number of Staff Cases	Number of cases giving cause for concern	Total Number of Deaths as a consequence of incident.	HIIAT Assessment (if appropriate)

Organisational Update		
Date		Comments : Include control measures, ward closure/opening, death certification and any other relevant information

Action Sheet

Meeting:		**Meeting called by:**	
		Date:	
Attendees:		**Apologies:**	
HIIAT:		**Venue:**	

DATE	AGENDA ITEM	WHAT: (Action)	WHEN: (Commit)	WHO: (Owner)	RESULT: (Conclusion)

DATE	AGENDA ITEM	WHAT: (Action)	WHEN: (Commit)	WHO: (Owner)	RESULT: (Conclusion)

CLOSED ACTIONS:

DATE	AGENDA ITEM	WHAT: (Action)	WHEN: (Commit)	WHO: (Owner)	RESULT: (Conclusion)

Objective

To ensure that Infection Prevention and Control Teams in Greater Glasgow & Clyde (GGC) have processes in place to initiate the NHS GG&C Boards Outbreak and Incident Management Plan & Chapter 3 of the National Infection Prevention and Control Policy

www.nhsggc.scot/downloads/outbreak-and-incident-management-plan

https://www.nipcm.hps.scot.nhs.uk/chapter-3-healthcare-infection-incidents-outbreaks-and-data-exceedance/

This framework applies to all staff employed by NHS Greater Glasgow & Clyde and locum staff on fixed term contracts.

KEY CHANGES FROM THE PREVIOUS VERSION OF THIS DOC

- Update to appendices.
- Scottish Government Standards on Healthcare Associated Infection Indicators (SGHAII) replace LDP.

Document Control Summary

Approved by and date	Board Infection Control Committee 21st February 2024
Date of Publication	28th February 2024
Developed by	Infection Prevention and Control Team
Related Documents	National IPC Manual – Chapter 3 https://www.nipcm.hps.scot.nhs.uk/chapter-3-healthcare-infection-incidents-outbreaks-and-data-exceedance/ GGC Outbreak-Incident Plan www.nhsggc.scot/downloads/outbreak-and-incident-management-plan
Distribution/ Availability	NHSGGC Infection Prevention and Control web page www.nhsggc.scot/hospitals-services/services-a-to-z/infection-prevention-and-control
Lead Manager	Director Infection Prevention and Control
Responsible Director	Executive Lead for Healthcare Associated Infections

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1. Introduction

This IPCT Incident Management Process Framework supports the implementation of the GG&C Outbreak and Incident Management Plan and Chapter 3 of the National Infection Prevention and Control Manual in the context of the Infection Prevention and Control service within NHSGGC.

The purpose of this document is to provide those responsible for responding to incidents and outbreaks within the IPCT, a framework to ensure compliance with both local and national policies and that ward to board governance systems are informed.

This framework should be read in conjunction with other local and national guidance. Training on incident management is available via Public Health for everyone involved in the incident management process.

2. IPCT IMT Process

2.1. Initial Assessment/Problem Assessment Group

An initial assessment is required to determine if an outbreak or incident is taking place. In a hospital, this will be carried out by the IPCT, or through a Problem Assessment Group (PAG).

The initial assessment will be based on available information. It may not be possible to make a decision on the information available immediately and further investigations may be required. A PAG may not always be required, and it is not necessary to hold a PAG prior to activating an Incident Management Team (IMT) meeting.

If an assessment is required or a PAG is held the IPCT will complete a NHS GGC IPC Incident summary (Appendix 1)/or if no further action is required a situation summary will be completed as a record of discussions held. There are normally two potential outcomes to a PAG:

- No significant risk to public health and/or patients; the PAG stood down, but surveillance continues or

- There are some concerns and the situation is assessed using the National Healthcare Infection Incident Assessment Tool (HIIAT) (www.nipcm.hps.scot.nhs.uk/media/2260/2022-02-07-hiiat-v20.pdf) all assessments regardless of outcome must be recorded on the Antimicrobial Resistance and Healthcare Associated Infection (ARHAI) Outbreak Reporting Tool (ORT).

2.2. Incident Management Team (IMT)

The IMT is an independent multi-disciplinary group with the responsibility for investigating and managing the incident. Incidents must all be managed as per:

• Chapter 3 of the National Infection Prevention & Control Manual (NIPCM); and NHSGGC Outbreak and Incident Management Plan
www.nhsggc.scot/downloads/outbreak-and-incident-management-plan

The documents from all outbreaks and incidents will be held in the NHSGGC IPCT pan Glasgow shared drive. Key documents in bold which must be held in each folder are:

- NHS GGC IPC Incident summary (Appendix 1) or Hot Debrief (Appendix 8);
- GGC IPCT IMT Decision & Improvement Log or minutes (Appendix 2)
- ARHAI SBAR
- Any results from environmental samples if done
- Any typing results if done
- Timeline if done
- Press releases
- Any other relevant reports/items

2.3. IMT Process and Template Agenda's

The IPCT process has a number of agenda templates. These are included in (Appendix 3)

These should ensure that all of the core actions required of an IMT, as detailed in Chapter 3 of the NIPCM and NHSGGC Outbreak and Incident Management Plan, are adhered to.

2.4. Action Log/Minute

Decisions must be clearly documented. The record must include not only the decision made, but if the alternative options have been considered and the rationale for the choice(s) made.

All actions must be concluded at the end of the final IMT or if this is not possible there is a clearly documented account of the actions that are to be included in another process or action plan. If minutes are taken then a separate action log must also accompany minute.

2.5. Environmental Sampling

Environmental sampling should only be undertaken at the instruction of the Infection Control Doctor (ICD). ICDs instructing sampling must ensure that the correct documentation is completed:

- Ad Hoc/Additional Environmental Request Swabs etc Non Water (Appendix 4)
- Ad Hoc/Additional Environmental Request Air & Water (Appendix 5)

And whomever is collecting the sample must ensure that full details are included on the request form, i.e. Room number (both ward ID and estates if applicable);

- Location within the room, e.g. bedroom, en-suite etc;
- Item, e.g. sink, bed table etc and Other relevant details.

2.6. Communicating with Patients, Carers and Families

The primary aim of the documents listed below which were developed by GGC Communications Team, is to set out the key principles which should be adhered to when communicating with patients with infections and their relatives and carers, other cohorts of patients and families, ward staff, NHSGGC staff, and the public during incidents and outbreaks and should guide IMT participants at all times in the decision process with regards to what, whom and when.

- Healthcare Associated Infection Communications Strategy
  www.nhsggc.scot/downloads/communications-strategy

- Communications during an incident or outbreak: Guidance for Problem Assessment Groups and Incident Management Teams
  www.nhsggc.scot/downloads/hai-communications-strategy-imt-guidance

A representative from Corporate Communications must be invited to all IMTs.

2.7. Risk Register

At the end of each incident the IMT will discuss if there is the requirement to consider if any actions or risks identified should be included on either the service or IPCT Risk Register.

This will also be considered in the hot debrief or IMT report which will be submitted to the relevant IPC Clinical Governance Committees (see section 3) and the relevant service clinical governance committees.

2.8. Duty of Candour

During an IMT, Clinical Teams may be referred to the NHSGGC Duty of Candour guidance.

Duty of Candour will be considered at the beginning and throughout the incident (Appendix 6) and members of the IMT will be required to follow the Health Boards Duty of Candour Policy:

Duty-of-Candour--Policy-and-Guidance-Sep-21.pdf

3. Reporting and Governance

National Reporting

All incidents and outbreaks that are HIIAT assessed are reported to ARHAI via the ARHAI Online Reporting Tool (ORT).

GGC Senior Management Team

A weekly report which contains a brief description of any incidents or outbreaks which are assessed as amber/red is completed and submitted to Board Executive Directors, Service Directors and Heads of Nursing and Medicine. An update on any incidents or outbreaks previously reported is also included until the incident is closed.

Infection Prevention and Control Governance Committees

All Incidents that score red/amber using the ARHAI HIIAT assessment will be reported to the relevant IPC governance groups, i.e. AICC or PICSG. All red/amber incidents will have a hot debrief/incident summary/IMT report completed at the closure of the incident.

A summary of **all** incidents that score amber or red will be presented at all IPC governance groups via the HAIRT

Acute Services

A summary of any incidents or outbreaks which are assessed as HIIAT amber/red will be included in the IPC report which is presented monthly to the Acute Clinical Governance Committee (ACGC).

NHS GGC Clinical & Care Governance Committee

The Healthcare Associated Infection Reporting Template (HAIRT) will include a summary of all incidents including actions taken and lessons learned in order to support immediate or ongoing improvement. The HAIRT will be submitted to all IPC governance groups for information and review and to the Clinical Care Governance Group for Assurance. A summary HAIRT will be submitted to the NHS Board for assurance.

HAIRT – The HAIRT Report is the national mandatory reporting tool and is presented bi-monthly to the NHS Board. This is a requirement by the Scottish Government HAI Task Force and informs NHSGGC of activity and performance against Healthcare Associated Infection Standards and performance measures.

Summary HAIRT – Summary HAIRT will include performance in relation to the Scottish Government Standards on Healthcare Associated Infection Indicators (SGHAII), mandatory surveillance, cleaning and estates audit results. A summary of all incidents and outbreaks that score red or amber will also be included.

Escalation

The IPCT will complete an IPC Incident summary (Appendix 1) for all amber/red incidents and outbreaks.

The IMT may, after consideration, choose to brief the executive team via the existing rapid alert system. IMT Governance and Assurance chart is included in Appendix 7.

Appendix 1

NHSGGC IPC Incident summary

Date reporting / Update no.	
Sector / Hospital	
Ward / departments	
Incident statement	
Patient cases	
Control measures	
Investigations	
Hypothesis	
HIIAT Score	
Patient Services Transmission Public Anxiety	
Communications / next steps	
Press statement	
Date	Incident update

Instruction for completion:

1. *Complete the above following all incident /PAG meetings that require HIIAT assessment.*
2. *Send to DIPC, LICD and ANDIPC (or deputy) for review*
3. *DIPC/ANDIPC will ask IPCT to complete ORT*
4. *IPC Data team will update ORT and sent to ARHAI*

Appendix 2

GGC IPCT IMT Decision Log & Improvement Plan

Meeting:		**Meeting called by:**	
		Date:	
Attendees:		**Apologies**	
Next Meeting:		**Venue:**	

DATE	AGENDA ITEM	WHAT: (Action)	WHEN: (Commit)	WHO: (Owner)	RESULT: (Conclusion)

The most up-to-date version of this document can be viewed at the following web page:
www.nhsggc.scot/hospitals-services/services-a-to-z/infection-prevention-and-control

CLOSED ACTIONS:

DATE	AGENDA ITEM	WHAT: (Action)	WHEN: (Commit)	WHO: (Owner)	RESULT: (Conclusion)

The most up-to-date version of this document can be viewed at the following web page:
www.nhsggc.scot/hospitals-services/services-a-to-z/infection-prevention-and-control

Appendix 3

Template Agenda
(Hospital, ward/dept/organism if applicable)
Date Location

1. Welcome and Introduction (Reminder of confidentiality)
2. Apologies
3. Minutes from the previous meeting
4. Incident summary
    a) General situation statement
    b) Patient report
    c) Microbiology report
    d) Epidemiology
    e) Environmental report
    f) Other relevant reports
5. Case definition
6. Hypothesis
7. Risk Management/Control Measures
    a) General
    b) Patients
    c) Staff
    d) Public Health
8. Further Investigation
    a) Epidemiological
    b) Environmental
    c) Standard Infection Control Precautions Standards (SICPS) audit
    d) HH audit
    e) Route Cause Analysis (RCA)

9. Control measures

10. Healthcare Infection Incident Assessment Tool (HIIAT)

11. Communications
    a) Advice to patients and carers
    b) Advice to public
    c) Advice to Staff
    d) Media (print, radio, TV, websites, social networking sites)
    e) Executive management team/Clinical Governance
    f) Health Protection Scotland (HPS) / Scottish Government (SG) HAI Policy Unit (HIIORT)
    g) Duty of Candour Consideration

12. AOCB

13. Action list with timescale and allocated responsibility

14. Date and time of next meeting

Appendix 4

LF591v2 Ad Hoc/Additional Environmental Request (Swabs etc - Non Water)

For Completion by Infection Control Team				
Date of Issue		**Authorising Infection Control Consultant**		
Expected Sampling Date		**Frequency of Testing (e.g. One Off / Each Thurs)**		
Estimated Numbers		**Location(s) Hospital Site / Ward**		
Sample Type(s)				
Estimation Request & Clinical Rational for Testing	*Example: Specify target organism only / All isolates / GNB only as part of IMT investigation*			
Result Notification	List all staff emails to receive a copy of results as they become available			
ALL SAMPLES TO BE SUBMITTED WITH A COMPLETED ENVIRONMENTAL REQUEST FORM				
For Completion by Laboratory Staff (in conjunction with Infection Control Consultant)				
Booking in PID as per LI720	*Ensure full details of locations are included so all samples are PID'd using the same location for duration if incident*			
Reporting Criteria	*Example: Any isolate present to be reported /Only target organism to be reported*			
Set Up & Reporting Procedure	*Media to be set up*			
	Temperature and atmosphere		*Duration of Incubation & Read Frequency*	
	Reporting Criteria	*Example: NG2D/'Target Organism' Not Detected*		
All reported organisms to be stored in freezer				

Appendix 5

LF592v2 Ad Hoc/Additional Environmental Request (Air & Water)

For Completion by Infection Control Team			
Date of Issue		**Authorising Infection Control Consultant**	
Expected Sampling Date		**Frequency of Testing (e.g. One Off / Each Thurs)**	
Estimated Numbers		**Location(s) Hospital Site / Ward & Contact Details**	
Examination Request & Clinical Rational for Testing	**Air:** */ Air Sampling / Target Organism /Particle Count* **Water:** *Specify if target organism only / TVC / All GNB only as part of IMT investigation*		
Result Notification	*List all staff emails to receive a copy of results as they become available*		
ALL SAMPLES TO BE SUBMITTED WITH A COMPLETED ENVIRONMENTAL REQUEST FORM			
For Completion by Laboratory Staff (in conjunction with Infection Control Consultant)			
Booking in PID as per LI720	*Ensure full details of locations are included so all samples are PID'd using the same location for duration of incident*		
Reporting Criteria	*Example: Any isolate present to be reported /Only target organism to be reported*		
Set Up & Reporting Procedure	**Media to be set up / Additional Plates set up**		
	Reporting Criteria	*Example: Target organism Isolated/'Target Isolate' Not Detected etc*	
	All reported organisms to be stored in freezer		

Appendix 6

Duty of Candour Considerations for Infection Control Incidents

For an infection incident to be considered as a Duty of Candour Event, there are a number of points to consider.

Incident Definition

An 'incident' as defined in NHS GGC Incident Management Policy is any event or circumstance that led to unintended or unexpected harm.

Was the patient harmed?

For the purposes of the Duty of Candour legislation, harm can be:

- death of the person
- a permanent lessening of bodily, sensory, motor, physiologic or intellectual functions
- an increase in the person's treatment
- changes to the structure of the person's body
- the shortening of the life expectancy of the person
- an impairment of the sensory, motor or intellectual functions of the person which has lasted, or is likely to last, for a continuous period of at least 28 days
- the person experiencing pain or psychological harm which has been, or is likely to be, experienced by the person for a continuous period of at least 28 days
- the person requiring treatment by a registered health professional in order to prevent – (i) the death of the person, or (ii) any injury to the person which, if left untreated, would lead to one or more of the outcomes mentioned above

Was the event causing the harm avoidable?

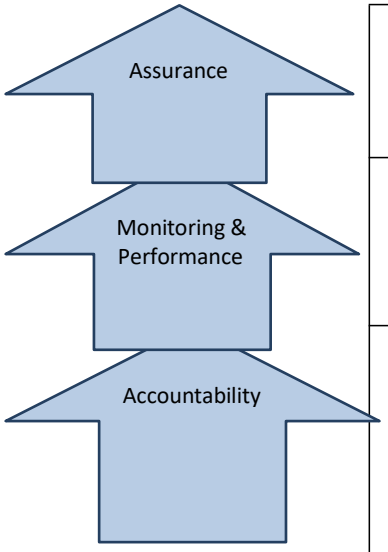
Harm may occur as a result of the natural progression of a disease or is an inherent risk of the treatment given. That harm may be deemed unavoidable, in which case Duty of Candour legislation would not apply. There does however need to be evidence that this was considered. If the incident review process is unable to determine that the harm was avoidable, a SAER should be commissioned to seek to answer this in line with the NHS GGC Management of Significant Adverse Events Policy.

	Was the Patient Harmed?	Yes	No
1	As a result of the infection, did the patient suffer harm (in line with the Organisational Duty of Candour Legislation definitions)? **Was the patient harmed?** For the purposes of the Duty of Candour legislation, harm can be: • death of the person • a permanent lessening of bodily, sensory, motor, physiologic or intellectual functions • an increase in the person's treatment • changes to the structure of the person's body • the shortening of the life expectancy of the person • an impairment of the sensory, motor or intellectual functions of the person which has lasted, or is likely to last, for a continuous period of at least 28 days • the person experiencing pain or psychological harm which has been, or is likely to be, experienced by the person for a continuous period of at least 28 days • the person requiring treatment by a registered health professional in order to prevent – (i) the death of the person, or (ii) any injury to the person which, if left untreated, would lead to one or more of the outcomes mentioned above		

If answered no, this does not meet the threshold for Duty of Candour.			
	On balance of probability was the unintended or unexpected infection incident avoidable?	Yes	No
2	Was there a systems issue e.g. guidance not followed, lack of PPE, poor practice identified?		
If answered no, this does not meet the threshold for Duty of Candour.			
The Clinical Service If you have answered yes to question 1 and 2, the infection incident meets the threshold for Organisational Duty of Candour, pass to service specialty to progress a review in line with the NHS GGC Management of Significant Adverse Event Policy. If the answer is no, a SAER would not normally be required, evidence that the avoidability has been considered should be retained for future evidence.			
SERVICE SPECIALTY (follow local SAER process)			
Ensure Datix has been completed			
Complete briefing note and commission of SAER			
Forward briefing note to clinical.risk@ggc.scot.nhs.uk			

Appendix 7

Governance and Assurance IMT Process

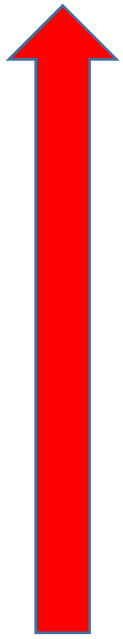


- Summary *HAIRT NHS GGC Board.
- HAIRT to Clinical Care Governance Committee.
- HAIRT Board Clinical Governance Committee.
- HAIRT/Hot Debriefs to Board Infection Control Committee.

- HAIRT/Hot Debriefs & IPC Risk Register to BICC, Acute Infection Control Committee & Partnership Infection Control Support Group.
- Weekly update to Board Executives, Service Directors, Chiefs of Medicine and Chiefs of Nursing re ongoing red/amber incidents.
- Director's dashboard to include details on incident and outbreaks.

- IMT Process and associated paperwork.
- Incident update in monthly sector reports to be tabled at service governance groups. Outstanding actions to be included in monthly report.

Rapid Alert will be completed by chair of IMT if considered that this is required by the IMT.



Appendix 8

Hot Debrief Tool

Hot debriefing document

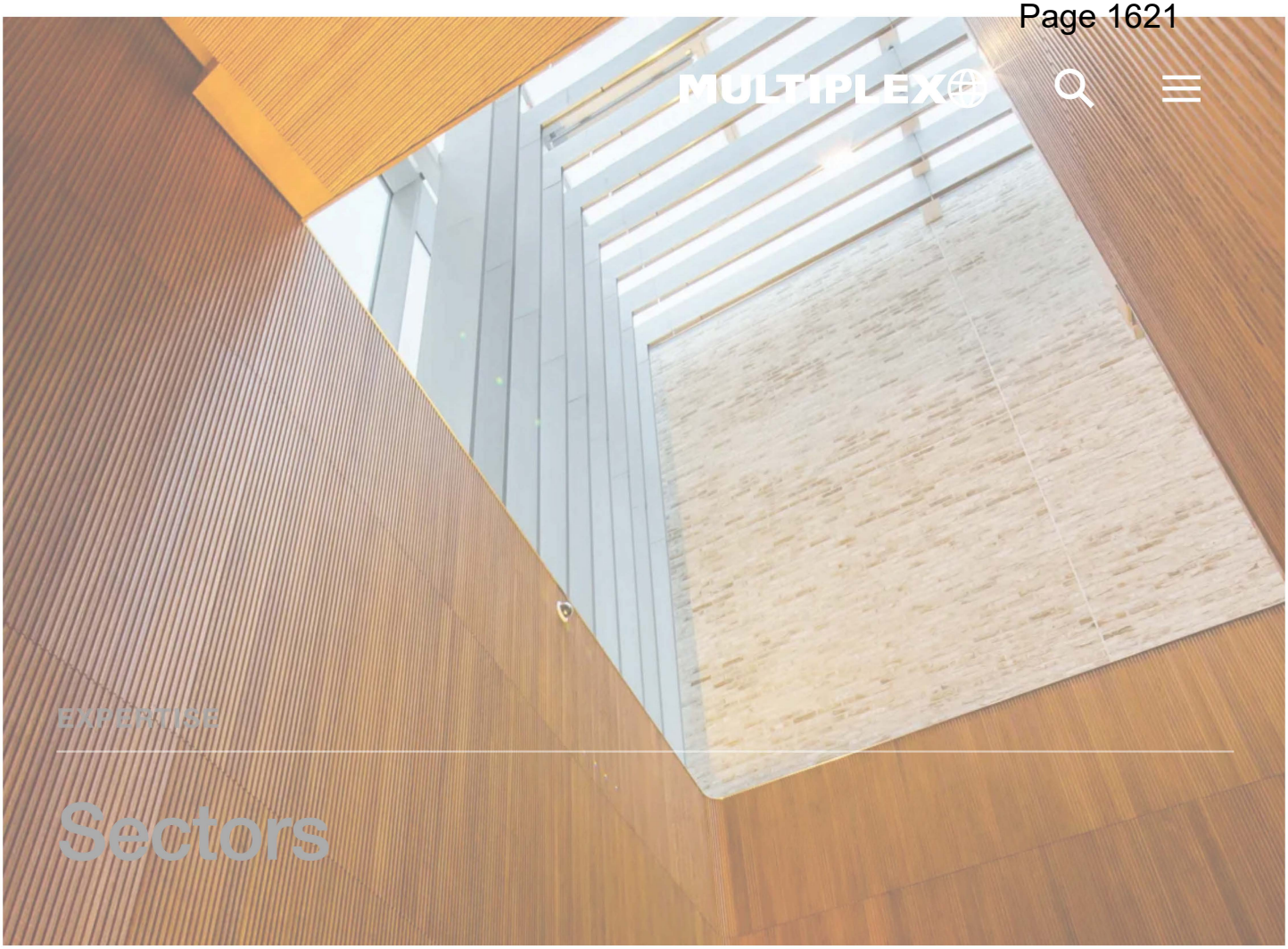
This is not a mandatory requirement but for the purpose of sharing lessons learned across Scotland particularly for rare or unusual events. The IPCT/HPT or chair of the IMT should complete this immediately following the end of an incident. It may be deemed that a full IMT report is not needed and this document may be sufficient. A full IMT reporting template can be found in the resources section of the NIPCM

1.Incident reference
Please provide a reference/title for this incident.
2. Details of incident
Please provide a brief summary of incident: Include details of the following where relevant: dates when incident started/ended; case definition; description, number and features of cases; care areas/locations affected; source and modes of cross-transmission/exposure; diagnosis and treatment, any enhanced surveillance of interventions, any hypotheses.
3. What went well?
Please list aspects of the incident considered to have been managed well:

4. What did not go well?	
Please list aspects of the incident considered not to have been managed well:	
5.Lessons Learned	
Please provide details of any learning points or recommendations:	
6. IMT lead details	
Name:	Email:
Job Title:	Address:
Contact number:	Contact number (mobile):
Date:	Signed:
Completed templates to be returned to: NSS.HPSInfectionControl@nhs.net	

Glossary

AICC	Acute Infection Control Committee
ARHAI	Antimicrobial Resistance and Healthcare Associated Infection
BICC	Board Infection Control Committee
HIIAT	Healthcare Infection Incident Assessment Tool
ICBEG	Infection Control in the Built Environment Group
ICD	Infection Control Doctor
IMT	Incident Management Team
IPCT	Infection Prevention and Control Team
NIPCM	National Infection Prevention Control Manual
ORT	Online Reporting Tool
PAG	Problem Assessment Group
PICSG	Partnership Infection Control Support Group
SAER	Significant Adverse Event Report
SBAR	Situation Background Assessment Recommendation



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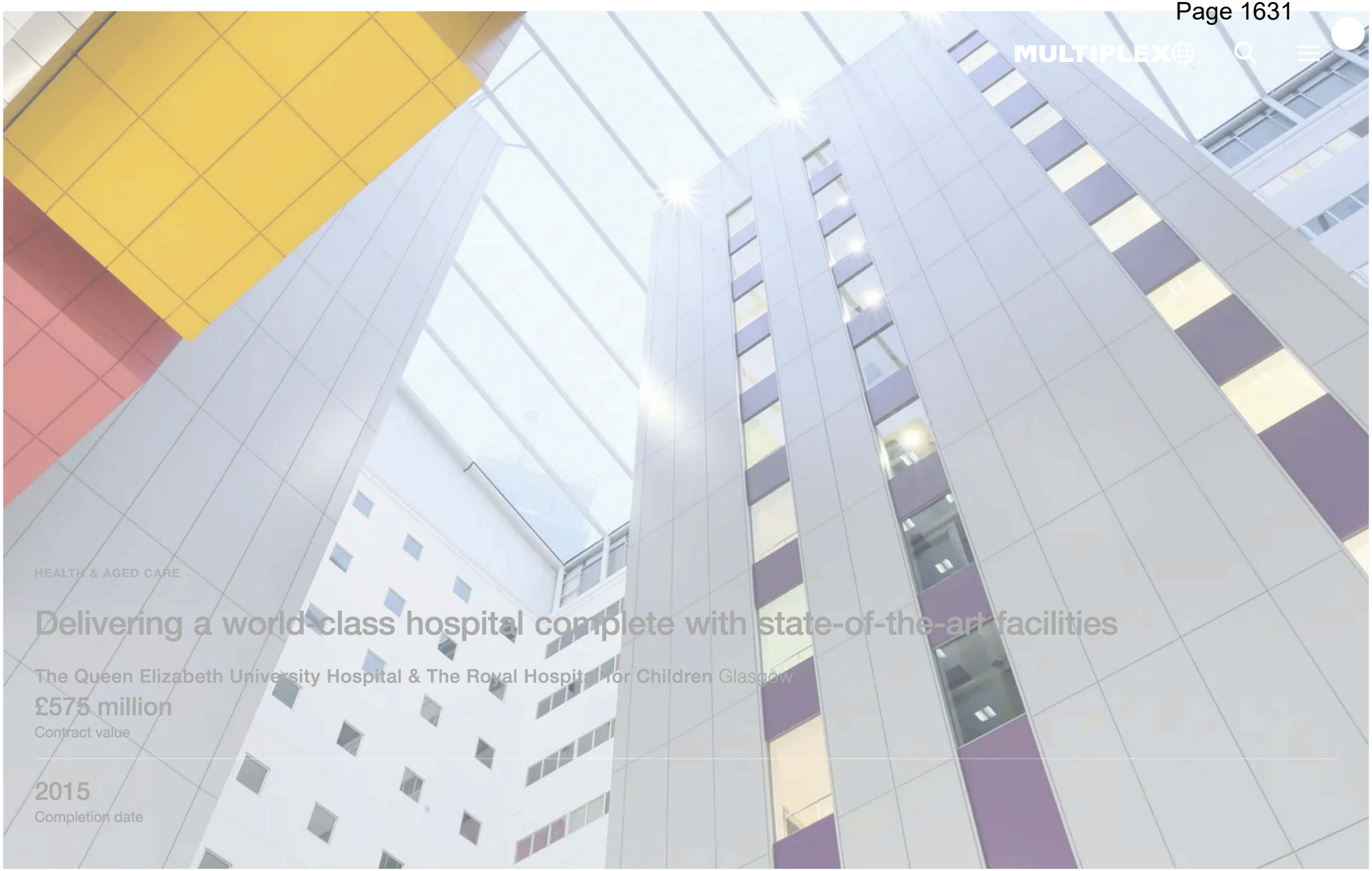

HEALTH & AGED CARE

Delivering a world-class hospital complete with state-of-the-art facilities

The Queen Elizabeth University Hospital & The Royal Hospital for Children Glasgow

£575 million
Contract value

2015
Completion date

At a glance

LOCATION
Scotland, Europe

TYPE OF PROJECT
Construction

CLIENT
NHS Greater Glasgow and Clyde

CONTRACT TYPE
Design & Build

STATUS
Completed

ESD RATING
BREEAM 'Excellent' Carbon foot print 80 kg CO2 M2

Delivering a leading hospital

Multiplex was responsible for the design and construction of the Queen Elizabeth University Hospital & The Royal Hospital for Children, Glasgow.

The £575 million publicly-funded development gives Glasgow one of the most advanced adult acute hospitals in the UK and the largest critical care complex in Scotland. It is the keystone facility within the Scottish Health Modernisation Strategy, which aims to lead the way in contemporary healthcare provision.

Multiplex delivered this new state-of-the-art healthcare facility and high quality design environment five weeks ahead of schedule and under budget. Built on the site of the existing Southern General Hospital in the south west of Glasgow, the project comprises a new acute care hospital with 1,109 beds in single-room accommodation, 256-bed children's hospital, 30 modern operating theatres and a separate laboratory block providing biochemistry, haematology and blood transfusion services and a stand-alone energy centre.

An estimated 750,000 patient episodes (including 110,000 A&E patients) are expected at the hospital every year. It is home to major specialised services such as renal medicine, transplantation and vascular surgery.

A key element of the Multiplex commitment to delivery of this project was to link the opportunities presented by the development into the needs of the local community. Multiplex achieved considerable client and industry recognition for our efforts in this area. As part of the project we exceeded our obligations by supporting local businesses and providing 440 new entrant jobs, 210 work experience placements and raised in excess of £400,000 for local charities and good causes.

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Awards

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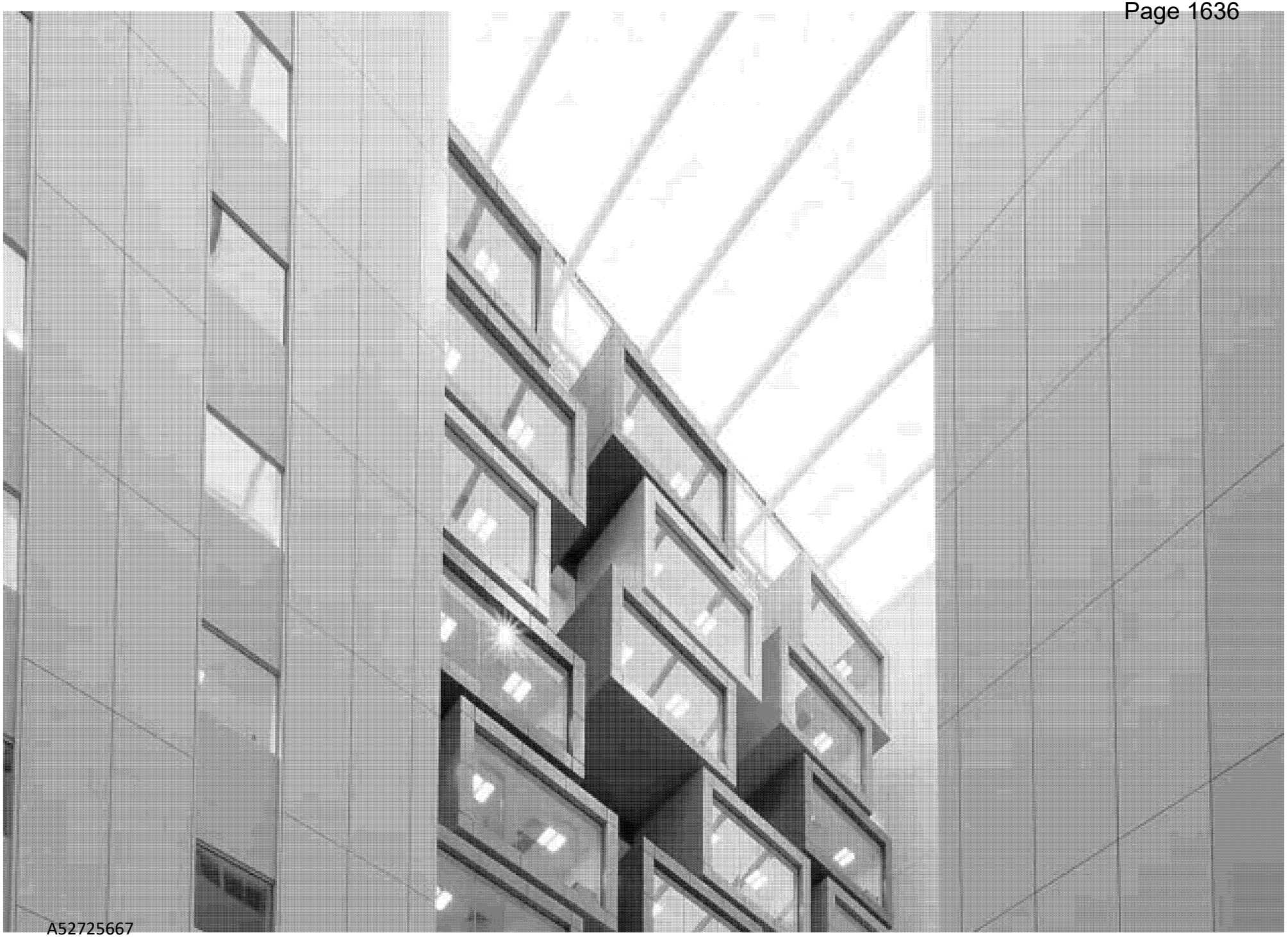

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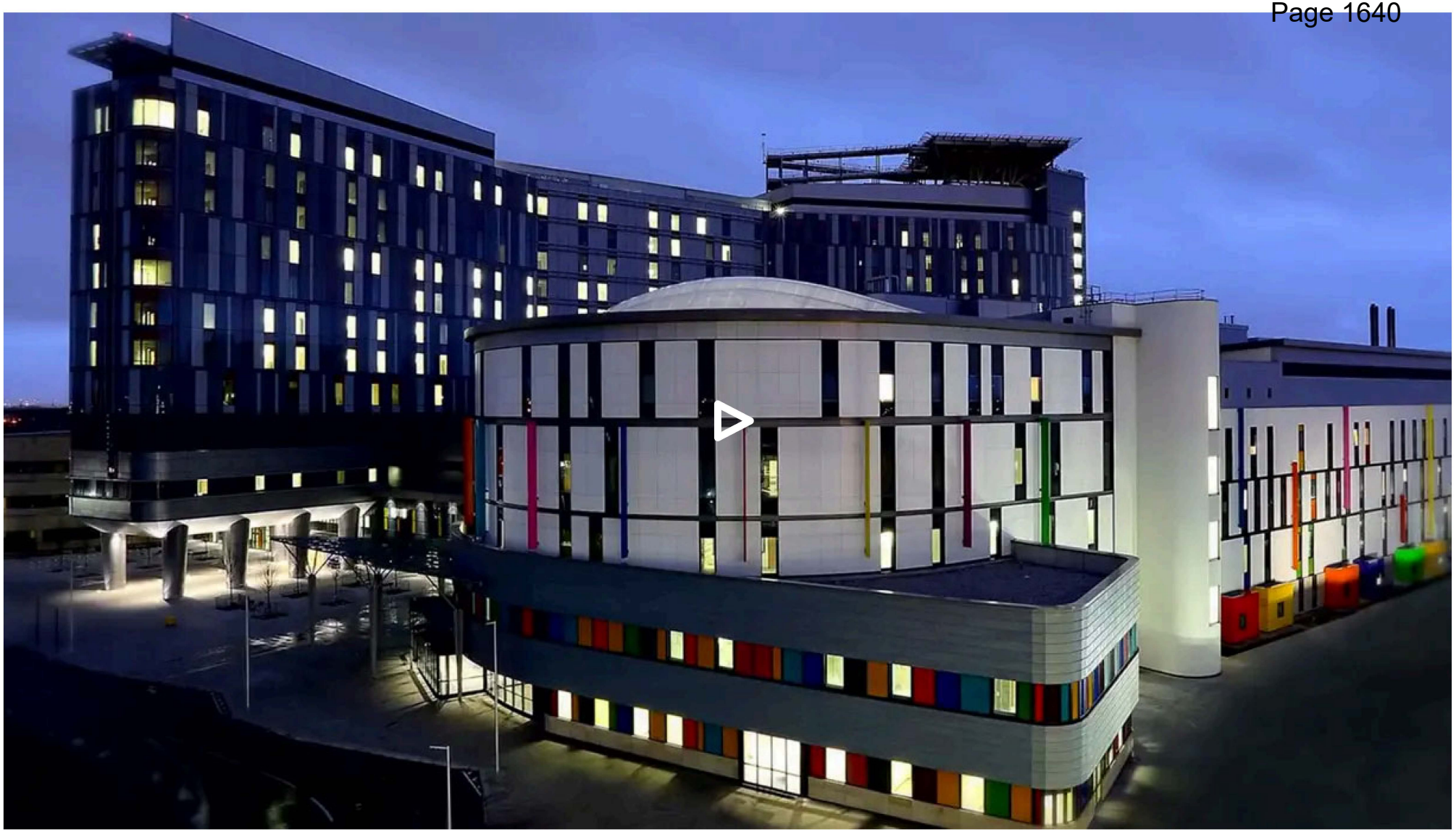
QUEH: From Concept to Completion



Project in numbers

1,109

beds in single rooms in the Acute Care Hospital

256

beds in the Children's Hospital

30

modern operating theatres

440

new entrant jobs created during construction

64%

of work packages awarded to local enterprises

0.08

Accident Frequency Rate

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Delivering major healthcare facilities around the world

We have a long track record of delivering world-class hospitals and aged care facilities that enhance wellbeing and safeguard the day-to-day running of existing operations.

This includes patient wards, operating theatres, MRI facilities, laboratories, energy centres, and aged care accommodation, as well as internal and external courtyards and green spaces to maximise the connection to the external environment.

Our teams are skilled in the detailed planning and robust scenario-testing required to ensure safety and surety of delivery in highly sensitive environments.

precision

We are experts in delivering state-of-the-art medical facilities in collaboration with our specialist supply chain. Our UK portfolio includes the largest hospital campus in Europe, Scotland's largest children's hospital, and luxury later living accommodation in Chelsea, London.

Our teams are skilled in the precision and meticulous logistical planning required to deliver major construction works adjacent to live hospital environments – including operating theatres, patient wards, accident and emergency facilities, and live blue light ambulance routes. They ensure day-to-day hospital functions are not impacted as works are carried out, with particular attention given to construction methods to control of dust, noise and vibration.

The Queen Elizabeth University Hospital

large windows, internal and external landscaped courtyards, and secure roof gardens accessible by bedridden patients all serve to improve infection control and aid patient wellbeing by providing natural light, fresh air and scenic views, all of which enhance connections with the external environment.

Linking the opportunities presented by our projects to the needs of local communities is built into the way we work. We have received considerable client and industry recognition for our efforts in this area, consistently exceeding our contractual obligations to deliver new entrant jobs, apprenticeships and work experience placements. We also work closely with our supply chain to make work packages accessible to local small and medium enterprises and hold capacity-building workshop for local business interested in becoming members of our supply chain.

PROJECT SPOTLIGHT:

One of the most advanced adult acute hospitals in the UK

Aside from delivering the project five weeks ahead of schedule and under budget, the project created significant social value to the local community during its construction. We exceeded our obligations by awarding 64% of work packages to local enterprises, providing 440 new entrant jobs and 210 work experience placements and raising in excess of $400,000 for local charities and good causes.

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Our values

Currie & Brown has a firm set of organisational values that encompass everything we do. Our people determine our values, shape our culture and define who we are.

Professional: We always ensure that we deliver excellence with respect, efficiency and business awareness

Collaborative: We are team players, promoting an inclusive and supportive working environment

Honest: We promote a transparent and responsible relationship with our clients and people

We positively promote these values in our activities and places of work and they are the basis for delivering excellence to the clients and communities we serve.

Healthcare

Our comprehensive, 'whole-system' approach to healthcare ensures our solutions increase productivity, drive efficiency and improve service delivery where it matters most.

As well as advising on new build, we support health service organisations in transformation programmes and resultant estates' reconfiguration. We support strategic development and deliver solutions that increase yield, drive efficiency and achieve continued improvement of the services delivery and property portfolios of our healthcare clients.

We operate for public sector organisations, private providers, funding institutions and outsource providers of healthcare globally. Our projects include:

- Reviewing the acute services provision and subsequent reconfiguration or new build of hospitals in the UK, including one of the largest in Europe.
- Overseeing and structuring Mexico's country-wide healthcare PPP initiative. We were responsible for feasibility studies, risk analysis and dispute resolution for more than ten hospitals. We supported the government throughout, from initial conceptualisation to the performance of the asset.
- Providing strategic, business case and implementation services for mental healthcare provision in high/medium/low security facilities in the UK.
- Reconfiguring the accident and emergency department of a major London hospital.
- Providing strategic, business case and implementation services for primary care facilities, working with the National Health Service and other public sector partners in the UK.
- Providing project management, quantity surveying, principal designer, building surveying, health and safety, environmental consultancy and ancillary services to NHS trusts, NHS bodies or public sector bodies through the NHS SBS framework for construction consultancy services.

Contact

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Currie & Brown joins forces with UK Government and Peru Ministry of Health to deliver the next generation of hospitals in Peru

22 AUGUST 2024

Currie & Brown, a world-leading provider of cost management, project management, and advisory services, is honoured to join forces with AECOM and Gleeds to create the UK Healthcare Alliance (UKHA). This partnership will implement a Government-to-Government (G2G) agreement with the UK Government and the Peruvian Ministry of Health (MINSA), kn... as PRONIS, to deliver the next generation of hospitals in Piura and Trujillo.

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INVITATION TO PARTICIPATE IN COMPETITIVE DIALOGUE

VOLUME 2/1

APPENDIX M&E.3
PLANT STRATEGY & DESIGN CRITERIA

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1.0 Introduction

This document has been prepared to collate the available information and provide an insight into the main M&E plant equipment and Design Criteria.

Information provided within the document shall allow the Contractor to formulate their plant proposals and commence their design based on the appropriate criteria.

The Contractor shall base all plant selection on their own approved proposals utilising the appropriate design criteria to achieve detailed compliance with the Employers Requirements.

Plant and equipment shall be selected and installed to allow full compliance with HAI Scribe to allow rigorous infection control procedures to be put in place.

Permanent access equipment shall be provided to allow routine maintenance of all equipment within all plant rooms.

Plant access shall be prioritised in all aspects of the building services design to minimise the requirement for the use of portable access equipment.

Special consideration shall be given to the location of water services and drainage to minimise the risk of flooding to Theatres Suites, Imaging, Critical Care areas, support areas, ICT server rooms and ICT Node rooms. Where water and drainage services require to be located on floors directly above these areas they require to be carefully routed to minimise the risk of flooding and non porous floors shall be provided, Penetrations shall be located at the perimeters with integrated up-stands provided at risers locations, leak detection shall also be provided.

All plant and materials for the Mechanical, Electrical, Public Health and Specialist systems shall selected to ensure that the Contractors targeted BREEAM items are achieved to meet the Excellent BREEAM requirement.

The Contractor shall also consider in depth all energy issues including parasitic losses in lighting and lighting controls and cable sizing economics to ensure that their bid provides a low energy solution.

2.0 Plant Strategy

2.1 Energy Centres

A modular resilient Energy Centre shall be established to house the main fossil fuel plant associated with the new Hospital Buildings. This shall operate in conjunction with a second Energy Centre to be established by the Contractor once the Laboratories are constructed and space is made available on the site adjacent to the present Morgue.

Energy Centre number one shall be a stand alone structure located adjacent to the Laboratories Building.

The Energy Centre designs shall be carried out at an early stage to allow the main construction works to be carried out prior to commissioning of the Adjacent Laboratories building.

Both Energy Centres shall be configured to support the contracted Low Zero Carbon (LZC) and on site renewable solutions together with the main fossil fuel systems and electrical distribution equipment, the initial building shall be of similar overall height as the Laboratory building, with internal floor heights configured to suit the equipment installation and maintenance requirements, the second energy centre shall be developed by the Contractor to meet the service requirements outlined in appendix M&E2.

2.2 Energy Centre adjacent to the Laboratories

2.2.1 The exact layout shall be configured to meet the detailed services design within the following concepts.

2.2.2 Basement

Approximately 6m clear height to accommodate compartments for incoming water mains and meter, mains water break tanks filtration equipment and bulk cold water storage, bulk fuel storage all sized to meet the requirements of the new hospitals buildings with additional fuel storage allocated for the Board's future electrical generator sets.

2.2.3 Ground and Mezzanine First Floors

Approximately 6.6m clear height compartmentalised to provide:

Two main boiler and CHP halls
Absorption chillers
Two electrical generator halls
Two medium voltage switchgear rooms
Two low voltage switchgear rooms
Transformer compounds
Gas meter room

Boilers shall be rated to provide resilient, redundant solution to meet the heating and hot water requirements for the new Adult Acute and Children's hospital buildings.

CHP units where proposed shall be rated in accordance with the Contractors Low Zero Carbon solution.

Electrical generators to be rated to provide a resilient and redundant solution to meet the full power requirements for the new Adult Acute and Children's hospital buildings. Space and services shall be provided for the Board to fit two further machines without the requirement to extend the building footprint, amend the external envelope or shut down live systems together with the facility to interconnect further remotely located generators to meet the demands of the retained estate at the end of the existing low voltage generator capacity design lifespan.

The MV switchgear shall be configured to support the full Southern General Campus and the known expansion including, the new hospitals, retained estate, future education facility, car parks, and the patient hotel etc.

The standby power system shall be configured to allow load bank testing of individual generators with automatic availability on the event of loss of power during load bank testing.

A facility shall be provided in each generator group to allow the connection of temporary generation capacity in the event of extended maintenance or repair works. This shall include dedicated switchgear cabled to secure link boxes, valved fuel flow and return pipework housed within fuel control cabinets and start-stop controls via a socket and plug arrangements all terminated at a suitable location for sighting the temporary equipment.

Mezzanine

First floor Mezzanine to provide accommodation for Power Distribution Equipment and a cross flow air intake path to the high level air attenuators for the generator halls.

2.2.4 Second Floor

Approximately 4m clear height compartmentalised to provide:

Two Control rooms
Two Heating pressurisation, pump, pipework distribution and LZC and renewables plant rooms

2.2.5 Roof Level

Space for Lift overrun, roof maintenance access, and any AHU or heat rejection plant and LZC and renewables required for operation of the Energy Centre.

2.2.6 Façade

The façade shall be configured to provide louvers where required to provide cross ventilation of plant configured with removable sections to allow for plant replacement.

2.2.7 Lifts

Heavy duty passenger/goods lifts shall be provided to serve all floors, the lift/s shall be selected to allow for ongoing maintenance of all plant with the car/s sized to accommodate the largest replacement part required under normal system operational lifetime.

2.2.8 Plant Replacement Strategy

The Contractor shall prepare a Plant replacement strategy, this shall be provided at an early stage in the building design to ensure that all lifting beams, access platforms, equipment cradles, slings, block and tackles and access ladders required for safe operation, maintenance and plant replacement are in place prior to operation of the Energy Centre.

The strategy shall incorporate a systematic approach to ensure that replacement of all plant items and their major components can be accommodated without the requirement to close down adjacent systems this shall include drawings together with method statements to demonstrate the philosophy and to indicate full compliance for all plant replacement in accordance with the strategy.

The location of engineering and utility services shall be co-coordinated with the structure and not constrain or conflict with operational functionality.

Access to all services shall facilitate ease of maintenance which should be safe and able to be effectively undertaken, cross referred to the activity schedules within the planned preventative maintenance regime.

2.2.9 Access and Egress

The Energy centre shall be configured to allow secure, safe entrance and egress with all plant installed in accordance with HTM 2023, Access and Accommodation for Engineering Services and HTM 06-01 Electrical Services Supply and Distribution. It shall also allow for safe delivery of fuel oil via readily accessible managed fill points to serve the basement storage tanks.

2.2.10 Common Chimney

A common chimney stack shall be provided and utilised to accommodate all flues from the boilers, generators and CHP units.

This chimney shall be sized in accordance with the clean air act for its discharge height.

Internal man maintenance access shall be provided over the complete height of the chimney stack.

2.2.11 Boilers

The following applies if the Contractor chooses traditional boiler plant, if an alternative approach is put forward the Contractor shall provide a detailed proposal identifying their solution indicating compliance with the requirement for resilience and spare capacity requirements.

The boilers to be used are high efficiency, low Nox, 3 pass high water content boilers with pressurised burners that operate on alternative fuel supplies of natural gas and 35 second light oil. Burners to be digital modulating with variable speed and air damper control and capacity control to achieve a high turndown ratio (10 to 1 turndown on natural gas). Low NOx (<70mg/KWhr natural gas) burner with oxygen trim control.

The boiler configuration shall employ an effective (N+1) redundancy at peak connected design load (effective N+2 at part load). Each boiler is to have its own discreet insulated and clad flue. The flue stack is to be an independent stainless structure which shall also accommodate other services requiring high level discharge.

The MTHW will be distributed via separate highly insulated district heating mains to the Adult and Children's Hospitals run within the basement service route between the Energy Centre/Loading Bay and the Hospitals.

The whole of the heating system will be chemically dosed and treated as appropriate. All pipework and fittings are to be highly insulated to minimise heat loss and heat gain to the hospital spaces. Insulation to be 50% thicker than the minimum economic thickness.

All pumping arrangements will include redundant standby pumping.

In order to optimise energy usage variable speed pumping will be employed throughout.

Boilers shall be of the welded steel type manufactured in accordance with BS 855 : 1990, BS EN 303-1 : 1999, BS EN 303-4 : 1999 : oil fired by matched pressure jet type burner using 35 seconds viscosity fuel oil, complete with fully automatic control and instrumentation and electric ignition. The burner control arrangement shall incorporate sequence starting, running and stopping and all flame failure devices.

The boilers shall be arranged for medium pressure hot water heating operation with a maximum flow temperature of 120 degrees C. and a design minimum return temperature of 90 degrees C. The entire boiler shall be clad within a heavy gauge sheet steel insulated jacket complete with inspection panels.

An integral boiler instrumentation panel shall be provided and shall incorporate:-

On/off Switch,
Control Thermostat,
Limit Thermostat (automatic reset),
Thermometer.

The boilers shall be supplied complete with burner attenuating hoods to minimise noise breakout.

The boilers shall be supplied complete with economisers.

A complete set of boiler flue cleaning tools shall be supplied complete with wall mounting rack and fixings.

The Contractor shall include for the services of the presence of the Boiler and Burner Manufacturer's skilled Services Engineers to start up, test and check all burner/boiler controls. The units when commissioned, shall be "Set Up" to give maximum combustion efficiency of no less than 80% when the draught over the combustion space has been regulated within the limits laid down by the Boiler Manufacturer. Flue gas outlet temperatures will require to be recorded at this stage, together with all relevant details necessary to ascertain the efficiency of the plant. All of the testing shall be carried out by the Contractor's appointed representative and then witnessed by the Consulting Engineer before the boiler plant will be accepted from the Contractor.

2.2.12 Water Filtration Equipment

Water filtration equipment shall be provided in accordance with the current SHBN, and will be located in the Energy Centre.

Filtration shall be introduced to; ensure the domestic water supply and hence all associated pipework is maintained at a high standard of cleanliness, from the supply point to all the potable water outlets, it will also prevent build-up in water systems of sediments and deleterious biofilms, which may act as nutrient sources for bacteria.

The plant shall be provided with a gas backwash facility. A suitable compressor and air receiver shall be provided to operate the air blowback system all located in close proximity to the water filtration equipment.

Filtration should not be a requirement for incoming water destined for non-domestic use, such as fire fighting, boiler feed or other chemically treated or dosed systems.

Where recycled water is proposed for non clinical areas the Contractor shall provide the appropriate risk assessments and indicate the proposed means of separation, filtration, storage, pumping and treatment systems.

2.2.13 Integrated Services Distribution Tunnels

Underground services walk in tunnels shall be provided, to allow all M&E services to traverse from the Energy Centres to the Hospital buildings. The tunnels shall be configured to ensure continued operation of the facility during maintenance of all services.

The tunnels shall also be utilised by the Hospital for automated and manual transfer of goods etc. All services shall be routed in the tunnels to allow inspection, maintenance and replacement while maintaining automated and manual transfer of goods.

Ventilation and lighting plus general services and fire fighting provisions shall be provided to allow it to be a fully functioning space.

2.2.14 Layout

Refer to drawing G1274/ME(60)01 for energy centre schematic layout.

2.2.15 Planned Preventative Maintenance

The Contractor shall provide a fully detailed PPM procedure document for all services as indicated in the Employer's Requirements.

2.2.16 Resilience

The systems shall all be configured to provide a high level of resilience for all services installations including but not limited to water, heating, ventilation, cooling, medical gases, electricity, UPS, Generators and comms etc. to ensure minimum disturbance to the ongoing operation of the hospitals during sectional maintenance.

2.3 Energy Centre adjacent to the old Morgue Site

2.3.1 The secondary energy centre shall be configured to meet the detailed services design within the concepts laid out above for the initial energy centre with both centres combining to provide a resilient efficient delivery of energy and C02 to meet the detailed services design requirements for the Works, the retained estate and the proposed new developments .

2.4 Main Hospital Building

2.4.1 Mechanical and Public Health

Basement plantrooms shall be established in the main Hospital building to accommodate the main heating and hot water distribution. These rooms shall contain plate heat exchangers, pressurisation equipment, storage tanks, pumpsets and DHW cylinders as required.

The plate heat exchangers shall take MTHW water at 120°C flow/90°C return and convert it to LTHW 80°C flow/ 60°C return to serve local room heat emitters, active chilled beams and air trimming coils.

Ventilation plantrooms shall be provided throughout the building to house the air handling units with access to the fresh air inlets and air discharge locations via louvred walls on the external structure.

Chiller plant shall be located on the roofs as required to suit the cooling load requirements of the building. The chiller configuration shall employ an effective (N+1) redundancy at peak connected design load.

Separate steam generation plant shall be provided for humidification and sterilisation, this plant may be located in local plantrooms in close proximity to its use.

2.4.2 General Plant Design & Distribution

Each hospital department is to contain its own dedicated air handling plant. Larger departments, such as inpatient wards, are to be zoned with separate air handling plant serving each zone. This is to ensure that in the event of mechanical failure, or during maintenance or refurbishment only a limited area is affected. Critical care units are to be served with back-up air handling plant with units being provided with duty/standby motors.

Service routing shall be configured to ensure that ductwork systems are routed from separate directions to avoid possible contamination of alternate systems during cleaning/ maintenance of individual systems.

Air handing plant at podium roof level are to serve the main body of the hospitals as well as the lower half of the adult hospital tower. The top half of the tower is to be served by air handling plant installed in the tower roof. Fresh air intake and discharge louvres are to be installed at these levels, carefully separated to avoid recirculation.

Supply and extract ductwork is to be distributed to the hospital departments via risers. Risers are to be located off main circulation routes to facilitate access for cleaning and maintenance. Horizontal distribution is to be in ceiling voids above corridors, wherever possible, so that access panels can be located outside clinical areas. Similarly, trimmer coils are to be installed above circulation areas wherever possible to avoid potential leaks in clinical areas, which would lead to greater disruption and potential damage to expensive equipment.

The ductwork distribution system is to be a low pressure system. Smoke dampers shall be installed through all main fire compartments and linked to dedicated control panels. Standard fuseable link fire dampers shall be employed through all other fire compartments. Access panels are to be installed in accordance with DW144 to allow adequate inspection, maintenance and cleaning. Flexible ductwork is only to be installed for final connections to grilles and diffusers.

Diffusers and grilles are to be carefully chosen to allow them to be easily removed and cleaned to limit airborne contamination.

Air handling plant shall be designed to comply with SHTM 03-01 requirements, and include, in addition to the base provision the following:

- Inspection, cleaning and maintenance access sections either side of all coils and dampers, upstream of all filters and downstream of all humidifiers.
- Blow-through configuration of fans to ensure as much of the unit is under positive pressure as possible.

The following fully operational sections are to be incorporated into all air handling units:

- Motorised damper
- Fog/frost coils
- Pre filter
- Energy recovery device with automatic control and bypass
- Fan
- Blast plate
- Cooling coils
- Eliminator
- High efficiency motors,
- Fans in air stream for efficiency
- Fan selection and control to develop full flow and pressure at highest efficiency
- Heater – battery *
- Steam injection humidifiers (where required) **
- Final filter
- Activated carbon filters for odour removal
- Manual isolation / volume control damper
- Active Chilled Beams

* Operating theatres main heater batteries shall be capable of heating the total air volume from minus 6°C to plus 35°C, this is to provide resilience, should the fog/frost coil fail or abnormal external conditions prevail.

** Humidifier sections to be provided on all Operating Theatre air handling units and other areas required for clinical operation in accordance with the SHTM's, SHBN's and RDS's.

2.4.3 Chilled Beams

The use of active chilled beams should be considered within all ward areas.

Active chilled beams will provide tempered, filtered air together with heating and comfort cooling of the space; thus providing effective local control of the environmental conditions.

Care must be taken in positioning of the chilled beams to ensure that cold draughts are avoided when they are in a cooling mode.

The control settings must ensure that the external elements of the beam are always above dew-point.

Beams must be easily accessible for cleaning and maintenance.

Fan coils shall not be acceptable for use in clinical areas

2.4.4 Thermal Comfort

General Considerations

High levels of comfort are required for all users; in particular staff and patients. This shall have an effect as to how the overall building and the health care provided is perceived, affecting staff performance and patient well being.

Many clinical areas require close control of the room environmental conditions to make the spaces functional. This will require spaces with air conditioning and/or comfort cooling.

Temperature, humidity and air distribution shall all carefully be controlled to provide good levels of thermal comfort.

For other areas broader environmental conditions will be acceptable and there is the possibility of natural ventilation and mechanical ventilation with comfort cooling. To achieve good levels of thermal comfort good zoning is essential as well as provision of, user controls, user operation and proper maintenance.

Openable windows can be used as part of the ventilation strategy, and it is necessary to ensure that other, often contradictory requirements such as restricting openings for safety reasons, are met.

In perimeter spaces where mechanical ventilation is provided for functional reasons a mixed mode approach is a possible solution. Users should still have the option to modify their environment by opening the window; particularly in summer.

The Design Solution should meet the current NHS and Building Regulation standards with regard to energy use current at the time the buildings are built or that are economically and technically viable to include.

Dynamic modelling including CFD to be provided as indicated in appendix M&E4.

2.4.5 General Chilled Water

In order to meet the annual cooling requirements of the development and the requirements of HTM 03-01 a chilled water installation shall be required.

The systems shall be configured to provide full operational resilience and ensure that maintenance can be carried out on a sectional basis while allowing ongoing operation of the remaining plant.

Sustainable cooling shall be used were possible with conventional chilling used as required as a top up and to provide system resilience, all lower carbon means of supplying cooling such as bore holes, piling systems and absorption chilling must be fully investigated and chosen if there is a carbon advantage over conventional cooling.

Typical chilled water system configurations are shown on G1274/M(55)01.

The configuration shows chiller installations located on the roofs. An (N+1) redundancy philosophy has been utilised for each chiller cluster, chillers should be provided with free cooling coils.

The chilled water equipment shall include chillers, buffer vessels and pressurisation units.

Each chiller shall be of the fully packaged air-cooled type complete with multiple modular screw compressors. The chiller shall be rated as residentially quiet to avoid obtrusive noise emissions and provided with the appropriate acoustic kits to achieve this.

Chillers shall be selected to operate at design duty with an external ambient temperature of 30^{o}C dry bulb.

Chillers to have variable speed head pressure control with load and efficiency optimized head pressure and chilled water flow temperature control to improve seasonal efficiency.

2.4.6 ITC Cooling

The Contractor shall provide N+1 redundant high specification, full function and close control air conditioning systems to support the Board's Technology requirements, such as but not limited to:-

- Server Rooms
- Computer Rooms
- Telephone Rooms
- CCTV DVR Equipment Rooms

The Contractor shall provide high specification cooling systems to support the Board's Technology requirements, such as but not limited to:-

- ICT Node Rooms
- BMS Node rooms (where these are separate from ICT node rooms)

The Contractors shall provide the most energy efficient solution available to meet the 24/7/365 ICT cooling requirements and should avoid the use of split refrigeration systems. All solutions shall include automatic free cooling sections to take advantage of the available temperature differentials.

Server and node rooms shall be protected by perimeter distributed cable type leak detection sensors with local audible and visual alarm annunciation and BMS alarm escalation signalling.

2.4.7 Renal Water

Renal Water shall be provided in accordance with appendix M&E 6. The equipment and pipework and outlets shall be integrated and coordinated in the overall building services systems to ensure a reliable safe maintainable solution.

The Plant shall be located as close to the point of use to minimise pipe runs.

2.4.8 Washer Sterilisers

The Contractor shall ensure that the most efficient energy source is provided for washer sterilisers.

2.4.9 Catering

All Mechanical, Electrical and Fire safety systems shall be provided to ensure successful operation of the catering requirements.

2.4.10 Electrical

A new Primary Sub- Station shall be established within the Southern General Site at the location indicated on the plans.

11kv sub-stations shall be established throughout the RHSC and the Adult Acute hospital's and energy centre, to meet the power distribution requirements. The substations shall be located to allow maintenance / replacement access.

The main 400V load centres shall be close coupled to the sub-stations

All plant rooms are to be in accordance with HTM 2023 and HTM-06-01

Distribution of LV power within the tower shall be by three-phase bus bar ducting with full size phase, neutral and earth conductors. Multiple tap off units shall be provided at each floor to serve distribution boards for lighting and power together with 25% spare capacity.

The principle strategy for the new RHSC and Adult Acute hospitals shall be a Dual-Unified distribution system comprising of separate primary and secondary circuits collectively forming the electrical distribution of the new hospitals. The secondary supply is to be equal to the primary supply; that is, both primary and secondary circuits are fully rated to provide resilient distribution. Consequently, it is not appropriate to talk about 'essential' and 'non-essential' supplies. Instead, the alternative supplies are called 'Side A' and 'Side B'.
The first single point of failure shall be as close to the final sub-circuits as practical.

2.4.11 Stand-by Generation Reliability and Resilience Issues

For a healthcare facility of this type, HTM 06-01 recommends that the resilience and redundancy to be achieved should be at least N+1. The maximum demand for the combined Adult and Children's Hospitals has been estimated to be 9.1MVA including future growth allowance in accordance with HTM-06-01,

100% standby generation is required. Initially this shall be provided by 6 no. generator modules with continuous rated outputs of 2000kVA each (N=5).

For the dual unified primary and secondary distribution system proposed, standby generation capacity shall be divided equally between both sides of the system refer to drawing: G1274/E(60)01.

The plant room shall be sized to accommodate a minimum of eight number 2000kVA continuous rated sets, six number fitted at day one, with all bases, brackets, lifting beams, fuel systems, flue connections, air flow requirements in place at day one for the two future sets to be fitted without disturbance to the system. The power infrastructure shall be fitted to allow the connection of two further similar rated sets

2.4.12 Uninterruptible Power Supplies (UPS)

Interruptible/ uninterruptible power supply (IPS/UPS) solutions to provide electrical safety in the patient environment shall be provided based on IEC 6034 for Electrical Installations in Medical Locations, HTM-06-01 and the recommendations of Guidance Note 7 to BS7671 Wiring Regulations published by the Institution of Electrical Engineers.

Uninterruptible Power Supplies solutions shall be provided to support Grade A standby lighting in Group 1 and Group 2 locations within areas of clinical risk 4 and 5.

Uninterruptible Power Supplies solutions shall be provided to support IPS and Group 2 locations within areas of clinical risk 5 with 3 hour autonomy.

UPS solutions are to be provided for each of the main ICT server rooms with N+1 redundancy and two hour autonomy. Within ICT nodes rooms UPS may be provided from central or local units, if local units are proposed these shall be integrated within the equipment rack and incorporate 15 minute autonomy. Automatic by-pass and strap by-pass shall be provided for all systems to allow maintenance without loss of service.

2.5 Above Ground Drainage

Above ground drainage shall be designed and installed in accordance with the relevant design documentation, all horizontal runs shall be minimised and the scheme shall be developed at an early date to ensure full co-ordination with the building fabric and engineering solutions.

2.6 Acoustics and Noise

Refer to Architectural section for noise criteria, the Contractors Acoustician shall provide guidance on the specific plant requirement in accordance with HTM 08-01 and BREEAM (credits Hea13 and Pol8) to ensure that a holistic solution is achieved in relation to selection, location, mounting, isolation and screening of all plant and equipment including but not limited to:

- Generators
- Boilers
- CHP (If provided shall be complete with acoustic enclosure)
- Air handling equipment
- Fans, pumps and compressors
- Chillers
- Dry air coolers
- Pipe work around the site
- Drive systems
- Specialist medical equipment
- Transformers and switch rooms
- UPS
- Vacuum pumps in theatres
- Ultrasonic washers
- Kitchen equipment
- Pneumatic Systems
- Lifts
- Ceiling Void equipment

Special consideration shall be given to sound attenuation at generators to minimise sound disturbance to the surrounding facilities as these will be run frequently for test purposes.

2.7 Lift Strategy

Lift performance

Projected building population shall be used to model the optimum number and size of lifts required taking into account and quality of service required, bed movement, lift footprint, redundancy provision, integration of evacuation and fire-fighting lifts shall be reviewed as part of the fire strategy with the Fire Engineer, Board's Fire Safety Adviser and the local fire services.

The amount of population arriving or leaving the building within 15 minutes shall be used as the basis for determining the arrival rate at a particular lift.

HTM 2024 states that 'in an emergency situation, it should be possible to clear all visitors from the hospital in 15 minutes. The handling capacity of the lift system shall meet this criterion'.

Escape Lifts

The Scottish Executive's Fire Safety Policy for NHS Scotland (HDL 2005 53) states that the development of fire strategies must take account of DDA requirements. As such it states that 'the use of escape bed lifts may need to be given a higher priority to ensure that people who are only able to access the premises via a lift can also evacuate in the same manner'.

The installation of escape lifts shall provide the following benefits:

- Ensure compliance with the DDA and assist the evacuation of patients unable to use stairs.
- Make full use of all egress capacity and thereby complete the evacuation process more quickly,
- Help make stairways more available to fire-fighters,
- Avoid burdensome descents using stairs from the upper stories.

Fire-Fighting Lifts

HTM 05-02 requires fire-fighting lifts in hospitals with five or more storeys, and states that a minimum of two should be installed.

The Fire Fighting lifts shall be installed in accordance with HTM 05-02, BS5588-5 and shall be integrated in the Contractor's fire strategy which shall be agreed with the Fire Engineer, Board's Fire Safety Adviser and the local fire services.

Lift Power and Communications

The electrical supplies, communications and lift-care control systems for escape lifts and fire-fighting lifts are to be installed in accordance with BS5588-5 and HTM 05-2.

Additionally all Lift power shall be via automatic changed over units with power fed from either side of the dual power distribution systems.

All lift components to be selected to minimise energy consumption to meet BREEAM credit requirements.

2.8 Plant Replacement Strategy

The Contractor shall prepare a Plant replacement strategy for each of the hospital buildings, this shall be provided at an early stage in the design taking into account weight, size and configuration of the item to ensure that all lifting beams, access platforms, equipment cradles, slings, block and tackles and access ladders required for safe operation, maintenance and plant replacement are in place prior to operation of the Hospitals.

The strategy shall incorporate a systematic approach to ensure that replacement of all plant items and their major components can be accommodated without the requirement to close down adjacent systems this shall include drawings together with method statements to demonstrate the philosophy and to indicate full compliance for all plant replacement in accordance with the Strategy.

The location of engineering and utility services shall be co-coordinated with the structure and not constrain or conflict with operational functionality.

All Mechanical, Electrical, Public Health and Specialist Systems plant must be provided with a safe means of access either at plant room floor level or if elevated by fixed platforms provided with ballustrading and harness secure points as required. Solutions involving the erection of temporary scaffolds will not be allowed. All items of heavy equipment such as fans, electric motors or pumps located within fixed plant should be provided with suitable lift beams to facilitate their removal and replacement if they are not positioned at slab level and have a safe means of removal.

All Mechanical, Electrical, Public Health and Specialist Systems plant must be installed with access to all internal services to facilitate ease of maintenance with location and access requirements cross referred to the MiCAD drawings and activity schedules within the planned preventative maintenance regime.

Access doors or panels shall be co-ordinated to provide immediate access for plant, valves, switches and other controls requiring frequent attention for safe operation and maintenance with adequate clearance provided for ease of working.

Items that require access at intervals (for example monthly) can be provided by means of removable panels in walls, false ceilings etc.

Access panels shall be fitted by means of retained quick-release (by special tool) mechanisms rather than screws and cups.

2.9 EMC

The services shall be configured to ensure full EMC compatibility with all Medical equipment and Robotics systems.

2.10 Isolation Suite

Wall mounted gauges shall be provided to indicate to staff the room pressure regime. The gauges shall be calibrated in pascals and give a digital read out for the following showing differential pressures between the areas as listed below :-

Lobby - + 10 Pa to Corridor

Isolation Room - 0 Pa to Corridor

En-Suite - negative to Isolation Room

2.11 AHU's

With regards to the Operating Theatres, each individual Theatre shall be provided with its own plant ie. One supply and one extract unit, there shall be no sharing of ventilation plant between the theatre suite, this also applies to Recovery which shall have duplicate systems.

2.12 Operating Theatre Plantroom

As the operating Theatre Plantroom is located above the Theatre Suite, all services penetrations shall be designed to the bare minimum and grouped together where possible.

This is to ensure that if a pipe should fail the water damage is kept to a minimum.

Only pipework serving the Theatre Suites should be located within this plant area. The area around the plant and the pipework should be bunded and the slab made waterproof, all penetrations should be made waterproof to prevent water ingress reaching the theatres and recovery below.

2.13 Operating Theatres

Humidification shall be provided within all air handling units serving the operating theatres all in accordance with SHTM's.

2.14 Pipework Welded Joints

Where pipework joints are welded the procedure shall be carried out in accordance with Code of Practice TR/5 " Welding of Carbon Steel Pipework" published by the Heating and Ventilation Contractors Association together with National Health Service Model Engineering Specifications.

An inspector will be approved to carry out all examinations and tests within the aforementioned Code of Practice. The Contractor shall cut out the joints as selected and these will be examined for fault or excessive jointing material.

Any remaking or faulty joints will be undertaken and all cost borne by the Contractor.

2.15 MTHW Pipework

The pipework systems shall be provided with valve arrangements such as to ensure that if a valve fails to provide isolation, there is another valve in close proximity that can be utilised without causing operational problems to the system and complying with resilience provision. ie. two points of isolation.

2.16 Plate Heat Exchangers

Plate heat exchangers shall be provided for the MTHW to LTHW and provision of LTHW to HWS. These units shall be supplied as packaged and come complete with fully integrated controls and control panels together with pumps etc.

Each plate heat exchanger shall be capable of operating autonomous and will not share common controls.

Where plate heat exchangers are required they will be provided in a duty/standby arrangement.

2.17 Control Valves for Heater Batteries

Air handling unit heater batteries and calorifiers shall be provided with a 3-port control valve. 2-port control valve configurations are not permitted.

2.18 Gas Supply

The incoming gas supply shall be provided with dual regulators to provide resilience.

2.19 Sprinkler Systems

General System Description

The specialist sprinkler installer shall be responsible for the complete design of the systems, the submission for approval of design drawings and calculation sheets, co-ordination of the sprinkler design with all other aspects of the building, and for the design, supply, delivery, storing and erecting of all component parts of the system as identified herein and for the testing and commissioning of the entire system to the satisfaction of the Client and Insurer.

The automatic sprinkler installation shall conform in all respects to the current edition of the Loss Prevention Council Rules for Automatic Sprinkler Installations incorporating BS EN 12845 with the requirements of the Client's Insurer (to be nominated) and those of the local water undertaking.

The sprinkler system shall be of a wet type and shall be classified as Ordinary Hazard Group III with a water density of 5 mm per min over a maximum area of 216 sq. m or appropriate to suit fire load in line with the fire strategy.

The system shall be enhanced to provide “Life Safety Coverage”.

The Contractor must issue a Certificate of Conformity on completion of the installation in compliance with LPS 1048.

Protection shall generally be as indicated on the “Areas of Protection” drawings indicated elsewhere in this document.

Sprinkler Coverage

The fire protection service comprising an automatic sprinkler system shall protect all areas of the building required to meet the fire strategy.

The sprinkler protection shall be excluded from electrical sub-stations and the two main communications rooms, where increased fire separation will be employed together with gaseous discharge systems.

Water Supplies

The water supplies shall be provided from a flanged connection fed direct from the Local Authority water main.

The water supply shall be provided from a sprinkler water storage tank with an actual working capacity to meet the requirements of the LPC Rules relevant to the classification of the system.

Storage Tanks

A water treatment regime shall be put in place and carried out to ensure that the water storage does not harbour Legionella all in accordance with the SHTM's

2.20 Fire/Ground Hydrants/Wet Risers

External Fire Mains - General

The complete installation shall comply in all respects with BS EN 671 : Parts 1, 2 & 3, the Building Regulations and shall satisfy the requirements of the Fire Prevention Department. The installation shall be earthed in accordance with the latest edition of the I.E.E. Regulations.

The complete installation shall be installed in strict accordance with the Manufacturer's instructions, particular care being taken to provide adequate thrust blocks and anchors.

Valves

Sluice type valves shall be fitted on the external fire mains and they shall be of the ductile iron cap head flanges type to BS 5163 and BS EN 1171.

Hydrants

Hydrants shall be of the screw down valve patterns to BS 750, type 2.

Hydrants may of the wedge gate valve pattern with duckfoot bend to BS 750, type 1.

Valve Chambers

Valve chambers shall be constructed in engineering brick English Bond in a similar manner to that described for brick manholes, and shall be set on a 100 mm concrete base as described on the detailed drawings and shall be complete with a cast iron cover and frame.

Chamber Covers

The covers shall be complete with a cast iron surface box frame to BS 750 and BS EN 671, Parts 1, 2 & 3, fitted to a surface box frame having a minimum clear opening size of 380 mm x 230 mm for hydrant type 2 and 495 mm x 215 mm for hydrant type 1, to BS EN 671, Parts 1, 2 & 3.

The cover shall be provided with the words "FIRE HYDRANT" (30 mm high) or letters "FH" (75 mm high) cast into the top surface of the cover - black letters on yellow background.

Wet Rising Mains

General

The wet rising mains installation shall comply in all respects with the Building Standards Regulations including all current amendments with BS EN 671, Parts 1, 2 & 3, and shall satisfy the requirements of the Fire Prevention Department.

The wet rising main shall be installed in sections as the building progresses, the inlets and outlets being installed so that water may be readily available at the highest possible level in the event of a fire occurring during building operations.

Storage Tanks

A water treatment regime shall be put in place and carried out to ensure that the water storage does not harbour Legionella all in accordance with the SHTM's

Standards

The wet riser components shall be in accordance with the current SHTM's and Clinical Sterilisation requirements.

2.21 Circulating Pumps

Duplicate pumps shall be in gunmetal installed on support brackets as necessary.

One pump shall be installed and one laid aside as standby, with necessary make up coupling.

Isolating valves shall be sized to meet the system requirements.

2.22 HWS Expansion Vessels

The vessels shall be sized to meet the system requirements.

2.23 Domestic Water Booster Set

Pump sets shall incorporate a minimum of three pumps for domestic water supply all mounted on a single bed plate with necessary flanged suction and delivery manifold arrangements, anti-vibration mountings and remote/control panel showing pump status.

2.24 Expansion Bellows

Expansion bellows and general measure to accommodate expansion shall be detailed at an early date to ensure integration with the building layout.

2.25 Packaged Expansion Units

Packaged expansion units shall be provided.

The units shall be of the fully automatic type, pre-piped and pre-wired, and mounted on a common base frame. The units shall include a fully automatic make-up and pressurisation unit with single or twin pumps as detailed in the schedule and be mounted on anti-vibration mountings. A pump control pressure switch, break tank, ball valve, non-return valve and starter with overload protection and two automatic reset pressure switches to provide high and low pressure protection shall also be incorporated. Expansion vessels be manufacturer to BS 4814 and shall be of the number and size to suit the requirements of installation, and shall incorporate replaceable diaphragms.

Units shall have an electrical control system, complete with integrated alarm, which is fail safe and linked to the heat source.

The Contractor shall allow for the services of the unit manufacturer to commission the units.

2.26 Schedule of Pipeline Materials

(a) LPHW heating pipework shall be black mild steel, to BS 1387, medium or heavy grade.

(b) MTHW heating pipework shall be black mild steel, to BS 1387, heavy grade.

(c) Primary HWS pipework shall be black mild steel, to BS 1387, medium or heavy grade.

(d) Chilled water pipework shall be black mild steel, to BS 1387, heavy grade.

(e) Condenser water pipework shall be black mild steel, to BS 1387, heavy grade.

(f) Gas pipework shall be black mild steel, to BS 1387, medium or heavy grade, but welded throughout and finally painted yellow ochre.

(g) Oil system pipework shall be black mild steel, to BS.1387, medium or heavy grade.

(h) Compressed air pipework shall be galvanised mild steel, to BS.1387, or heavy medium grade.

(i) Steam pipework shall be black mild steel, to BS.1387, heavy grade.

(j) Condensate pipework shall be copper tube to BS EN 1057 R250 Table 2

(k) Refrigerant pipework shall be copper tube of refrigerant quality.

(l) Air conditioning condensate drain pipework shall be copper tube to BS EN 1057 : 1996, BS EN 12449 : 1999, BS EN 12451 : 1999.

(m) Cold feed and vent pipework shall be copper tube to BS EN 1057 : 1996, BS EN 12449 : 1999, BS EN 12451 : 1999.

(l) Stainless Steel Pipework for H&C water services.

2.27 Rain water

Rain water systems shall be designed and installed in accordance with the relevant design documentation, all horizontal runs shall be minimised and the scheme shall be developed at an early date to ensure full co-ordination with the building fabric and engineering solutions.

Where rainwater harvesting is put forward for non clinical areas, full risk analysis shall be carried out and tabled for consideration and all actions shall be taken to mitigate risks to infection control requirements. Rain water re-use shall not be allowed in Clinical areas.

3.0 Design Criteria

3.1 External Design Temperatures

Summer	26.2°C DB	18.5°C WB
Winter	- 6°C	

To be in accordance with CIBSE Environmental Data at time of tender, SHTM's and HTM requirements.

Theatres shall require to operate within specification to a broader summer external temperature figure of + 30°C DB and the main heater battery in each theatre air handling unit shall be sized in accordance with 2.2.2.

Global warming potential shall be considered and the Contractor shall provide suggestions for dealing with this under the innovation section of the tender return documents.

3.2 Temperature Differentials for general design

Supply flow rates to achieve the required room conditions are calculated conventionally, taking account of all heat and moisture gains and losses, and of maximum permissible temperature differences between the room and supply air. In most applications the base heating load shall be provided by a heating system, or the room being considered shall be within the heated building envelope.

Temperature differences of up to 10 K for winter heating and 7 K for summer cooling must not be exceeded for air supply.

It is acceptable in general areas for the humidity to swing uncontrolled between 35% and 60% saturation.

Refer to HTM/SHTM for general design criteria.

Special consideration shall be given in all areas for burns recovery patient areas to ensure that local area temperature uplift is available on demand in line with the Clinical requirements.

3.3 Day Lighting

The recommendation for daylight in hospitals, especially the ward areas, is to achieve an average daylight factor between 2% and 5%.

Clinical and Staff areas should achieve at least 3%. However, the daylight factor cannot be taken in isolation as a high daylight factor with a low uniformity value shall make the spaces adjacent to large windows look gloomy and supplementary lighting may be required to install a visual balance. Uniformity levels of between 30% and 50% shall be achieved. In this way an area with a 3% daylight factor and a uniformity of 40% shall look more attractive than a space with a daylight factor of 5% and a uniformity level of 10%.

Daylight shall provide sufficient and suitable illumination for normal tasks to be carried out. The extent of daylight penetration shall vary with the location, orientation and window design and the lighting controls shall be integrated as detailed below to maximise energy saving.

Refer to Appendix M&E4.

3.4 Artificial Lighting

The lighting proposal shall meet the requirements of the Building (Scotland) Regulations 2004 as stated in section 6 of the 2007 Technical Handbook. Artificial lighting is to be carefully designed to ensure that a pleasant and visually effective environment is achieved for staff and patients. As well as meeting the clinical requirements of staff, attention is to be paid the lit appearances of the spaces.

General lighting to all areas is to be by low energy high frequency dimmable, low harmonic emission ballast fluorescent lamps (refer to appendix M&E4) with appropriate colour rendering.

Lighting levels shall be in accordance with CIBSE Lighting Guide 2 'Hospitals and Healthcare Buildings'. Lighting shall be designed to ensure that staff and patient areas are cheerful and visually interesting. This shall be achieved by ensuring adequate illumination of walls and ceilings, and by accent lighting used

.

The use of wall-mounted fittings in corridors and stairs is to be considered as these areas require neither high levels of horizontal luminance nor uniformity, and wall-mounted fittings avoid light shining into the eyes of patients being wheeled on trolleys and bright reflected patches on polished floors.

In ward and bedroom areas lighting shall be installed to enable the ability to create different conditions depending on the time of day and what it happening. Ward and bedroom lighting shall, for example, incorporate night-lighting so that nurses can check patients at night. The installation of bed head lights with a range of adjustable illuminances is to be utilised so that they can be used for patient examination.

One or more of the luminaires adjacent to windows shall be linked to internal photocells to monitor daylight and adjust the electric lighting accordingly by dimming or increasing the lamp output. It is not acceptable to use daylight sensors which switch out certain lamps or luminaire rows adjacent to windows without first dimming the lamps to their lowest level.

The practice of switching off luminaires when the lamps are at full output is not only distractive, while the occupants visually adapt, it also lowers the quality of the lit space by creating a visual imbalance at various times of the day.

If daylight is sufficient, or lights are switched off in unoccupied areas, it is unlikely that these shall be switched on again until needed. This type of system shall be used for providing reduced lighting levels early in the morning or evening to cover cleaning and security operations. Local manual override switching is also required when automatic controls are used.

Occupancy detectors shall be used to detect the presence of people and to control the lighting accordingly. These can rely upon acoustic, infrared, microwave or other methods of detection. A time lag shall be built into the system to prevent premature switch-off or excessive switching cycles.

Each luminaire shall be addressed in the BMS in order to program the appropriate effect lighting within individual areas.

To satisfy HTM 06-01 recommendations, at least two lighting circuits shall be provided to each room. One circuit shall be fed from a Side A distribution board. The other circuit shall be fed from a Side B distribution board. In the event of failure of either side A or Side B supply (but not both) at least half of the lighting shall remain on.

3.5 Standby Lighting

Standby lighting shall be provided as appropriate and shall derive power from the Secondary Power Supply (SPS) or UPS, with UPS systems supported by the SPS. BS7671 GN7 and IEC 60364-7-710 require light fittings used in Group 2 locations to have power supplies which restore power to the Standby Lighting within 0.5 seconds of a power supply failure. Essentially, these areas shall require standby lighting to be supported by a UPS.

Standby lighting shall be provided as follows:

- Grade A – to areas of Clinical Risk Category 5 (IEE GN7 Group 1 and 2 areas) provides lighting at the same level as normal lighting, power shall be supplied by a UPS.

- Grade B – to areas of Clinical Risk Category 3 provides lighting at a reduced level compared to the normal lighting and power shall be supplied from the SPS.

Group 1 Locations include:

- LDRP (labour, delivery, recovery, post-partum)
- Endoscopy rooms
- A&E general/minors
- Haemodialysis areas
- ECG, EEG, EHG rooms
- Nuclear medicine
- Radiography
- Diagnostic
- MRI
- Urology treatment areas
- Examination/ treatment/ therapy rooms
- Ultrasound
- Bedrooms

Group 2 Locations include:

- Anaesthetic room
- Operating theatre
- Operating prep room
- Operating plaster room
- Operating recovery room
- Heart cauterisation room
- Intensive care room
- Angiographic examination room
- Premature baby rooms

Grade A standby lighting shall be provided from Central UPS inverters and storage battery systems to provide an interruption time of less than 0.5 seconds to Group 2 locations. Inverter systems shall be installed with N+1 resilience and supplied with dual power supplies from Side A and Side B sources and capable of up to 3 hours autonomous operation.

3.6 External Lighting

Outdoor Car Parks 5 lux min/20 lux average
External loading Doors 150 lux
Entrances and Exits 100 lux
Roadways 6 lux av. 2 lux min
Roof Plant Areas 50 lux

3.7 Emergency Lighting

Average illumination 1 lux
Illuminated signage Euro Legend
Integrated test facility

3.8 Fire Detection

Full Automatic Analogue Addressable Covering all rooms and void spaces as per fire code and BS5839 type L1, supplemented by VESDA high sensitivity smoke detecting aspirating systems.

The system shall comprise stand alone networked panels at appropriate locations throughout the hospitals supplemented with clear text display units at staff bases to provide alarm and area evacuation status.

A fire command control centre shall be established in the FM building, complete with PC based front end graphics to monitor the fire alarm and life safety systems.

Front end PC shall include the capability for operational management of the system including individual device & zone isolation facility.

The Contractor shall develop the Control philosophy with Building Control and the Fire Officer to provide double knock detection activation before the operation of fire damper devices and or ventilation plant shut down within critical clinical area's i.e. theatres, ICU, decontamination suite etc. to avoid Infection control issues in the event of a single device activated false alarm.

The fire command control centre shall monitor incoming alarms from the retained estate and shall be configured for modular development to suit the expanding site requirements.

All Alarms to be automatically transmitted to the Hillington Control Room.

3.9 Fire Suppression

Double knock activated Automatic Fire Extinguishant Systems shall be fitted within Main ICT Server rooms, MV transformer housings and MV switchgear.

3.10 Load Balancing

The systems shall be designed to achieve as even a balance over the phases as practical. The load balancing shall be demonstrated during the commissioning stages and any remedial action taken in advance of occupation.

3.11 Mains Synchronisation

Full G59 Protection shall be provided from an approved proprietary relay including:

- Under and over voltage protection
- Under and over frequency protection
- Loss of mains (ROCOF, vector shift, inter-tripping)

The full scheme shall be negotiated with the local supply authority and If required compliance provided in accordance with the requirements of G75/1, P28 voltage fluctuations, P29 voltage imbalance shall be provided.

3.12 Lightning Protection

Lightning Protection shall be provided in accordance with BSEN 62305.

3.13 Harmonics

Voltage and Current distortion to be considered and appropriate apparatus installed to allow successful operation of all systems, with particular emphasis on variable frequency drives, ICT, UPS equipment and major clinical equipment.

Voltage and Current distortion measurements to be carried at each major distribution node and all LV and MV distribution points and equipment fitted were required to meet the minimum requirements of the utility company documents. G5/4.

Where harmonic filters are deemed as not required at day one, the Contractor shall provide all CT's, sensing wiring and dedicated breakers (Not included in 25% spare capacity) to allow these to be retrofitted at a later date.

3.14 Main ICT server room Cooling and UPS to accommodate

6kw racks - 2kw per sq m (on N+1 redundancy where N<4)

3.15 Node ICT server room Cooling

3kw racks - 1kw per sq m (on N+1 redundancy where N<4)

3.16 Main ICT server room filtration - G4.

3.17 Electrical Metering incorporating: Harmonic monitoring, Kwh, KVAh, together with indication of Phase Voltage, Current, Power factor, Frequency and fault monitoring via the BMS system. Metering also to be selected to meet the Contractor's targeted BREEAM credits.

3.18 Heating/ Cooling Metering shall be sized and located to suit flow rate provide pulse value to indicate department use via the BMS system. Metering also to be selected to meet the Contractor's targeted BREEAM credits.

3.19 Water Meters shall be sized and located to suit flow rate, and provide pulse value to indicate building use and quickly identified major leak detection via the BMS system.

The major leak detection shall be integrated with differential pressure detection to shutdown the appropriate pipework legs in line with the resilient pipework strategy.

The incoming water main metering shall also include water pressure monitoring to generate high and low pressure alarms via local alarm annunciator panels with remote monitoring via the BMS.

Metering also to be selected to meet the Contractor's targeted BREEAM credits.

3.20 Theatre Panels to be PC based touch screen type, suitable for easy cleaning and sterilization. All power and data cabling to be recessed in steel conduit suitable for rewiring without dismantling ceilings. Spare conduit way to be provided for future use.

3.21 Theatre PACS system to be recessed type suitable for easy cleaning and sterilization. All power and data cabling to be recessed in steel conduit suitable for rewiring without dismantling ceilings. Spare conduit way to be provided for future use.

3.22 Theatre Intercom to be recessed type suitable for easy cleaning and sterilization.

3.23 Earthing systems.

The earthing system shall comply with HTM 06-01, BS7430, BS767, with the Electricity at Work Regulations and Compliance with ESI engineering recommendation S34.

	Maximum resistance of system
Lightning Protection	10 ohms
MV Earth	1 ohm
Generator Earth	1 ohm
UPS Earth	1 ohm
LV Earth	1 ohm

The installation shall comply with the requirements of MEIGaN HTM 2027 & BS EN 60601-1-1.

3.24 Clean Earth

	Maximum resistance of system
ICT Main Server rooms	1 ohm
ICT Node rooms	3 ohms
Medical Equipment	3 ohms

3.25 Transient

	Max Surge Current
Incoming and outgoing mains power supplies including UPS and generator circuits	480kA
Main power distribution boards including UPS, generator circuits, and PAV's	480kA

Surge arrestors shall also be provided in accordance with BSEN 62305.

3.23 Resilience and Redundancy

All engineering systems require to be configured to provide a resilient solution

3.24 Environmental conditions

Refer to sample room data sheets for environmental conditions.

4.0 Architects Layouts

The layout drawings have been compiled to indicate departmental adjacencies and exemplar layouts, the Contractor shall develop these and provide an integrated plant layout philosophy and show all external louvre positions and plant rooms and replacement routes.

5.0 Commissioning and Building Test Regime

5.1 Program

Refer to the draft project program incorporated in the ER's for overall target dates. Once agreed the testing and commissioning period shall not be reduced.

5.2 Commissioning Engineer

An independent Commissioning Engineer shall be appointed by the Contractor.

The Commissioning Engineer shall be responsible for fully managing the commissioning process for the Electrical and Mechanical, Public Health, Medical Gases, Life Safety and communications Installations and shall carry out all necessary liaison with other Contractors and specialist installers and compile the operation and maintenance manuals.

The role of the Commissioning Engineer is to assist the Project Manager in providing the Employer with engineering services that perform effectively. This requires them to be:

- Installed in a manner that permits ready maintenance access (refer to plant replacement documentation)
- Effectively commissioned and correctly tested
- Seasonally commissioned
- Fully documented in an easy to access format
- Demonstrated to the end users

The following paragraphs of this document define the principal duties of the Contractor, although the Contractor shall also carry out any other reasonable requests by the Employer that are considered by them to be necessary to achieve the effective handover of the engineering services.

5.3 Scope of Works

The Contractor shall arrange for the Commissioning Engineer to carry out the duties defined for all systems and engineering services included in this Project, other than components that are purely structural or architectural and have no interface with building engineering services.

The engineering services that require the Contractor's input include, but are not limited to the following:

- Underground Services
- Internal Fit-Out
- Underfloor Services
- Mechanical Installation
- Bulk Fuel Systems
- Public Health and Water
- Direct supply equipment

- Below ground drainage
- Utilities: water, gas, power and telecoms
- Seasonal commissioning

5.4 Information Provided with Bid

In addition to information requested elsewhere, the Contractor shall return with his tender full details of each of the following:

a) Curriculum Vitae for all employees who will have a significant role in the Project.

b) A resource schedule for all activities, both on site and elsewhere.

5.5 Commissioning Management

Pre Construction Duties

The Contractor shall carry out a full review of the drawings and specification for all of the engineering services, and provide the Employer with written comment and marked up drawings to cover the following:-

- Accessibility for initial commissioning and subsequent balancing or other modifications.
- Adequacy of testing points and balancing and regulating devices.
- Provision of clear performance data.
- Installation sequence necessary to address the dependence of one system upon another for successful commissioning.
- Suitability of engineering services strategy for phased/staged completion.
- Asset Register Status
- PPM access certification
- Plant Replacement strategy Status
- MiCAD drawing status

The Contractor shall attend all Trade Contractor's (TC) technical/progress meetings as required by the Employer. The Contractor shall develop a fully detailed commissioning network programme in conjunction with the Employer which clearly sets out the activities comprising:-

- Cleaning, flushing, testing etc.
- Balancing and regulating.
- MV & LV Switchgear
- UPS & Generators
- Main & Sub Main Cabling Tests
- Earthing
- Isolated Power System (IPS)
- Power Control & Monitoring
- Final Circuit Testing
- Lighting & Emergency Lighting
- Fire Systems
- Gas Extinguisant Systems

- CCTV Installation
- Access Control & Security Systems
- Setting to Work all M&E Systems
- Inter Operation Test Matrix
- Cause and Effect Matrix
- Underground Services
- Internal Fit-Out
- Underfloor Services
- Mechanical Installation
- Bulk Fuel Systems
- Public Health and Water
- Filtered Water
- Renal Water
- Direct supply equipment
- Below ground drainage
- Utilities: water, gas, power and telecoms
- Demonstrate resilience of system
- Seasonal Commissioning

The Contractor shall provide comments to the Employer upon method statements, programmes and commissioning method statements provided by any other TC.

The Contractor shall obtain from all other TC's commissioning method statements for each element of their works. They will comment upon the acceptability of this method statement and assist the TC where necessary to ensure that comprehensive method statements are provided for each activity to the complete satisfaction of the Employer.

The Contractor shall provide to the Principal Contractor such method statements as the Principal Contractor may require to ensure that the Contractor is carrying out his site activities to the full requirements of the Construction Design and Management Regulations.

Within one month of appointment, the Contractor shall devise a comprehensive scheme for the identification and labelling of all engineering services for integration in the asset register. The proposals shall be clearly documented and shall identify all plant and equipment by location descriptions that relate to the final use of the corresponding part of the development. The document shall be submitted to the Employer who will liaise with the employer for approval of the terms used.

On agreement of this identification scheme, all future documentation will refer to these agreed descriptions.

The Contractor shall assist the Employer in ensuring that all TCs adhere strictly to the agreed identification system and that all identification labels are of the appropriate size and quality and are securely fixed in suitable locations.

Construction Stage Duties

Attend weekly commissioning meetings with the Employer and any other relevant persons, until Practical Completion of the Project.

Review progress of all pre-commissioning, commissioning and testing and the TCs test/commissioning data sheets and submit a written report (computer generated) to the Employer on the day before each weekly meeting.

Attend any TCs specific “commissioning planning” meetings.

Update the detailed commissioning network from time to time, to take account of any re-scheduling of the Works, or of any other part of the Project notified by the Employer.

Assist Employer in the preparation of the TCs co-ordinated individual bar chart programmes for each commissioning activity and the updating of such programmes as required by the Employer.

In co-operation with the Employer, check that TC’s details permit the specified service installations to be commissioning in the most efficient manner and that the TC’s method statements comply with the requirements of their respective Trade Contract.

Witness all TC’s static testing and dynamic commissioning work, witness all the pre-commissioning, commissioning and testing of the Works in co-operation with the Employer with reference to the pre-commissioning and testing requirements set out in the Trade Contracts.

On completion of the commissioning, witness such performance tests of the various engineering systems that are deemed necessary, and defined in the respective trade contract documents and for which proper provision has been made by the Employer in the works programme of the TC. Co-ordinate the TCs’ completion and submission of the test sheets to the Employer. Assist the Employer in fine-tuning of engineering systems.

Issue to the Employer “Installation Defects” lists where installations are incomplete or defective in relation to testing and commissioning matters.

Investigate, diagnose and report in writing on all installation and performance faults which occur at any stage of the Project. Assist the Employer to procure the correction of such faults and witness any further commissioning or re-commissioning and testing or re-testing as required.

Maintain a commissioning diary on a day to day basis.

By means of inspection of calibration certificates, check that any testing/measuring equipment is correctly calibrated at any relevant time and recommend to the Employer any necessary re-calibration of such equipment. Obtain from the TC a calibration certificate for all testing/measuring equipment.

Obtain and compile from the TC all manufacturers' information relating to operating and maintaining their plant, as described in the Employers Requirements.

Assist the Employer with his liaison with the statutory authorities and the employer's representatives. Provide whatever assistance is necessary to ensure that the building control officer, environmental health officer, fire officer and the employer's clerk of works, centre manager and insurance inspector are able to satisfy themselves that testing and commissioning of the engineering systems comply with all regulations and inspections necessary at each stage of the Works.

The employer will require phased/staged completion or partial possession of areas of the works in advance of Practical Completion. The Contractor shall ensure that all of his construction stage duties reflect this requirement fully, and that in particular disruption to the employer and his tenants in occupied areas is avoided wherever possible.

The Contractor shall, in conjunction with the Employer, operate a Permit to Work system. The Contractor shall arrange written communications and notices to clearly define the areas on site which will be subject to the Permit to Work system, along with certain items of plant and equipment. The Contractor will issue Permit application forms to the TC's, and will issue Permits to the applicants. The Contractor shall also be responsible for monitoring the TC's for compliance with the terms and conditions of the Permit to Work system. Permit to Work areas shall include HV switch rooms, UPS rooms, and generator rooms.

Check that the TC's are installing plant and equipment labelling which fully complies with the prior agreed labelling convention.

Post Construction Duties

The Contractor shall allow for ninety full day visits to site during the Defects Liability Period to assist the Employer in any way that he considers necessary.

Seasonal Commissioning

The Contractor shall include for all labour resources and equipment spares and accessories to carry out Seasonal Commissioning in accordance with the BREEAM requirements

Summary Position

	2015/16 Budgeted WTE	2023/24 Budgeted WTE	Variance WTE	2015/16 Actual Costs £,000	2023/24 Actual Costs £,000	Actual Variance £,000
Soft FM **(Pay)**	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Hard FM **(Pay)**	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Soft FM **(Non-Pay)**	N/A	N/A	N/A	[redacted]	[redacted]	[redacted]
Hard FM - Contractor ***(Non-Pay)**	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Hard FM – (Non-Pay Costs excl. contractor)	N/A	N/A	N/A	[redacted]	[redacted]	[redacted]
TOTAL	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

* This includes labour and materials costs.

Table 2A – Soft FM (WTE and Pay)

	2015/16 Budgeted WTE	2023/24 Budgeted WTE	Variance WTE	2015/16 Actual Pay Costs £,000	2023/24 Actual Pay Costs £,000	Actual Pay Variance £,000
Domestic	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Catering	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Portering	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Total	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

N.B. Reduction in Catering and Portering relates to financial improvement plans. The domestic services increase of 36.66 WTE should be noted.

Table 2B – Soft FM (Non Pay)

	2015/16 Actual Non-Pay Costs £,000	2023/24 Actual Non-Pay Costs £,000	Actual Non-Pay Variance £,000
Domestic	[redacted]	[redacted]	[redacted]
Catering	[redacted]	[redacted]	[redacted]
Portering	[redacted]	[redacted]	[redacted]
Total	[redacted]	[redacted]	[redacted]

Table 3a – Hard FM (WTE and Pay)

Hard FM (Pay)	2015/16 Budgeted WTE	2023/24 Budgeted WTE	Variance WTE	2015/16 Actual Pay Costs £,000	2023/24 Actual Pay Costs £,000	Actual Pay Variance £,000
	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Table 3b – Hard FM (Non-Pay and Contractor Support Costs)

Hard FM (Non-Pay)	2015/16 WTE	2023/24 WTE	Variance WTE	2015/16 Actual Costs £,000	2023/24 Actual Costs £,000	Variance Costs £,000
Contract Support	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Estates Non-Pay Costs (excl. contract support)	N/A	N/A	N/A	[redacted]	[redacted]	[redacted]
Total	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Room Name	Temperature	Temperature	Temperature Notes	Temperature	Ventilation	Ventilation	Mechanical Ventilation Notes	Ventilation	Ventilation	Ventilation	Filtration Humidity Notes	Ventilation
	Winter (min)	Summer (max)		Relative Humidity %	Winter (l/s/p)	Winter (l/s/m²)		Air	Positive Pressure	Dual Speed Response	Humidification	Dehumidification
3 Day Trolley spaces: Renal Treatment	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Supply air rate at 40 litres per second per cubicle	BAL		0	0	
4 Bay Trolley spaces: Renal Treatment	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Supply air rate at 40 litres per second per cubicle	BAL		0	0	
8 Recliner Chair Bays	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Supply air rate at 40 litres per second per cubicle	BAL		0	0	
Activities of daily living: bath: shower: WC With hoists	22	-		-		10		NEG		0	0	
Activities of daily living: bathroom with hoists	22	-		-		10		NEG		0	0	
Activities of daily living: bathroom with hoists -ADL	22	None			10	8		NEG		0	0	
Activities of daily living: bedroom with living assessment	22		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but -		-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Activities of daily living: bedroom with living assessment	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Activities of daily living: kitchen	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		5	-	Mechanical ventilation (extract): Local to cookers.	NEG		0	0	
Activities of daily living: kitchen	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		5	-	Mechanical ventilation (extract): Local to cookers.	NEG		0	0	
Activities of daily living: kitchen	22	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but -		5	-	Mechanical ventilation (extract): Local to cookers.	NEG		0	0	
Activity area/gymnasium: Physiotherapy: 15 patients	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		6	-	6 Mechanical ventilation (supply): Vent maybe required to suit loceation.	NEG		0	0	
Activity area: Physiotherapy	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Activity area: Physiotherapy	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Activity area: Physiotherapy: 10 patients	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Activity area: Physiotherapy: 5 patients	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Adult WC/Change	22	-			10	-		NEG		0	0	
Adult Workshop	20	-		-	-		Mechanical ventilation to suit equipment.			0	0	
Adults Devices Library	16	-		-	-					0	0	
Ambulance Office	20		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Ambulance staff duty room: 5 places	20		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Anaesthetic room With patient trolley and ceiling hoist	21	25		-	-		Design in accordance with SHTM 03-01	POS		0	0	
Anaesthetic room With patient trolley and ceiling hoist	21	25		-	-		Design in accordance with SHTM 03-01	POS		0	0	
Angio Exam Room	22		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days		6		6	BAL		0	0	
Ante-Room	21	25			6		5	NEG		0	0	
Assessment Cubicle	21	25			6		6	BAL		0	0	
Assessment room with visual acuity facility: child	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		5	-	Mechanical ventilation (extract): Locally controlled. REF to BN text - ventilation.	NEG		0	0	
Assessment room: A&E	21	25	Individual room temperature control required		6		6	BAL		0	0	
Assessment room: Paediatric: A&E	21	25	Individual room temperature control required		6		6	BAL		0	0	
Assessment/Holding Area	22	25			6		6	BAL		0	0	
Assessment/Treatment room	21	25	Individual room temperature control required		6		6	BAL		0	0	
Assessment: interview and treatment room	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		10		10			0	0	
Audit Office: 4 person	20		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Automated Dispensary area	18	-		-	-					0	0	
Bath: WC and wash: en-suite: wheelchair accessible Domestic type: with	20	-			10		8	NEG		0	0	
Bathroom: assisted	22	-			10		8	NEG		0	0	
Bathroom: assisted - Dermatology	22	None			10		8	NEG		0	0	
Bathroom: assisted - Dermatology HANDED	22	None			10		8	NEG		0	0	
Bathroom: assisted - Dermatology with mobile hoist	22	None			10		8	NEG		0	0	
Bathroom: assisted - Dermatology with mobile hoist HANDED	22	None			10		8	NEG		0	0	
Bathroom: assisted HANDED	22	-			10		8	NEG		0	0	
Bathroom: semi-ambulant	22	-			10		8	NEG		0	0	
Bathroom: semi-ambulant HANDED	22	None			10		8	NEG		0	0	
Bed bay: 1 place Bed space	21	25			6		6	BAL		0	0	
Beverage Bay	20	-			6	-		NEG		0	0	
Beverage Bay	20				6	-		NEG		0	0	
Beverage Bay	20	None			6	-		NEG		0	0	
Beverage: snack preparation bay	18	-		-	-		Local extract ventilation at food prep. area	NEG		0	0	
Biopsy room	21	25		-	-		Mechanical Vent. (supply): 0.3 m3/s.	POS		0	0	
Blood bank refrigerator bay	18	-		-	-					0	0	
Blood bank: out-of-hours bay	21		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	POS		0	0	
Blood cell Labeling Room	21	25		-	-		Mechanical ventilation (supply): To suit equipment heat gain. Mechanical ventilation (extract): To suit supply.	BAL		0	0	
Blood Lab	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days		6		6	BAL		0	0	
Body viewing/bier room	20	22			6		5	NEG		0	0	
Broadcasting Studio	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Cafe area: 20 places	20	-		-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater			0	0	
Cardiac Room	22	20	Summer and winter temperature control 15 to 25 degC.	-	-		Mechanical Vent. (supply): 0.3 m3/s.	POS		0	0	
Cardiac tech tape read	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-		Mechanical ventilation (supply): To suit heat gains from equipment. Fresh air at 10 l/s per person	BAL		0	0	
Cardiac Treatment Room	22	20	Summer and winter temperature control 15 to 25 degC.		10		10	BAL		0	0	
Casting Rectification	21		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		6		6 Local extraction from plaster saws	BAL		0	0	
Central Changing Facilities Female: 150 lockers	20	-			6		5 Extract air change rate can include sanitary accommodation associated with changing room.	NEG		0	0	
Central Changing Facilities Male: 50 lockers	20	-			6		5 Extract air change rate can include sanitary accommodation associated with changing room.	NEG		0	0	
Change 1	21	-			6	-				0	0	
Change 2	21	-			6	-				0	0	
Change 3	21	-			6	-				0	0	
Changing room: independent wheelchair	21	-			6	-	Mechanical ventilation (supply): Supply to supplement extract as necessary.	NEG		0	0	
Changing room: semi-ambulant	21	-			6	-	Mechanical ventilation (supply): Supply to supplement extract as necessary.	NEG		0	0	
Chemo clean room	20		23	-	-		Mechanical ventilation to BS EN ISO 14644-14	POS		0	0	
Chemo Prep Room	21		23				As HBN 14 -01			0	0	
Chemotherapy treatment room: 1 patient	21		25		6		6	BAL		0	0	
Children Play area	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-					0	0	
CIVAS; Clean room	20		23	-	-		Mechanical ventilation to BS EN ISO 14644-3	POS		0	0	
Clean utility room	20		25				6	POS		0	0	
Clean utility room: Cardiology	20		25				6	POS		0	0	
Clean utility room: with controlled drugs cupboard	20		25				6	POS		0	0	
Clean utility with blood bank	20		25				6	POS		0	0	
Clean utility: barium preparation	20		25				6	POS		0	0	
Cleaners room	16	-			6	-		NEG		0	0	
Cleaners room - Cluster	16	-			6	-		NEG		0	0	
Cleansing: disinfection and store: endoscope: suction bottle: autoclave	18	-			10		6 Mechanical ventilation (supply): Minimum to suit heat gain.	NEG		0	0	
Clinic Nurse (BP & Vision)/Consulting Room	22		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Clinical Physics	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Clinical Research Room	20		25		-		Air volume to suit occupancy at 10 litres per second per person			0	0	
Clinical Skills Lab	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data 0 - 0	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	-		0	0	
Clinical work room with prep area; workstations and storage	16	None			3	-		NEG		0	0	
Combined Control room	21	23	Temperature: Control 20degC - 25degC	-	-		Air volume to suit occupancy at 10 litres per second per person			0	0	
Concourse/Foyer	18	-		-	-					0	0	
Conference/meeting room: 10 person	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Conference/meeting room: 10 person	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Consultant's Office	20		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Consulting room	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Consulting/examination room: Dietetics	22		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but 0 -		-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL				
Consulting/examination room: double-sided couch access	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Consulting/examination room: double-sided couch access	22		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Consulting/examination room: double-sided couch access :Paediatrics	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Consulting/examination room: Haemophilia	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Consulting/examination room: MDU adult	22		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Consulting/examination room: MDU children	22		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Consulting/examination room: Physio	22		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but 0 -		-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL				
Consulting/examination room: Psychiatry	22		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but 0 -		-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL				
Consulting/examination room: SALT	22		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but 0 -		-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL				
Consulting/examination room: single-sided couch access	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Consulting: examination bay: Ophthalmology	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Mechanical ventilation (supply): To suit heat gains from equipment. Fresh air at 10 l/s per person	BAL		0	0	
Consulting: examination bay: Ophthalmology	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Mechanical ventilation (supply): To suit heat gains from equipment. Fresh air at 10 l/s per person	BAL		0	0	
Consulting: examination room: ENT	22		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Consulting: examination room: Ophthalmology	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Mechanical ventilation (supply): To suit heat gains from equipment. Fresh air at 10 l/s per person	BAL		0	0	
Consulting: examination room: Orthoptic	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Mechanical ventilation (supply): To suit heat gains from equipment. Fresh air at 10 l/s per person	BAL		0	0	
Consulting: examination room: Orthoptic	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Consulting: examination: fitting room: Orthotics	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Mechanical ventilation (supply): To suit heat gains from equipment. Fresh air at 10 l/s per person	BAL		0	0	
Consulting: examination: fitting room: Orthotics	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Mechanical ventilation (supply): To suit heat gains from equipment. Fresh air at 10 l/s per person	BAL		0	0	
Consulting: examination: with echocardiograph All-round couch access	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Consulting: examination: with echocardiograph All-round couch access	22		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Consulting: interview room: Mental Illness	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Consulting: treatment room: Dental with dental tube X-ray Dental surgery	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		5		6	POS		0	0	
Contingency	21	-		-	-					0	0	
Control area: serving catheter laboratory	21		25 Temperature: Control 21degC - 25degC	-	-		Mechanical ventilation (supply): Vent maybe required to suit location. Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater			0	0	
Control room serving CT simulator room	20		25 Temperature: Control 21degC - 25degC	-	-		Mechanical Ventilation Supply & Extract to suit equipment heat gain with independant control.			0	0	
Control room: serving 2 CT rooms	20		25 Temperature: Control 21degC - 25degC	-	-		Air volume to suit occupancy at 10 litres per second per person			0	0	
Control room: serving 2 MRI rooms	20		25 Temperature: Control 20degC - 25degC	-	-		Mechanical ventilation (supply): Air volume to suit heat gains from equipment. Extract to suit design.			0	0	
Control room: serving CT room	20		25 Temperature: Control 21degC - 25degC	-	-		Air volume to suit occupancy at 10 litres per second per person	POS		0	0	Humidity control to suit equipment.
Control room: serving Interventional Radiology	20		25 Temperature: Control 20degC - 25degC	-	-		Air volume to suit occupancy at 10 litres per second per person			0	0	
Control room: serving neuroangiography	20		25 Temperature: Control 21degC - 25degC	-	-		Mechanical ventilation (supply): Vent maybe required to suit location. Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater			0	0	
Control room: serving open MRI Room layout in preparation	20		25 Temperature: Control 20degC - 25degC	-	-		Air volume to suit occupancy at 10 litres per second per person			0	0	Humidity control to suit equipment.
Controlled drugs store	16	-		-	-					0	0	
Creche facilities	21		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Critical Care Bed space:4	27	16	Summer and winter (local control) temperature control: 16 to 27 deg.C					BAL		0	0	
CT Preparation room	21		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		5		6 Mechanical ventilation (supply): Air volume to suit heat gains from equipment. Mechanical ventilation (extract): Medical gas scavenging required.	POS		0	0	
Cystoscopy	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	POS		0	0	
Darkroom: processing: viewing area: 2 processors Bench top	20	25			10		8 Mechanical ventilation (supply): to suit ventilation extract rate. Mechanical ventilation (extract): to suit equipment requirements and COSHH regulations	NEG		0	0	
Decontaminationfor beds: trolleys: chairs	18	-		-	-		Mechanical ventilation (extract): Filtered extract recirculated. Extract from woodworking machinary. Local extract from adhesives bay.			0	0	
Dental Store	16	None		-	-					0	0	
Detention Room	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days		10		10 Independent mechanical ventilation and possibly air-conditioning.	BAL		0	0	
Dialysis Machine	16	-			2		2	BAL		0	0	
Dining room & Playroom (10 - 15 patients)	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person	NEG		0	0	
Dining room & Playroom (10 - 15 patients)	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person	NEG		0	0	
Dining room (15 patients)	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person			0	0	
Dirty utility room	18	-			10	-		NEG		0	0	
Dirty utility room: for ward areas	18	-			10	-		NEG		0	0	
Dirty utility: bedpan disposal Radiology	18	-			10	-	Mechanical ventilation (supply): Minimum to suit heat gain.	NEG		0	0	
Dirty utility: bedpan disposal: urine test	18	-			10	-		NEG		0	0	
Dirty utility: serving 1 theatre or cath. lab.	18	-			10	-		NEG		0	0	
Dirty utility: serving 2 theatres	18	-			10	-		NEG		0	0	
Dirty utility: serving maternity theatre	18	-			10	-		NEG		0	0	
Dirty utility: urine test	18	-			10	-		NEG		0	0	
Disassembly Clean & Test	18	-		-	-		Mechanical ventilation (supply): To BS5295 part 1 class J	POS		0	0	Pressure Relative: POS to exit; NEG to suite.
Discharge lounge: 8 places	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person			0	0	
Discharge lounge: patients: visitors	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person			0	0	
Discharge lounge: patients: visitors	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person			0	0	
Dispatch and store area	16	-		-	-					0	0	
Disposal hold: 1700 litres	16	-			10	-		NEG		0	0	
Disposal hold: 3000 litres	16	-			10	-		NEG		0	0	
Document Library	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person	BAL		0	0	
Double bedroom: Children/young people day care	21	23	Winter Temperature (degC): up to 24; independent control	-	-		Supply air rate at 40 litres per second 1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor		0	0	
Drinking water dispenser	18	-		-	-					0	0	
Duty room: 2 porters	20		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Duty room: 6 porters	20	-		-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater			0	0	
Echo Parking	16	-		-	-					0	0	
ECMO and HAEMO service room	21	None		-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL		0	0	
Emergency Linen Store	16	-		-	-					0	0	
Engineer Workshop	18	-		-	-		Mechanical ventilation to suit equipment.			0	0	
Entrance and Office for Lollipop	16	-		-	-					0	0	
Entrance Lobby for Medicinema	16	None		-	-					0	0	
Entrance lobby: controlled access	-	-		-	-					0	0	
Entrance lobby: controlled access	None	None		-	-					0	0	
Equipment library/ store	16	None		-	-					0	0	
Equipment Store – plumbed storage for machines	16	-		-	-					0	0	
Examination room: audiometric test Sound field testing: multi-occupancy	22		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days		6		6	BAL		0	0	
Examination room: audiometric test Sound field testing: multi-occupancy	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		6		6	BAL		0	0	
Examination room: Hearing Assesment	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		5	-	Mechanical ventilation (extract): Locally controlled. REF to BN text - ventilation.	NEG		0	0	

Examination room: vestibular test	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	6	6		BAL	0	0		
Examination/physical therapy room	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Exercise Test Lab	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	6	6		BAL	0	0		
Exit/Goods in lobby	-	-		-	-			0	0		
Exit/parking bay: theatre: Shared	20	-		-	-			0	0		
Family Room	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-	Air volume to suit occupancy at 10 litres per second per person	BAL	0	0		
Female WC: Handwash Area	20	-		10	-		NEG	0	0		
Female WCs	20	-		10	-		NEG	0	0		
Fluoroscopy	21	25	Temperature: Control 21degC - 25degC	5	6	Mechanical ventilation (supply): Up to 6 ac/hr depending on local conditions. Mechanical ventilation (extract): To suit overall design of diagnostic & processing areas.	POS	0	0	Humidity control to suit equipment.	
FM & Staff Facilities	20	-		-	-			0	0		
FM Hot Desks	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
FM Store	16	-		-	-			0	0		
FM Training Room	20	25		-	-	Air volume to suit occupancy at 10 litres per second per person	BAL	0	0		
Foyer: visitors	18	-		-	-			0	0		
Fridge/Freezer area	16	-		-	-	Mechanical Ventilation (extract) is required.		0	0		
General Receipt/Sorting & Scanning	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Goods In Area	-	-		-	-			0	0		
Goods Out Area	16	-		-	-			0	0		
Goods reception and unpacking area Pharmacy support services: Purcha	16	-		-	-			0	0		
Group room (Group Therapy)	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Group room: meeting: 16 places (including 1 wheelchair place)	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Group room: meeting: 7 places (including 1 wheelchair place)	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Group support room: 20 person Multi-purpose use	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	NEG	0	0		
Gym: exercise area	18	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	6	6	Mechanical ventilation (supply): Vent maybe required to suit location.	NEG	0	0		
Gymnasium	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
HD Store: 2 dialysis stations	16	-		-	-			0	0		
Hold: Clean - Cluster	16	-		10	-		NEG	0	0		
Hold: Dirty - Cluster	16	-		10	-		NEG	0	0		
Hold: Trolley - Cluster	16	-		10	-		NEG	0	0		
Hospital at Night	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Hospital at Night -AAU	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Hydrotherapy pool hall	28	28	Winter temperature: To suit water temp.	-	-	Mechanical ventilation (supply): 30.025 m3/sec per m2 wetted area of pool+10% refer to BN text. Mechanical ventilation (extract): 3 to suit overall design.Refer to B.N text.	NEG	0	0		
Hydrotherapy: laundry: utility room	16	-		6	5		NEG	0	0		
Image control/reporting room	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person		0	0	Humidity control to suit equipment.	
Imaging reporting room	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-	Air volume to suit occupancy at 10 litres per second per person	BAL	0	0		
Imaging reporting room: 2 workstations	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person		0	0		
Imaging review room: 6 workstations	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person		0	0		
Imaging room: Bone Mineral Densitometry (BMD)	21	25		5	6	Mechanical ventilation (supply): Up to 6 ac/hr to suit equipment & depending on local conditions. Mechanical ventilation (extract): To suit overall equipment design of area.	POS	0	0	Humidity control to suit equipment.	
Imaging room: conventional: general x-ray With mobile examination lam	21	25		5	6	Mechanical ventilation (supply): Up to 6 ac/hr depending on local conditions. Mechanical ventilation (extract): To suit overall design of area	POS	0	0		
Imaging room: conventional: general x-ray With mobile examination lam	21	25		5	6	Mechanical ventilation (supply): Up to 6 ac/hr depending on local conditions. Mechanical ventilation (extract): To suit overall design of area	POS	0	0	Humidity control to suit equipment.	
Imaging room: Gamma Camera multi detector SPECT Radionuclide	21	23	See text ref. control of rate of cooling See text ref. control of rate of cooling for crystal detector.	5	6	Mechanical ventilation (supply): Up to 6 ac/hr depending on local conditions. Extract to suit design.	POS	0	0		
Imaging room: Gamma Camera multi detector with stress facility Radion	21	23	See text ref. control of rate of cooling for crystal detector.	5	6	Mechanical ventilation (supply): Up to 6 ac/hr depending on local conditions. Extract to suit design	POS	0	0		
Imaging room: Gamma Camera multi detector with stress facility Radion	21	23	See text ref. control of rate of cooling for crystal detector.	5	6	Mechanical ventilation (supply): Up to 6 ac/hr depending on local conditions. Extract to suit design	POS	0	0		
Imaging room: Interventional Radiology	21	23	Temperature: Control 21degC - 25degC	5	6	Mechanical ventilation (supply): Up to 6 ac/hr depending on local conditions. Mechanical ventilation (extract): To suit overall design of diagnostic & processing areas.	POS	0	0		
Imaging room: Interventional Radiology	21	25	Temperature: Control 21degC - 25degC	5	6	Mechanical ventilation (supply): Up to 6 ac/hr depending on local conditions. Mechanical ventilation (extract): To suit overall design of diagnostic & processing areas.	POS	0	0		
Imaging room: Mammography	21	25		5	6	Mechanical ventilation (supply): Up to 6 ac/hr to suit equipment & depending on local conditions. Mechanical ventilation (extract): To suit overall equipment design of area.	POS	0	0		
Imaging room: remote fluoroscopy: barium	21	25	Temperature: Control 21degC - 25degC	5	6	Mechanical ventilation (supply): Up to 6 ac/hr. depending on local conditions. Mechanical ventilation (extract): Extract to suit overall design of diagnostic & processing areas.	POS	0	0		
Imaging room: Ultrasound: general With reporting workstation	21	25		6	6	Mechanical ventilation (supply & extract): To suit overall equipment design of area.	POS	0	0		
Imaging room: Ultrasound: general With reporting workstation	21	25		6	6	Mechanical ventilation (supply & extract): To suit overall equipment design of area.	POS	0	0		
Infant feeding room	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		NEG	0	0		
Infant feeding room	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		NEG	0	0		
Infant Lung Lab	21	25		6	6		BAL	0	0		
Information centre with beverage bay: 5 person	20	-		-	-	Local extract ventilation at food prep. area		0	0		
Information centre: 5 person	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Internal Play Area	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person		0	0		
Interview room: 4 places (including 1 wheelchair place)	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Interview room: 4 places (including 1 wheelchair place)	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Interview room: 7 places (including 1 wheelchair place; Psychiatry)	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Interview room: 7 places (including 1 wheelchair place; Psychology)	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Interview room: Police	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Interview/counselling/advisory room: 4 person 2 door access	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person		0	0		
Interview/counselling/advisory room: 4 person 2 door access	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Interview/meeting room: 2 person office: Emergency call lamp	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater		0	0		
Interview/Office/Consulting	22	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Interview: counselling room: 5 person With desk	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Interview: counselling: quiet room: 5 person	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Interview: counselling: quiet room: 5 person	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Interview: counselling: quiet room: 5 person	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Intrathecal Chemo Treatment Room	21	25		10	10		BAL	0	0		
Investigation room: echocardiography All-round couch access	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	6	6		BAL	0	0		
Investigation room: Electrophysiology	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	6	6		BAL	0	0		
Investigation room: resting electrocardiography (ECG)	22	26		6	6		BAL	0	0		
Investigation room: resting electrocardiography (ECG)	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE TSY weather data	6	6		BAL	0	0		
Investigation room: stress echocardiography All-round couch access	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	6	6		BAL	0	0		
Investigation room: stress electrocardiography (ECG)	21	23	Local temperature control required.	6	6		BAL	0	0		
Investigation room: tilt electrocardiography (ECG)	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	6	6		BAL	0	0		
Isolation treatment room: dialysis: 1 patient	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	10	10		BAL	0	0		
Kitchen - Clean prep area and dirty area	18	-		6	5	Minimum air changes per hour (AC/hr): 6	NEG	0	0		
Laboratory workshop: Quality control Support services	18	-		-	-			0	0		
Laboratory: catheter; biplane	22	20	Summer and winter temperature control 15 to 25 degC.	5	6	Mechanical ventilation (extract); To include gas scavenging.	POS	0	0		
Lead aprons bay	16	-		-	-			0	0		
Library: study room: 10 person	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person	BAL	0	0		
Light activity area: Occupational therapy: 10 patients Rehabilitation	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Linen bay: exchange trolley	16	-		-	-			0	0		
Live Test Area	16	-		-	-			0	0		
Lobby	21	None		-	-			0	0		
Lobby and waiting to Studio and Creche	20	-		-	-			0	0		
Lobby to isolation room	21	-		-	-	See HBN 04-01 Supplement 1 for further details of specific requirements.	POS	0	0	1. See Table 1 of HBN 04-01 Supplement 1 for further details relating to pressure differentials. 2. Mechanically ventilated to allow positive pressure of Isolation Room relevant to en-suite and negati	
Lobby to isolation room	21	-		-	-	See HBN 04-01 Supplement 1 for further details of specific requirements.	POS	0	0	1. See Table 1 of HBN 04-01 Supplement 1 for further details relating to pressure differentials. 2. Mechanically ventilated to allow positive pressure of Isolation Room relevant to en-suite and negati	
Lobby: gowning 1	21	-		-	-		POS	0	0		
Lobby: gowning 2	21	-		-	-			0	0		
Locker bay: 12 small lockers	20	-		6	5		NEG	0	0		
Locker bay: 4 small lockers	20	-		6	5		NEG	0	0		
Locker bay: staff/patients	20	-		6	5		NEG	0	0		
Lung Function Lab	21	25		6	6		BAL	0	0		
Lung Volume Lab	21	25		6	6		BAL	0	0		
Machine room: technician equipment room	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Mechanical ventilation: Supply & extract vent required to suit heat gain from equipment.	BAL	0	0		
Main entrance draught lobby	10	-	Winter temperature: Ambient temperature	-	-			0	0		
Main entrance draught lobby	10	-	Winter temperature: Ambient temperature	-	-			0	0		
Main Reception & Information	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Main Records staff area	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Maintenance for beds: trolleys: chairs	18	-		-	-	Mechanical ventilation (extract): Filtered extract recirculated. Extract from woodworking machinary. Local extract from adhesives bay.		0	0		
Major treatment/minor surgery room With resuscitation trolley	21	23		-	-	Mechanical Vent. (supply): 0.3 m3/s.	POS	0	0		
Major treatment/minor surgery room With resuscitation trolley	21	23	Temperature: Control 21degC - 23degC	-	-	Mechanical Vent. (supply): 0.3 m3/s.	POS	0	0		
Major treatment/minor surgery room With resuscitation trolley	21	23		-	-	Mechanical Vent. (supply): 0.3 m3/s.	POS	0	0		
Male WC: Handwash Area	20	-		10	-		NEG	0	0		
Male WCs	20	-		10	-		NEG	0	0		
Materials Transfer	18	-		-	-	Mechanical ventilation (supply): To BS5295 part 1 class J unless stated otherwise.	POS	0	0		Pressure Relative: POS & NEG POS to sterile.loading area. NEG to filling
MDT Room	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Medical observation area: 6 - 8 person Pschiatry	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	6	6		BAL	0	0		
Medical observation area: 6 - 8 person Psychology	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	6	6		BAL	0	0		
Medicine Management	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but -	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Medicine Management/Dispensary	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but -	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater		0	0		
Medicine store/preparation room	18	-		-	-			0	0		
Medicinema	21	25		-	-	Air volume to suit occupancy at 10 litres per second per person		0	0		
Minor Procedures	22	23		-	-	Mechanical Vent. (supply): 0.3 m3/s.	POS	0	0		
MOHS Prep	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		NEG	0	0		
Mould room: orthopaedics	20	25		10	8		NEG	0	0		
Multi-bed room: Cardiac day care: 4 beds	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	6	6		NEG to corridor	0	0		
Multi-bed room: Children/young peoples day care: 4 beds	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data Winter temperature (degC): up t	6	6		NEG to corridor	0	0		
Multi-bed room: Children/young peoples day care: 4 beds	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data Winter temperature (degC): up t	6	6		NEG to corridor	0	0		
Multi-bed room: Children/young peoples day care: 4 beds Type 3	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data Winter temperature (degC): up t	6	6		NEG to corridor	0	0		
Multi-bed room: Children/young peoples day care: 4 beds Type 4	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data Winter temperature (degC): up t	6	6		NEG to corridor	0	0		
Multi-bed room: Children/young peoples day care: 4 beds Type 5	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data Winter temperature (degC): up t	6	6		NEG to corridor	0	0		
Multi-bed room: Day care: 4 beds	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	6	6		NEG to corridor	0	0		
Nappy change room with hand rinse and wash: single-sided table access	21	-		10	-		NEG	0	0		
Nappy changing room	21	-		10	-		NEG	0	0		
Nappy changing room HANDED	21	None		10	-		NEG	0	0		
Near patient testing room	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-			0	0		
Near patient testing room	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-			0	0		
Near patient testing/status laboratory	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	6	5	Mechanical ventilation (supply): To suit heat gains from equipment. Mechanical ventilation (extract): To suit supply	NEG	0	0		
Near patient testing/status laboratory	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	6	5	Mechanical ventilation (supply): To suit heat gains from equipment. Mechanical ventilation (extract): To suit supply	NEG	0	0		
Near patient testing/status laboratory	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	6	5	Mechanical ventilation (supply): To suit heat gains from equipment. Mechanical ventilation (extract): To suit supply	NEG	0	0		
Near patient testing/status laboratory	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	6	5	Mechanical ventilation (supply): To suit heat gains from equipment. Mechanical ventilation (extract): To suit supply	NEG	0	0		
Nursery	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Observation and recording room: child assessment and therapy Assessn	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	6	6		BAL	0	0		
Observation Room: child protection	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	6	6		BAL	0	0		
Office and Hotdesking with Admin Area	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Office and reception: 2 staff With observation panel	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Office and rest: 1 staff: 5 person rest area	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Office and rest: 1 staff: 6 person rest area (voluntary workers)	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater		0	0		
Office and rest: 1 staff: 6 person rest area (voluntary workers)	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Office nursing: 1 staff	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Office POD - Cluster	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Office records and store: 1 staff	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater		0	0		
Office records: 2 staff	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Office records: 5 staff	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Office technical and data review	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Office/meeting room: 10 places (including 2 workstations)	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Office: 1 person	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Office: 1 person and visitors	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Office: 1 staff	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Office: 1 staff	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Office: 1 staff: open plan x6	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater		0	0		
Office: 10 staff	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Office: 2 Person	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Office: 2 person	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Office: 2 person	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Office: 2 person (wired for 3)	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Office: 2 person: volunteers	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Office: 2 staff Safe: cash point hatch	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Office: 3 staff	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Office: 3 staff	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Office: 4 person	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Office: 4 person	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Office: 4 person	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Office: 4 person	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-			0	0		
Office: 4 staff	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Office: 6 staff	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Office: 6 staff	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Office: 7 staff	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		

Office: manager	20		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Office: medical reporting: 1 staff Surgeon	20		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-			0	0						
Office: medical reporting: 2 staff	20		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-			0	0						
Office: OPD manager	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
On-call overnight stay room	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-	Air volume to suit occupancy at 10 litres per second per person	BAL	0	0						
On-call overnight stay room	20		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person		0	0						
Open Plan Office for 20 persons	20		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater		0	0						
Operating theatre with ultra clean ventilation canopy (UCV) Cardiac/Card	22		20 Summer and winter temperature control 15 to 25 degC.	-	-	Mechanical ventilation (supply): Designed to Operating Theatre ventilation systems (UCV).		0	0 Refer to HBN26						
Operating theatre: general	22		20 Summer and winter temperature control 15 to 25 degC.	-	-	Design in accordance with SHTM03-01	POS	30	0 Refer to HBN26						
Operating theatre: general	22		20 Summer and winter temperature control 15 to 25 degC.	-	-	Design in accordance with SHTM03-01	POS	30	0 Refer to HBN26						
Operating theatre: laminar flow	22		20 Summer and winter temperature control 15 to 25 degC.	-	-	Design in accordance with SHTM03-01	POS	30	0 Refer to HBN26						
Orthopaedics Treatment Room (2 plinths)	22		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days		10	10	BAL	0	0						
Orthotics Base: supply and fitting	22	None		-		1.5 Mechanical ventilation (supply): Mechanical ventilation required if internal location.	POS	0	0						
OT fine motor room	21		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		6	6		0	0						
OT Therapy Room	22		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days		6	6	BAL	0	0						
Paediatric Workshop	18	-		-	-			0	0						
Paeds Devices Library	16	-		-	-			0	0						
Pantry/refreshment area - Cluster	18	-		-	-	Minimum air changes per hour (AC/hr): 6	NEG	0	0						
Parents Room	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person		0	0						
Parking bay	16	-		-	-			0	0						
Parking bay: 2 patient trolleys: 4 wheelchairs	16	-		-	-			0	0						
Parking bay: 2 patient trolleys: 8 wheelchairs	16	-		-	-			0	0						
Parking bay: 3 accident trolleys: 2 wheelchairs	16	-		-	-			0	0						
Parking bay: 3 wheelchairs	16	-		-	-			0	0						
Parking bay: 4 patient trolleys: 4 wheelchairs	16	-		-	-			0	0						
Parking bay: 6 wheelchairs	16	-		-	-			0	0						
Parking bay: equipment: general	16	-		-	-			0	0						
Parking bay: mobile 2 x-ray units	16	-		-	-			0	0						
Parking bay: mobile x-ray: image intensifier: ultrasound unit	16	-		-	-			0	0						
Parking bay: mobile x-ray: ultrasound unit	16	-		-	-			0	0						
Parking bay: resuscitation trolley	16	-		-	-			0	0						
Parking bay: resuscitation trolley and cylinder trolley	16	-		-	-			0	0						
Parking bay: shopping: prams: pushchairs	16	-		-	-			0	0						
Parking bay: ultrasound unit	16	-		-	-			0	0						
Parking bay: wheelchair	16	-		-	-			0	0						
Parts store	-	-		-	-			0	0						
Patient changing cubicle: ambulant person	21	-			6	- Mechanical ventilation (supply) To supplement extract as necessary	NEG	0	0						
Patient changing cubicle: ambulant person 2 door access	21	-			6	- Mechanical ventilation (supply): Supply to supplement extract as necessary.	NEG	0	0						
Patient changing cubicle: independent wheelchair accessible	21	-			6	- Mechanical ventilation (supply): Supply to supplement extract as necessary.	NEG	0	0						
Patient changing cubicle: wheelchair accessible: 2 door access	21	-			6	- Mechanical ventilation (supply): Supply to supplement extract as necessary.	NEG	0	0						
Patient changing cubicles: 2 places 1 cubicle ambulant: 1 cubicle wheelch	21	-			6	- Mechanical ventilation (supply): Supply to supplement extract as necessary.	NEG	0	0						
Patient changing room with cubicles; shower & wash: 10 places	22	-			10	-	NEG	0	0						
Patients advocates room	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Photocopying/printing room	18	-			2	-	NEG	0	0						
Photography Studio: Adult	20		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Mechanical ventilation (supply): To suit heat gains from equipment. Fresh air at 10 l/s per person	BAL	0	0						
Photography Studio: Paeds	20		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Mechanical ventilation (supply): To suit heat gains from equipment. Fresh air at 10 l/s per person	BAL	0	0						
Physical measurement area: Renal	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		6	6	BAL	0	0						
Physical measurement bay	21	-		-	-			0	0						
Physical measurement bay	21	-		-	-			0	0						
Physical measurement bay - Baby	21	-		-	-			0	0						
Physical measurement bay - Disabled	21	-		-	-			0	0						
Physical measurement bay - Junior	21	-		-	-			0	0						
Physio Treatment	22		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Plaster room	21		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		6	6 Local extraction from plaster saws	BAL	0	0						
Plaster room - HBN 00-03	21		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		6	6 Local extraction from plaster saws	BAL	0	0						
Plaster room : 5 places	21		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		6	6 Local extraction from plaster saws	BAL	0	0						
Plaster Room 4 Bay	22		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days		6	6 Local extraction from plaster saws	BAL	0	0						
Plaster Room 4 Bay	21		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		6	6 Local extraction from plaster saws	BAL	0	0						
Playroom: 10 children	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person		0	0						
Pre Op Waiting Area	21	-		-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Pre-op assess	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Mechanical ventilation (supply): To suit heat gains from equipment. Fresh air at 10 l/s per person	BAL	0	0						
Prep room: Cardiology	20		25	-		6	5 Mechanical ventilation (extract): Extract rate to take account of dust ext.unit & fume from oven.	POS	0	0					
Preparation and splint fitting room: 1 patient	21		25		6		NEG	0	0						
Preparation and store: Radiopharmaceuticals	21		23		6	6 Ventilation to be balanced with BSC or Fume hood. Extract to be stand alone. Design to HBN14-01	POS	0	0						
Preparation and store: Radiopharmaceuticals	21		23			As HBN 14 -01		0	0						
Preparation room (Dermatology OPD)	20		25	-		6	POS	0	0						
Preparation; aseptic	20		23	-	-	Mechanical ventilation to BS EN ISO 14644-18	POS	0	0						
Printer Stations	18	-		-	-			0	0						
Processing: viewing room: serving 2 imaging rooms Computed Radiograp	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		10	8 Mechanical ventilation (supply): to suit ventilation extract rate. Mechanical ventilation (extract): to suit equipment requirements and COSHH regulations	NEG	0	0						
Processing: viewing room: serving 3/4 imaging rooms Computed Radiogr	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		10	8 Mechanical ventilation (supply): to suit ventilation extract rate. Mechanical ventilation (extract): to suit equipment requirements and COSHH regulations	NEG	0	0						
Projection Room for Medicinema: 10 people	20		25		6	6	BAL	0	0						
Protective Clothing Store	16	None		-	-			0	0						
Public telephone: single booth: accessible	18	-		-	-			0	0						
Quiet / Counselling room	21		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Quiet / Counselling room: Chaplaincy	21		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Radio Nuclear Administration	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Radiology hot desks (10 person)	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-	Air volume to suit occupancy at 10 litres per second per person		0	0						
Radiotherapy treatment room: unsealed radioactive source (Iodine bedr	21		23		10	10	BAL	0	0						
Reception and office: 4 staff	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Reception and office: 4 staff	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Reception and office: 4 staff	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Reception and office: 4 staff	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Reception and office: 5 staff	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Reception and office: 5 staff	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Reception and office: 6 staff	20		28 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Reception and records office	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Reception and records office: 2 staff	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Reception and records office: 4 staff	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Reception Lobby: Chaplaincy	16	-		-	-			0	0						
Reception with Goods in and out area	16	-		-	-			0	0						
Reception/staff base: 4 staff including case-notes trolleys Maternity	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Reception: 1 staff	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Reception: 1 staff	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Reception: 2 person	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Reception: 2 staff	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Reception: 3 staff	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Reception: 3 staff Including 2 case-notes trolleys	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Reception: 3 staff Including 2 case-notes trolleys	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Reception: 5 person Office:2 person	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Reception: administration office and communication base: 2 staff	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Reception: administration office and communication base: 4 staff	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Recovery Bay	21		23	-	-	Design in accordance with SHTM03-01	POS	0	0						
Recovery bay: post anaesthetic: 1 place Bed space	21		23		15	15	BAL	0	0						
Recovery bay: post anaesthetic: 1 place Bed space	21		23		15	15	BAL	0	0	Part of multi-bay.					
Recovery room: ECT: 8 trolleys	21		23		15	15	BAL	0	0						
Recovery room: post-anaesthetic: 4 places	21		23		15	15	BAL	0	0						
Recovery room: post-anaesthetic: 4 places	21		23		15	15	BAL	0	0						
Recreation room with beverage: snack preparation bay: 10 teenagers	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person. Local extract ventilation at food prep. area		0	0						
Refreshment area: snack bar: servery and preparation	20	-		-	-	Mechanical ventilation (supply): Local extract over beverage preparation area to suit design.	NEG	0	0						
Refreshment area: snack bar: servery and preparation	20	-		-	-	Mechanical ventilation (supply): Local extract over beverage preparation area to suit design.	NEG	0	0						
Refreshment: drinking water dispenser	18	-		-	-			0	0						
Rehab/Treatment Area	21		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Relatives overnight stay	20		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person		0	0						
Relatives overnight stay	20		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person		0	0						
Relatives overnight stay	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-	Air volume to suit occupancy at 10 litres per second per person	BAL	0	0						
Renal Dialysis Technical Services Area	18	-	Winter temperature: Frost protection only when plant is shutdown.		5	-	NEG	0	0	.					
Reporting room: 1 workstation PACS	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person		0	0						
Reporting room: 4 workstations PACS	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person		0	0						
Reporting room: echocardiography: 3 places	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Mechanical ventilation (supply): To suit heat gains from equipment. Fresh air at 10 l/s per person		0	0						
Respiratory Investigation	22		23 Local temperature control required.		6	6	BAL	0	0						
Rest & dining room with beverage & snack preparation bay: 40 staff	20		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-			0	0						
Rest room with beverage: snack preparation bay: 10 staff	20		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person. Local extract ventilation at food prep. area		0	0						
Rest room with beverage: snack preparation bay: 10 staff With 10 small	20		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person. Local extract ventilation at food prep. area		0	0						
Rest room with beverage: snack preparation bay: 5 staff	20		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person. Local extract ventilation at food prep. area		0	0						
Rest: dining room: 20 staff With emergency call lamp	20		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Rest: dining room: 35 staff With emergency call lamp	20		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person		0	0						
Rest: Staff	20	-			10	-	NEG	0	0						
Resuscitation room: 4 places	27		16 Summer and winter temperature control 16 to 27 degC.		6	10	POS To corridor	0	0 Final filtration EU10/11 to suit clinical requirements.						
Resuscitation room: 6 places	27		16 Summer and winter temperature control 16 to 27 degC.		6	10 Mechanical ventilation (supply): Minimum to suit heat gains.	POS To corridor	0	0 Final filtration EU10/11 to suit clinical requirements.						
Retinal Screening	22		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-	Mechanical ventilation (supply): To suit heat gains from equipment. Fresh air at 10 l/s per person	BAL	0	0						
Returns Trolley	16	-		-	-			0	0						
Robing/Treatment Room	22		25		10	10	BAL	0	0						
Sample Countiers	20		25	-	-			0	0						
Sanctuary	21	-		-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Sanctuary	21	-		-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Scanner room: Computed Tomography (CT)	21		25 Temperature: Control 21 deg C - 25 deg C		5	6 Mechanical ventilation (supply): Air volume to suit heat gains from equipment. Mechanical ventilation (extract): Medical gas scavenging required.	POS	0	0 Humidity control to suit equipment.						
Scanner room: Computed Tomography (CT)	21		25 Temperature: Control 21 deg C - 25 deg C		5	6 Mechanical ventilation (supply): Air volume to suit heat gains from equipment. Mechanical ventilation (extract): Medical gas scavenging required.	POS	0	0						
Scanner room: open Magnetic Resonance Imaging (MRI)	21		21 +/-2 deg.C. Ref.to HBN for temperature control.		5	6 Mechanical ventilation (supply): Air volume to suit heat gain from equipment.	POS	0	0						
Scanner room: open Magnetic Resonance Imaging (MRI)	21		21 +/-2 deg.C. Ref.to HBN for temperature control.		5	6 Mechanical ventilation (supply): Air volume to suit heat gain from equipment.	POS	0	0 Humidity control to suit equipment.						
Scrub-up and gowning room: 3 places	21		25	-	-	Design in accordance with SHTM 03-01	POS	0	0						
Scrub-up and gowning room: 3 places	21		25		-	-	Design in accordance with SHTM 03-01	POS	0	0					
Security room: CCTV control	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Mechanical ventilation (supply) to suit equipment heat gains. Mechanical extract to suit supply.	BAL	0	0						
Seminar room: 15 person	20		25	-	-	Air volume to suit occupancy at 10 litres per second per person		0	0						
Seminar room: 15 person	21		25	-	-	Air volume to suit occupancy at 10 litres per second per person	BAL	0	0						
Seminar room: 15 person	20		25	-	-	Air volume to suit occupancy at 10 litres per second per person		0	0						
Seminar room: 15 person	20		25	-	-	Air volume to suit occupancy at 10 litres per second per person		0	0						
Seminar: training room: 10 person	20		25	-	-	Air volume to suit occupancy at 10 litres per second per person		0	0						
Seminar: training room: 15 person	20		25	-	-	Air volume to suit occupancy at 12 litres per second per person or cooling requirement; whichever the greater	BAL	0	0						
Seminar: training room: 20 person - Cluster	20		25		-	-	Air volume to suit occupancy at 10 litres per second per person	BAL	0	0					
Seminar: training room: 20 person - Cluster	20		25		-	-	Air volume to suit occupancy at 10 litres per second per person		0	0					
Seminar: training room: 25 person	20		25		-	-	Air volume to suit occupancy at 10 litres per second per person		0	0					
Seminar: training room: 30 person	21		25		-	-	Air volume to suit occupancy at 10 litres per second per person	BAL	0	0					
Seminar: training room: 30 person	20		25		-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0					
Seminar: training: library room: 5 person	20		25		-	-	Air volume to suit occupancy at 10 litres per second per person		0	0					
Seminar: training: library room: 5 person	20		25		-	-	Air volume to suit occupancy at 12 litres per second per person or cooling requirement; whichever the greater	BAL	0	0					
Service room: equipment	16	-			10	-	Mechanical ventilation (supply): Supply to suit heat gains or extract ventilation rate.		0	0					
Service room: generator and image computer equipment Angiography	18	-		-	-			0	0						
Sewing Room	18	-		-	-			0	0						
Shower room: ambulant	22	-			10	-	NEG	0	0						
Shower room: ambulant HANDED	22	None			10	-	NEG	0	0						
Shower room: assisted	22	-			10	-	NEG	0	0						
Shower room: assisted HANDED	22	-			10	-	NEG	0	0						
Shower room: en-suite	22	-			10	-	NEG	0	0						
Shower room: en-suite	22	-			10	-	NEG	0	0						
Shower room: en-suite chamfered	22	-			10	-	NEG	0	0						
Shower room: en-suite chamfered: Dual-access	22	-			10	-	NEG	0	0						
Shower room: en-suite chamfered: Dual-access HANDED	22	None			10	-	NEG	0	0						
Shower room: en-suite HANDED	22	None			10	-	NEG	0	0						
Shower room: en-suite HANDED	22	None			10	-	NEG	0	0						
Shower room: independent wheelchair	22	-			10	-	NEG	0	0						
Shower room: independent wheelchair HANDED	22	None			10	-	NEG	0	0						

Shower room: semi-ambulant: standing use	22	-			10	-			NEG	0	0		
Shower room: semi-ambulant: standing use HANDED	22	None			10	-			NEG	0	0		
Single bed space	27		16 Summer and winter (local control) temperature control: 16 to 27 deg.C						BAL	0	0		
Single bed space	27		16 Summer and winter (local control) temperature control: 16 to 27 deg.C						BAL	0	0		
Single bed space	27		16 Summer and winter (local control) temperature control: 16 to 27 deg.C						BAL	0	0		
Single bedroom for Renal Dialysis	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	Winter temperature (degC): up to 24; independent control			Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0		
Single bedroom: Children/young people day care	21		23 Winter Temperature (degC): up to 24; independent control				Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0		
Single bedroom: Children/young people: Renal	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	Winter temperature (degC): up to 24; independent control			Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0		
Single bedroom: Children/young people: with relatives overnight stay	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	Winter temperature (degC): up t	-		Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0	Pressure relative: WC NEG to bedroom.	
Single bedroom: isolation: Children/young people: Renal	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	Winter temperature (degC): up t	-		Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0	1. See Table 1 of HBN 04-01 Supplement 1 for further details relating to pressure differentials. 2. Mechanically ventilated to allow positive pressure of Isolation Room relevant to en-suite and negat	
Single bedroom: isolation: Children/young people: with relatives overnig	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	Winter temperature (degC): up t	-		See Table 1 of HBN 04-01 Supplement 1 for guide to air volumes and pressure differentials.		-	0	0	1. See Table 1 of HBN 04-01 Supplement 1 for further details relating to pressure differentials. 2. Mechanically ventilated to al Pressure relative: WC NEG to bedroom.	
Single bedroom: isolation: Children/young people: with relatives overnig	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	Winter temperature (degC): up t	-		Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0	1. See Table 1 of HBN 04-01 Supplement 1 for further details relating to pressure differentials. 2. Mechanically ventilated to allow positive pressure of Isolation Room relevant to en-suite and negat	
Single bedroom: isolation: Critical care	27		16 Summer and winter (local control) temperature control: 16 to 27 deg.C		6		6 See Table 1 of HBN 04-01 Supplement 1 for guide to air volumes and pressure differentials.			0	0		
Single bedroom: isolation: Critical care	27		16 Summer and winter (local control) temperature control: 16 to 27 deg.C				See Table 1 of HBN 04-01 Supplement 1 for guide to air volumes and pressure differentials.			0	0		
Single bedroom: isolation: Critical care	27		16 Summer and winter (local control) temperature control: 16 to 27 deg.C				See Table 1 of HBN 04-01 Supplement 1 for guide to air volumes and pressure differentials.			0	0		
Single bedroom: isolation: Critical care	27		16 Summer and winter (local control) temperature control: 16 to 27 deg.C				See Table 1 of HBN 04-01 Supplement 1 for guide to air volumes and pressure differentials.			0	0		
Single-bed room	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data				Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0		
Single-bed room - Renal	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data				Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0		
Single-bed room 1	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0		
Single-bed room 2	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data				Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0		
Single-bed room 3	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data				Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0		
Single-bed room 4	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data				Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0		
Single-bed room 5	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data				Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0		
Single-bed room 6	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data				Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0		
Single-bed room 7	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data				Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0		
Single-bed room 8	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data				Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0		
Single-bed room Haemoto-Onco Type 1	22		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days				Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0		
Single-bed room Haemoto-Onco Type 2	22		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days				Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0		
Single-bed room Haemoto-Onco Type 3	22		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days				Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0		
Single-bed room: Coronary Care	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data				See Table 1 of HBN 04-01 Supplement 1 for guide to air volumes and pressure differentials.			0	0	1. See Table 1 of HBN 04-01 Supplement 1 for further details relating to pressure differentials. 2. Mechanically ventilated to allow positive pressure of Isolation Room relevant to en-suite and negat	
Sister Office	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater		BAL	0	0		
Sitting room: 10 patients With settee/bed	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person			0	0		
Sitting room: 15 visitors	20		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person			0	0		
Sitting room: 5 relatives	20		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person			0	0		
Sitting room: 5 relatives	20		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person			0	0		
Sittingand body viewing room with beverage bay: 8 person	21		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Local extract ventilation at food prep. area			0	0		
Small Lab (endocrinology)	20		25	-	-		Mechanical ventilation (supply): To suit equipment heat gain. Mechanical ventilation (extract): To suit supply.		NEG To plate pouring.POS to washup	0	0		
Snoozelum room	18	-			6		6			0	0		
Social Worker's Office	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater		BAL	0	0		
Socialisation Space	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater		BAL	0	0		
Special room: distressed/disturbed patient	21		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		10		10 Independent mechanical ventilation and possibly air-conditioning.			0	0		
Specialised laboratory: Dental processing with daylight processor	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-				NEG	0	0		
Staff Accommodation - Hot Desk (10 Persons Room)	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater		BAL	0	0		
Staff Accommodation - Junior Doctors Office	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-		Air volume to suit occupancy at 10 litres per second per person			0	0		
Staff Base	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater		BAL	0	0		
Staff base and clean utility bay: 2 staff With controlled drugs cupboard. I	21		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-					0	0		
STAFF BASE(reception) & OFFICE COMBINED	22		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater		BAL	0	0		
Staff changing room	20	-			6		5 Extract air change rate can include sanitary accommodation associated with changing room.		NEG	0	0		
Staff changing room - Cluster	20	-			6		5 Extract air change rate can include sanitary accommodation associated with changing room.		NEG	0	0		
Staff changing room including boot change: 40 places Lockers: coat rail: r	20	-			6		5		NEG	0	0		
Staff changing room including boot change: 40 places Lockers: coat rail: r	20	-			6		5 Extract air change rate can include sanitary accommodation associated with changing room.		NEG	0	0		
Staff changing room with cubicle and handwash: 10 places Slimline locke	20	-			6		5 Extract air change rate can include sanitary accommodation associated with changing room.		NEG	0	0		
Staff changing room with cubicle and handwash: 17 places	20	-			6		5 Extract air change rate can include sanitary accommodation associated with changing room.		NEG	0	0		
Staff changing room with cubicle and handwash: 20 places Slimline locke	20	-			6		5 Extract air change rate can include sanitary accommodation associated with changing room.		NEG	0	0		
Staff changing room with handwash: 20 places Lockers: coat rail	20	-			6		5		NEG	0	0		
Staff changing room with handwash: 5 places 2 door access. Lockers	20	-			6		5		NEG	0	0		
Staff changing room: 10 places Slimline lockers: coat rail: shoe rack	20	-			6		5 Extract air change rate can include sanitary accommodation associated with changing room.		NEG	0	0		
Staff changing room: 15 places Slimline lockers: coat rail: shoe rack	20	-			6		5 Extract to included WC/shower cubicles within changing area		NEG	0	0		
Staff changing room: 20 places Slimline lockers: coat rail: shoe rack	20	-			6		5 Extract air change rate can include sanitary accommodation associated with changing room.		NEG	0	0		
Staff changing room: 30 places	20	-			6		5		NEG	0	0		
Staff changing room: 30 places Slimline lockers: coat rail: shoe rack	20	-			6		5		NEG	0	0		
Staff changing room: 5 places	20	-			6		5 Extract air change rate can include sanitary accommodation associated with changing room.		NEG	0	0		
Staff changing room: 50 places	20	-			6		5		NEG	0	0		
Staff changing room: female	20	-			6		5 Extract air change rate can include sanitary accommodation associated with changing room.		NEG	0	0		
Staff changing room: male	20	-			6		5 Extract air change rate can include sanitary accommodation associated with changing room.		NEG	0	0		
Staff communication base: 2 places	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater		BAL	0	0		
Staff communication base: 2 places	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater		BAL	0	0		
Staff communication base: enclosed: 3 staff	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater		BAL	0	0		
Staff communication base: enclosed: 4 staff	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater		BAL	0	0		
Staff Lounge (including pantry area)	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		6		6 Mechanical ventilation (supply): Air volume to suit heat gain from equipment.			0	0		
Status Lab	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days		6		5 Mechanical ventilation (supply): To suit heat gains from equipment. Mechanical ventilation (extract): To suit supply		NEG	0	0		
Storage	16	None			3	-	Mechanical ventilation (extract): To suit overall design of area		NEG	0	0		
Store	16	-		-	-					0	0		
Store and Clean Utility: equipment and supplies	16	-		-	-					0	0		
Store and Clean Utility: sterile supplies	16	-		-	-					0	0		
Store -Aseptic	16	-		-	-		Mechanical ventilation to BS EN ISO 14644-9		POS	0	0		
Store chemicals	16	-			3	-	Mechanical ventilation (extract): To suit overall design of area		NEG	0	0		
Store for Medicinema	16	None		-	-					0	0		
Store: ambulance equipment	16	-		-	-					0	0		
Store: assembly and Packing	16	-		-	-					0	0		
Store: bed cot	16	-		-	-					0	0		
Store: bulk fluid	16	-		-	-					0	0		
Store: bulk supplies	16	-		-			1.5 Mechanical ventilation (supply): Minimum 0.1m3/s.		POS	0	0		
Store: bulk supplies	16	-		-			1.5 Mechanical ventilation (supply): Minimum 0.1m3/s.		POS	0	0		
Store: bulk supplies	16	None		-			1.5 Mechanical ventilation (supply): Minimum 0.1m3/s.		POS	0	0		
Store: bulk supplies	16	-		-			1.5 Mechanical ventilation (supply): Minimum 0.1m3/s.		POS	0	0		
Store: bulk supplies: medical and surgical	16	-		-	-					0	0		
Store: bulk supplies: medical and surgical - Cluster	16	-		-	-					0	0		
Store: bulk supplies: medical and surgical - Cluster	16	-		-	-					0	0		
Store: catheters and sterile packs	16	-		-	-					0	0		
Store: catheters and sterile packs	16	-		-	-					0	0		
Store: Clean flexible endoscopes	16	-			2		2		BAL	0	0		
Store: clinical equipment	16	-			2		2		BAL	0	0		
Store: clinical equipment	16	-		-	-					0	0		
Store: clinical equipment	16	-		-	-					0	0		
Store: clinical supplies	16	-		-	-					0	0		
Store: clothing back-up	16	-		-	-					0	0		
Store: Domestic	16	None		-	-								
Store: equipment	16	None			2		2		BAL	0	0		
Store: equipment	16	-		-	-					0	0		
Store: Equipment	16	-			2		2		BAL	0	0		
Store: equipment	16	-			2		2		BAL	0	0		
Store: equipment: hydrotherapy pool and cleaning	16	-			6	-			NEG	0	0		
Store: equipment: local to theatre	16	-		-	-					0	0		
Store: exercise equipment: activity area	16	-		-	-					0	0		
Store: exercise equipment: therapy treatment cubicles	16	-		-	-					0	0		
Store: for studio	16	-		-	-					0	0		
Store: furniture	16	-		-	-					0	0		
Store: furniture: equipment and disposables	16	-		-	-					0	0		
Store: general	16	None			2		2		BAL	0	0		
Store: general	16	-			2		2		BAL	0	0		
Store: general	16	-			2		2		BAL	0	0		
Store: general	16	None			2		2		BAL	0	0		
Store: general	16	-			2		2		BAL	0	0		
Store: general	16	-			2		2		BAL	0	0		
Store: general and linen	16	-		-			1.5 Mechanical ventilation (supply): Mechanical ventilation required if internal location.		POS	0	0		
Store: general and stationery	16	-		-	-					0	0		
Store: general and stationery	16	-		-	-					0	0		
Store: general Pharmacy support services: Purchase and distribution	16	-		-	-					0	0		
Store: human milk bank and feeds preparation	18	-		-	-					0	0		
Store: linen	16	-		-	-					0	0		
Store: linen	16	-		-	-					0	0		
Store: linen	16	-		-	-					0	0		
Store: major incident equipment	16	-		-	-					0	0		
Store: materials and equipment Occupational therapy	16	-		-	-					0	0		
Store: orthotics supply and fitting	16	-		-	-					0	0		
Store: patients clothing	16	-			2		2		BAL	0	0		
Store: plaster equipment	16	-		-	-					0	0		
Store: ready to use medical gas cylinders	10	-	Temperature: Above 10deg C if nitrous oxide/oxygen mixtures are stored.	-	-		Natural ventilation or mechanical extract ventilation if not practical			0	0		
Store: satellite pharmacy Surgical procedure	16	-		-			3		POS	0	0		
Store: splint: crutch	16	-		-	-					0	0		
Store: splint: crutch	16	-		-	-					0	0		
Store: stationery and document	16	-		-	-					0	0		
Store: sterile supplies	16	-		-			3		POS	0	0		
Store: study casts/records	16	-		-	-					0	0		
Store:Bed/Mattress	16	None		-			1.5 Mechanical ventilation (supply): Mechanical ventilation required if internal location.							
Studies Area	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-		Air volume to suit occupancy at 10 litres per second per person			0	0		
Switchgear cupboard	-	-		-	-					0	0		
Team room	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater		BAL	0	0		
Telephone booth	18	-		-	-					0	0		
Telephone booth: wheelchair accessible	18	-		-	-					0	0		
Telephone booth: wheelchair accessible	18	-		-	-					0	0		
Temperature controlled store - freezer	-20	-		-	-					0	0		
Temperature controlled store - general	4	-		-	-					0	0		
Therapy area: wet and dry	21		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		6		6			0	0		
Therapy Room	21		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater		BAL	0	0		
Touchdown base	20	-		-			Supply air to balance extract from other areas			0	0		
Toy store	16	None		-	-					0	0		
TPN Clean room	20		23	-	-		Mechanical ventilation to BS EN ISO 14644-7		POS	0	0		
TPN Dispatch	20		23	-	-		Mechanical ventilation to BS EN ISO 14644-16		POS	0	0		
TPN Supllies	20		23	-	-		Mechanical ventilation to BS EN ISO 14644-4		POS	0	0		
Training Room	20		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Air volume to suit occupancy at 10 litres per second per person		BAL	0	0		
Training room for Peritoneal Dialysis (PD)	20		26 26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Mechanical ventilation (supply): To suit heat gains from equipment. Fresh air at 10 l/s per person		BAL	0	0		
Treatment cubicle: dialysis: 1 patient With bed	21		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Supply air rate at 40 litres per second per cubicle		BAL	0	0		
Treatment cubicle: dialysis: 1 patient With bed	21		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Supply air rate at 40 litres per second per cubicle		BAL	0	0		
Treatment cubicles: Physiotherapy: 10 patients	21		25		6		6 Mechanical ventilation (supply): Cubicle area only. Mechanical ventilation (extract): Ref.to B.N. text.		BAL	0	0		
Treatment room: A&E: gynaecology/genitourinary colposcopy	21		25		10		10 Mechanical ventilation (extract): Exhaust connector & discharge pipe required for use with cryo-surgery equipment. Ref BN text.		BAL	0	0		
Treatment room: all-round couch access	21		25		10		10		BAL	0	0		
Treatment room: all-round couch access	21		25		10		10		BAL	0	0		
Treatment room: all-round couch access -Child Protection	21		25		10		10		BAL	0	0		
Treatment room: chiropody/podiatry: 1 patient	21		25		10		8		NEG	0	0		
Treatment room: Continuous ambulatory peritoneal dialysis: 1 patient	21		26 26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-		Supply air rate at 40 litres per second per cubicle		BAL	0	0		
Treatment room: double-sided couch access	21		25		10		10		BAL	0	0		
Treatment room: double-sided couch access	21		25		10		10		BAL	0	0		
Treatment room: double-sided couch access	22		25		10		10		BAL	0	0		
Treatment room: double-sided couch access	21		25		10		10		BAL	0	0		
Treatment room: double-sided couch access: Cardiology	21		25		10		10		BAL	0	0		
Treatment room: double-sided couch access: Dermatology	22		25		10		10		BAL	0	0		
Treatment room: double-sided couch access: Dermatology	21		25		10		10		BAL	0	0		

Treatment room: Endoscopy	21	25		8	10		POS	0	0		
Treatment room: Head & Neck Type 1	27	16	Summer and winter temperature control 16 to 27 degC.	6	10	Mechanical ventilation: To suit heat gains.	POS	0	0		
Treatment room: Head & Neck Type 2	27	16		6	10	Mechanical ventilation: To suit heat gains.	POS	0	0		
Treatment room: Leg Ulcer	22	25	-	10	10		BAL	0	0		
Treatment room: Ophthalmology: laser	21	25		10	10	Mechanical ventilation (extract): Supply and extract ventilation to suit heat gains from equipment.	BAL	0	0		
Treatment room: Physiotherapy UVL: 1 patient	21	25		10	10		BAL	0	0		
Treatment room: Physiotherapy: 1 patient	21	25		10	10		BAL	0	0		
Treatment room: Speech therapy: 1 patient	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	6	6		BAL	0	0		
Treatment room: Urodynamic	21	25		8	10		POS	0	0		
Trolley Area: 10 place Trolley space	21	25		6	6		BAL	0	0		
Trolley Hold	16	-	-	-	-			0	0		
Trolley store - 6 ITU Trolleys or Incubators	16	None		2	2		BAL	0	0		
Trolley Wash	16	-	-	-	Mechanical ventilation (supply): To BS5295 part 1 class J unless stated otherwise.		POS	0	0	Pressure Relative: POS to transfer hatch & cont.prep.	
Unlicenced medicines	16	-	-	-				0	0		
UPS room Uninterrupted Power Supply	16	25	Summer temperature control maybe required depending on the battery used.	-	-	Mechanical ventilation (supply): Natural or mechanical ventilation may be required depending on type of battery used.		0	0		
UPS room/data computer hub room	16	25	Summer temperature control maybe required depending on type of battery used.	-	-	Mechanical ventilation (supply): Natural or mechanical ventilation may be required depending on type of battery used.		0	0		
Utility/laundry room	18	None		10	-		NEG	0	0		
Utility: footwear washing	18	-		10	-		NEG	0	0		
Vascular Lab	22	25		6	6	Mechanical ventilation (supply & extract): To suit overall equipment design of area.	POS	0	0		
Vending Area & Telephones	18	None		-	-			0	0		
Vending machine	18	-		-	-			0	0		
Venepuncture room: 1 place	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Venepuncture room: 1 place	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Venepuncture room: 1 place	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Vestry Office: 2 person	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Video/Digital Editing Room	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person	POS	0	0		
Visual Field Testing	22	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-	Mechanical ventilation (supply): To suit heat gains from equipment. Fresh air at 10 l/s per person	BAL	0	0		
Volunteers Lounge and meetings room	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Waiting 'hot' room: post-injection: 7 patients Radionuclide	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person		0	0		
Waiting area: 10 person including 1 wheelchair user	20	-		-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Waiting area: 10 person including 1 wheelchair user	20	-		-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Waiting area: 10 person including 3 wheelchair user	20	-		-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Waiting area: 15 person including 2 wheelchair user	20	-		-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Waiting area: 20 places (including 2 wheelchair places)	20	-		-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Waiting area: 3 person	20	-		-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Waiting area: 30 person including 3 wheelchair user	20	-		-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Waiting area: 4 person including 1 wheelchair user	20	-		-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Waiting area: 40 person including 4 wheelchair user	20	-		-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Waiting area: 45 person including 4 wheelchair user	20	-		-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Waiting area: 5 places (including 1 wheelchair place)	20	-		-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Waiting area: 70 person including 5 wheelchair user	20	-		-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Waiting bay: 1 patient trolley/bed place	20	-		-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Waiting bay: 2 patients trolley/bed place	20	-		-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Waiting bay: 3 patients trolley/bed place	20	-		-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Waiting play area: 10 children	20	-		-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Waiting play area: 10 children	20	-		-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Waiting play area: 5 children	20	-		-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Waiting play area: 5 young people	20	-		-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Waiting room: relatives: visitors: 5 person	20	-		-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Waiting: transfer: parking area: MRI trolley: 2 MRI wheelchairs	20	-		-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		
Ward pantry	18	-		6	5	Minimum air changes per hour (AC/hr): 6	NEG	0	0		
Washing Area (Foot)	21	-		10	-			0	0		
Washing Area (Foot)	21	-		10	-			0	0		
WC and handrinse: specimen; wheelchair accessible With pass-through	20	-		10	-	Mechanical Ventilation (extract) is required.	NEG	0	0		
WC and handrinse: specimen; wheelchair accessible With pass-through	20	None		10	-		NEG	0	0		
WC and wash: en-suite: wheelchair accessible Domestic type: with unbr	20	-		10	-		NEG	0	0		
WC and wash: en-suite: wheelchair accessible Domestic type: with unbr	20	-		10	-		NEG	0	0		
WC with bidet: semi-ambulant	20	-		10	-		NEG	0	0		
WC: ambulant	20	-		10	-		NEG	0	0		
WC: ambulant - Cluster	20	-		10	-			0	0		
WC: ambulant - Cluster HANDED	20	None		10	-		NEG	0	0		
WC: ambulant HANDED	20	None		10	-		NEG	0	0		
WC: assisted	20	-		10	-		NEG	0	0		
WC: assisted HANDED	20	None		10	-		NEG	0	0		
WC: independent wheelchair	20	-		10	-		NEG	0	0		
WC: independent wheelchair HANDED	20	None		10	-		NEG	0	0		
WC: semi-ambulant	20	-		10	-		NEG	0	0		
WC: semi-ambulant HANDED	20	None		10	-		NEG	0	0		
Wet Room/Treatment room	22	25		10	10		BAL	0	0		
Workshop: hearing aid repair	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-			0	0		
Workshop: prosthetics repairs: adjustment Orthotics	18	-		-	-			0	0		
Workshop: renal dialysis equipment: Wet: dry area	18	-		-	-			0	0		
Workstations	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person		0	0		
Workstations - Clinical Photography	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-	Air volume to suit occupancy at 10 litres per second per person or cooling requirement; whichever the greater	BAL	0	0		

Dept Code	Group Code	Room Number	Room Name	Design Criteria	Design Criteria	Design Criteria	Design Criteria	Design Criteria	Design Criteria	Design Criteria	Design Criteria	Occupancy
NCH-23HU		B2406C	Recovery room: ECT: 8 trolleys	B2406C	NA-SZ-xx-RD-400-166	Recovery room: ECT: 8 trolleys	B2406C	NCH-01-23HU-040	33.5 m²	74.5 m²	2.400 metres	6 x Patients 3 x Others
NCH-23HU		B2409C	Recovery room: post-anaesthetic: 4 places	B2409C	NA-SZ-xx-RD-400-165	Recovery room: post-anaesthetic: 4 places	B2409C	NCH-01-23HU-022	38.5 m²	71.2 m²	2.400 metres	4 x Patients 4 x Staff 2x parents
NCH-23HU		D0815C	Playroom: 10 children	D0815C	NA-SZ-xx-RD-400-278	Playroom: 10 children	D0815C	NCH-01-23HU-032	30.0 m²	37.4 m²	2.400 metres	10 x Children: 3 x parents/carers
NCH-ARU		B2011C4	Multi-bed room: Children/young peoples day care: 4 beds	B2011C4	NA-SZ-xx-RD-400-042-01	Multi-bed room: Children/young peoples day care: 4 beds	B2011C4	NCH-02-ARU-102	66.0 m²	67.8 m²	2.400 metres	4 x Patients 6 x Others
NCH-ARU		D0612C	Dining room & Playroom (10 - 15 patients)	D0612C	NA-SZ-xx-RD-400-040	Dining room & Playroom (10 - 15 patients)	D0612C	NCH-02-ARU-113	27.0 m²	25.2 m²	2.400 metres	20 x Patients seated 03 x Staff
NCH-ARU		G0133C1	Parking bay: 4 patient trolleys: 4 wheelchairs	G0133C1	NA-SZ-xx-RD-400-334-01	Parking bay: 4 patient trolleys: 4 wheelchairs	G0133C1	NCH-02-ARU-084	5.0 m²	24.5 m²	2.400 metres	Intermittent use.
NCH-CAR		C0201C	Infant Lung Lab	C0201C	NA-SZ-xx-RD-400-597	Infant Lung Lab	C0201C	NCH-00-OPD-040	13.5 m²	13.3 m²	2.400 metres	2 x Patients (in-patients and out-patients) 2/3 x Staff/students
NCH-CAR		C0201C1	Lung Volume Lab	C0201C1	NA-SZ-xx-RD-400-597-01	Lung Volume Lab	C0201C1	NCH-00-OPD-047	21.0 m²	23.9 m²	2.400 metres	2 x Patients (in-patients and out-patients) 2/3 x Staff/students
NCH-CAR		C0522B	Examination/physical therapy room	C0522B	NA-SZ-xx-RD-400-236	Examination/physical therapy room	C0522B	NCH-00-OPD-048	12.0 m²	12.5 m²	2.400 metres	1 x patient 1-2 x staff 1 x other
NCH-CAR		C0710B1	Exercise Test Lab	C0710B1	NA-SZ-xx-RD-400-216-01	Exercise Test Lab	C0710B1	NCH-00-OPD-050	16.5 m²	23.0 m²	2.400 metres	1 x Patient 4 x Staff
NCH-CAR		E0501C	Imaging reporting room: 2 workstations	E0501C	NA-SZ-xx-RD-400-293	Imaging reporting room: 2 workstations	E0501C	NCH-00-OPD-046	16.0 m²	18.0 m²	2.400 metres	Up to 4 Staff Intermittent use
NCH-CAR		T0535B2	Prep room: Cardiology	T0535B2	NA-SZ-xx-RD-400-064-02	Prep room: Cardiology	T0535B2	NCH-00-CAR-005	16.0 m²	7.4 m²	2.400 metres	2 x Staff
NCH-CAR		Z0605C	Laboratory workshop: Quality control Support services	Z0605C	NA-SZ-xx-RD-400-534	Laboratory workshop: Quality control Support services	Z0605C	NCH-00-OPD-049	10.0 m²	12.5 m²	2.400 metres	2 x Staff
NCH-CARD		C0704C1	Investigation room: resting electrocardiography (ECG)	C0704C1	NA-SZ-xx-RD-400-194-01 c	Investigation room: resting electrocardiography (ECG)	C0704C1	NCH-00-OPD-156	10.0 m²	16.4 m²	2.400 metres	1 x Patient 1 x Staff
NCH-CARD		C0222C	Consulting: examination: with echocardiograph All-round couch access	C0222C	NA-SZ-xx-RD-400-270	Consulting: examination: with echocardiograph All-round couch access	C0222C	NCH-00-OPD-051 NCH-00-OPD-051	16.5 m²	14.0 m²	2.400 metres	1 x Patient 2 x Staff 1 x Other (escort)
NCH-CARD		C0711C	Investigation room: echocardiography All-round couch access	C0711C	NA-SZ-xx-RD-400-271	Investigation room: echocardiography All-round couch access	C0711C	NCH-00-OPD-052	16.5 m²	18.0 m²	2.400 metres	1 x Patient 1 x Staff: occasionally 2 staff
NCH-CARD		G0133C	Parking bay: 2 patient trolleys: 4 wheelchairs	G0133C	NA-SZ-xx-RD-400-334	Parking bay: 2 patient trolleys: 4 wheelchairs	G0133C	NCH-00-OPD-036	5.0 m²	6.0 m²	2.400 metres	Intermittent use.
NCH-CARW		B1802C2	Single bedroom: Children/young people: Renal	B1802C2	NA-SZ-xx-RD-400-044-02	Single bedroom: Children/young people: Renal	B1802C2	NCH-01-CAR-018	15.0 m²	16.9 m²	2.400 metres	1 x Patient 3 x Others
NCH-CARW		B1805C2	Single bedroom: isolation: Children/young people: Renal	B1805C2	NA-SZ-xx-RD-400-041-02	Single bedroom: isolation: Children/young people: Renal	B1805C2	NCH-01-CAR-016	15.0 m²	16.9 m²	3.000 metres	1 x Patient 3 x Others
NCH-CARW		B2409C1	Recovery room: post-anaesthetic: 4 places	B2409C1	NA-SZ-xx-RD-400-165-01	Recovery room: post-anaesthetic: 4 places	B2409C1	NCH-01-CAR-050	38.5 m²	68.1 m²	2.400 metres	4 x Patients 4 x Staff 2x parents
NCH-CARW		G0149A1	Echo Parking	G0149A1	NA-SZ-xx-RD-400-060-01	Echo Parking	G0149A1	NCH-01-CAR-001	5.0 m²	5.2 m²	2.400 metres	Intermittent use
NCH-CARW		T0535B1	Clean utility room: Cardiology	T0535B1	NA-SZ-xx-RD-400-064-01	Clean utility room: Cardiology	T0535B1	NCH-00-CAR-005	16.0 m²	14.0 m²	2.400 metres	2 x Staff
NCH-CARW		X0145B3	Treatment room: double-sided couch access: Cardiology	X0145B3	NA-SZ-xx-RD-400-205-03	Treatment room: double-sided couch access: Cardiology	X0145B3	NCH-00-CAR-004	16.0 m²	16.5 m²	2.400 metres	1 x Patient 2 x Staff
NCH-CCW		D1504C	On-call overnight stay room	D1504C	NA-SZ-xx-RD-400-145-01	On-call overnight stay room	D1504C	NCH-01-CCW-022	13.0 m²	13.4 m²	2.400 metres	1 x Person (ambulant)
NCH-CCW		B1602B2	Single bed space	B1602B2	NA-SZ-xx-RD-400-560-02	Single bed space	B1602B2	NCH-01-CCW-068	26.0 m²	29.5 m²	3.000 metres	1 x Patient Up to 8 Staff
NCH-CCW		B1602C	Critical Care Bed space:4	B1602C	NA-SZ-xx-RD-400-563	Critical Care Bed space:4	B1602C	NCH-01-CCW-074; 075; 081; 082	120.0 m²	122.8 m²	3.000 metres	1 x Patient Up to 8 Staff
NCH-CCW		L1305B2	Status Lab	L1305B2	NA-SZ-xx-RD-400-223-02 c	Status Lab	L1305B2	NCH-00-CCW-055	8.5 m²	8.5 m²	2.400 metres	1 x Staff
NCH-CCW		M0505C	Clinical Physics	M0505C	NA-SZ-xx-RD-400-605	Clinical Physics	M0505C	NCH-00-CCW-014	37.0 m²	37.2 m²	2.400 metres	4 x Staff
NCH-CCW		M0505C1	ECMO and HAEMO service room	M0505C1	NA-SZ-xx-RD-400-606	ECMO and HAEMO service room	M0505C1	NCH-00-CCW-015	44.0 m²	44.4 m²	2.400 metres	2 x Staff 2 x Other Intermittent use
NCH-CCW		T0540B	Medicine Management	T0540B	NA-SZ-xx-RD-400-434-01	Medicine Management	T0540B		8.0 m²	18.0 m²	2.400 metres	1 x Staff
NCH-CCW		W1555C	Toy store	W1555C	NA-SZ-xx-RD-400-604	Toy store	W1555C	NCH-00-CCW-044	6.0 m²	8.6 m²	2.400 metres	
NCH-CCW		D0205C	Rest room with beverage: snack preparation bay: 5 staff	D0205C	NA-SZ-xx-RD-400-135	Rest room with beverage: snack preparation bay: 5 staff	D0205C	NCH-01-CCW-059	11.0 m²	8.5 m²	2.400 metres	5 x Staff
NCH-CCW		D0403B	Rest: dining room: 20 staff With emergency call lamp	D0403B	NA-SZ-xx-RD-400-136	Rest: dining room: 20 staff With emergency call lamp	D0403B	NCH-01-CCW-113	25.0 m²	26.5 m²	2.400 metres	20 x Staff
NCH-CCW		D1402C	Sitting room: 15 visitors	D1402C	NA-SZ-xx-RD-400-134	Sitting room: 15 visitors	D1402C	NCH-01-CCW-008	20.0 m²	16.0 m²	2.400 metres	15 x Persons
NCH-CCW		E0523C	Workstations	E0523C	NA-SZ-xx-RD-400-329	Workstations	E0523C	NCH-01-CCW-120	5.0 m²	11.4 m²	2.400 metres	1 x Staff
NCH-CCW		G0104C	Parking bay: resuscitation trolley and cylinder trolley	G0104C	NA-SZ-xx-RD-400-332	Parking bay: resuscitation trolley and cylinder trolley	G0104C	NCH-01-CCW-061	2.0 m²	2.8 m²	2.400 metres	1 x Staff
NCH-CCW		G0510B1	Lobby to isolation room	G0510B1	NA-SZ-xx-RD-400-126-01	Lobby to isolation room	G0510B1	NCH-01-CCW-092	5.0 m²	7.0 m²	2.400 metres	2 x Persons
NCH-CCW		H0516C	Seminar: training room: 25 person	H0516C	NA-SZ-xx-RD-400-346	Seminar: training room: 25 person	H0516C	NCH-01-CCW-045	45.5 m²	29.9 m²	2.400 metres	25 x Persons
NCH-CCW		J0135C	Foyer: visitors	J0135C	NA-SZ-xx-RD-400-351	Foyer: visitors	J0135C	NCH-01-CCW-001	0.0 m²	10.5 m²	2.400 metres	
NCH-CCW		J0610C	Reception: administration office and communication base: 4 staff	J0610C	NA-SZ-xx-RD-400-356	Reception: administration office and communication base: 4 staff	J0610C	NCH-01-CCW-058	24.0 m²	24.1 m²	2.400 metres	4 x Staff
NCH-CCW		P1005C	Store: human milk bank and feeds preparation	P1005C	NA-SZ-xx-RD-400-418	Store: human milk bank and feeds preparation	P1005C	NCH-01-CCW-048	9.0 m²	3.8 m²	2.400 metres	2 x Staff
NCH-CCW		T0513C	Clean utility with blood bank	T0513C	NA-SZ-xxRD-400-433	Clean utility with blood bank	T0513C	NCH-01-CCW-090	17.0 m²	17.0 m²	2.400 metres	3 x Staff Intermittent use
NCH-CCW		W0115C	Store: bulk supplies	W0115C	NA-SZ-xx-RD-400-564	Store: bulk supplies	W0115C	NCH-01-CCW-117	80.0 m²	76.2 m²	2.400 metres	2 x Staff
NCH-CCW		W1429C	Store: furniture	W1429C	NA-SZ-xx-RD-400-498	Store: furniture	W1429C	NCH-01-CCW-XXX	20.0 m²	19.7 m²	2.400 metres	1 x Staff
NCH-CP		C0107C2	Consulting room	C0107C2	NA-SZ-xx-RD-400-296-02	Consulting room	C0107C2	NCH-00-CPS-003	10.5 m²	15.2 m²	2.400 metres	1 x Staff 1 x Patient 1 x Others (escort) All day use
NCH-CP		V1726C/R	Bathroom: semi-ambulant HANDED	V1726C/R	NA-SZ-xx-RD-400-461 HANDED	Bathroom: semi-ambulant HANDED	V1726C/R	NCH-00-CPS-006	6.0 m²	4.5 m²	2.400 metres	1 x Patient Intermittent use
NCH-CP		D1405C	Sitting room: 5 relatives	D1405C	NA-SZ-xx-RD-400-273	Sitting room: 5 relatives	D1405C	NCH-00-CPS-002	10.0 m²	12.0 m²	2.400 metres	5 x Persons
NCH-CP		L1602C1	Observation Room: child protection	L1602C1	NA-SZ-xx-RD-400-587	Observation Room: child protection	L1602C1	NCH-00-CPS-005	8.0 m²	4.0 m²	2.400 metres	Intermittent use
NCH-CP		V1726C	Bathroom: semi-ambulant	V1726C	NA-SZ-xx-RD-400-461	Bathroom: semi-ambulant	V1726C	NCH-00-CPS-006	6.0 m²	4.5 m²	2.400 metres	1 x Patient Intermittent use
NCH-CP		X0147B2	Treatment room: all-round couch access -Child Protection	X0147B2	NA-SZ-xx-RD-400-588-01	Treatment room: all-round couch access -Child Protection	X0147B2	NCH-00-CPS-004	20.4 m²	20.3 m²	2.400 metres	1 x Patient 2 x Staff
NCH-DCFP		B1811C	Single bedroom: Children/young people day care	B1811C	NA-SZ-xx-RD-400-281	Single bedroom: Children/young people day care	B1811C	NCH-04-DCFP-032	14.5 m²	15.8 m²	2.400 metres	1 x Patient 3 x Others
NCH-DCFP		B1811C1	Double bedroom: Children/young people day care	B1811C1	NA-SZ-xx-RD-400-281-01	Double bedroom: Children/young people day care	B1811C1	NCH-04-DCFP-031	14.5 m²	34.5 m²	2.400 metres	1 x Patient 3 x Others
NCH-DCFP		C0107C1	Therapy Room	C0107C1	NA-SZ-xx-RD-400-296-01	Therapy Room	C0107C1	NCH-04-DCFP-012	10.5 m²	10.1 m²	2.400 metres	1 x Staff 1 x Patient 1 x Others (escort) All day use
NCH-DCFP		C0230C	Team room	C0230C	NA-SZ-xx-RD-400-279	Team room	C0230C	NCH-04-DCFP-008	20.0 m²	20.1 m²	2.400 metres	1 x patient Up to 8 x staff Up to 2 others (escort)
NCH-DCFP		D0206C	Rest room with beverage: snack preparation bay: 10 staff	D0206C	NA-SZ-xx-RD-400-280	Rest room with beverage: snack preparation bay: 10 staff	D0206C	NCH-04-DCFP-010	18.0 m²	15.1 m²	2.400 metres	10 x Staff
NCH-DCFP		D0607C	Dining room (15 patients)	D0607C	NA-SZ-xx-RD-400-283	Dining room (15 patients)	D0607C	NCH-04-DCFP-045	20.0 m²	20.7 m²	2.400 metres	15 Persons seated.
NCH-DCFP		D0815C1	Internal Play Area	D0815C1	NA-SZ-xx-RD-400-278-01	Internal Play Area	D0815C1	NCH-04-DCFP-051	30.0 m²	26.1 m²	2.400 metres	10 x Children: 3 x parents/carers
NCH-DCFP		D1110C	Sitting room: 10 patients With settee/bed	D1110C	NA-SZ-xx-RD-400-282	Sitting room: 10 patients With settee/bed	D1110C	NCH-04-DCFP-043	20.0 m²	18.0 m²	2.400 metres	10 x Persons
NCH-DCFP		D1405C1	Sitting room: 5 relatives	D1405C1	NA-SZ-xx-RD-400-273-01	Sitting room: 5 relatives	D1405C1	NCH-04-DCFP-040	10.0 m²	15.7 m²	2.400 metres	5 x Persons
NCH-DCFP		H0530C1	Seminar: training: library room: 5 person	H0530C1	NA-SZ-xx-RD-400-292-01	Seminar: training: library room: 5 person	H0530C1	NCH-04-DCFP-022	14.0 m²	14.6 m²	2.400 metres	5 x Persons
NCH-DCFP		J0130B	Entrance lobby: controlled access	J0130B	NA-SZ-xx-RD-400-277	Entrance lobby: controlled access	J0130B	NCH-00-OPD-032	0.0 m²	0.0 m²	2.400 metres	
NCH-DCFP		O0507C	Therapy area: wet and dry	O0507C	NA-SZ-xx-RD-400-421	Therapy area: wet and dry	O0507C	NCH-04-DCFP-029	30.0 m²	15.0 m²	2.400 metres	12 x Patients 3 x Staff
NCH-DCFP		O0805C	Snoozelum room	O0805C	NA-SZ-xx-RD-400-554	Snoozelum room	O0805C	NCH-04-DCFP-050	12.0 m²	12.9 m²	2.400 metres	8 x Patients: up to 3 in wheelchairs 3 x Staff
NCH-DCFP		S0045C3	Quiet / Counselling room	S0045C3	NA-SZ-xx-RD-400-589-01	Quiet / Counselling room	S0045C3	NCH-04-DCFP-024	10.0 m²	9.4 m²	2.400 metres	5 persons
NCH-DCFP		X0114C	Treatment room: Speech therapy: 1 patient	X0114C	NA-SZ-xx-RD-400-509	Treatment room: Speech therapy: 1 patient	X0114C	NCH-04-DCFP-023	15.0 m²	14.7 m²	2.400 metres	2 x Patients & escorts. 2 x Staff
NCH-EMC		C0107C	Consulting: interview room: Mental Illness	C0107C	NA-SZ-xx-RD-400-296	Consulting: interview room: Mental Illness	C0107C	NCH-00-EMC-073	10.5 m²	11.1 m²	2.400 metres	1 x Staff 1 x Patient 1 x Others (escort) All day use
NCH-EMC		W1132A2	Trolley store - 6 ITU Trolleys or Incubators	W1132A2	NA-SZ-xx-RD-400-486-02	Trolley store - 6 ITU Trolleys or Incubators	W1132A2	NCH-02-TPB-003	36.0 m²	28.0 m²	2.400 metres	1 x Staff
NCH-EMC		W1303B M1012B	Clinical work room with prep area: workstations and storage	W1303B M1012B	NA-SZ-xx-RD-400-493-01	Clinical work room with prep area: workstations and storage	W1303B M1012B	NSGH-02-TPB-001	6.0 m²	30.1 m²	2.400 metres	
NCH-EMC		W1519A	Protective Clothing Store	W1519A	NA-SZ-xx-RD-400-504-01	Protective Clothing Store	W1519A	NCH-02-TPB-002	6.0 m²	6.0 m²	2.400 metres	2 x Staff Intermittent use
NCH-EMC		Y0507C	Utility/laundry room	Y0507C	NA-SZ-xx-RD-400-529	Utility/laundry room	Y0507C	NCH-02-TPB-002	8.0 m²	9.4 m²	2.400 metres	1 - 2 Persons
NCH-EMC		C0304C	Assessment room: Paediatric: A&E	C0304C	NA-SZ-xx-RD-400-207	Assessment room: Paediatric: A&E	C0304C	NCH-00-EMC-078	16.0 m²	14.3 m²	2.400 metres	1 x Patient 1 - 2 Staff 2 x Others (escort)
NCH-EMC		D0201C	Rest room with beverage: snack preparation bay: 10 staff With 10 small l	D0201C	NA-SZ-xx-RD-400-20	Rest room with beverage: snack preparation bay: 10 staff With 10 small lockers	D0201C	NCH-00-EMC-077	18.0 m²	16.2 m²	2.400 metres	10 x Staff
NCH-EMC		D0407C	Rest: dining room: 35 staff With emergency call lamp	D0407C	NA-SZ-xx-RD-400-208	Rest: dining room: 35 staff With emergency call lamp	D0407C	NCH-00-EMC-029	46.0 m²	37.4 m²	2.400 metres	35 x Staff
NCH-EMC		G0139C	Parking bay: ultrasound unit	G0139C	NA-SZ-xx-RD-400-338	Parking bay: ultrasound unit	G0139C	NCH-00-EMC-017	1.0 m²	1.0 m²	2.400 metres	Intermittent use
NCH-EMC		L1308C	Near patient testing room	L1308C	NA-SZ-xx-RD-400-389	Near patient testing room	L1308C	NCH-00-EMC-030	8.0 m²	8.8 m²	2.400 metres	2 x Staff Intermittent use
NCH-EMC		S0029C	Sitting and body viewing room with beverage bay: 8 person	S0029C	NA-SZ-xx-RD-400-426	Sitting and body viewing room with beverage bay: 8 person	S0029C	NCH-00-EMC-074	16.0 m²	16.2 m²	2.400 metres	1 x Staff Up to 7 others: including wheelchair person
NCH-EMC		T0203C	Staff communication base: enclosed: 3 staff	T0203C	NA-SZ-xx-RD-400-430	Staff communication base: enclosed: 3 staff	T0203C	NCH-00-EMC-041	15.0 m²	17.1 m²	2.400 metres	3 x Staff: simultaneously used Intermittent use Seating up to 8 persons
NCH-EMC		V0515C	Staff changing room: 50 places	V0515C	NA-SZ-xx-RD-400-442	Staff changing room: 50 places	V0515C	NCH-00-EMC-076	25.0 m²	42.0 m²	2.400 metres	Up to 25 staff at any time.
NCH-EMC		V0517C	Staff changing room: 30 places	V0517C	NA-SZ-xx-RD-400-443	Staff changing room: 30 places	V0517C	NCH-00-EMC-063	16.0 m²	35.2 m²	2.400 metres	Up to 15 staff at any time.
NCH-EMC		X0145B	Treatment room: double-sided couch access	X0145B	NA-SZ-xx-RD-400-205	Treatment room: double-sided couch access	X0145B	NCH-00-EMC-055	16.0 m²	15.2 m²	2.400 metres	1 x Patient 2 x Staff
NCH-EMC		X0237C	Resuscitation room: 4 places	X0237C	NA-SZ-xx-RD-400-515	Resuscitation room: 4 places	X0237C	NCH-00-EMC-018-021	116.0 m²	116.3 m²	3.000 metres	4 x Patients Minimum 5 staff per bay.
NCH-EMC		X0266C	Plaster room - HBN 00-03	X0266C	NA-SZ-xx-RD-400-521	Plaster room - HBN 00-03	X0266C	NCH-00-EMC-045	16.0 m²	17.2 m²	2.400 metres	1 x Patient 2 x Staff 1 x Other
NCH-ENT		C0514C1	Broadcasting Studio	C0514C1	NA-SZ-xx-RD-400-580	Broadcasting Studio	C0514C1	NCH-00-ENT-013	12.0 m²	13.6 m²	2.400 metres	1 x Patient 1 x Other (escort) Up to 6 Staff
NCH-ENT		D1135A1	Discharge lounge: patients: visitors	D1135A1	NA-SZ-xx-RD-400-249-01	Discharge lounge: patients: visitors	D1135A1	NCH-03-GWS-045	54.0 m²	83.8 m²	2.400 metres	20 x Persons: including 1 wheelchair patient.
NCH-ENT		G0108C	Parking bay: shopping: prams: pushchairs	G0108C	NA-SZ-xx-RD-400-333	Parking bay: shopping: prams: pushchairs	G0108C	NCH-00-ENT-003	6.0 m²	6.3 m²	2.400 metres	
NCH-ENT		H1130C	Information centre with beverage bay: 5 person	H1130C	NA-SZ-xx-RD-400-348	Information centre with beverage bay: 5 person	H1130C	NCH-00-ENT-028	18.0 m²	31.1 m²	2.400 metres	5 x Persons Patients escort may be present.
NCH-ENT		J0103C1	Entrance and Office for Lollipop	J0103C1	NA-SZ-xx-RD-400-579	Entrance and Office for Lollipop	J0103C1	NCH-00-ENT-016	10.0 m²	8.8 m²	2.400 metres	2x persons
NCH-ENT		J0611C1	Office: 1 person and visitors	J0611C1	NA-SZ-xx-RD-400-585	Office: 1 person and visitors	J0611C1	NCH-00-ENT-023	11.0 m²	11.0 m²	2.400 metres	4 x Staff
NCH-ENT		J1206C1	Waiting area: 4 person including 1 wheelchair user	J1206C1	NA-SZ-xx-RD-400-584	Waiting area: 4 person including 1 wheelchair user	J1206C1	NCH-00-ENT-018	6.0 m²	6.4 m²	2.400 metres	3 x Persons: including wheelchair user.
NCH-ENT		J1415C	Creche facilities	J1415C	NA-SZ-xx-RD-400-363	Creche facilities	J1415C	NCH-00-ENT-014	24.0 m²	25.2 m²	2.400 metres	10 x children with staff
NCH-ENT		J1415C2	Lobby and waiting to Studio and Creche	J1415C2	NA-SZ-xx-RD-400-571	Lobby and waiting to Studio and Creche	J1415C2	NCH-00-ENT-015	8.0 m²	8.6 m²	2.400 metres	Intermittent use
NCH-ENT		M0330B1	Volunteers Lounge and meetings room	M0330B1	NA-SZ-xx-RD-400-583	Volunteers Lounge and meetings room	M0330B1	NCH-00-ENT-027	18.0 m²	18.1 m²	2.400 metres	10 x Staff
NCH-ENT		M0410C	Photocopying/printing room	M0410C	NA-SZ-xx-RD-400-399	Photocopying/printing room	M0410C	NCH-03-GWS-005	6.0 m²	6.1 m²	2.400 metres	Intermittent use
NCH-ENT		M0606C	Office: 2 person: volunteers	M0606C	NA-SZ-xx-RD-400-582	Office: 2 person: volunteers	M0606C	NCH-00-ENT-029	14.0 m²	13.0 m²	2.400 metres	Up to 6 persons.
NCH-ENT		M0709C	Interview/counselling/advisory room: 4 person 2 door access	M0709C	NA-SZ-xx-RD-400-403	Interview/counselling/advisory room: 4 person 2 door access	M0709C	NCH-00-ENT-025 NCH-00-ENT-025	9.0 m²	9.1 m²	2.400 metres	1 x Staff Up to 3 others: including wheelchair person.
NCH-ENT		M0712B1	Interview: counselling: quiet room: 5 person	M0712B1	NA-SZ-xx-RD-400-062-01	Interview: counselling: quiet room: 5 person	M0712B1	NCH-00-ENT-045	9.0 m²	10.5 m²	2.400 metres	1 x Staff Up to 4 others: including wheelchair person. Intermittent use
NCH-ENT		M0727B1	Patients advocates room	M0727B1	NA-SZ-xx-RD-400-586	Patients advocates room	M0727B1	NCH-00-ENT-038	0.0 m²	10.5 m²	2.400 metres	Up to 7 persons
NCH-ENT		P0802B1	Refreshment area: snack bar: servery and preparation	P0802B1	NA-SZ-xx-RD-400-217-01	Refreshment area: snack bar: servery and preparation	P0802B1	NCH-03-GWS-026	23.0 m²	41.9 m²	2.400 metres	2 x Staff
NCH-ENT		O0504C	Light activity area: Occupational therapy: 10 patients Rehabilitation	O0504C	NA-SZ-xx-RD-400-420	Light activity area: Occupational therapy: 10 patients Rehabilitation	O0504C	NCH-03-GWS-034	70.0 m²	62.3 m²	2.400 metres	10 x Patients 03 x Staff
NCH-ENT		W0704C	Store: for studio	W0704C	NA-SZ-xx-RD-400-581	Store: for studio	W0704C	NCH-00-ENT-014	3.0 m²	3.9 m²	2.400 metres	
NCH-ENT		X0705C	Observation and recording room: child assessment and therapy Assessm	X0705C	NA-SZ-xx-RD-400-523	Observation and recording room: child assessment and therapy Assessment room	X0705C	NCH-00-ENT-023	11.0 m²	11.0 m²	2.400 metres	5 x Persons
NCH-GENW		B1802C	Single bedroom: Children/young people: with relatives overnight stay	B1802C	NA-SZ-xx-RD-400-044	Single bedroom: Children/young people: with relatives overnight stay	B1802C	NCH-03-GW1-042	15.0 m²	16.8 m²	2.400 metres	1 x Patient 3 x Others
NCH-GENW		B1805C	Single bedroom: isolation: Children/young people: with relatives overnigl	B1805C	NA-SZ-xx-RD-400-041	Single bedroom: isolation: Children/young people: with relatives overnight stay	B1805C	NCH-03-GW1-006	15.0 m²	16.8 m²	3.000 metres	1 x Patient 3 x Others
NCH-GENW		B2011C	Multi-bed room: Children/young peoples day care: 4 beds	B2011C	NA-SZ-xx-RD-400-042	Multi-bed room: Children/young peoples day care: 4 beds	B2011C	NCH-03-GW1-017	66.0 m²	67.9 m²	2.400 metres	4 x Patients 6 x Others
NCH-GENW		V1221C/R	WC: assisted HANDED	V1221C/R	NA-SZ-xx-RD-400-993 HANDED	WC: assisted HANDED	V1221C/R	NCH-01-THE-XXX	7.5 m²	7.8 m²	2.400 metres	1 x patient 1-2 assistants Intermittent use
NCH-GENW		V1643C/R	Shower room: en-suite HANDED	V1643C/R	NA-SZ-xx-RD-400-046 HANDED	Shower room: en-suite HANDED	V1643C/R	NCH-03-GW1-037	5.0 m²	4.5 m²	2.400 metres	1 x patient 1-2 assistants Intermittent use
NCH-GENW		D0612C1	Dining room & Playroom (10 - 15 patients)	D0612C1	NA-SZ-xx-RD-400-040-01	Dining room & Playroom (10 - 15 patients)	D0612C1	NCH-03-GW1-046	27.0 m²	23.0 m²	2.400 metres	20 x Patients seated 03 x Staff
NCH-GENW		L1305B1	Near patient testing/status laboratory	L1305B1	NA-SZ-xx-RD-400-223-01	Near patient testing/status laboratory	L1305B1	NCH-03-GW3-068	8.5 m²	10.6 m²	2.400 metres	1 x Staff
NCH-GENW		S0012C	Infant feeding room	S0012C	NA-SZ-xx-RD-400-045	Infant feeding room	S0012C	NCH-03-GW3-061	6.0 m²	7.9 m²	2.400 metres	1 x infant 1 x parent/carer
NCH-GENW		V1221C	WC: assisted	V1221C	NA-SZ-xx-RD-400-993	WC: assisted	V1221C	NCH-01-THE-XXX	7.5 m²	7.8 m²	2.400 metres	1 x patient 1-2 assistants Intermittent use
NCH-GENW		V1643C	Shower room: en-suite	V1643C	NA-SZ-xx-RD-400-046	Shower room: en-suite	V1643C	NCH-03-GW1-037	5.0 m²	4.5 m²	2.400 metres	1 x patient 1-2 assistants Intermittent use
NCH-GENW		W1132A1	Store: bed cot	W1132A1	NA-SZ-xx-RD-400-486-01	Store: bed cot	W1132A1	NCH-03-GW3-071	36.0 m²	57.1 m²	2.400 metres	1 x Staff
NCH-GENW		W1584C	Store: clinical equipment	W1584C	NA-SZ-xx-RD-400-039	Store: clinical equipment	W1584C	NCH-00-OBW-031	16.0 m²	15.2 m²	2.400 metres	1 x Staff Intermittent use
NCH-GENW		W1594C	Store: linen	W1594C	NA-SZ-xx-RD-400-043	Store: linen	W1594C	NCH-03-GW1-030	0.0 m²	6.0 m²	2.400 metres	1 x Staff Intermittent use
NCH-GWS/1		B1802C1	Single bedroom for Renal Dialysis	B1802C1	NA-SZ-xx-RD-400-044-01	Single bedroom for Renal Dialysis	B1802C1	NCH-03-GW1-007	15.0 m²	16.7 m²	2.400 metres	1 x Patient 3 x Others
NCH-GWS/1		K0378C	Workshop: renal dialysis equipment: Wet: dry area	K0378C	NA-SZ-xx-RD-400-380	Workshop: renal dialysis equipment: Wet: dry area	K0378C	NCH-03-GWS-014	12.0 m²	29.6 m²	2.400 metres	1 -2 x Persons Intermittent use
NCH-GWS/1		W1531B	Dialysis Machine	W1531B	NA-SZ-xx-RD-400-047-01	Dialysis Machine	W1531B	NCH-03-GW1-007	12.0 m²	6.5 m²	2.400 metres	
NCH-GWS/1		X0251A2	3 Day Trolley spaces: Renal Treatment	X0251A2	NA-SZ-xx-RD-400-559	3 Day Trolley spaces: Renal Treatment	X0251A2	NSGH-04-REND-033	55.0 m²	57.6 m²	2.400 metres	3 x Patient 1 x Staff
NCH-GWS/1		X0251A3	Treatment cubicle: dialysis: 1 patient With bed	X0251A3	NA-SZ-xx-RD-400-558	Treatment cubicle: dialysis: 1 patient With bed	X0251A3	NSGH-04-REND-058	10.5 m²	15.8 m²	2.400 metres	1 x Patient 1 x Staff
NCH-MDU		B2011C1	Multi-bed room: Children/young peoples day care: 4 beds Type 3	B2011C1	NA-SZ-xx-RD-400-042-02	Multi-bed room: Children/young peoples day care: 4 beds Type 3	B2011C1	NCH-01-MDU-006	66.0 m²	36.0 m²	2.400 metres	4 x Patients 6 x Others
NCH-MDU		B2417B3	Trolley Area: 10 place Trolley space	B2417B3	NA-SZ-xx-RD-400-159-03	Trolley Area: 10 place Trolley space	B2417B3	NCH-01-MDU-009	13.5 m²	92.3 m²	2.400 metres	10 x Patients staff and parents
NCH-MDU		C0237C4	Consulting/examination room: MDU children	C0237C4	NA-SZ-xx-RD-400-180-04	Consulting/examination room: MDU children	C0237C4	NCH-01-MDU-025	16.0 m²	14.0 m²	2.400 metres	1 x patient 1-2 x staff 1 x other
NCH-MDU		M0712B2	Interview: counselling: quiet room: 5 person	M0712B2	NA-SZ-xx-RD-400-062-02	Interview: counselling: quiet room: 5 person	M0712B2	NCH-01-MDU-026	9.0 m²	12.3 m²	2.400 metres	1 x Staff Up to 4 others: including wheelchair person. Intermittent use
NCH-MDU		T0151B2	STAFF BASE(reception) & OFFICE COMBINED	T0151B2	NA-SZ-xx-RD-400-017-02	STAFF BASE(reception) & OFFICE COMBINED	T0151B2	NSGH-01-MDU-168/017-01	2.0 m²	24.1 m²	2.400 metres	1 x Staff
NCH-MDU		T0540B1	Medicine Management/Dispensary	T0540B1	NA-SZ-xx-RD-400-434-02	Medicine Management/Dispensary	T0540B1	NCH-00-OPD-033	8.0 m²	0.0 m²	2.400 metres	1 x Staff
NCH-MDU		W1585B4	Store: general	W1585B4	NA-SZ-xx-RD-400-027-04	Store: general	W1585B4	NCH-01-MDU-016	0.0 m²	14.8 m²	2.400 metres	1 x Staff Intermittent use
NCH-MDU		P0703C	Beverage: snack preparation bay	P0703C	NA-SZ-xx-RD-400-416	Beverage: snack preparation bay	P0703C	NCH-01-MDU-008	6.0 m²	6.0 m²	2.400 metres	2 x Persons Intermittent use
NCH-MDU		T0540C	Medicine store/preparation room	T0540C	NA-SZ-xx-RD-400-434	Medicine store/preparation room	T0540C	NCH-01-MDU-018	8.0 m²	9.2 m²	2.400 metres	1 x Staff
NCH-MDU		V1715C1	Bath: WC and wash: en-suite: wheelchair accessible Domestic type: with	V1715C1	NA-SZ-xx-RD-400-460-01	Bath: WC and wash: en-suite: wheelchair accessible Domestic type: with unbreakable mirror	V1715C1	NCH-01-MDU-019	10.0 m²	10.9 m²	2.400 metres	1 x Patient 1 x Other
NCH-MDU		X0147B	Treatment room: all-round couch access	X0147B	NA-SZ-xx-RD-400-588	Treatment room: all-round couch access	X0147B	NCH-01-MDU-021	16.0 m²	18.2 m²	2.400 metres	1 x Patient 2 x Staff
NCH-OBS		W1408C	Store: clothing back-up	W1408C	NA-SZ-xx-RD-400-496	Store: clothing back-up	W1408C	NCH-03-OBS-063	6.0 m²	3.0 m²	2.400 metres	01 x Staff Intermittent use
NCH-OPD		C0237C	Consulting/examination room: double-sided couch access :Paediatrics	C0237C	NA-SZ-xx-RD-400-180-01	Consulting/examination room: double-sided couch access :Paediatrics	C0237C	NCH-00-OPD0-161	16.0 m²	16.5 m²	2.400 metres	1 x patient 1-2 x staff 1 x other
NCH-OPD		H0104B2	Conference/meeting room: 10 person	H0104B2	NA-SZ-xx-RD-400-284-02	Conference/meeting room: 10 person	H0104B2	NCH-00-OPD-016	20.0 m²	20.1 m²	2.400 metres	10 x Persons
NCH-OPD		H0104B3	MDT Room	H0104B3	NA-SZ-xx-RD-400-284-03	MDT Room	H0104B3	NCH-00-OPD-017	20.0 m²	19.6 m²	2.400 metres	10 x Persons
NCH-OPD		M0202B1	Sister Office	M0202B1	NA-SZ-xx-RD-400-010-01	Sister Office	M0202B1	NCH-00-OPD-002	9.0 m²	12.5 m²	2.400 metres	1 x Staff 3 x Others
NCH-OPD		M0529B1	Office: OPD manager	M0529B1	NA-SZ-xx-RD-400-258-01	Office: OPD manager	M0529B1	NCH-00-OPD-003	12.0 m²	13.8 m²	2.400 metres	1 x Staff 3 x Others
NCH-OPD		P0808B+G0712B	Vending Area & Telephones	P0808B+G0712B		Vending Area & Telephones	P0808B+G0712B		0.0 m²	305.0 m²	2.400 metres	
NCH-OPD		J0419C	Reception/staff base: 4 staff including case-notes trolleys Maternity	J0419C	NA-SZ-xx-RD-400-355	Reception/staff base: 4 staff including case-notes trolleys Maternity	J0419C	NCH-00-OPD-004	17.5 m²	54.5 m²	2.400 metres	4 x Persons
NCH-OPD		J1403C	Waiting play area: 5 children	J1403C	NA-SZ-xx-RD-400-361	Waiting play area: 5 children	J1403C	NCH-00-OPD-032	13.0 m²	27.1 m²	2.400 metres	5 x Children with adults
NCH-OPD		J1410C	Waiting play area: 10 children	J1410C	NA-SZ-xx-RD-400-362	Waiting play area: 10 children	J1410C	NCH-00-OPD-124	18.0 m²	36.4 m²	2.400 metres	10 x children with adults
NCH-OPD		V0416C	Staff changing room with handwash: 5 places 2 door access. Lockers	V0416C	NA-SZ-xx-RD-400-439	Staff changing room with handwash: 5 places 2 door access. Lockers	V0416C	NCH-00-OPD-127	8.5 m²	18.3 m²	2.400 metres	5 x Staff
NCH-OPD		X0145C	Treatment room: double-sided couch access	X0145C	NA-SZ-xx-RD-400-205-01	Treatment room: double-sided couch access	X0145C	NCH-00-OPD0-184	16.0 m²	15.2 m²	2.400 metres	1 x Patient 2 x Staff
NCH-OPD/1		C0513C	Examination room: vestibular test	C0513C	NA-SZ-xx-RD-400-191	Examination room: vestibular test	C0513C	NCH-00-OPD-093	17.0 m²	15.2 m²	2.400 metres	1 x Patient 1 x Staff
NCH-OPD/1		C0203C	Consulting: examination room: ENT	C0203C	NA-SZ-xx-RD-400-602 c	Consulting: examination room: ENT	C0203C	NCH-00-OPD-078	16.5 m²	16.5 m²	2.400 metres	1 x Patient 2 x Staff 1 x Other (escort)
NCH-OPD/1		C0514B1	Examination room: audiometric test Sound field testing: multi-occupanc	C0514B1	NA-SZ-xx-RD-400-178-01 c	Examination room: audiometric test Sound field testing: multi-occupancy booth and control area	C0514B1	NCH-00-OPD-086&087	51.0 m²	20.2 m²	2.400 metres	1 x Patient 1 x Other (escort) Up to 6 Staff
NCH-OPD/1		J0130C1	Entrance lobby: controlled access	J0130C1	NA-SZ-xx-RD-400-178-01	Entrance lobby: controlled access	J0130C1	NCH-00-OPD-086&087	0.0 m²	16.0 m²	2.400 metres	
NCH-OPD/1		L1806C	Workshop: hearing aid repair	L1806C	NA-SZ-xx-RD-400-392	Workshop: hearing aid repair	L1806C	NCH-00-OPD-089	8.0 m²	13.7 m²	2.400 metres	01 x Staff
NCH-OPD/3		C0704C	Investigation room: resting electrocardiography (ECG)	C0704C	NA-SZ-xx-RD-400-194	Investigation room: resting electrocardiography (ECG)	C0704C	NCH-00-OPD-156	10.0 m²	16.0 m²	2.400 metres	1 x Patient 1 x Staff
NCH-OPD/3		C0706B	Investigation room: Electrophysiology	C0706B	NA-SZ-xx-RD-400-225	Investigation room: Electrophysiology	C0706B	NCH-00-OPD-080	16.0 m²	20.6 m²	2.400 metres	1 x Patient 1 x Staff: occasionally 2 staff
NCH-OPD/3		C0904C	Consulting: treatment room: Dental with dental tube X-ray Dental surger	C0904C	NA-SZ-xx-RD-400-192	Consulting: treatment room: Dental with dental tube X-ray Dental surgery	C0904C	NCH-00-OPD-082	18.0 m²	19.9 m²	2.400 metres	1 x Patient 2 x Staff 1 x Other (escort)
NCH-OPD/3		C1011C	Consulting: examination bay: Ophthalmology	C1011C	NA-SZ-xx-RD-400-176-01	Consulting: examination bay: Ophthalmology	C1011C	NCH-00-OPD-094	13.0 m²	14.9 m²	2.400 metres	1 x Patient 2 x Staff 1 x Other (escort)
NCH-OPD/3		C1013C	Consulting: examination room: Orthoptic	C1013C	NA-SZ-xx-RD-400-186-01	Consulting: examination room: Orthoptic	C1013C	NCH-00-OPD-128	18.5 m²	20.3 m²	2.400 metres	1x Patient 2 x Staff 1 x Other (escort)
NCH-OPD/3		C1401C	Physical measurement bay - Disabled	C1401C	NA-SZ-xx-AS-400-193	Physical measurement bay - Disabled	C1401C	NCH-00-OPD-102	3.5 m²	2.2 m²	2.400 metres	1 x Patient 1 x Staff
NCH-OPD/3		C1401C1	Physical measurement bay - Baby	C1401C1	NA-SZ-xx-RD-400-193-01	Physical measurement bay - Baby	C1401C1	NCH-00-OPD-101	3.5 m²	4.9 m²	2.400 metres	1 x Patient 1 x Staff
NCH-OPD/3		C1401C2	Physical measurement bay - Junior	C1401C2	NA-SZ-xx-RD-400-193-02	Physical measurement bay - Junior	C1401C2	NCH-00-OPD-100	3.5 m²	4.2 m²	2.400 metres	1 x Patient 1 x Staff
NCH-OPD/3		C1408B	Venepuncture room: 1 place	C1408B	NA-SZ-xx-RD-400-272	Venepuncture room: 1 place	C1408B	NCH-00-OPD-194	8.0 m²	8.4 m²	2.400 metres	1 x Patient 1 x Staff
NCH-OPD/3		C1408B1	Venepuncture room: 1 place	C1408B1	NA-SZ-xx-RD-400-272	Venepuncture room: 1 place	C1408B1	NCH-00-OPD-193	8.0 m²	13.2 m²	2.400 metres	1 x Patient 1 x Staff
NCH-OPD/3		D1310C3	Family Room	D1310C3	NA-SZ-xx-RD-400-164-03	Family Room	D1310C3	NCH-00-OPD-018	12.0 m²	13.5 m²	2.400 metres	2 x Persons Intermittent use
NCH-OPD/3		E0501C1	Imaging reporting room	E0501C1	NA-SZ-xx-RD-400-293-01	Imaging reporting room	E0501C1	NCH-00-OPD-023	16.0 m²	25.0 m²	2.400 metres	Up to 4 Staff Intermittent use
NCH-OPD/3		W1504C	Dental Store	W1504C	NA-SZ-xx-RD-400-603	Dental Store	W1504C	NCH-00-OPD-136	8.0 m²	11.6 m²	2.400 metres	
NCH-OPD/3		J1304C	Waiting room: relatives: visitors: 5 person	J1304C	NA-SZ-xx-RD-400-360	Waiting room: relatives: visitors: 5 person	J1304C	NCH-00-OPD-006	11.0 m²	16.0 m²	2.400 metres	Intermittent use
NCH-OPD/3		L1205C	Specialised laboratory: Dental processing with daylight processor	L1205C	NA-SZ-xx-RD-400-388	Specialised laboratory: Dental processing with daylight processor	L1205C	NCH-00-OPD-145	13.0 m²	10.6 m²	2.400 metres	1 x Persons
NCH-OPD/3		L1308C1	Near patient testing room	L1308C1	NA-SZ-xx-RD-400-389-01	Near patient testing room	L1308C1	NCH-00-OPD-126	8.0 m²	15.0 m²	2.400 metres	2 x Staff Intermittent use
NCH-OPD/3		L1602C	Medical observation area: 6 - 8 person Pschiatry	L1602C	NA-SZ-xx-RD-400-390	Medical observation area: 6 - 8 person Pschiatry	L1602C	NCH-00-OPD-014	8.0 m²	11.3 m²	2.400 metres	Intermittent use
NCH-OPD/3		L1602C1	Medical observation area: 6 - 8 person Psychology	L1602C1	NA-SZ-xx-RD-400-390-01	Medical observation area: 6 - 8 person Psychology	L1602C1	NCH-00-OPD-014	20.4 m²	11.4 m²	2.400 metres	Intermittent use
NCH-OPD/3		M0254B4	Office: 4 person	M0254B4	NA-SZ-xx-RD-400-068-04	Office: 4 person	M0254B4	NCH-00-OPD-067	24.0 m²	15.4 m²	2.400 metres	4 x Persons
NCH-OPD/3		M0727B	Interview room: 7 places (including 1 wheelchair place: Psychiatry)	M0727B	NA-SZ-xx-RD-400-088	Interview room: 7 places (including 1 wheelchair place: Psychiatry)	M0727B	NCH-00-OPD0-187	12.0 m²	7.9 m²	2.400 metres	Up to 7 persons
NCH-OPD/3		M0727B1	Interview room: 7 places (including 1 wheelchair place: Psychology)	M0727B1	NA-SZ-xx-RD-400-088-01	Interview room: 7 places (including 1 wheelchair place: Psychology)	M0727B1	NCH-00-OPD0-187	12.0 m²	8.3 m²	2.400 metres	Up to 7 persons
NCH-OPD/3		M1017C	Office and reception: 2 staff With observation panel	M1017C	NA-SZ-xx-RD-400-406	Office and reception: 2 staff With observation panel	M1017C	NCH-00-OPD-005	16.5 m²	15.1 m²	2.400 metres	2 x Persons
NCH-OPD/3		W1516C	Store: clinical supplies	W1516C	NA-SZ-xx-RD-400-103	Store: clinical supplies	W1516C	NCH-00-OPD-035	6.0 m²	7.4 m²	2.400 metres	
NCH-OPD/3		X0266C1	Plaster room : 5 places	X0266C1	NA-SZ-xx-RD-400-521-01	Plaster room : 5 places	X0266C1	NCH-00-OPD-073	16.0 m²	60.8 m²	2.400 metres	5 x Patient 2 x Staff 1 x Other
NCH-RCG/F		E0113B1	Imaging room: Ultrasound: general With reporting workstation	E0113B1	NA-SZ-xx-RD-400-080-01	Imaging room: Ultrasound: general With reporting workstation	E0113B1	NCH-00-RCG-098	16.0 m²	16.0 m²	2.400 metres	1 x Patient 2 x Staff 2 x Additional staff intermittently Intermittent use
NCH-RCG/F		E0125B1	Imaging room: conventional: general x-ray With mobile examination lam	E0125B1	NA-SZ-xx-RD-400-073-01	Imaging room: conventional: general x-ray With mobile examination lamp	E0125B1	NCH-00-RCG-082	30.0 m²	42.4 m²	3.100 metres	1 x Patient 2 x Staff
NCH-RCG/F		E0136C	Image control/reporting room	E0136C	NA-SZ-xx-RD-400-117	Image control/reporting room	E0136C	NCH-00-RCG-081	7.0 m²	8.4 m²	2.400 metres	1 x Staff Intermittent use
NCH-RCG/F		E0151C	Imaging room: Bone Mineral Densitometry (BMD)	E0151C	NA-SZ-xx-RD-400-112	Imaging room: Bone Mineral Densitometry (BMD)	E0151C	NCH-00-RCG-055	18.0 m²	18.0 m²	2.400 metres	1 x Patient 2 x Staff
NCH-RCG/F		E0206C	Darkroom: processing: viewing area: 2 processors Bench top	E0206C	NA-SZ-xx-RD-400-109	Darkroom: processing: viewing area: 2 processors Bench top	E0206C	NCH-00-RCG-043	12.0 m²	22.8 m²	2.400 metres	1 -2 Staff
NCH-RCG/F		E0311A1	Imaging room: Interventional Radiology	E0311A1	NA-SZ-xx-RD-400-092-01	Imaging room: Interventional Radiology	E0311A1	NCH-01-RCI-013	45.0 m²	71.6 m²	3.100 metres	1 x Patient Up to 6 Staff: (2 radiologists: 2 nurses: 2 radiographers)
NCH-RCG/F		E0312C	Fluoroscopy	E0312C	NA-SZ-xx-RD-400-114	Fluoroscopy	E0312C	NCH-00-RCG-043	16.0 m²	47.2 m²	2.400 metres	3 x Staff With intermittent visitors.
NCH-RCG/F		E0529C	Processing: viewing room: serving 3/4 imaging rooms Computed Radiogr	E0529C	NA-SZ-xx-RD-400-108	Processing: viewing room: serving 3/4 imaging rooms Computed Radiography unit (CR)	E0529C	NCH-00-RCG-044	40.0 m²	24.4 m²	2.400 metres	8 x Staff Intermittent use
NCH-RCG/F		E0534C	Reporting room: 4 workstations PACS	E0534C	NA-SZ-xx-RD-400-106	Reporting room: 4 workstations PACS	E0534C	NCH-00-RCG-009	16.0 m²	48.1 m²	2.400 metres	Up to 4 Staff Intermittent use
NCH-RCG/F		E0601B	Scanner room: Computed Tomography (CT)	E0601B	NA-SZ-xx-RD-400-072	Scanner room: Computed Tomography (CT)	E0601B	NCH-01-RCF-017	36.0 m²	40.0 m²	3.100 metres	1 x Patient 4 x Staff Intermittent use
NCH-RCG/F		E0702C	Waiting 'hot' room: post-injection: 7 patients Radionuclide	E0702C	NA-SZ-xx-RD-400-113	Waiting 'hot' room: post-injection: 7 patients Radionuclide	E0702C	NCH-00-RCG-058	25.0 m²	23.3 m²	2.400 metres	7 x Patients: including 1 trolley and 1 wheelchair patient.
NCH-RCG/F		E0815B1	Scanner room: open Magnetic Resonance Imaging (MRI)	E0815B1	NA-SZ-xx-RD-400-085-01	Scanner room: open Magnetic Resonance Imaging (MRI)	E0815B1	NCH-00-RCG-064	50.0 m²	64.5 m²	3.000 metres	1 x Patient 2 - 8 Staff Intermittent use
NCH-RCG/F		E0817C	Control room: serving open MRI Room layout in preparation	E0817C	NA-SZ-xx-RD-400-116	Control room: serving open MRI Room layout in preparation	E0817C	NCH-00-RCG-063	16.0 m²	20.8 m²	2.400 metres	3 x Staff (radiographers & a radiologist) Other persons may include radiographers: clinicians incl. surgeons & anesthetists. With intermittent visitors.
NCH-RCG/F		E0902C	Combined Control room	E0902C	NA-SZ-xx-RD-400-093-01	Combined Control room	E0902C	NCH-01-RCI-008	16.0 m²	29.5 m²	2.400 metres	3 x Staff (2 Radiographers: 1 Radiologist)
NCH-RCG/F		G0125C	Lead aprons bay	G0125C	NA-SZ-xx-RD-400-120	Lead aprons bay	G0125C	NCH-01-RCF-030.1	0.5 m²	0.9 m²	2.400 metres	Intermittent use
NCH-RCG/F		H0514C	Seminar: training room: 10 person	H0514C	NA-SZ-xx-RD-400-104	Seminar: training room: 10 person	H0514C	NCH-00-RCG-007	20.0 m²	35.0 m²	2.400 metres	10 x Persons
NCH-RCG/F		J1224C	Waiting: transfer: parking area: MRI trolley: 2 MRI wheelchairs	J1224C	NA-SZ-xx-RD-400-115	Waiting: transfer: parking area: MRI trolley: 2 MRI wheelchairs	J1224C	NCH-00-RCG-061	5.0 m²	16.3 m²	2.400 metres	1 x Patient 1 - 2 Staff
NCH-RCG/F		J1233C	Waiting bay: 3 patients trolley/bed place	J1233C	NA-SZ-xx-RD-400-119	Waiting bay: 3 patients trolley/bed place	J1233C	NCH-00-RCG-091	13.0 m²	16.2 m²	2.400 metres	3 x Patient 3 x Staff
NCH-RCG/F		J1422C	Waiting play area: 5 young people	J1422C	NA-SZ-xx-RD-400-107	Waiting play area: 5 young people	J1422C	NCH-00-RCG-039	13.0 m²	16.1 m²	2.400 metres	5 x Young people
NCH-RCG/F		K0906C	Service room: generator and image computer equipment Angiography	K0906C	NA-SZ-xx-RD-400-383	Service room: generator and image computer equipment Angiography	K0906C	NCH-01-RCI-006	16.0 m²	12.0 m²	2.400 metres	1 - 2 x Person Intermittent use
NCH-RCG/F		M0307C	Office: medical reporting: 2 staff	M0307C	NA-SZ-xx-RD-400-102	Office: medical reporting: 2 staff	M0307C	NCH-00-RCG-010	13.5 m²	15.1 m²	2.400 metres	2 x Staff 3 x Others
NCH-RCG/F		V0419C	Staff changing room with handwash: 20 places Lockers: coat rail	V0419C	NA-SZ-xx-RD-400-105	Staff changing room with handwash: 20 places Lockers: coat rail	V0419C	NCH-00-RCG-018	18.0 m²	9.0 m²	2.400 metres	20 x Staff
NCH-RCG/F		V0716C	Patient changing cubicle: ambulant person 2 door access	V0716C	NA-SZ-xx-RD-400-111	Patient changing cubicle: ambulant person 2 door access	V0716C	NCH-00-RCG-050	2.5 m²	2.7 m²	2.400 metres	1x Patient
NCH-RCG/F		V0726C	Changing room: independent wheelchair	V0726C	NA-SZ-xx-RD-400-110	Changing room: independent wheelchair	V0726C	NCH-00-RCG-046	4.5 m²	3.7 m²	2.400 metres	1 x Person
NCH-RCG/F		X0240C	Major treatment/minor surgery room With resuscitation trolley	X0240C	NA-SZ-xx-RD-400-517	Major treatment/minor surgery room With resuscitation trolley	X0240C	NCH-01-RCF-014	17.5 m²	19.9 m²	2.400 metres	1 x Patient 4 x Staff
NCH-RCG/F		X1011C	Laboratory: catheter: biplane	X1011C	NA-SZ-xx-RD-400-524	Laboratory: catheter: biplane	X1011C	NCH-01-RCI-005	50.0 m²	86.8 m²	2.950 metres	1 x Patient 6 x Staff
NCH-RCG/F		Y0315C	Dirty utility: bedpan disposal Radiology	Y0315C	NA-SZ-xx-RD-400-118	Dirty utility: bedpan disposal Radiology	Y0315C	NCH-00-RCG-087	9.0 m²	9.3 m²	2.400 metres	1 - 2 Persons Intermittent use
NCH-REH		C1112B1	Consulting: examination: fitting room: Orthotics	C1112B1	NA-SZ-xx-RD-400-182-01	Consulting: examination: fitting room: Orthotics	C1112B1	NCH-00-REH-015	14.0 m²	12.0 m²	2.400 metres	1 x Patient 2 x Staff 1 x Other (escort)
NCH-REH		C0230C1	Physio Treatment	C0230C1	NA-SZ-xx-RD-400-279-01 c	Physio Treatment	C0230C1	NCH-00-REH-011	20.0 m²	13.6 m²	2.400 metres	1 x patient Up to 8 x staff Up to 2 others (escort)
NCH-REH		C0237B6	Consulting/examination room: Physio	C0237B6	NA-SZ-xx-RD-400-180-06 c	Consulting/examination room: Physio	C0237B6	NCH-00-REH-021	20.4 m²	12.0 m²	2.400 metres	1 x Patient 2 x Staff 1 x Other (escort)
NCH-REH		C0237B7	Consulting/examination room: Dietetics	C0237B7	NA-SZ-xx-RD-400-180-07 c	Consulting/examination room: Dietetics	C0237B7	NCH-00-REH-017	20.4 m²	12.0 m²	2.400 metres	1 x Patient 2 x Staff 1 x Other (escort)
NCH-REH		G0405C	Exit/Goods in lobby	G0405C	NA-SZ-xx-RD-400-339	Exit/Goods in lobby	G0405C	NCH-00-SPF-004	6.0 m²	6.6 m²	2.400 metres	
NCH-REH		C0237B8	Consulting/examination room: Psychiatry	C0237B8	NA-SZ-xx-RD-400-180-08 c	Consulting/examination room: Psychiatry	C0237B8	NCH-00-REH-015	20.4 m²	12.0 m²	2.400 metres	1 x Patient 2 x Staff 1 x Other (escort)
NCH-REH		H0104B1	Group room (Group Therapy)	H0104B1	NA-SZ-xx-RD-400-284-01	Group room (Group Therapy)	H0104B1	NCH-00-REH-054	20.0 m²	24.0 m²	2.400 metres	10 x Persons
NCH-REH		C0237B9	Consulting/examination room: SALT	C0237B9	NA-SZ-xx-RD-400-180-09 c	Consulting/examination room: SALT	C0237B9	NCH-00-REH-014	14.0 m²	12.2 m²	2.400 metres	1 x Patient 2 x Staff 1 x Other (escort)
NCH-REH		H0530C	Seminar: training: library room: 5 person	H0530C	NA-SZ-xx-RD-400-292	Seminar: training: library room: 5 person	H0530C	NCH-00-REH-051	14.0 m²	24.0 m²	2.400 metres	5 x Persons
NCH-REH		J1415C1	Nursery	J1415C1	NA-SZ-xx-RD-400-363-01	Nursery	J1415C1	NCH-00-REH-007	24.0 m²	30.0 m²	2.400 metres	10 x children with staff
NCH-REH		K0336C	Workshop: prosthetics repairs: adjustment Orthotics	K0336C	NA-SZ-xx-RD-400-375	Workshop: prosthetics repairs: adjustment Orthotics	K0336C	NCH-00-REH-033	24.0 m²	38.0 m²	2.400 metres	1 x Person
NCH-REH		K0901B	Machine room: technician equipment room	K0901B	NA-SZ-xx-RD-400-598	Machine room: technician equipment room	K0901B	NCH-00-REH-031	16.0 m²	17.6 m²	2.400 metres	1 - 2 x Person Intermittent use
NCH-REH		P0602C	Kitchen - Clean prep area and dirty area	P0602C	NA-SZ-xx-RD-400-414	Kitchen - Clean prep area and dirty area	P0602C	NCH-00-SPF-006	20.0 m²	30.0 m²	2.400 metres	Intermittent use
NCH-REH		O0120C	Activities of daily living: kitchen	O0120C	NA-SZ-xx-RD-400-419	Activities of daily living: kitchen	O0120C	NCH-00-REH-053	22.0 m²	22.0 m²	2.400 metres	3 x Patients 1 x Staff All day use
NCH-REH		O0508C1	OT fine motor room	O0508C1	NA-SZ-xx-RD-400-595	OT fine motor room	O0508C1	NCH-00-REH-013	20.0 m²	23.8 m²	2.400 metres	8 x Patients: up to 3 in wheelchairs 3 x Staff
NCH-REH		O0519C	Hydrotherapy pool hall	O0519C	NA-SZ-xx-RD-400-422	Hydrotherapy pool hall	O0519C	NCH-00-REH-047	92.5 m²	39.3 m²	4.500 metres	2-3 Staff: 3-4 patients.
NCH-REH		O0521C	Hydrotherapy: laundry: utility room	O0521C	NA-SZ-xx-RD-400-423	Hydrotherapy: laundry: utility room	O0521C	NCH-00-REH-050	10.0 m²	4.1 m²	2.400 metres	2 x Staff
NCH-REH		T0202C	Staff communication base: enclosed: 4 staff	T0202C	NA-SZ-xx-RD-400-429	Staff communication base: enclosed: 4 staff	T0202C	NCH-00-REH-023	11.0 m²	20.1 m²	2.400 metres	2 x Staff: simultaneously used Intermittent use Seating up to 5 persons
NCH-REH		V0706C	Patient changing cubicles: 2 places 1 cubicle ambulant: 1 cubicle wheelch	V0706C	NA-SZ-xx-RD-400-449	Patient changing cubicles: 2 places 1 cubicle ambulant: 1 cubicle wheelchair accessible: 2 lockers	V0706C	NCH-00-REH-044	11.0 m²	11.9 m²	2.400 metres	6 x Patients
NCH-REH		W0254A3	Fridge/Freezer area	W0254A3	NA-SZ-xx-RD-400-478	Fridge/Freezer area	W0254A3	NCH-00-SPF-006	5.0 m²	2.2 m²	2.400 metres	1 x Staff
NCH-REH		W0613C	Store: study casts/records	W0613C	NA-SZ-xx-RD-400-483	Store: study casts/records	W0613C	NCH-00-REH-035	22.0 m²	10.0 m²	2.400 metres	Intermittent use
NCH-REH		W1227C	Store: equipment: hydrotherapy pool and cleaning	W1227C	NA-SZ-xx-RD-400-490	Store: equipment: hydrotherapy pool and cleaning	W1227C	NCH-00-REH-046	7.0 m²	5.5 m²	2.400 metres	
NCH-REH		W1310A1	Store: splint: crutch	W1310A1	NA-SZ-xx-RD-400-494-01	Store: splint: crutch	W1310A1	NCH-00-REH-012	2.0 m²	24.6 m²	2.400 metres	
NCH-REH		X0266C2	Casting Rectification	X0266C2	NA-SZ-xx-RD-400-521-02	Casting Rectification	X0266C2	NCH-00-REH-034	16.0 m²	20.0 m²	2.400 metres	1 x Patient 2 x Staff 1 x Other
NCH-REH		X0312B3	Gymnasium	X0312B3	NA-SZ-xx-RD-400-215-03	Gymnasium	X0312B3	NCH-00-REH-024	50.0 m²	60.8 m²	3.200 metres	2-3 staff: up to 5 patients
NCH-REH		X0313A1	Rehab/Treatment Area	X0313A1	NA-SZ-xx-RD-400-290-01	Rehab/Treatment Area	X0313A1	NCH-00-REH-049	80.0 m²	27.9 m²	3.200 metres	3-4 staff: up to 10 patients
NCH-REH		X1816C	Mould room: orthopaedics	X1816C	NA-SZ-xx-RD-400-596	Mould room: orthopaedics	X1816C	NCH-00-REH-037	12.0 m²	11.3 m²	2.400 metres	1 x Patient 2 x Staff 1 x Other (escort)
NCH-SAN		J0102A1	Reception Lobby: Chaplaincy	J0102A1	NA-SZ-xx-RD-400-566	Reception Lobby: Chaplaincy	J0102A1	NCH-01-SAN-001	5.0 m²	10.2 m²	2.400 metres	Intermittent use
NCH-SAN		M0252B1	Vestry Office: 2 person	M0252B1	NA-SZ-xx-RD-400-013-01	Vestry Office: 2 person	M0252B1	NCH-01-SAN-004	12.0 m²	13.1 m²	2.400 metres	2 x Persons
NCH-SAN		S0045C	Sanctuary	S0045C	NA-SZ-xx-RD-400-568	Sanctuary	S0045C	NCH-01-SAN-003	30.0 m²	31.7 m²	2.400 metres	10 persons
NCH-SAN		S0045C1	Washing Area (Foot)	S0045C1	NA-SZ-xx-RD-400-567	Washing Area (Foot)	S0045C1	NCH-01-SAN-005	4.0 m²	4.9 m²	2.400 metres	1 Persons
NCH-SAN		S0045C2	Quiet / Counselling room: Chaplaincy	S0045C2	NA-SZ-xx-RD-400-589	Quiet / Counselling room: Chaplaincy	S0045C2	NCH-00-ENT-045	10.0 m²	10.6 m²	2.400 metres	5 persons
NCH-SCHW		B1805C1	Single bedroom: isolation: Children/young people: with relatives overnigl	B1805C1	NA-SZ-xx-RD-400-041-01	Single bedroom: isolation: Children/young people: with relatives overnight stay	B1805C1	NCH-03-SCH-010	15.0 m²	17.6 m²	3.000 metres	1 x Patient 3 x Others
NCH-SCHW		B2011C2	Multi-bed room: Children/young peoples day care: 4 beds Type 4	B2011C2	NA-SZ-xx-RD-400-042-03	Multi-bed room: Children/young peoples day care: 4 beds Type 4	B2011C2	NCH-02-DCU-007	66.0 m²	69.6 m²	2.400 metres	4 x Patients 6 x Others
NCH-SCHW		B2011C3	Multi-bed room: Children/young peoples day care: 4 beds Type 5	B2011C3	NA-SZ-xx-RD-400-042-04	Multi-bed room: Children/young peoples day care: 4 beds Type 5	B2011C3	NCH-02-DCU-011	66.0 m²	38.4 m²	2.400 metres	4 x Patients 6 x Others
NCH-SCHW		C0237B2	Consulting/examination room: Haemophilia	C0237B2	NA-SZ-xx-RD-400-180-02	Consulting/examination room: Haemophilia	C0237B2	NCH-02-DCU-024	16.0 m²	17.5 m²	2.400 metres	1 x patient 1-2 x staff 1 x other
NCH-SCHW		D1310C1	Relatives overnight stay	D1310C1	NA-SZ-xx-RD-400-164-01	Relatives overnight stay	D1310C1	NCH-02-SCH-081	12.0 m²	8.9 m²	2.400 metres	2 x Persons Intermittent use
NCH-SCHW		H0520A2	Seminar room: 15 person	H0520A2	NA-SZ-xx-RD-400-174-02	Seminar room: 15 person	H0520A2	NCH-02-AFD-009	27.5 m²	30.1 m²	2.400 metres	15 x Persons
NCH-SCHW		J9099B	Contingency	J9099B	NA-SZ-xx-RD-400-594	Contingency	J9099B	NCH-02-TCT-002	50.0 m²	49.0 m²	2.400 metres	6-8 x patients
NCH-SCHW		M0251B2	Hospital at Night	M0251B2	NA-SZ-xx-RD-400-202-02	Hospital at Night	M0251B2	NCH-02-AFD-008	8.0 m²	13.2 m²	2.400 metres	Up to 3 persons
NCH-SCHW		M0254B3	Office: 4 person	M0254B3	NA-SZ-xx-RD-400-068-03	Office: 4 person	M0254B3	NCH-02-SCH-088	24.0 m²	14.8 m²	2.400 metres	4 x Persons
NCH-SCHW		V1715C	WC and wash: en-suite: wheelchair accessible Domestic type: with unbre	V1715C	NA-SZ-xx-RD-400-460	WC and wash: en-suite: wheelchair accessible Domestic type: with unbreakable mirror	V1715C	NCH-02-SCH-085	7.0 m²	7.0 m²	2.400 metres	1 x Patient 1 x Other
NCH-SCHW		V1715C/R	WC and wash: en-suite: wheelchair accessible Domestic type: with unbre	V1715C/R	NA-SZ-xx-RD-400-460 HANDED	WC and wash: en-suite: wheelchair accessible Domestic type: with unbreakable mirror HANDED	V1715C/R	NCH-02-SCH-085	7.0 m²	7.0 m²	2.400 metres	1 x Patient 1 x Other
NCH-SCHW		X1501C	Chemotherapy treatment room: 1 patient	X1501C	NA-SZ-xx-RD-400-525	Chemotherapy treatment room: 1 patient	X1501C	NCH-02-SCH-021	12.0 m²	16.6 m²	2.400 metres	1 x Patients 2 x Staff
NCH-SCHW		X1805A	Ante-Room	X1805A	NA-SZ-xx-RD-400-482	Ante-Room	X1805A	NCH-02-SCH-083	6.0 m²	7.8 m²	2.400 metres	1 - 2 Staff
NCH-SCHW		X2051C	Radiotherapy treatment room: unsealed radioactive source (Iodine bedro	X2051C	NA-SZ-xx-RD-400-526	Radiotherapy treatment room: unsealed radioactive source (Iodine bedroom and lobby)	X2051C	NCH-02-SCH-081	28.0 m²	20.8 m²	2.400 metres	1 x Patient 4 x Others
NCH-SCHW		Z0809B1	Chemo Prep Room	Z0809B1	NA-SZ-xx-RD-400-082-01	Chemo Prep Room	Z0809B1	NCH-02-SCH-021	20.0 m²	10.4 m²	2.400 metres	2 x Staff
NCH-THE		D1119C	Recreation room with beverage: snack preparation bay: 10 teenagers	D1119C	NA-SZ-xx-RD-400-167	Recreation room with beverage: snack preparation bay: 10 teenagers	D1119C	NCH-01-THE-024	30.0 m²	31.4 m²	2.400 metres	10 x Patients parents
NCH-THE		D1133C	Discharge lounge: 8 places	D1133C	NA-SZ-xx-RD-400-163	Discharge lounge: 8 places	D1133C	NCH-01-23HU-012	20.0 m²	20.0 m²	2.400 metres	8 x Patients parents
NCH-THE		D1310C	Parents Room	D1310C	NA-SZ-xx-RD-400-164	Parents Room	D1310C	NCH-01-23HU-015	12.0 m²	29.3 m²	2.400 metres	2 x Persons Intermittent use
NCH-THE		M0228B	Office: 10 staff	M0228B	NA-SZ-xx-RD-400-396	Office: 10 staff	M0228B	NCH-02-ADF-007	43.5 m²	43.6 m²	2.400 metres	Up to 10 staff
NCH-THE		M0306C	Office: medical reporting: 1 staff Surgeon	M0306C	NA-SZ-xx-RD-400-397	Office: medical reporting: 1 staff Surgeon	M0306C	NCH-01-THE-168	10.5 m²	10.7 m²	2.400 metres	1 x Staff 3 x Others
NCH-THE		M1011C	Office: 6 staff	M1011C	NA-SZ-xx-RD-400-168	Office: 6 staff	M1011C	NCH-01-THE-XXX	36.0 m²	28.2 m²	2.400 metres	6 x Persons
NCH-THE		N0106B1	Operating theatre: general	N0106B1	NA-SZ-xx-RD-400-146-01	Operating theatre: general	N0106B1	NCH-01-THE-085	55.0 m²	56.9 m²	3.000 metres	1 x Patient 7 x Staff
NCH-THE		N0111C	Operating theatre with ultra clean ventilation canopy (UCV) Cardiac/Card	N0111C	NA-SZ-xx-RD-400-413	Operating theatre with ultra clean ventilation canopy (UCV) Cardiac/Cardiothoracic	N0111C	NCH-01-THE-054	63.0 m²	61.8 m²	3.000 metres	1 x Patient 7 - 9 Staff
NCH-THE		N0216B1	Scrub-up and gowning room: 3 places	N0216B1	NA-SZ-xx-RD-400-149-01	Scrub-up and gowning room: 3 places	N0216B1	NCH-01-THE-087	11.0 m²	11.9 m²	2.400 metres	Up to 4 staff
NCH-THE		N0305C1	Anaesthetic room With patient trolley and ceiling hoist	N0305C1	NA-SZ-xx-RD-400-148-01	Anaesthetic room With patient trolley and ceiling hoist	N0305C1	NCH-01-THE-088	19.0 m²	19.1 m²	2.400 metres	1 x Patient 4 x Staff 1 x Relative accompanying child patient
NCH-THE		N0316C	Recovery Bay	N0316C	NA-SZ-xx-RD-400-169	Recovery Bay	N0316C	NCH-01-THE-XXX	19.0 m²	13.6 m²	2.400 metres	1 x Patient 4 x Staff
NCH-THE		O0304C	Assessment: interview and treatment room	O0304C	NA-SZ-xx-RD-400-170	Assessment: interview and treatment room	O0304C	NCH-01-THE-XXX	10.0 m²	14.0 m²	2.400 metres	1 - 2 Patients 1 - 2 Staff
NCH-THE		V0218C	Staff changing room including boot change: 40 places Lockers: coat rail:	V0218C	NA-SZ-xx-RD-400-435	Staff changing room including boot change: 40 places Lockers: coat rail: racks	V0218C	NCH-01-THE-044	30.0 m²	27.2 m²	2.400 metres	40 x Staff
NCH-THE		W0118C	Store: Clean flexible endoscopes	W0118C	NA-SZ-xx-RD-400-464	Store: Clean flexible endoscopes	W0118C	NCH-01-THE-103	6.0 m²	10.2 m²	2.400 metres	1 x Staff Intermittent use
NCH-THE		W0129C	Store: bulk supplies	W0129C	NA-SZ-xx-RD-400-468	Store: bulk supplies	W0129C	NCH-01-THE-073	30.0 m²	51.4 m²	2.400 metres	1 x Staff
NCH-THE		W1461C	Store: patients clothing	W1461C	NA-SZ-xx-RD-400-500	Store: patients clothing	W1461C	NCH-01-THE-007	4.0 m²	0.0 m²	2.400 metres	1 x Staff Intermittent use
NCH-THE		W1556C	Store: general and stationery	W1556C	NA-SZ-xx-RD-400-505	Store: general and stationery	W1556C	NCH-02-ADF-019	9.0 m²	18.6 m²	2.400 metres	
NCH-THE		Y0410C	Dirty utility: serving maternity theatre	Y0410C	NA-SZ-xx-RD-400-527	Dirty utility: serving maternity theatre	Y0410C	NCH-01-THE-126	10.0 m²	14.0 m²	2.400 metres	2 x Persons
NCH-THE		Y0421C	Dirty utility: serving 2 theatres	Y0421C	NA-SZ-xx-RD-400-528	Dirty utility: serving 2 theatres	Y0421C	NCH-01-THE-084	14.0 m²	13.6 m²	2.400 metres	3 x Staff
NSGH_END		B2417B1	Recovery bay: post anaesthetic: 1 place Bed space	B2417B1	NA-SZ-xx-RD-400-159-01	Recovery bay: post anaesthetic: 1 place Bed space	B2417B1	NSGH-02-THE-303	13.5 m²	12.9 m²	2.400 metres	1 x Patients
NSGH_END		J0413A	Reception and records office: 2 staff	J0413A	NA-SZ-xx-RD-400-171	Reception and records office: 2 staff	J0413A	NSGH-02-END-001	11.0 m²	13.6 m²	2.400 metres	2 x Staff
NSGH_END		V1727A	WC with bidet: semi-ambulant	V1727A	NA-SZ-xx-RD-400-462	WC with bidet: semi-ambulant	V1727A	NSGH-02-END-016	7.5 m²	4.4 m²	2.400 metres	1 x Patient Intermittent use
NSGH_END		X0221A	Treatment room: Endoscopy	X0221A	NA-SZ-xx-RD-400-512	Treatment room: Endoscopy	X0221A	NSGH-02-END-033	22.0 m²	22.0 m²	2.400 metres	1 x Patient 4 x Staff
NSGH-AAU		C0302B2	Assessment Cubicle	C0302B2	NA-SZ-xx-RD-400-200-02	Assessment Cubicle	C0302B2	NSGH-00-AAU-225	16.0 m²	16.6 m²	2.400 metres	1 x Patient 1 - 2 Staff 2 x Others (escort)
NSGH-AAU		C0710B	Investigation room: stress echocardiography All-round couch access	C0710B	NA-SZ-xx-RD-400-216	Investigation room: stress echocardiography All-round couch access	C0710B	NSGH-00-AAW-070	16.5 m²	18.0 m²	2.400 metres	1 x Patient 4 x Staff
NSGH-AAU		H0520A4	Seminar room: 15 person	H0520A4	NA-SZ-xx-RD-400-174-04	Seminar room: 15 person	H0520A4	NSGH-00-AAW-230	27.5 m²	39.7 m²	2.400 metres	15 x Persons
NSGH-AAU		M0251B3	Hospital at Night -AAU	M0251B3	NA-SZ-xx-RD-400-202-03	Hospital at Night -AAU	M0251B3	NSGH-00-AAW-386	8.0 m²	12.1 m²	2.400 metres	Up to 3 persons
NSGH-AAU		O0122A	Activities of daily living: bedroom with living assessment	O0122A	NA-SZ-xx-RD-400-210-01	Activities of daily living: bedroom with living assessment	O0122A	NSGH-00-AAW-044	18.0 m²	17.6 m²	2.400 metres	1-2 Staff: 1 patient & sometimes 1 relative.
NSGH-AAU		W0129B	Store: bulk supplies	W0129B	NA-SZ-xx-RD-400-599	Store: bulk supplies	W0129B	NSGH-00-AAW-236	20.0 m²	18.2 m²	2.400 metres	1 x Staff
NSGH-AAU		W1424A1	Store: equipment	W1424A1	NA-SZ-xx-RD-400-235-01	Store: equipment	W1424A1	NSGH-00-AAW-141	18.0 m²	19.6 m²	2.400 metres	1 x Person
NSGH-AAU		X0145B4	Treatment room: double-sided couch access	X0145B4	NA-SZ-xx-RD-400-205-04 c	Treatment room: double-sided couch access	X0145B4	NSGH-00-AAW-045	16.0 m²	13.0 m²	2.400 metres	1 x Patient 2 x Staff
NSGH-AAU		J1306B	Waiting area: 10 person including 1 wheelchair user	J1306B	NA-SZ-xx-RD-400-209	Waiting area: 10 person including 1 wheelchair user	J1306B	NSGH-00-AAW-001	16.5 m²	16.8 m²	2.400 metres	10 x Persons: including wheelchair user.
NSGH-AAU		L0508B	Blood bank: out-of-hours bay	L0508B	NA-SZ-xx-RD-400-222	Blood bank: out-of-hours bay	L0508B	NSGH-00-AAW-224	5.0 m²	6.0 m²	2.400 metres	
NSGH-AAU		L1305B	Near patient testing/status laboratory	L1305B	NA-SZ-xx-RD-400-223	Near patient testing/status laboratory	L1305B	NSGH-00-AAW-226	8.5 m²	8.3 m²	2.400 metres	1 x Staff
NSGH-AAU		M0221A	Office: 1 staff: open plan x6	M0221A	NA-SZ-xx-RD-400-220	Office: 1 staff: open plan x6	M0221A	NSGH-00-AAW-174	6.0 m²	27.7 m²	2.400 metres	1 x Person
NSGH-AAU		M0225A	Office: 6 staff	M0225A	NA-SZ-xx-RD-400-219	Office: 6 staff	M0225A	NSGH-00-AAW-171	27.5 m²	24.8 m²	2.400 metres	Up to 6 Staff
NSGH-AAU		M1012B	Office: 4 staff	M1012B	NA-SZ-xx-RD-400-218	Office: 4 staff	M1012B	NSGH-00-AAW-167	18.0 m²	18.1 m²	2.400 metres	3 x Persons
NSGH-AAU		P0802B	Refreshment area: snack bar: servery and preparation	P0802B	NA-SZ-xx-RD-400-217	Refreshment area: snack bar: servery and preparation	P0802B	NSGH-00-AAW-159	23.0 m²	43.7 m²	2.400 metres	2 x Staff
NSGH-AAU		O0120A	Activities of daily living: kitchen	O0120A	NA-SZ-xx-RD-400-540	Activities of daily living: kitchen	O0120A	NSGH-00-AAW-043	30.0 m²	27.0 m²	2.400 metres	3 x Patients 1 x Staff All day use

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NSGH-AAU	O0122A	Activities of daily living: bedroom with living assessment	O0122A	NA-SZ-xx-RD-400-210		Activities of daily living: bedroom with living assessment	O0122A	NSGH-00-AAW-044	18.0 m²	17.6 m²	2.400 metres	1-2 Staff: 1 patient & sometimes 1 relative.	1) Disabled patient may be ambulant with/without walking aids or in a wheelchair. 2) Training patient to get in and out of bed. 3) Rehabilitation in undressing: dressing: grooming. 4) Use of bedroom furniture and bedmaking. 5) Assessing patient using chairs. 6) Training patient to use electric gantry hoist and lifting p	Lamp indicator call situated over door outside room
NSGH-AAU	O0123A	Activities of daily living: bath: shower: WC With hoists	O0123A	NA-SZ-xx-RD-400-211		Activities of daily living: bath: shower: WC With hoists	O0123A	NSGH-00-AAW-046	13.0 m²	13.0 m²	2.400 metres	Intermittent use	1) Disabled patient may be ambulant with/without walking aids or in a wheelchair. 2) Undressing: dressing: using domestic bathroom: WC and aids. 3) Using shower. 4) Using mobile hoist. 5) Patient may require assistance during the activities.	Lamp indicator call situated over door outside room
NSGH-AAU	V0527A	Staff changing room: male	V0527A	NA-SZ-xx-RD-400-213		Staff changing room: male	V0527A	NSGH-00-AAW-048	8.0 m²	15.4 m²	2.400 metres	10 x Staff	1) Changing into protective clothing (uniforms) from outer clothing. 2) Hanging outdoor clothing. 3) Security of clothing and personal effects. 4) Grooming. 5) Disposal of used protective clothing.	Waste bin - project team option.
NSGH-AAU	V0554A	Staff changing room: female	V0554A	NA-SZ-xx-RD-400-214		Staff changing room: female	V0554A	NSGH-00-AAW-054	20.0 m²	31.5 m²	2.400 metres	Intermittent use	1) Undressing and dressing. 2) Changing into protective clothing (uniforms) from outer clothing. 3) Changing footwear. 4) Secure hanging of wet outdoor clothing. 5) Secure holding of clothing and personal belongings. 6) Secure holding of motorcycle and bicycle helmets.	This space includes 20 full-height lockers and communal space for four ambulant people to change. …
NSGH-AAU	V0628B	Locker bay: staff/patients	V0628B	NA-SZ-xx-RD-400-224		Locker bay: staff/patients	V0628B	NSGH-00-AAW-229	2.0 m²	4.3 m²	2.400 metres	Intermittent use	1) Security of clothing and personal effects.	If used in MRI suite: Plastic or aluminium key are required for the lockers so that the patient may retain possession. SpaceNotes: Height to suit surrounding area.
NSGH-AAU	X0312B	Activity area: Physiotherapy: 5 patients	X0312B	NA-SZ-xx-RD-400-215		Activity area: Physiotherapy: 5 patients	X0312B	NSGH-00-AAW-061	50.0 m²	38.2 m²	3.200 metres	2-3 staff: up to 5 patients	1) Rehabilitation exercises 2) Deskwork. 3) Clinical hand washing.	Lamp indicator call situated over door outside room. Individual treatment or re-education of patients whose treatment does not require privacy: …
NSGH-CCW	B1602B	Single bed space	B1602B	NA-SZ-xx-RD-400-560		Single bed space	B1602B	NSGH-01-CCW-174	0.0 m²	30.2 m²	3.000 metres	1 x Patient Up to 8 Staff	1) Accommodating a patient needing continuous medical and nursing care using piped medical gases: vacuum and life-support system. 2) Medical and nursing procedures requiring all sides access to patient whilst 1-6 staff use specialised equipment. 3) Self dispensing medication or drugs. 4) Monitoring vital physiolo	Push button 'crash' call is connected to hospital main switch board. Engineering services are integral to ceiling mounted supply system & include power supply & medical gases. …
NSGH-CCW	B1602B	Single bedroom: isolation: Critical care	B1602B	NA-SZ-xx-RD-400-127		Single bedroom: isolation: Critical care	B1602B	NSGH-01-CCW-091	26.0 m²	26.2 m²	3.000 metres	1 x Patient Up to 8 Staff	(as above)	(as above)
NSGH-CCW	B1602B1	Single bedroom: isolation: Critical care	B1602B1	NA-SZ-xx-RD-400-127-01		Single bedroom: isolation: Critical care	B1602B1	NSGH-01-CCW-157	26.0 m²	26.2 m²	3.000 metres	1 x Patient Up to 8 Staff	(as above)	(as above)
NSGH-CCW	B1602B1	Single bed space	B1602B1	NA-SZ-xx-RD-400-560-01		Single bed space	B1602B1	NSGH-01-CCW-068	0.0 m²	29.7 m²	3.000 metres	1 x Patient Up to 8 Staff	(as above)	(as above)
NSGH-CCW	B1602B2	Single bedroom: isolation: Critical care	B1602B2	NA-SZ-xx-RD-400-127-02		Single bedroom: isolation: Critical care	B1602B2	NSGH-01-CCW-091	26.0 m²	26.2 m²	3.000 metres	1 x Patient Up to 8 Staff	(as above)	(as above)
NSGH-CCW	B1602B3	Single bedroom: isolation: Critical care	B1602B3	NA-SZ-xx-RD-400-127-03		Single bedroom: isolation: Critical care	B1602B3	NSGH-01-CCW-091	26.0 m²	26.2 m²	3.000 metres	1 x Patient Up to 8 Staff	(as above)	(as above)
NSGH-CCW	D1310C2	Relatives overnight stay	D1310C2	NA-SZ-xx-RD-400-164-02		Relatives overnight stay	D1310C2	NSGH-01-CCW-128	12.0 m²	14.0 m²	2.400 metres	2 x Persons Intermittent use	1) Resting and sleeping.	DesignNotes: In areas used by children and young people: door hinge protectors are required
NSGH-CCW	F0612A2	Staff Lounge (Including pantry area)	F0612A2	NA-SZ-xx-RD-400-128		Staff Lounge (Including pantry area)	F0612A2	NSGH-01-CCW-201	130.0 m²	140.7 m²	2.400 metres	60 x Persons	1) Consuming beverages and refreshments. 2) Dispensing chilled water. 3) Laying up tables. 4) Clearing used crockery and cutlery.	Lamp indicator call situated over door outside room. This room is optional to ward dining room. …
NSGH-CCW	G0143A	Parking bay: mobile x-ray: image intensifier: ultrasound unit	G0143A	NA-SZ-xx-RD-400-131		Parking bay: mobile x-ray: image intensifier: ultrasound unit	G0143A	NSGH-01-CCW-094	8.0 m²	8.9 m²	2.400 metres		1) Parking mobile image unit. 2) Charging batteries of imaging x-ray machine. 3) Holding protective lead apron(s).	SpaceNotes: Height to suit surrounding area.
NSGH-CCW	G0510B	Lobby to isolation room	G0510B	NA-SZ-xx-RD-400-126		Lobby to isolation room	G0510B	NSGH-01-CCW-092	5.0 m²	7.1 m²	2.400 metres	2 x Persons	1) Use of clinical wash-hand basin. 2) Dispensing disposable aprons. 3) Dispensing disposable gloves. 4) Disposal of clinical waste. 5) Disposal of non-clinical waste.	WARNING NOTICE: This room is based on a theoretical design model: which has not been validated (see paragraph 1.8 of HBN 4 Supplement 1). …
NSGH-CCW	H0520A3	Clinical Research Room	H0520A3	NA-SZ-xx-RD-400-174-03		Clinical Research Room	H0520A3	NSGH-01-CCW-239	27.5 m²	26.0 m²	2.400 metres	15 x Persons	1) Holding seminar. 2) Discussions. 3) Writing notes and/or reports. 4) Viewing x-ray films. 5) Viewing film and/or computer generated images. 6) Using specialised visual aids multi-media equipment. 7) Secure storage of equipment. 8) Hanging coats.	Chair upright with arms can be replaced by chair with writing arm - project team option. …
NSGH-CCW	H0517B1	Seminar: training room: 30 person	H0517B1	NA-SZ-xx-RD-400-100-01		Seminar: training room: 30 person	H0517B1	NSGH-01-CCW-022	55.0 m²	64.1 m²	2.400 metres	30 x Persons	1) Holding seminar. 2) Students/Participants to make use of books and to take notes. 3) Writing notes and/or reports. 4) Viewing film and/or computer generated images. 5) Using specialised visual aids multi-media equipment. 6) Secure storage of equipment	Use for small committee work and similar activities Rail around room for flip charts to hang on during seminar. …
NSGH-CCW	J0420A	Reception and office: 4 staff	J0420A	NA-SZ-xx-RD-400-122		Reception and office: 4 staff	J0420A	NSGH-01-CCW-002	27.0 m²	136.4 m²	2.400 metres	4 x Staff	1) Reception and registration of patients. 2) Dealing with enquiries. 3) Maintaining appointments and attendance register. 4) Receipt and dispatch of documents. 5) Using computer workstation(s). 6) Holding current patients records …	Counter/reception desk should be accessible to all users. Induction loop hearing aid system.
NSGH-CCW	L1305B3	Near patient testing/status laboratory	L1305B3	NA-SZ-xx-RD-400-03	c	Near patient testing/status laboratory	L1305B3	NSGH-01-CCW-093	8.5 m²	8.5 m²	2.400 metres	1 x Staff	1) Performing blood gas analysis. 2) Performing electrolyte analysis. 3) Performing glucose analysis. 4) Microscope examinations. 5) Refrigerated storage. 6) Using refrigerator machine ice cubes/flakes. 7) Calibrating and checking laboratory equipment. 8) Using computer workstation(s). 9) Clinical hand washing.	In HBN Day surgery: Water supply - demineralised/osmosis-purified is required.
NSGH-CCW	L1803A	Service room: equipment	L1803A	NA-SZ-xx-RD-400-057		Service room: equipment	L1803A	NSGH-01-CCW-130	24.0 m²	121.5 m²	2.400 metres	2 -3 Staff Intermittent use	1) Person servicing of Electronic and Medical Engineering (EME) equipment. 2) Minor scheduled/unscheduled servicing of equipment by a visiting EME technician when full facilities of EME workshop are not required. 3) Storing user servicing and instruction manuals for EME equipment. …	In Critical Care - serving 16 beds. Emergency stop button: adjacent to access door - outside room. Nitrous oxide and gas scavenging - project team option. …
NSGH-CCW	M0252B3	Consultant's Office	M0252B3	NA-SZ-xx-RD-400-013-03		Consultant's Office	M0252B3	NSGH-01-CCW-197	12.0 m²	13.1 m²	2.400 metres	2 x Persons	1) Clinical administration. 2) Using computer workstation(s). 3) Using telephone(s). 4) Discussions and interviews. 5) Storing files and records. 6) Hanging coats. 7) Secure holding of personal belongings.	A dimming switch is recommended if the room is used for viewing digital images.
NSGH-CCW	M0604B	Office and rest: 1 staff: 5 person rest area	M0604B	NA-SZ-xx-RD-400-124		Office and rest: 1 staff: 5 person rest area	M0604B	NSGH-01-CCW-225	15.0 m²	13.0 m²	2.400 metres	Up to 6 persons	1) Deskwork for 1 person. 2) Using computer workstation(s). 3) Using printer. 4) Holding files: books and documents. 5) Holding working supply of stationery and office accessories. 6) Holding meeting formal and/or informal. 7) Staff rest and relaxation. 8) Preparing beverages and snacks. 9) Consuming beverages and refreshments.	
NSGH-CCW	M0713A	Interview/meeting room: 2 person office: Emergency call lamp	M0713A	NA-SZ-xx-RD-400-133		Interview/meeting room: 2 person office: Emergency call lamp	M0713A	NSGH-01-CCW-041	14.0 m²	17.6 m²	2.400 metres	3 x Staff 3 x Others	1) Interviewing. 2) Holding meeting formal and/or informal. 3) Displaying information.	Emergency call system operated from communication base. DesignNotes: In HBN23 HACh & YP: door hinge protectors are required.
NSGH-CCW	T0211A	Staff communication base: 2 places	T0211A	NA-SZ-xx-RD-400-431		Staff communication base: 2 places	T0211A	NSGH-01-CCW-118	11.0 m²	25.9 m²	2.400 metres	2 x Staff	1) Accessing and updating electronic patient records (EPRs). 2) Using computer workstation(s). 3) Dealing with enquiries. 4) Using telephone(s). 5) Staff supervision and observation of patients.	Clear access space around the staff communication base should be maintained even when someone is standing at the front of the base. …
NSGH-CCW	V0546A1	Staff changing room	V0546A1	NA-SZ-xx-RD-400-129		Staff changing room	V0546A1	NSGH-01-CCW-205	55.0 m²	88.4 m²	2.400 metres	60 x Staff	1) Changing into/out of outdoor clothing. 2) Changing footwear. 3) Hanging outdoor clothing. 4) Security of clothing and personal effects. 5) Disposal of used protective clothing. 6) Grooming.	DesignNotes: Ceiling: Class 0
NSGH-CCW	V1635B	Shower room: assisted	V1635B	NA-SZ-xx-RD-400-999		Shower room: assisted	V1635B	NSGH-01-CCW-073	8.0 m²	8.3 m²	2.400 metres	1 x Patient 2 x Staff Intermittent use	1) Use of assisted shower. 2) Use of assisted toilet. 3) Use of wheelchair accessible hand-wash basin. 4) Undressing and dressing in privacy. 5) Hanging clothes. 6) Hanging towels. 7) Use of sanitary chair. 8) Use of shower chair. 9) Use of mobile hoist.	The lamp repeat call is situated over the door outside the room. Where there is significant risk of assault or self-harm: …
NSGH-CCW	V1635B/R	Shower room: assisted HANDED	V1635B/R	NA-SZ-xx-RD-400-999 HANDED		Shower room: assisted HANDED	V1635B/R	NSGH-01-CCW-073	8.0 m²	8.3 m²	2.400 metres	1 x Patient 2 x Staff Intermittent use	(as above)	(as above)
NSGH-CCW	W0116A	Store: bulk supplies	W0116A	NA-SZ-xx-RD-400-123		Store: bulk supplies	W0116A	NSGH-01-CCW-006	100.0 m²	97.5 m²	2.400 metres	3 x Staff	1) Reception of all supplies for use within the operating department. 2) Storing bulk supplies. 3) Parking of tray supply trolleys. 4) Moving/manoeuvring trolleys. 5) Using computer workstation(s). 6) Using printer.	6x Trolleys SSD distribution/collection - parked only. …
NSGH-CCW	W1132A	Store: furniture: equipment and disposables	W1132A	NA-SZ-xx-RD-400-486		Store: furniture: equipment and disposables	W1132A	NSGH-01-CCW-144	36.0 m²	44.5 m²	2.400 metres	1 x Staff	1) Storing furniture: commodes: chairs. 2) Storing disposable items.	
NSGH-CCW	W1453A	Store: clinical equipment	W1453A	NA-SZ-xx-RD-400-499		Store: clinical equipment	W1453A	NSGH-01-CCW-003	48.0 m²	88.0 m²	2.400 metres	3 x Staff	1) Storing small items of equipment. 2) Storing mobile equipment. 3) Manoeuvring large: mobile items. 4) Charging and recharging medical equipment.	Serving 16 Critical Care beds. MON030- Haemodialysis & MON031- Haemofiltration monitors - project team option. …
NSGH-CCW	W1602A	Store: linen	W1602A	NA-SZ-xx-RD-400-125		Store: linen	W1602A	NSGH-01-CCW-081	3.5 m²	4.0 m²	2.400 metres	1 x Person	1) Storing linen. 2) Parking of clean linen on distribution trolley.	
NSGH-CCW/CCU	B0308A	Single-bed room: Coronary Care	B0308A	NA-SZ-xx-RD-400-570		Single-bed room: Coronary Care	B0308A	NSGH-01-CCU-036	19.0 m²	20.4 m²	3.000 metres	1 x Patient 4 x Others	1) Clinical discussions and delivery of minimally invasive clinical procedures at the bedside. 2) Use of monitoring equipment. 3) Use of mobile diagnostic and therapeutic equipment. 4) Undressing and dressing in privacy. 5) Resting …	WARNING NOTICE: This room is based on a theoretical design model: …
NSGH-CCW/CCU	D1310C4	Relatives overnight stay	D1310C4	NA-SZ-xx-RD-400-164-04		Relatives overnight stay	D1310C4	NSGH-01-CCU-008	12.0 m²	17.3 m²	2.400 metres	2 x Persons Intermittent use	1) Resting and sleeping.	DesignNotes: In areas used by children and young people: door hinge protectors are required
NSGH-CCW/CCU	K0116A	UPS room Uninterrupted Power Supply	K0116A	NA-SZ-xx-RD-400-130		UPS room Uninterrupted Power Supply	K0116A	NSGH-01-CCU-032	4.0 m²	1.7 m²	2.400 metres	N/A		Equipment to be project specific: may require independent ventilation.
NSGH-CCW/CCU	M0252B5	Office: 2 Person	M0252B5	NA-SZ-xx-RD-400-013-05		Office: 2 Person	M0252B5	NSGH-00-CCU-056	12.0 m²	16.3 m²	2.400 metres	2 x Persons	1) Clinical administration. 2) Using computer workstation(s). 3) Using telephone(s). 4) Discussions and interviews. 5) Storing files and records. 6) Hanging coats. 7) Secure holding of personal belongings.	A dimming switch is recommended if the room is used for viewing digital images.
NSGH-CCW/CCU	W1123A	Store: bulk supplies: medical and surgical	W1123A	NA-SZ-xx-RD-400-234		Store: bulk supplies: medical and surgical	W1123A	NSGH-01-CCU-035	18.0 m²	16.0 m²	2.400 metres	2 x Staff	1) Reception of all supplies for use within the unit. 2) Storing bulk supplies. 3) Storing medical and surgical supplies. 4) Parking trolley(s). 5) Moving/manoeuvring trolley(s).	Bulk storage of all supplies: sub-divided as follows: a. sterile items: …
NSGH-CCW/CCU	W1424A	Store: equipment	W1424A	NA-SZ-xx-RD-400-235		Store: equipment	W1424A	NSGH-01-CCU-074	18.0 m²	20.1 m²	2.400 metres	1 x Person	1) Storing sundries and small items. 2) Storing nursing equipment. 3) Storing mobile equipment.	Storing cardiotocograph: ultrasound machines: venepuncture trolley and wheelchair may also be stored here.
NSGH-CCW/CCU	X0240B	Major treatment/minor surgery room With resuscitation trolley	X0240B	NA-SZ-xx-RD-400-517		Major treatment/minor surgery room With resuscitation trolley	X0240B	NSGH-01-RCF-014	17.5 m²	28.0 m²	2.400 metres	1 x Patient 4 x Staff	1) Patient may arrive on foot or in a wheelchair. 2) Patient transferred to a treatment trolley. 3) Administration of local analgesics. 4) Minor surgical procedures under local anaesthetic. 5) Clinical procedures and dressings. 6) Emergency resuscitation. 7) Clinical hand washing. …	Lamp indicator call situated over door outside room. Computer keyboard should be with cleanable or disposable cover.
NSGH-CCW/CCU	Y0412A	Dirty utility: urine test	Y0412A	NA-SZ-xx-RD-400-132		Dirty utility: urine test	Y0412A	NSGH-01-CCU-020	8.0 m²	12.0 m²	2.400 metres	2 x Staff Intermittent use	1) Disposal of liquid waste. 2) Cleansing trays: trolleys and equipment. 3) Testing urine specimens. …	Limited space for holding of materials requiring disposal or reprocessing. …
NSGH-DEC	G0507A	Lobby: gowning 1	G0507A	NA-SZ-xx-RD-400-561		Lobby: gowning 1	G0507A	NSGH-02-DCT-009	4.0 m²	8.0 m²	2.400 metres	2 x Persons	1) Clinical hand washing. 2) Dispensing disposable aprons. 3) Dispensing disposable gloves. 4) Disposal of clinical waste. 5) Disposal of non-clinical items.	Source and protective isolation. …
NSGH-DEC	G0510A	Lobby: gowning 2	G0510A	NA-SZ-xx-RD-400-562		Lobby: gowning 2	G0510A	NSGH-02-DCT-011	5.0 m²	9.5 m²	2.400 metres	2 x Persons	1) Use of clinical wash-hand basin. 2) Dispensing disposable aprons. 3) Dispensing disposable gloves. 4) Disposal of clinical waste. 5) Disposal of non-clinical waste.	WARNING NOTICE: This room is based on a theoretical design model: …
NSGH-DEC	G0526D	Returns Trolley	G0526D	NA-SZ-xx-RD-400-340		Returns Trolley	G0526D	NSGH-02-DCT-002	14.0 m²	15.8 m²	2.400 metres	Intermittent use	1) Receiving contaminated returns containers/trolleys. 2) Parking contaminated return containers/trolleys. 3) Collecting goods.	DesignNotes: Wall and door protection required.
NSGH-DEC	K0303D	Engineer Workshop	K0303D	NA-SZ-xx-RD-400-368		Engineer Workshop	K0303D	NSGH-02-DCT-018	15.0 m²	16.7 m²	2.400 metres	03 x Staff Intermittent use	1) Maintaining radiodiagnostic equipment including TV and VDTs. 2) Storing tools and equipment. 3) Repairing and servicing equipment. 4) Manoeuvring mobile x-ray film trolley.	
NSGH-DEC	R1073D	Dispatch and store area	R1073D	NA-SZ-xx-RD-400-424		Dispatch and store area	R1073D	NSGH-02-DCT-021	40.0 m²	16.3 m²	2.400 metres	4 x Staff	1) Receipt of decontaminated trolleys and containers. 2) Parking distribution trolley and transport containers. 3) Moving/manoeuvring trolley(s). 4) Recording despatch of processed items. 5) Assembling batches of processed products for distribution. 6) Deskwork.	SpaceNotes: Based upon parking trolley approx size 1500x700 (1.5 sq.m per trolley space). …
NSGH-DEC	W0237D	Store: assembly and Packing	W0237D	NA-SZ-xx-RD-400-473		Store: assembly and Packing	W0237D	NSGH-02-DCT-006	83.0 m²	98.5 m²	2.400 metres	1 x Staff	1) Storing materials.	Can be a 'subarea' of stores.
NSGH-DEC	Z0403D	Disassembly Clean & Test	Z0403D	NA-SZ-xx-RD-400-530		Disassembly Clean & Test	Z0403D	NSGH-02-DCT-010	123.0 m²	115.1 m²	2.400 metres	1 x Staff 1 x Other All day use Intermittent use	1) Unpacking containers prior to washing. 2) Washing containers. 3) Washing and preparing container closures. 4) Drying and sterilizing laboratory glassware after washing. 5) Moving containers and closures to filling area.	
NSGH-DEC	Z0405D	Trolley Wash	Z0405D	NA-SZ-xx-RD-400-531		Trolley Wash	Z0405D	NSGH-02-DCT-003	15.0 m²	14.9 m²	2.400 metres	3 x Staff	1) Moving/manoeuvring sterilizer transfer trolley. 2) Trolley Wash area	Pitot head for manometer. The filled containers are passed to a collection point in the steriliser loading area …
NSGH-DEC	Z0406D	Materials Transfer	Z0406D	NA-SZ-xx-RD-400-532		Materials Transfer	Z0406D	NSGH-02-DCT-013	26.0 m²	26.6 m²	2.400 metres	1 x Staff Intermittent use	1) Transferring loaded sterilizer loading truck from Filling Area to Sterilizer Loading Area. 2) Moving/manoeuvring loaded truck transfer trolleys at either end of transfer station.	Indicator lights to show door open to user approaching from opposite end.
NSGH-DEC	Z0412D	Trolley Hold	Z0412D	NA-SZ-xx-RD-400-533		Trolley Hold	Z0412D	NSGH-02-DCT-004	16.0 m²	14.0 m²	2.400 metres	1 x Staff Intermittent use	1) Holding trucks and trolleys in area set aside for natural cooling of processed loads. 2) Transferring loads to Inspection and labelling Area.	
NSGH-DMW	B0607A	Multi-bed room: Day care: 4 beds	B0607A	NA-SZ-xx-RD-400-276		Multi-bed room: Day care: 4 beds	B0607A	NSGH-02-DMW-012	40.0 m²	36.8 m²	2.400 metres	4 x Patients 4 x Others	1) Patient may arrive on foot or in a wheelchair. 2) Patient to receive therapeutic and clinical attention from health team staff. 3) Patient to read: write: listen to radio: views TV and use telephone. 4) Patient to receive visitors. 5) Holding clothing and personal effects. 6) Using monitoring/diagnostic equipment. …	Bed area should be designed to allow interchangeable use of beds or reclining chairs. …
NSGH-DMW	V1736B1	Bathroom: assisted - Dermatology	V1736B1	NA-SZ-xx-RD-400-995-01		Bathroom: assisted - Dermatology	V1736B1	NSGH-02-DMW-011	15.0 m²	15.5 m²	2.400 metres	1 x patient Up to 3 x staff	1) Use of assisted bath. 2) Use of assisted toilet. 3) Use of wheelchair accessible hand-wash basin. 4) Undressing and dressing in privacy. 5) Hanging clothes. 6) Hanging towels. 7) Use of sanitary chair. 8) Use of shower chair. 9) Use of mobile hoist.	If used as a treatment bath: space is required to accommodate stretcher hoist. …
NSGH-DMW	V1736B1/R	Bathroom: assisted - Dermatology HANDED	V1736B1/R	NA-SZ-xx-RD-400-995-01 HANDED		Bathroom: assisted - Dermatology HANDED	V1736B1/R	NSGH-02-DMW-011	15.0 m²	15.5 m²	2.400 metres	1 x patient Up to 3 x staff	(as above)	(as above)
NSGH-DMW	V1736B2	Bathroom: assisted - Dermatology with mobile hoist	V1736B2	NA-SZ-xx-RD-400-995-02		Bathroom: assisted - Dermatology with mobile hoist	V1736B2	NSGH-02-DMW-013	15.0 m²	15.5 m²	2.400 metres	1 x patient Up to 3 x staff	(as above)	(as above)
NSGH-DMW	V1736B2/R	Bathroom: assisted - Dermatology with mobile hoist HANDED	V1736B2/R	NA-SZ-xx-RD-400-995-02 HANDED		Bathroom: assisted - Dermatology with mobile hoist HANDED	V1736B2/R	NSGH-02-DMW-013	15.0 m²	15.5 m²	2.400 metres	1 x patient Up to 3 x staff	(as above)	(as above)
NSGH-DMW	X0145A1	Treatment room: Leg Ulcer	X0145A1	NA-SZ-xx-RD-400-275-01	c	Treatment room: Leg Ulcer	X0145A1	NSGH-02-DMW-009	16.0 m²	16.4 m²	2.400 metres	1 x Patient 2 x Staff	1) Invasive clinical procedures from both sides of the couch. 2) Undressing and dressing in privacy. 3) Preparation of trays/packs for clinical procedures. 4) Use of clinical wash-hand basin. 5) Accessing and updating electronic patient …	This room includes a 3-section couch and is based on option 1 layout in HBN 00-03. …
NSGH-DMW	X0145A5	Treatment room: double-sided couch access: Dermatology	X0145A5	NA-SZ-xx-AS-400-205-05	c	Treatment room: double-sided couch access: Dermatology	X0145A5	NSGH-02-DMW-005	16.0 m²	13.7 m²	2.400 metres	1 x Patient 2 x Staff	(as above)	(as above)
NSGH-DMW	X0102A	Treatment room: Physiotherapy UVL: 1 patient	X0102A	NA-SZ-xx-RD-400-274		Treatment room: Physiotherapy UVL: 1 patient	X0102A	NSGH-02-DMW-004	12.0 m²	39.9 m²	2.400 metres	1 x Patients 1 - 2 Staff	1) Patient may be ambulant with/without walking aids: in wheelchairs or requiring assistance. 2) Patient to undress/dress in privacy. 3) Medical and nursing procedures. …	Lamp indicator call situated over door outside room. Treatment will be carried out by 1-2 physiotherapists using UVL equipment.
NSGH-DMW	X0145A	Treatment room: double-sided couch access: Dermatology	X0145A	NA-SZ-xx-RD-400-275		Treatment room: double-sided couch access: Dermatology	X0145A	NSGH-02-DMW-010	16.0 m²	16.9 m²	2.400 metres	1 x Patient 2 x Staff	1) Invasive clinical procedures from both sides of the couch. …	This room includes a 3-section couch …
NSGH-DOPD	C0235B	Consulting/examination room: single-sided couch access	C0235B	NA-SZ-xx-RD-400-185		Consulting/examination room: single-sided couch access	C0235B	NSGH-01-OPD-047	12.0 m²	13.4 m²	2.400 metres	1 x patient 1-2 x staff 1 x other	1) Consultations. 2) Examinations from one side of the couch. 3) Minimally invasive clinical procedures from one side of the couch. …	The lamp repeat call is situated over the door outside the room. …
NSGH-DOPD	H1127B	Information centre: 5 person	H1127B	NA-SZ-xx-RD-400-189		Information centre: 5 person	H1127B	NSGH-02-DOPD-021	15.0 m²	18.1 m²	2.400 metres	5 x Persons	1) Instructing with the aid of a television monitor for showing video tape recordings. 2) Displaying information. 3) Displaying periodicals: pamphlets and reports. 4) Displaying literature. 5) Holding books.	Information should be provided in formats suitable for blind and visually impaired patients. …
NSGH-DOPD	L0315A	MOHS Prep	L0315A	NA-SZ-xx-RD-400-555		MOHS Prep	L0315A	NSGH-02-DOPD-025	16.0 m²	13.8 m²	2.400 metres	4 x Staff	1) MOHS tissue preparation and microscopic examination. 2) MOHS procedures and preparation. 3) Holding refrigerated specimens prior to despatch. 4) Disposal of liquid waste. 5) Use of clinical wash-hand basin.	MOHS and preparation room
NSGH-DOPD	T0526B2	Preparation room (Dermatology OPD)	T0526B2	NA-SZ-xx-RD-400-188		Preparation room (Dermatology OPD)	T0526B2	NSGH-02-DOPD-017 PREP, Ach:11.9m² Req:12.0m² NSGH-00-DOP	12.0 m²	11.9 m²	2.400 metres	2 - 3 Staff	1) Dermatology Prep area: to confirm more activities.	CAB036 - Heated lotion cabinet could be provided in Central Store as option. Trolley dressing/instrument - number and size - project team option.
NSGH-DOPD	X0240B1	Biopsy room	X0240B1	NA-SZ-xx-RD-400-190		Biopsy room	X0240B1	NSGH-02-DOPD-024	18.0 m²	16.9 m²	2.400 metres	1 x Patient 4 x Staff	1) Patient may arrive on foot or in a wheelchair. 2) Patient transferred to a treatment trolley. 3) Administration of local analgesics. …	Lamp indicator call situated over door outside room. Computer keyboard should be with cleanable or disposable cover. …
NSGH-EMC	C0302B	Assessment room: A&E	C0302B	NA-SZ-xx-RD-400-200		Assessment room: A&E	C0302B	NSGH-00-EMC-040	16.0 m²	11.8 m²	2.400 metres	1 x Patient 1 - 2 Staff 2 x Others (escort)	1) Patient may arrive on foot or in a wheelchair. 2) Patient to undress/dress in privacy. 3) Clinical examination and assessment in privacy. …	Lamp indicator call situated over door outside room. Illuminated sign "IN USE" …
NSGH-EMC	G0128B	Parking bay: 3 accident trolleys: 2 wheelchairs	G0128B	NA-SZ-xx-RD-400-204		Parking bay: 3 accident trolleys: 2 wheelchairs	G0128B	NSGH-00-EMC-147	0.0 m²	7.0 m²	2.400 metres		1) Parking accident trolley. 2) Parking wheelchair(s).	SpaceNotes: Height to suit surrounding area.
NSGH-EMC	G0705A	Public telephone: single booth: accessible	G0705A	NA-SZ-xx-RD-400-199		Public telephone: single booth: accessible	G0705A	NSGH-00-EMC-005	2.0 m²	2.0 m²	2.400 metres	1 x Person	1) Using payphone.	Suitable for disabled person. …
NSGH-EMC	H0339B	Training Room	H0339B	NA-SZ-xx-RD-400-203		Training Room	H0339B	NSGH-00-EMC-136	20.0 m²	19.2 m²	2.400 metres	5 x Persons 1 x Staff	1) Using specialised visual aids multi-media equipment. 2) Using computer workstation(s). 3) Holding staff training courses.	Access to IT services.
NSGH-EMC	J0107A	Main entrance draught lobby	J0107A	NA-SZ-xx-RD-400-195		Main entrance draught lobby	J0107A	NSGH-00-EMC-001	11.0 m²	15.5 m²	2.400 metres		1) Access of ambulant people. 2) Access of disabled people with/without escorts: who may be ambulant or in a wheelchair. 3) Access for visitors and staff.	Draught lobby with automatic sliding doors used in conjunction with canopy area: …
NSGH-EMC	J0421A	Reception and office: 5 staff	J0421A	NA-SZ-xx-RD-400-198		Reception and office: 5 staff	J0421A	NSGH-00-EMC-004	33.0 m²	14.2 m²	2.400 metres	5 x Staff	1) Reception and registration of patients. 2) Dealing with enquiries. …	Counter/reception desk should be accessible to all users. Induction loop hearing aid system.
NSGH-EMC	J1106A	Waiting area: 70 person including 5 wheelchair user	J1106A	NA-SZ-xx-RD-400-196		Waiting area: 70 person including 5 wheelchair user	J1106A	NSGH-00-EMC-002	111.5 m²	82.6 m²	2.400 metres	70 x Persons: including 5 wheelchair users.	1) Patient may arrive on foot or in a wheelchair. 2) Waiting by patients: relatives and escorts. 3) Displaying information. 4) Displaying notices.	TV screen display information and number being called from C/E room: …
NSGH-EMC	J1410B	Waiting play area: 10 children	J1410B	NA-SZ-xx-RD-400-197		Waiting play area: 10 children	J1410B	NSGH-00-EMC-003	0.0 m²	17.7 m²	2.400 metres	10 x children with adults	1) Waiting child patients accompanied by adults. …	Dividing screen - project team option. …
NSGH-EMC	L1612B	Body viewing/bier room	L1612B	NA-SZ-xx-RD-400-391		Body viewing/bier room	L1612B	NSGH-00-EMC-115	10.0 m²	10.0 m²	2.400 metres	6 x Persons 1 x trolley with deceased person	1) Preparation of the deceased person to view. 2) Viewing bodies by relatives. 3) Holding limited supply of linen and amenities.	Space required to accommodate trolley with the deceased person in a peninsular position. …
NSGH-EMC	M0251B	Office: 2 person (wired for 3)	M0251B	NA-SZ-xx-RD-400-202		Office: 2 person (wired for 3)	M0251B	NSGH-00-EMC-130	12.0 m²	10.5 m²	2.400 metres	Up to 3 persons	1) Clinical administration. 2) Using computer workstation(s). 3) Using telephone(s). 4) Discussions and interviews. 5) Storing files and records. 6) Hanging coats. 7) Secure holding of personal belongings.	The following equipment is shown on the room layout but is optional: …
NSGH-EMC	C0302A2	Assessment/Holding Area	C0302A2	NA-SZ-xx-RD-400-608	c	Assessment/Holding Area	C0302A2	NSGH-00-DCU-001	16.0 m²	13.7 m²	2.400 metres	1 x Patient 1 - 2 Staff	1) Patient may arrive on foot or in a wheelchair. 2) Patient to undress/dress in privacy. …	Lamp indicator call situated over door outside room. Illuminated sign "IN USE" sited outside the doorway of the room.
NSGH-EMC	G0507A2	Lobby	G0507A2	NA-SZ-xx-RD-400-561-01		Lobby	G0507A2	NSGH-00-DCU-000	6.2 m²	6.2 m²	2.400 metres	1 x Person	1) Clinical hand washing. 2) Dispensing disposable aprons. 3) Dispensing disposable gloves. 4) Disposal of clinical waste. 5) Disposal of non-clinical items.	
NSGH-EMC	M0252B4	Social Worker's Office	M0252B4	NA-SZ-xx-RD-400-013-04		Social Worker's Office	M0252B4	NSGH-00-EMC-151	12.0 m²	12.8 m²	2.400 metres	2 x Persons	1) Clinical administration. …	A dimming switch is recommended if the room is used for viewing digital images.
NSGH-EMC	M0727B2	Interview room: Police	M0727B2	NA-SZ-xx-RD-400-088-02		Interview room: Police	M0727B2	NSGH-00-EMC-054	12.0 m²	10.1 m²	2.400 metres	Up to 7 persons	1) Discussions and interviews.	Staff emergency call is not required if the room is for staff use only. …
NSGH-EMC	S0062A1	Detention Room	S0062A1	NA-SZ-xx-RD-400-427-01		Detention Room	S0062A1	NSGH-00-EMC-054	11.0 m²	3.7 m²	2.400 metres	1 x Patient Up to 4 x Staff: (when required)	1) Care of a severely disturbed patient for a short period. 2) Patient to rest.	Where there is a significant risk of assault or self-harm …
NSGH-EMC	M0606A	Office and rest: 1 staff: 6 person rest area (voluntary workers)	M0606A	NA-SZ-xx-RD-400-401		Office and rest: 1 staff: 6 person rest area (voluntary workers)	M0606A	NSGH-00-EMC-026 NSGH-00-EMC-026 NSGH-00-EMC-026	14.0 m²	18.6 m²	2.400 metres	Up to 6 persons.	1) Administration: clerical duties. 2) Deskwork for 1 person. 3) Using telephone(s). 4) Sitting and relaxing. 5) Security for personal items.	Suitable for voluntary workers.
NSGH-EMC	W0532A2	Storage	W0532A2	NA-SZ-xx-RD-400-609		Storage	W0532A2	NSGH-00-DCU-002	23.0 m²	18.4 m²	2.400 metres	1 x Staff Intermittent use	1) Secure storage of equipment.	
NSGH-EMC	X0147A2	Wet Room/Treatment room	X0147A2	NA-SZ-xx-RD-400-610	c	Wet Room/Treatment room	X0147A2	NSGH-00-DCU-003	18.0 m²	16.8 m²	2.400 metres	1 x Patient 2 x Staff	1) Invasive clinical procedures from all sides of the couch: including the head of the couch. …	DesignNotes: In areas used by children and young people: door hinge protectors are required
NSGH-EMC	X0147A3	Robing/Treatment Room	X0147A3	NA-SZ-xx-RD-400-610-01	c	Robing/Treatment Room	X0147A3	NSGH-00-DCU-004	16.0 m²	16.3 m²	2.400 metres	1 x Patient 2 x Staff	(as above)	This room includes a 3-section couch …
NSGH-EMC	S0062A	Special room: distressed/disturbed patient	S0062A	NA-SZ-xx-RD-400-427		Special room: distressed/disturbed patient	S0062A	NSGH-00-EMC-029	11.0 m²	11.2 m²	2.400 metres	1 x Patient Up to 4 x Staff: (when required)	1) Care of a severely disturbed patient for a short period. 2) Patient to rest.	Where there is a significant risk of assault or self-harm …
NSGH-EMC	T0316A	Store	T0316A	NA-SZ-xx-RD-400-432		Store	T0316A	NSGH-00-EMC-036	10.0 m²	14.1 m²	2.400 metres		1) Holding supply of sterile equipment and supplies. 2) Holding supply of medicines: lotions and controlled drugs. 3) Preparing/laying up trolleys for clinical procedures. 4) Clinical hand washing.	
NSGH-EMC	V0536A	Staff changing room: 20 places Slimline lockers: coat rail: shoe rack	V0536A	NA-SZ-xx-RD-400-446		Staff changing room: 20 places Slimline lockers: coat rail: shoe rack	V0536A	NSGH-00-EMC-123	11.5 m²	36.2 m²	2.400 metres	20 x Staff	1) Changing into/out of outdoor clothing. 2) Changing footwear. 3) Hanging outdoor clothing. 4) Security of clothing and personal effects. 5) Disposal of used protective clothing. 6) Grooming.	DesignNotes: Ceiling: Class 0
NSGH-EMC	V0546B	Staff changing room: 30 places Slimline lockers: coat rail: shoe rack	V0546B	NA-SZ-xx-RD-400-447		Staff changing room: 30 places Slimline lockers: coat rail: shoe rack	V0546B	NSGH-00-EMC-111	30.0 m²	38.4 m²	2.400 metres	60 x Staff	(as above)	DesignNotes: Ceiling: Class 0
NSGH-EMC	V1321A1	Rest: Staff	V1321A1	NA-SZ-xx-RD-400-457		Rest: Staff	V1321A1	NSGH-00-EMC-125	50.0 m²	51.4 m²	2.400 metres	1 x person (staff or visitor) Intermittent use	1) Use of shower by ambulant person. 2) Undressing and dressing in privacy. 3) Hanging clothes. 4) Hanging towels.	This room is not recommended for patient use.
NSGH-EMC	W0534A	Store and Clean Utility: sterile supplies	W0534A	NA-SZ-xx-RD-400-481		Store and Clean Utility: sterile supplies	W0534A	NSGH-00-EMC-072	15.0 m²	15.1 m²	2.400 metres	1 x Staff Intermittent use	1) Storing sterile supplies.	
NSGH-EMC	W1303B	Store: major incident equipment	W1303B	NA-SZ-xx-RD-400-493		Store: major incident equipment	W1303B	NSGH-00-EMC-134	6.0 m²	11.8 m²	2.400 metres		1) Storing major incident packs and portable equipment.	Shelving to be at height to allow trolley parking underneath.
NSGH-EMC	W1321A	Store and Clean Utility: equipment and supplies	W1321A	NA-SZ-xx-RD-400-495		Store and Clean Utility: equipment and supplies	W1321A	NSGH-00-EMC-135	36.0 m²	19.1 m²	2.400 metres	2 x Persons Intermittent use	1) Receiving supplies. 2) Sorting materials and supplies. 3) Holding for distribution/delivery. 4) Storing linen. 5) Storing stationery/paper. 6) Storing materials and supplies. 7) Loading trolleys for issue.	
NSGH-EMC	W1510A	Store: stationery and document	W1510A	NA-SZ-xx-RD-400-502		Store: stationery and document	W1510A	NSGH-00-EMC-146	11.0 m²	10.1 m²	2.400 metres	2 x Persons Intermittent use	1) Secure storage. 2) Storing files and records. 3) Storing patients records and treatment notes. 4) Storing stationery/paper. 5) Long term storage of records. 6) Weeding records.	
NSGH-EMC	W1519A	Store: ambulance equipment	W1519A	NA-SZ-xx-RD-400-504		Store: ambulance equipment	W1519A	NSGH-00-EMC-137	6.0 m²	6.4 m²	2.400 metres	2 x Staff Intermittent use	1) Secure storage. 2) Storing equipment. 3) Storing linen. 4) Storing stretcher canvasses: blankets and pillow cases. 5) Storing stretcher poles.	
NSGH-EMC	X0238A	Resuscitation room: 6 places	X0238A	NA-SZ-xx-RD-400-516		Resuscitation room: 6 places	X0238A	NSGH-00-EMC-105	180.0 m²	209.2 m²	3.000 metres	5 x Patients Minimum 5 staff per bay	1) Patient will arrive on trolley. 2) Resuscitation procedures. 3) Clinical procedures requiring all sides access to patient: minimum of 5 staff using variety of equipment. …	Lamp indicator call situated over door outside room. One resuscitation bay must be equipped for babies: children and young people. …
NSGH-EMC	X0244A	Treatment room: Head & Neck Type 1	X0244A	NA-SZ-xx-RD-400-518		Treatment room: Head & Neck Type 1	X0244A	NSGH-00-EMC-049	16.0 m²	16.1 m²	3.000 metres	1 x Patient 2 x Staff 2 x Others	1) Patient may be ambulant: in a wheelchair or on a trolley. 2) Patient transferred to a treatment chair/couch. 3) Administration of local analgesics. 4) Holding supply of medicines: lotions and drugs. 5) Minor surgical procedures …	Lamp indicator call situated over door outside room. Illuminated sign "IN USE" …
NSGH-EMC	X0244A1	Treatment room: Head & Neck Type 2	X0244A1	NA-SZ-xx-RD-400-518-01		Treatment room: Head & Neck Type 2	X0244A1	NSGH-00-EMC-050	16.0 m²	14.5 m²	3.000 metres	1 x Patient 2 x Staff 2 x Others	(as above)	(as above)
NSGH-EMC	X0245A	Treatment room: A&E: gynaecology/genitourinary colposcopy	X0245A	NA-SZ-xx-RD-400-519		Treatment room: A&E: gynaecology/genitourinary colposcopy	X0245A	NSGH-00-EMC-073	16.0 m²	15.6 m²	3.000 metres	1 x Patient 1 - 4 Staff 2 x Others	1) Patient may be ambulant: in a wheelchair or on a trolley. 2) Interviewing and consultation. 3) Patient transferred to a treatment chair/couch. …	Lamp indicator call situated over door outside room. …
NSGH-EMC	Y0302A	Dirty utility: bedpan disposal: urine test	Y0302A	NA-SZ-xx-RD-400-201		Dirty utility: bedpan disposal: urine test	Y0302A	NSGH-00-EMC-064	12.0 m²	11.9 m²	2.400 metres	2 x Staff	1) Disposal of liquid waste. 2) Disposal of contents and disposable bedpans: urinals or vomit bowls. …	Limited space for holding of materials requiring disposal or reprocessing. …
NSGH-ENT	D0815A	Children Play area	D0815A	NA-SZ-xx-RD-400-262		Children Play area	D0815A	NSGH-00-ENT-056	30.0 m²	152.2 m²	2.400 metres	10 x Children: 3 x parents/carers	1) Patient may be ambulant with/without walking aids: in wheelchairs or requiring assistance. 2) Water play. 3) Sand play. 4) Storing toys: books and games. 5) Manoeuvring mobile equipment and trolleys. 6) Rehabilitation exercises 7) Viewing television and/or DVDs/videos.	
NSGH-ENT	D1135A	Discharge lounge: patients: visitors	D1135A	NA-SZ-xx-RD-400-249		Discharge lounge: patients: visitors	D1135A	NSGH-00-DLO-002	54.0 m²	130.6 m²	2.400 metres	20 x Persons: including 1 wheelchair patient.	1) Patient may be ambulant or in a wheelchair. 2) Waiting by patients: relatives and escorts. 3) Final recovery of patient prior to discharge. 4) Consuming beverages and refreshments. 5) Displaying information.	Loudspeaker: TV/video control situated at reception desk.
NSGH-ENT	F0410A	Cafe area: 20 places	F0410A	NA-SZ-xx-RD-400-247		Cafe area: 20 places	F0410A	NSGH-00-ENT-021	91.0 m²	97.4 m²	2.400 metres	20 x Persons	1) Consuming beverages and refreshments. 2) Rest and relaxation. 3) Social activities for patients.	If used in Mental Illness Dept.: …
NSGH-ENT	G0114A	Parking bay: 2 patient trolleys: 8 wheelchairs	G0114A	NA-SZ-xx-RD-400-252		Parking bay: 2 patient trolleys: 8 wheelchairs	G0114A	NSGH-00-ENT-004	10.5 m²	12.6 m²	2.400 metres		1) Parking trolleys/wheelchairs for use by patients to and from ambulances: cars.	SpaceNotes: Height to suit surrounding area.
NSGH-ENT	G0710A	Telephone booth	G0710A	NA-SZ-xx-RD-400-255		Telephone booth	G0710A	NSGH-00-ENT-013	1.5 m²	1.5 m²	2.400 metres	1 x Person	1) Using payphone.	All public telephones should include a shelf …
NSGH-ENT	G0712A	Telephone booth: wheelchair accessible	G0712A	NA-SZ-xx-RD-400-341		Telephone booth: wheelchair accessible	G0712A	NSGH-00-ENT-019	2.0 m²	1.5 m²	2.400 metres	1 x Person	1) Using payphone.	This space includes a fold-down seat (450-520 mm high). …
NSGH-ENT	G0712B	Telephone booth: wheelchair accessible	G0712B	NA-SZ-xx-RD-400-257		Telephone booth: wheelchair accessible	G0712B	NSGH-00-ENT-020	2.0 m²	1.5 m²	2.400 metres	1 x Person	1) Using payphone	This space includes a fold-down seat (450-520 mm high). …
NSGH-ENT	H1127A	Main Reception & Information	H1127A	NA-SZ-xx-RD-400-253		Main Reception & Information	H1127A	NSGH-00-ENT-006	20.0 m²	25.9 m²	2.400 metres	5 x Persons	1) Instructing with the aid of a television monitor for showing video tape recordings. …	Information should be provided in formats suitable for blind and visually impaired patients. …
NSGH-ENT	J0108A	Main entrance draught lobby	J0108A	NA-SZ-xx-RD-400-250		Main entrance draught lobby	J0108A	NSGH-00-ENT-001	20.0 m²	77.1 m²	2.400 metres		1) Access of ambulant people. 2) Access of disabled people with/without escorts: who may be ambulant or in a wheelchair. 3) Access for visitors and staff.	Draught lobby with automatic doors used in conjunction with canopy area: …
NSGH-ENT	J0115A	Concourse/Foyer	J0115A	NA-SZ-xx-RD-400-251		Concourse/Foyer	J0115A	NSGH-00-ENT-002	40.0 m²	76.7 m²	2.400 metres		1) Circulation of patients: escorts: visitors: staff and others visiting the department. 2) Using payphone.	
NSGH-ENT	J0415B	Reception and records office: 4 staff	J0415B	NA-SZ-xx-RD-400-254		Reception and records office: 4 staff	J0415B	NSGH-00-ENT-007	18.0 m²	21.0 m²	2.400 metres	4 x Staff	1) Reception and registration of patients. …	Counter/reception desk should be accessible to all users. Induction loop hearing aid system.
NSGH-ENT	M0530B	Ambulance staff duty room: 5 places	M0530B	NA-SZ-xx-RD-400-400		Ambulance staff duty room: 5 places	M0530B	NSGH-00-DLO-016	11.0 m²	11.1 m²	2.400 metres	1 x Staff 5 x Others	1) Managerial tasks associated with department control. 2) Use of visual display terminal(s). 3) Using telephone(s). 4) Discussions and interviews. 5) Holding and controlling petty cash. 6) Payment of wages.	Board map is required.
NSGH-ENT	M0530B1	Ambulance Office	M0530B1	NA-SZ-xx-RD-400-400-01		Ambulance Office	M0530B1	NSGH-00-DLO-013	18.0 m²	18.4 m²	2.400 metres	1 x Staff 5 x Others	(as above)	Board map is required.
NSGH-ENT	M0606B	Office and rest: 1 staff: 6 person rest area (voluntary workers)	M0606B	NA-SZ-xx-RD-400-402		Office and rest: 1 staff: 6 person rest area (voluntary workers)	M0606B	NSGH-00-ENT-033	14.0 m²	15.6 m²	2.400 metres	Up to 6 persons	1) Administration: clerical duties. 2) Deskwork for 1 person. 3) Using telephone(s). 4) Sitting and relaxing. 5) Security for personal items.	Suitable for voluntary workers.
NSGH-ENT	M0704A	Interview: counselling room: 5 person With desk	M0704A	NA-SZ-xx-RD-400-259		Interview: counselling room: 5 person With desk	M0704A	NSGH-00-ENT-035	9.0 m²	10.4 m²	2.400 metres	1 x Staff Up to 4 others: including wheelchair person.	1) Interviewing. 2) Discussions. 3) Counselling patient after diagnosis. 4) Counselling staff. 5) Comforting relatives/carers. 6) Deskwork for 1 person. 7) Displaying information. 8) Using telephone(s).	Furniture subject to project specific requirements (e.g. settee or chairs). …
NSGH-ENT	M0709C1	Interview/counselling/advisory room: 4 person 2 door access	M0709C1	NA-SZ-xx-RD-400-403-01		Interview/counselling/advisory room: 4 person 2 door access	M0709C1	NSGH-00-ENT-036	9.0 m²	14.6 m²	2.400 metres	1 x Staff Up to 3 others: including wheelchair person.	1) Interviewing. 2) Advising to the patient by staff. 3) Counselling patient after diagnosis. 4) Comforting relatives/carers. 5) Security entrance from the waiting area under staff control.	Furniture subject to project specific requirements (e.g. settee or chairs). …
NSGH-ENT	M0724B	Interview room: 4 places (including 1 wheelchair place)	M0724B	NA-SZ-xx-RD-400-404		Interview room: 4 places (including 1 wheelchair place)	M0724B	NSGH-00-ENT-030	8.0 m²	31.4 m²	2.400 metres	Up to 4 persons	1) Discussions and interviews.	The lamp repeat call is situated over the door outside the room. …
NSGH-ENT	M1713A	Duty room: 6 porters	M1713A	NA-SZ-xx-RD-400-412		Duty room: 6 porters	M1713A	NSGH-00-ENT-023	10.0 m²	21.4 m²	2.400 metres	Up to 6 Staff	1) Waiting by duty porters. 2) Using telephone: taking messages	
NSGH-ENT	V1131B/R	Nappy changing room HANDED	V1131B/R	NA-SZ-xx-RD-400-992 HANDED		Nappy changing room HANDED	V1131B/R	NSGH-00-ENT-038	5.0 m²	4.3 m²	2.400 metres	1 x baby or infant 1 x adult (ambulant)	1) Changing nappies. 2) Disposal of clinical waste. 3) Use of wash-hand basin.	This room includes a wall-mounted fold-down changing table. …
NSGH-ENT	P0625B3	Beverage Bay	P0625B3	NA-SZ-xx-RD-400-415		Beverage Bay	P0625B3	NSGH-00-DLO-004	20.4 m²	6.0 m²	2.400 metres	Intermittent use	1) Preparing snacks and beverages and associated activities. 2) Using microwave oven. 3) Storing dry goods in cupboards. …	The following items are included on the room layout but are optional: - a microwave oven: - a dishwasher.
NSGH-ENT	P0808B	Vending machine	P0808B	NA-SZ-xx-RD-400-256		Vending machine	P0808B	NSGH-00-ENT-018	3.0 m²	3.4 m²	2.400 metres		1) Buying cold snacks/beverages from vending machines.	SpaceNotes: 2400 mm is anticipated minimum ceiling height. …
NSGH-ENT	S0012B	Infant feeding room	S0012B	NA-SZ-xx-RD-400-260		Infant feeding room	S0012B	NSGH-00-ENT-039	6.0 m²	6.3 m²	2.400 metres	1 x infant 1 x parent/carer	1) Breast or bottle feeding an infant in privacy as required. 2) Mother to express milk using breast pump. 3) Use of wash-hand basin.	This room may also be used for expressing milk. …
NSGH-ENT	V0922A1	Female WC: Handwash Area	V0922A1	NA-SZ-xx-RD-400-451		Female WC: Handwash Area	V0922A1	NSGH-00-ENT-041	17.0 m²	35.7 m²	2.400 metres	1 x Person Intermittent use	1) Use of independent wheelchair accessible toilet and adjacent hand-rinse basin.	The lamp repeat call is situated over the door outside the room. …
NSGH-ENT	V0922A2	Male WC: Handwash Area	V0922A2	NA-SZ-xx-RD-400-452		Male WC: Handwash Area	V0922A2	NSGH-00-ENT-052	14.0 m²	29.3 m²	2.400 metres	1 x Person Intermittent use	1) Use of independent wheelchair accessible toilet and adjacent hand-rinse basin.	The lamp repeat call is situated over the door outside the room. …
NSGH-ENT	V1010A1	Female WCs	V1010A1	NA-SZ-xx-RD-400-454		Female WCs	V1010A1	NSGH-01-RES-019	14.0 m²	13.9 m²	2.400 metres	1 x Person Intermittent use	1) Use of toilet by ambulant person. 2) Use of hand-rinse basin.	Where there is a significant risk of assault or self-harm: …
NSGH-ENT	V1010A2	Male WCs	V1010A2	NA-SZ-xx-RD-400-455		Male WCs	V1010A2	NSGH-01-RES-014	12.0 m²	15.0 m²	2.400 metres	1 x Person Intermittent use	1) Use of toilet by ambulant person. 2) Use of hand-rinse basin.	Where there is a significant risk of assault or self-harm: …
NSGH-ENT	V1131B	Nappy changing room	V1131B	NA-SZ-xx-RD-400-992		Nappy changing room	V1131B	NSGH-00-ENT-038	5.0 m²	4.3 m²	2.400 metres	1 x baby or infant 1 x adult (ambulant)	1) Changing nappies. 2) Disposal of clinical waste. 3) Use of wash-hand basin.	This room includes a wall-mounted fold-down changing table. …
NSGH-ENT	V1638A	Adult WC/Change	V1638A	NA-SZ-xx-RD-400-459		Adult WC/Change	V1638A	NSGH-00-ENT-054	12.5 m²	15.2 m²	2.400 metres	1 x Patient 1 - 2 Assistants Intermittent use	1) Using by assisted wheelchair or sanitary chair patient. 2) Using by assisted shower trolley patient. 3) Using mobile hoist. …	Lamp indicator call situated over door outside room. …
NSGH-ENT	W0704A	Store: general and linen	W0704A	NA-SZ-xx-RD-400-485		Store: general and linen	W0704A	NSGH-01-RES-025	3.0 m²	4.9 m²	2.400 metres		1) Storing shrouds. 2) Storing towels. 3) Storing protective clothing. 4) Storing disposable items. 5) Storing cleaning materials and disposables.	
NSGH-ENT	W1585B1	Store: general	W1585B1	NA-SZ-xx-RD-400-027-01		Store: general	W1585B1	NSGH-00-DLO-014	0.0 m²	6.1 m²	2.400 metres	1 x Staff Intermittent use	1) Storing equipment. 2) Storing non-clinical supplies.	This store includes a mixture of shelving and racking. …
NSGH-FM	D0114A	FM & Staff Facilities	D0114A	NA-SZ-xx-RD-400-246		FM & Staff Facilities	D0114A	NSGH-03-CA3-015	44.5 m²	82.3 m²	2.400 metres	Up to 20 persons	1) Holding seminar. 2) Students/Participants to make use of books and to take notes. …	
NSGH-FM	H0513-X1	FM Training Room	H0513-X1	NA-SZ-xx-RD-400-574		FM Training Room	H0513-X1	NSGH-03-FM3-016	35.0 m²	35.9 m²	2.400 metres	20 x Persons	1) Holding seminar. … 5) Secure storage of equipment	Use for small committee work and similar activities Rail around room for flip charts to hang on during seminar.
NSGH-FM	H0516C1	Medicinema	H0516C1	NA-SZ-xx-RD-400-347		Medicinema	H0516C1	NCH-03-GW3-055	130.0 m²	200.5 m²	2.400 metres	78 x Persons	1) Holding seminar. … 6) Secure storage of equipment.	Advice required for this room
NSGH-FM	K0331A1	Maintenance for beds: trolleys: chairs	K0331A1	NA-SZ-xx-RD-400-370		Maintenance for beds: trolleys: chairs	K0331A1	NSGH-B1-FMB-008	24.0 m²	24.5 m²	2.400 metres	5 x Persons	1) Holding tools and equipment. 2) Mechanical fitting: metal work including use of machinery. 3) Maintenance and care of wheelchair. 4) Hand washing.	
NSGH-FM	K0331A2	Decontaminationfor beds: trolleys: chairs	K0331A2	NA-SZ-xx-RD-400-371		Decontaminationfor beds: trolleys: chairs	K0331A2	NSGH-B1-FMB-371	16.0 m²	28.0 m²	2.400 metres	5 x Persons	(as above)	
NSGH-FM	K0336-X1	Sewing Room	K0336-X1	NA-SZ-xx-RD-400-575		Sewing Room	K0336-X1	NSGH-03-FM3-051	27.0 m²	27.4 m²	2.400 metres	1 x Person	1) Storing materials. 2) Storage of uniforms. 3) Using sewing machine. 4) Hand washing. 5) Sewing and clerical work.	Equipment - project specific. DesignNotes: Hinge protectors and secure locking system in accordance to Trust Policy.
NSGH-FM	K1002B	Security room: CCTV control	K1002B	NA-SZ-xx-RD-400-384		Security room: CCTV control	K1002B	NSGH-00-ENT-022	16.0 m²	26.0 m²	2.400 metres	1-2 persons.	1) Use of visual display terminal(s). 2) Monitoring of all entrances/exits. 3) Using telephone(s).	Equipment/surveillance cameras to be project specific. Monitoring equipment to local policy requirements.
NSGH-FM	M0115A	Office: 3 staff	M0115A	NA-SZ-xx-RD-400-394		Office: 3 staff	M0115A	NSGH-00-ENT-025	18.0 m²	20.1 m²	2.400 metres	3 x Persons	1) Deskwork. 2) Using computer workstation(s). 3) Using printer. 4) Using telephone(s). 5) Storing files. 6) Holding current patients records/case notes. 7) Security for personal items.	Dividing screens: 1100 height: provided when required. Cabinet storage may form part of an open plan office area. In Community Healthcare use of desks may be shared.
NSGH-FM	M0252-X1	FM Hot Desks	M0252-X1	NA-SZ-xx-RD-400-576		FM Hot Desks	M0252-X1	NSGH-03-FM3-576	12.0 m²	12.8 m²	2.400 metres	2 x Persons	1) Hot desk work spaces. 2) Using computer workstation(s). 3) Using telephone(s). 4) Discussions and interviews. 5) Storing files and records. 6) Secure holding of personal belongings	A dimming switch is recommended if the room is used for viewing digital images.
NSGH-FM	M0529B	Office: manager	M0529B	NA-SZ-xx-RD-400-258		Office: manager	M0529B	NSGH-00-ENT-026	12.0 m²	20.1 m²	2.400 metres	1 x Staff 3 x Others	1) Supervising departmental activities. 2) Allocating staff resources. 3) Administration: clerical duties. 4) Using computer workstation(s). 5) Using telephone(s). 6) Holding files: books and documents. 7) Communicating with patient and arranging transport facility. 8) Recording attendance. 9) Alerting staff. 10) Contro	CUP011 - Cupboard: can be replaced by built-in cupboard.
NSGH-FM	M1026B	Office: 2 staff Safe: cash point hatch	M1026B	NA-SZ-xx-RD-400-407		Office: 2 staff Safe: cash point hatch	M1026B	NSGH-00-ENT-032	15.0 m²	22.1 m²	2.400 metres	Up to 3 persons	1) Deskwork for 2 persons. 2) Using computer workstation(s). 3) Using printer. 4) Using telephone(s). 5) Storing files and records. 6) Security for personal items. 7) Security of patients valuables. 8) Security for cash.	Dividing screens: 1600 height: provided when required. Cabinet storage may form part of an open plan office area. The office can also function as a patients' bank- cash point if a suitable hatch is provided.
NSGH-FM	E0534C1	Studies Area	E0534C1	NA-SZ-xx-RD-400-106-01		Studies Area	E0534C1	NSGH-03-FM3-002	16.0 m²	19.9 m²	2.400 metres	Up to 4 Staff Intermittent use	1) Radiologist to report on scans previously carried out or to study digital diagnostic images.	Picture Archive and Communication System (PACS) If Monitor Flat Panel is not in use: worktops required to be 850mm deep. …
NSGH-FM	E0534C2	Radiology hot desks (10 person)	E0534C2	NA-SZ-xx-RD-400-106-02		Radiology hot desks (10 person)	E0534C2	NSGH-03-FM3-007	16.0 m²	94.7 m²	2.400 metres	Up to 4 Staff Intermittent use	1) Radiologist to report on scans previously carried out or to study digital diagnostic images.	Picture Archive and Communication System (PACS) …
NSGH-FM	F0612A2	Staff Accommodation - Junior Doctors Office	F0612A2	NA-SZ-xx-RD-400-128-01		Staff Accommodation - Junior Doctors Office	F0612A2	NSGH-03-FM3-003	130.0 m²	48.6 m²	2.400 metres	60 x Persons	1) Consuming beverages and refreshments. 2) Dispensing chilled water. 3) Laying up tables. 4) Clearing used crockery and cutlery.	Lamp indicator call situated over door outside room. This room is optional to ward dining room. …
NSGH-FM	H0514B1	Projection Room for Medicinema: 10 people	H0514B1	NA-SZ-xx-RD-400-347-01		Projection Room for Medicinema: 10 people	H0514B1		20.0 m²	0.0 m²	2.400 metres	10 x Persons	1) Direct link to Medicinema Room. 2) Writing notes and/or reports. 3) Viewing film and/or computer generated images. 4) Using specialised visual aids multi-media equipment.	Direct link to Medicinema.
NSGH-FM	J0103B1	Entrance Lobby for Medicinema	J0103B1	NA-SZ-xx-RD-400-347-02		Entrance Lobby for Medicinema	J0103B1		5.0 m²	0.0 m²	2.400 metres		1) Access to projection room	Draught lobby with automatic sliding doors with "presence" - project team option. …
NSGH-FM	M1011C1	Staff Accommodation - Hot Desk (10 Persons Room)	M1011C1	NA-SZ-xx-RD-400-168-01		Staff Accommodation - Hot Desk (10 Persons Room)	M1011C1	NCH-03-FM3-004	36.0 m²	40.4 m²	2.400 metres	6 x Persons	1) Deskwork for 6 persons. 2) Using computer workstation(s). 3) Using printer. 4) Using telephone(s). 5) Filing. 6) Holding working supply of stationery and office accessories. 7) Security for personal items.	Dividing screens: 1600 height: provided when required. Telephone switchboard may be included on one of the workstations - project team option. Suitable to use for IT resource also provide facilities for self- education and study.
NSGH-FM	W1132A2	Store: Domestic	W1132A2	NA-SZ-xx-RD-400-486-02		Store: Domestic	W1132A2	NSGH-B1-FMB-021	36.0 m²	65.9 m²	2.400 metres	1 x Staff	1) Storing furniture: commodes: chairs. 2) Storing disposable items.	
NSGH-FM	W1132A3	Store:Bed/Mattress	W1132A3	NA-SZ-xx-RD-400-486-03		Store:Bed/Mattress	W1132A3	NSGH-B1-FMB-020	36.0 m²	50.5 m²	2.400 metres	1 x Staff	1) Storing furniture: commodes: chairs. 2) Storing disposable items.	
NSGH-FM	W1236A3	Equipment library/ store	W1236A3	NA-SZ-xx-RD-400-160-03		Equipment library/ store	W1236A3	NSGH-03-FM3-006	25.0 m²	250.1 m²	2.400 metres	1 - Staff Intermittent use	1) Holding of prosthetics. (e.g. shoes: callipers) awaiting collection.	
NSGH-FM	V0554-X1	Central Changing Facilities Male: 50 lockers	V0554-X1	NA-SZ-xx-RD-400-572		Central Changing Facilities Male: 50 lockers	V0554-X1	NSGH-03-FM3-5018	72.0 m²	90.1 m²	2.400 metres	Intermittent use	1) Undressing and dressing. 2) Changing into protective clothing (uniforms) from outer clothing. 3) Changing footwear. 4) Secure hanging of wet outdoor clothing. 5) Secure holding of clothing and personal belongings. 6) Secure holding of motorcycle and bicycle helmets.	This space includes 50 full-height lockers and communal space for four ambulant people to change. …
NSGH-FM	V0554-X2	Central Changing Facilities Female: 150 lockers	V0554-X2	NA-SZ-xx-RD-400-573		Central Changing Facilities Female: 150 lockers	V0554-X2	NSGH-03-FM3-049	184.0 m²	188.9 m²	2.400 metres	Intermittent use	(as above)	This space includes 150 full-height lockers and communal space for four ambulant people to change. …
NSGH-FM	W1585B1	Store for Medicinema	W1585B1	NA-SZ-xx-RD-400-347-03		Store for Medicinema	W1585B1		4.0 m²	0.0 m²	2.400 metres	1 x Staff Intermittent use	1) Storing equipment.	This store includes a mixture of shelving and racking. …
NSGH-FM	V1115C	Nappy change room with hand rinse and wash: single-sided table access	V1115C	NA-SZ-xx-RD-400-456		Nappy change room with hand rinse and wash: single-sided table access	V1115C	NCH-03-GW3-049	9.0 m²	8.0 m²	2.400 metres	1 Child or young person (0-18 years old) + 1 parent or carer.	1) Changing nappies/continence pads. 2) Disposal of soiled nappies/continence pads. 3) Using WC by wheelchair or walking aid person. 4) Hand washing. 5) Patient may require assistance during the activities.	Lamp indicator call situated over door outside room. Space require to accommodate patient mobile hoist. …
NSGH-FM	W0317A	Store chemicals	W0317A	NA-SZ-xx-RD-400-480		Store chemicals	W0317A	NSGH-B1-FMB-011	8.0 m²	11.4 m²	2.400 metres	1 x Staff Intermittent use	1) Storing chemicals.	Store for chemicals to clean beds/chairs/trolleys
NSGH-FM	W1108-X1	Emergency Linen Store	W1108-X1	NA-SZ-xx-RD-400-577		Emergency Linen Store	W1108-X1	NSGH-FMC2-007	70.0 m²	89.8 m²	2.400 metres	1 x Staff	1) Secure storage. 2) Storing supplies. 3) Storing small items of equipment. 4) Storing linen. 5) Storing disposable items.	
NSGH-FM	W1150C	Store: bulk fluid	W1150C	NA-SZ-xx-RD-400-487		Store: bulk fluid	W1150C	NCH-03-GW3-045	0.0 m²	13.5 m²	2.400 metres			Details: area and layout project specific
NSGH-FM	W1321-X1	FM Store	W1321-X1	NA-SZ-xx-RD-400-578		FM Store	W1321-X1	NSGH-B1-FMB-018	80.0 m²	80.6 m²	2.400 metres	2 x Persons Intermittent use	1) Receiving supplies. 2) Sorting materials and supplies. 3) Holding for distribution/delivery. 4) Storing stationery/paper. 5) Storing materials and supplies. 6) Loading trolleys for issue.	
NSGH-GENW	B0305A	Single-bed room 7	B0305A	NA-SZ-xx-RD-400-001-07		Single-bed room 7	B0305A	NSGH-06-GENW1-047	16.5 m²	16.9 m²	2.400 metres	1 x Patient 4 x Others	1) Clinical discussions and delivery of minimally invasive clinical procedures at the bedside. 2) Use of monitoring equipment. 3) Use of mobile diagnostic and therapeutic equipment. 4) Undressing and dressing in privacy. 5) Resting and sleeping in bed. 6) Patient to take meals in bed or by the bed. 7) Using entertainm	This room is based on the use of a trolley with a worktop. …
NSGH-GENW	B0305A	Single-bed room 5	B0305A	NA-SZ-xx-RD-400-001-05		Single-bed room 5	B0305A	NSGH-06-GENW1-033	16.5 m²	19.5 m²	2.400 metres	1 x Patient 4 x Others	(as above)	(as above)
NSGH-GENW	B0305A	Single-bed room 4	B0305A	NA-SZ-xx-RD-400-001-04		Single-bed room 4	B0305A	NSGH-06-GENW4-033	16.5 m²	20.7 m²	2.400 metres	1 x Patient 4 x Others	(as above)	(as above)
NSGH-GENW	B0305A	Single-bed room 6	B0305A	NA-SZ-xx-RD-400-001-06		Single-bed room 6	B0305A	NSGH-06-GENW1-053	16.5 m²	19.8 m²	2.400 metres	1 x Patient 4 x Others	(as above)	(as above)
NSGH-GENW	B0305A	Single-bed room 3	B0305A	NA-SZ-xx-RD-400-001-03		Single-bed room 3	B0305A	NSGH-06-GENW4-001 NSGH-06-GENW4-001 NSGH-06-GENW4-001 NSG	16.5 m²	19.0 m²	2.400 metres	1 x Patient 4 x Others	(as above)	(as above)
NSGH-GENW	B0305A	Single-bed room 2	B0305A	NA-SZ-xx-RD-400-001-02		Single-bed room 2	B0305A	NSGH-06-GENW1-044	16.5 m²	17.3 m²	2.400 metres	1 x Patient 4 x Others	(as above)	(as above)
NSGH-GENW	B0305A	Single-bed room 1	B0305A	NA-SZ-xx-RD-400-001		Single-bed room 1	B0305A	NSGH-06-GENW1-049	16.5 m²	16.9 m²	2.400 metres	1 x Patient 4 x Others	(as above)	(as above)
NSGH-GENW	B0305A	Single-bed room 8	B0305A	NA-SZ-xx-RD-400-001-08		Single-bed room 8	B0305A	NSGH-06-GENW1-010	16.5 m²	18.1 m²	2.400 metres	1 x Patient 4 x Others	(as above)	(as above)
NSGH-GENW	D0403B1	Socialisation Space	D0403B1	NA-SZ-xx-RD-400-002		Socialisation Space	D0403B1	NSGH-06-GENW1-032	25.0 m²	26.8 m²	2.400 metres	20 xpatients	1) Rest and relaxation. 2) Reading. 3) Viewing television and/or DVDs/videos. 4) Dining. 5) Consuming beverages and refreshments. 6) Displaying staff notices: information and/or messages. 7) Displaying staff location information. 8) Informal staff discussions.	
NSGH-GENW	G0103B	Parking bay: resuscitation trolley	G0103B	NA-SZ-xx-RD-400-003		Parking bay: resuscitation trolley	G0103B	NSGH-06-GENW1-072	1.0 m²	2.0 m²	2.400 metres	1 x Staff Intermittent use	1) Parking resuscitation trolley.	SpaceNotes: Height to suit surrounding area.
NSGH-GENW	G0118B	Linen bay: exchange trolley	G0118B	NA-SZ-xx-RD-400-004		Linen bay: exchange trolley	G0118B	NSGH-06-GENW1-075	4.0 m²	1.5 m²	2.400 metres		1) Parking exchange linen trolley.	This room is project team option. SpaceNotes: Height to suit surrounding area.
NSGH-GENW	G0129A	Parking bay: wheelchair	G0129A	NA-SZ-xx-RD-400-005		Parking bay: wheelchair	G0129A	NSGH-06-GENW1-084	1.5 m²	4.0 m²	2.400 metres		1) Parking wheelchair(s).	Number of wheelchairs - project team option. SpaceNotes: Height to suit surrounding area.
NSGH-GENW	G0180B	Parking bay	G0180B	NA-SZ-xx-RD-400-006		Parking bay	G0180B	NSGH-06-GENW1-078	2.0 m²	1.8 m²	2.400 metres	Intermittent use	1) Parking mobile equipment. 2) Charging equipment.	The parking bay may be used for a range of mobile equipment …
NSGH-GENW	H0513A	Seminar: training room: 20 person - Cluster	H0513A	NA-SZ-xx-RD-400-007-03		Seminar: training room: 20 person - Cluster	H0513A	NSGH-06-WS6-xxx	37.5 m²	84.5 m²	2.400 metres	20 x Persons	1) Holding seminar. … 6) Secure storage of equipment.	Use for small committee work and similar activities Rail around room for flip charts to hang on during seminar.
NSGH-GENW	H0513A	Seminar: training room: 20 person - Cluster	H0513A	NA-SZ-xx-RD-400-007-01		Seminar: training room: 20 person - Cluster	H0513A	NSGH-06-WS5-033	37.5 m²	41.7 m²	2.400 metres	20 x Persons	(as above)	(as above)
NSGH-GENW	J1201B	Waiting area: 10 person including 1 wheelchair user	J1201B	NA-SZ-xx-RD-400-008		Waiting area: 10 person including 1 wheelchair user	J1201B	NSGH-06-WS5-006 NSGH-05-WS5-006 NSGH-05-WS5-006 NSGH-05-W	16.5 m²	32.1 m²	2.400 metres	10 x Persons: including wheelchair user.	1) Patient may arrive on foot or in a wheelchair. 2) Waiting by patients: relatives and escorts. 3) Displaying information. 4) Displaying notices.	In HBN Hosp. accom for children and young people - Display/notice board must be Velcro or magnetic. …
NSGH-GENW	K0101CA	Switchgear cupboard	K0101CA	NA-SZ-xx-RD-400-009		Switchgear cupboard	K0101CA	NSGH-06-GENW1-089	1.0 m²	2.1 m²	2.400 metres	N/A	1) Housing electrical switches: distribution boards for department lighting and power. …	Equipment to be project specific. Socket outlet: switched: 13amp - Connected to emergency supply. …
NSGH-GENW	M0202B	Office nursing: 1 staff	M0202B	NA-SZ-xx-RD-400-010		Office nursing: 1 staff	M0202B	NSGH-06-GENW1-069	9.0 m²	9.0 m²	2.400 metres	1 x Staff 3 x Others	1) Deskwork for 1 person. 2) Using telephone(s). 3) Discussions and interviews. 4) Holding files: books and documents. 5) Hanging outdoor clothing. 6) Maintaining staff and patients location. 7) Safekeeping money: valuables: papers.	Suitable for nursing officer.
NSGH-GENW	M0218A	Office: 1 staff	M0218A	NA-SZ-xx-RD-400-011		Office: 1 staff	M0218A	NSGH-06-GENW1-070	16.0 m²	12.2 m²	2.400 metres	Up to 7 persons	1) Deskwork for 1 person. 2) Using computer workstation(s). 3) Using telephone(s). 5) Discussions and meetings with visitors. 6) Storing files and records. 7) Security for personal items.	Suitable for senior management: (as Control Manager Office). In addition to office activities: small formal meeting may take place.
NSGH-GENW	M0251POD	Office POD - Cluster	M0251POD	NA-SZ-xx-RD-400-012		Office POD - Cluster	M0251POD	NSGH-06-WS6-036	0.0 m²	11.5 m²	2.400 metres	Up to 3 persons	1) Clinical administration. …	The following equipment is shown on the room layout but is optional: …
NSGH-GENW	M0252B	Office: 2 person	M0252B	NA-SZ-xx-RD-400-013		Office: 2 person	M0252B	NSGH-06-GENW1-073	12.0 m²	7.2 m²	2.400 metres	2 x Persons	1) Clinical administration. …	A dimming switch is recommended if the room is used for viewing digital images.
NSGH-GENW	M0724A	Interview room: 4 places (including 1 wheelchair place)	M0724A	NA-SZ-xx-RD-400-014		Interview room: 4 places (including 1 wheelchair place)	M0724A	NSGH-06-GENW1-071	8.0 m²	9.3 m²	2.400 metres	Up to 4 persons	1) Discussions and interviews.	The lamp repeat call is situated over the door outside the room. …
NSGH-GENW	P0625B	Pantry/refreshment area - Cluster	P0625B	NA-SZ-xx-RD-400-015		Pantry/refreshment area - Cluster	P0625B	NSGH-06-WS6-018	30.0 m²	48.5 m²	2.400 metres	Intermittent use	1) Preparing snacks and beverages and associated activities. …	The following items are included on the room layout but are optional: - a microwave oven: - a dishwasher.
NSGH-GENW	P0627B	Ward pantry	P0627B	NA-SZ-xx-RD-400-016		Ward pantry	P0627B	NSGH-06-GENW1-077	12.0 m²	15.0 m²	2.400 metres	Intermittent use	1) Preparing snacks and beverages and associated activities. …	This room does not include space for a regeneration trolley.
NSGH-GENW	T0151B	Touchdown base	T0151B	NA-SZ-xx-RD-400-017		Touchdown base	T0151B	NSGH-06-GENW1-048	2.0 m²	2.1 m²	2.400 metres	1 x Staff	1) Accessing and updating electronic patient records (EPRs). 2) Using computer workstation(s). 3) Reviewing and recording patient records. 4) Staff supervision and observation of patients.	Clear access space past the touchdown base should be maintained …
NSGH-GENW	T0211B	Staff communication base: 2 places	T0211B	NA-SZ-xx-RD-400-018		Staff communication base: 2 places	T0211B	NSGH-06-GENW1-073	11.0 m²	11.2 m²	2.400 metres	2 x Staff	1) Accessing and updating electronic patient records (EPRs). …	Clear access space around the staff communication base …
NSGH-GENW	T0538A	Clean utility room: with controlled drugs cupboard	T0538A	NA-SZ-xx-RD-400-019		Clean utility room: with controlled drugs cupboard	T0538A	NSGH-06-GENW1-081	15.0 m²	15.5 m²	2.400 metres	2 x Staff	1) Holding and preparing dressing/instrument trolley. 2) Holding sterile supplies and consumables. …	This room represents a typical example layout of a clean utility room …
NSGH-GENW	V0546A1	Staff changing room - Cluster	V0546A1	NA-SZ-xx-RD-400-020		Staff changing room - Cluster	V0546A1	NSGH-06-WS6-026	55.0 m²	34.3 m²	2.400 metres	60 x Staff	1) Changing into/out of outdoor clothing. … 6) Grooming.	DesignNotes: Ceiling: Class 0
NSGH-GENW	V0922B	WC: independent wheelchair	V0922B	NA-SZ-xx-RD-400-023		WC: independent wheelchair	V0922B	NSGH-06-WS6-005	4.5 m²	5.5 m²	2.400 metres	1 x Person Intermittent use	1) Use of independent wheelchair accessible toilet and adjacent hand-rinse basin.	The lamp repeat call is situated over the door outside the room. …
NSGH-GENW	V1010B	WC: ambulant	V1010B	NA-SZ-xx-RD-400-022		WC: ambulant	V1010B	NSGH-06-GENW1-083	2.0 m²	2.3 m²	2.400 metres	1 x Person Intermittent use	1) Use of toilet by ambulant person. 2) Use of hand-rinse basin.	Where there is a significant risk of assault or self-harm: …
NSGH-GENW	V1010B/1	WC: ambulant - Cluster	V1010B/1	NA-SZ-xx-RD-400-021		WC: ambulant - Cluster	V1010B/1	NSGH-06-WS6-003	0.0 m²	2.6 m²	2.400 metres	1 x Person Intermittent use	1) Use of toilet by ambulant person. 2) Use of hand-rinse basin.	Where there is a significant risk of assault or self-harm: …
NSGH-GENW	V0922B/R	WC: independent wheelchair HANDED	V0922B/R	NA-SZ-xx-RD-400-023 HANDED		WC: independent wheelchair HANDED	V0922B/R	NSGH-06-WS6-005	4.5 m²	5.5 m²	2.400 metres	1 x Person Intermittent use	1) Use of independent wheelchair accessible toilet and adjacent hand-rinse basin.	The lamp repeat call …
NSGH-GENW	V1010B/1/R	WC: ambulant - Cluster HANDED	V1010B/1/R	NA-SZ-xx-RD-400-021 HANDED		WC: ambulant - Cluster HANDED	V1010B/1/R	NSGH-06-WS6-003	0.0 m²	2.6 m²	2.400 metres	1 x Person Intermittent use	1) Use of toilet by ambulant person. 2) Use of hand-rinse basin.	Where there is a significant risk …
NSGH-GENW	V1121B	WC: semi-ambulant	V1121B	NA-SZ-xx-RD-400-990		WC: semi-ambulant	V1121B	NSGH-06-WS5-003	2.5 m²	2.7 m²	2.400 metres	1 x Person Intermittent use	1) Use of toilet by semi-ambulant person. 2) Use of hand-rinse basin.	The lamp repeat call …
NSGH-GENW	V1010B/R	WC: ambulant HANDED	V1010B/R	NA-SZ-xx-RD-400-022 HANDED		WC: ambulant HANDED	V1010B/R	NSGH-06-GENW1-083	2.0 m²	2.6 m²	2.400 metres	1 x Person Intermittent use	1) Use of toilet by ambulant person. 2) Use of hand-rinse basin.	Where there is a significant risk …
NSGH-GENW	V1121B/R	WC: semi-ambulant HANDED	V1121B/R	NA-SZ-xx-RD-400-990 HANDED		WC: semi-ambulant HANDED	V1121B/R	NSGH-06-WS5-003	2.5 m²	2.8 m²	2.400 metres	1 x Person Intermittent use	1) Use of toilet by semi-ambulant person. 2) Use of hand-rinse basin.	The lamp repeat call …
NSGH-GENW	V1321B/R	Shower room: ambulant HANDED	V1321B/R	NA-SZ-xx-RD-400-996 HANDED		Shower room: ambulant HANDED	V1321B/R	NSGH-00-EMC-106	2.5 m²	4.2 m²	2.400 metres	1 x person (staff or visitor) Intermittent use	1) Use of shower by ambulant person. 2) Undressing and dressing in privacy. 3) Hanging clothes. 4) Hanging towels.	This room is not recommended for patient use.
NSGH-GENW	V1321B	Shower room: ambulant	V1321B	NA-SZ-xx-RD-400-996		Shower room: ambulant	V1321B	NSGH-00-EMC-106	2.5 m²	4.2 m²	2.400 metres	1 x person (staff or visitor) Intermittent use	(as above)	This room is not recommended for patient use.
NSGH-GENW	V1645B/R	Shower room: en-suite HANDED	V1645B/R	NA-SZ-xx-RD-400-024 HANDED		Shower room: en-suite HANDED	V1645B/R	NSGH-06-GENW1-050	4.5 m²	5.3 m²	2.400 metres	1 x patient 1-2 assistants Intermittent use	1) Use of assisted shower with fixed tip-up shower seat. 2) Use of assisted toilet. 3) Use of adjustable height hand-wash basin. 4) Undressing and dressing in privacy. 5) Hanging clothes. 6) Hanging towels. 7) Use of sanitary chair. 8) Use of shower chair. 9) Use of mobile hoist.	Assisted access to one side of the toilet requires the second door to the en-suite bedroom to be open. …
NSGH-GENW	V1645B	Shower room: en-suite	V1645B	NA-SZ-xx-RD-400-024		Shower room: en-suite	V1645B	NSGH-06-GENW1-050	4.5 m²	5.3 m²	2.400 metres	1 x patient 1-2 assistants Intermittent use	(as above)	(as above)
NSGH-GENW	W1123A/1	Store: bulk supplies: medical and surgical - Cluster	W1123A/1	NA-SZ-xx-RD-400-025		Store: bulk supplies: medical and surgical - Cluster	W1123A/1	NSGH-06-WS6-032	0.0 m²	39.4 m²	2.400 metres	2 x Staff	1) Reception of all supplies for use within the unit. …	Bulk storage of all supplies: …
NSGH-GENW	W1555B	Store: general and stationery	W1555B	NA-SZ-xx-RD-400-026		Store: general and stationery	W1555B	NSGH-06-GENW1-026	6.0 m²	6.0 m²	2.400 metres		1) Storing stationery/paper. 2) Storing small items	
NSGH-GENW	W1585B	Store: general	W1585B	NA-SZ-xx-RD-400-027		Store: general	W1585B	NSGH-06-GENW1-076	0.0 m²	7.8 m²	2.400 metres	1 x Staff Intermittent use	1) Storing equipment. 2) Storing non-clinical supplies.	This store includes a mixture of shelving and racking. …
NSGH-GENW	X0312B1	Activity area: Physiotherapy	X0312B1	NA-SZ-xx-RD-400-215-01		Activity area: Physiotherapy	X0312B1	NSGH-06-WS6-xxx	50.0 m²	84.5 m²	3.200 metres	2-3 staff: up to 5 patients	1) Rehabilitation exercises 2) Deskwork. 3) Clinical hand washing.	Lamp indicator call situated over door outside room. …
NSGH-GENW	Y0431B	Dirty utility room: for ward areas	Y0431B	NA-SZ-xx-RD-400-028		Dirty utility room: for ward areas	Y0431B	NSGH-06-GENW1-079	12.0 m²	8.1 m²	2.400 metres	2 x Staff Intermittent use	1) Disposal of liquid waste. 2) Holding SHARPS in a container. 3) Bagging and holding of items for disposal or reprocessing. 4) Use of clinical wash-hand basin. 5) Urinalysis.	This room represents one example layout of a dirty utility room …
NSGH-GENW	Y0614B1	Hold: Trolley - Cluster	Y0614B1	NA-SZ-xx-RD-400-029		Hold: Trolley - Cluster	Y0614B1	NSGH-06-WS6-029	11.0 m²	11.2 m²	2.400 metres	1 x Staff Intermittent use	1) Holding refuse for collection: (disposal or reprocessing). 2) Holding in colour-coded bags or containers contaminated linen: or equipment for reprocessing or disposal.	May be combined with SSD returns. …
NSGH-GENW	Y0614B2	Hold: Dirty - Cluster	Y0614B2	NA-SZ-xx-RD-400-030		Hold: Dirty - Cluster	Y0614B2	NSGH-06-WS6-028	26.0 m²	26.6 m²	2.400 metres	1 x Staff Intermittent use	(as above)	(as above)
NSGH-GENW	Y0614B3	Hold: Clean - Cluster	Y0614B3	NA-SZ-xx-RD-400-031		Hold: Clean - Cluster	Y0614B3	NSGH-06-WS6-016	26.0 m²	26.6 m²	2.400 metres	1 x Staff Intermittent use	(as above)	(as above)
NSGH-GENW	Y0642B	Disposal hold: 1700 litres	Y0642B	NA-SZ-xx-RD-400-032		Disposal hold: 1700 litres	Y0642B	NSGH-06-GENW1-080	8.0 m²	9.1 m²	2.400 metres	1 x Staff Intermittent use	1) Holding domestic: clinical and recyclable waste for disposal or reprocessing.	This disposal hold is based on the storage of approximately 1700 litres of waste. …
NSGH-GENW	Y1510B	Cleaners room	Y1510B	NA-SZ-xx-RD-400-034		Cleaners room	Y1510B	NSGH-06-GENW1-066	8.0 m²	7.8 m²	2.400 metres	2 x Staff Intermittent use	1) Disposal of liquid waste. 2) Filling and emptying buckets. 3) Holding cleaning materials. 4) Parking cleaning equipment. 5) Secure holding of personal belongings. 6) Use of hand-rinse basin. 7) Use of sink. 8) Use of janitorial unit.	This room represents a typical traditional cleaners' room …
NSGH-GENW	Y1510B	Cleaners room - Cluster	Y1510B	NA-SZ-xx-RD-400-033		Cleaners room - Cluster	Y1510B	NSGH-06-WS6-027	0.0 m²	9.0 m²	2.400 metres	2 x Staff Intermittent use	(as above)	(as above)
NSGH-HOW	M0115A1	Office and Hotdesking with Admin Area	M0115A1	NA-SZ-xx-RD-400-394-01		Office and Hotdesking with Admin Area	M0115A1	NSGH-04-HOW-006: 007: 008	18.0 m²	33.5 m²	2.400 metres	3 x Persons	1) Deskwork. 2) Using computer workstation(s). … 7) Security for personal items.	Dividing screens: 1100 height: provided when required. …
NSGH-HOW	B0305A3	Single-bed room Haemoto-Onco Type 3	B0305A3	NA-SZ-xx-RD-400-001-13		Single-bed room Haemoto-Onco Type 3	B0305A3	NSGH-04-HOW-031	16.5 m²	16.9 m²	2.400 metres	1 x Patient 4 x Others	1) Clinical discussions and delivery of minimally invasive clinical procedures at the bedside. …	This room is based on the use of a trolley with a worktop. …
NSGH-HOW	B0305A3	Single-bed room Haemoto-Onco Type 2	B0305A3	NA-SZ-xx-RD-400-001-12		Single-bed room Haemoto-Onco Type 2	B0305A3	NSGH-04-HOW-021	16.5 m²	20.7 m²	2.400 metres	1 x Patient 4 x Others	(as above)	(as above)
NSGH-HOW	B0305A3	Single-bed room Haemoto-Onco Type 1	B0305A3	NA-SZ-xx-RD-400-001-11		Single-bed room Haemoto-Onco Type 1	B0305A3	NSGH-04-HOW-024	16.5 m²	17.3 m²	2.400 metres	1 x Patient 4 x Others	(as above)	(as above)
NSGH-HOW	W1585B2	Store: Equipment	W1585B2	NA-SZ-xx-RD-400-027-02		Store: Equipment	W1585B2	NSGH-04-HOW-032	0.0 m²	32.0 m²	2.400 metres	1 x Staff Intermittent use	1) Storing equipment. 2) Storing non-clinical supplies.	This store includes a mixture of shelving and racking. …
NSGH-HOW	X0145B2	Treatment room: double-sided couch access	X0145B2	NA-SZ-xx-RD-400-205-02		Treatment room: double-sided couch access	X0145B2	NSGH-04-HOW-003	16.0 m²	16.5 m²	2.400 metres	1 x Patient 2 x Staff	1) Invasive clinical procedures from both sides of the couch. …	This room includes a 3-section couch …
NSGH-HOW	X0147B3	Intrathecal Chemo Treatment Room	X0147B3	NA-SZ-xx-RD-400-050-01		Intrathecal Chemo Treatment Room	X0147B3	NSGH-04-HOW-004	16.0 m²	16.5 m²	2.400 metres	1 x Patient 2 x Staff	1) Invasive clinical procedures from all sides of the couch. …	This room includes a 3-section couch …
NSGH-MDU	B2417B2	Bed bay: 1 place Bed space	B2417B2	NA-SZ-xx-RD-400-159-02		Bed bay: 1 place Bed space	B2417B2	NSGH-01-MDU-008	13.5 m²	13.1 m²	2.400 metres	1 x Patients	1) Post anaesthetic recovery of patients. 2) Observation by medical and nursing staff. …	Lamp indicator call situated over door outside room Space required to accommodate use of hoist.
NSGH-MDU	C1408B2	Venepuncture room: 1 place	C1408B2	NA-SZ-xx-RD-400-272-02		Venepuncture room: 1 place	C1408B2	NSGH-01-MDU-020	8.0 m²	9.0 m²	2.400 metres	1 x Patient 1 x Staff	1) Patient may arrive on foot or in a wheelchair. 2) Taking blood samples from patient. …	Lamp indicator call situated over door outside room/cubicle.
NSGH-MDU	J0207A1	Reception: 3 staff Including 2 case-notes trolleys	J0207A1	NA-SZ-xx-RD-400-242-01		Reception: 3 staff Including 2 case-notes trolleys	J0207A1	NSGH-01-MDU-003	16.5 m²	14.8 m²	2.400 metres	3 x Staff	1) Reception and registration of patients. …	Parking space may be required for more than one case note trolley. …
NSGH-MDU	J1132A2	Pre Op Waiting Area	J1132A2	NA-SZ-xx-RD-400-590		Pre Op Waiting Area	J1132A2	NSGH-01-POA-001	20.0 m²	20.0 m²	2.400 metres	15 x Persons: including 1 wheelchair user.	1) Patient may arrive on foot or in a wheelchair. 2) Waiting by patients: relatives and escorts. 3) Displaying information.	Loudspeaker volume control situated at reception desk. TV/video situated elsewhere.
NSGH-MDU	L0320A	Small Lab (endocrinology)	L0320A	NA-SZ-xx-RD-400-386		Small Lab (endocrinology)	L0320A	NSGH-01-MDU-021	10.5 m²	11.4 m²	2.400 metres	Up to 2 staff	1) Preparation of media. 2) Filling sterilized containers or test tubes with prepared media: …	
NSGH-MDU	P0625B1	Beverage Bay	P0625B1	NA-SZ-xx-RD-400-415-01		Beverage Bay	P0625B1	NSGH-01-MDU-005	8.0 m²	8.1 m²	2.400 metres	Intermittent use	1) Preparing snacks and beverages and associated activities. …	The following items are included on the room layout but are optional: - a microwave oven: - a dishwasher.
NSGH-MDU	T0151B1	Staff Base	T0151B1	NA-SZ-xx-RD-400-017-01		Staff Base	T0151B1	NSGH-01-MDU-035	2.0 m²	11.3 m²	2.400 metres	1 x Staff	1) Accessing and updating electronic patient records (EPRs). …	Clear access space past the touchdown base …
NSGH-MDU	C0237B5	Consulting/examination room: MDU adult	C0237B5	NA-SZ-xx-RD-400-180-05	c	Consulting/examination room: MDU adult	C0237B5	NSGH-01-POA-003	16.0 m²	13.5 m²	2.400 metres	1 x patient 1-2 x staff 1 x other	1) Consultations. 2) Examinations from both sides of the couch. …	This room includes a 3-section couch …
NSGH-MDU	L1305B4	Near patient testing/status laboratory	L1305B4	NA-SZ-xx-RD-400-223-04	c	Near patient testing/status laboratory	L1305B4	NSGH-01-MDU-xxx	8.5 m²	8.3 m²	2.400 metres	1 x Staff	1) Performing blood gas analysis. …	In HBN Day surgery: Water supply - demineralised/osmosis-purified is required.
NSGH-MDU	M0114B1	Office records: 5 staff	M0114B1	NA-SZ-xx-RD-400-393-01		Office records: 5 staff	M0114B1	NSGH-01-MDU-049	14.0 m²	13.1 m²	2.400 metres	2 x Person	1) Deskwork. 2) Use of visual display terminal(s). …	
NSGH-MDU	W1585B5	Store: general	W1585B5	NA-SZ-xx-RD-400-027-05		Store: general	W1585B5	NSGH-01-MDU-019	0.0 m²	7.6 m²	2.400 metres	1 x Staff Intermittent use	1) Storing equipment. 2) Storing non-clinical supplies.	This store includes a mixture of shelving and racking. …
NSGH-MDU	X0147B1	Treatment room: all-round couch access	X0147B1	NA-SZ-xx-RD-400-588-02		Treatment room: all-round couch access	X0147B1	NSGH-01-MDU-012	16.0 m²	32.8 m²	2.400 metres	1 x Patient 2 x Staff	1) Invasive clinical procedures from all sides of the couch. …	This room includes a 3-section couch …
NSGH-MIL	C1025A	Photography Studio: Adult	C1025A	NA-SZ-xx-RD-400-324		Photography Studio: Adult	C1025A	NSGH-00-MIL-006	25.2 m²	27.8 m²	2.400 metres	1 x Patient 1 x Staff	1) Taking photos. 2) Patient may arrive on foot or in a wheelchair. 3) Secure storage of camera: photographic equipment and supplies. …	Illuminated sign warning 'In Use' - on outside wall next to the door. Photographic equipment project specific.
NSGH-MIL	C1025C1	Photography Studio: Paeds	C1025C1	NA-SZ-xx-RD-400-325		Photography Studio: Paeds	C1025C1	NSGH-00-MIL-010 NSGH-00-MIL-010	25.2 m²	28.1 m²	2.400 metres	1 x Patient 1 x Staff	(as above)	(as above)
NSGH-MIL	E0531C	Video/Digital Editing Room	E0531C	NA-SZ-xx-RD-400-330		Video/Digital Editing Room	E0531C	NSGH-00-MIL-007	9.0 m²	10.5 m²	2.400 metres	1 Staff Intermittent use	1) Editing video and digital images. 2) Using telephone(s). 3) Deskwork for 1 person.	
NSGH-MIL	M1036C	Workstations - Clinical Photography	M1036C	NA-SZ-xx-RD-400-410		Workstations - Clinical Photography	M1036C	NSGH-00-MIL-007	20.0 m²	31.0 m²	2.400 metres	5 x Persons	1) Deskwork for 5 persons. 2) Using computer workstation(s). 3) Using printer. 4) Using telephone(s). 5) Storing files and records. 6) Storing reference books.	Dividing screens: 1100mm height: provided when required.
NSGH-MP	B0607A1	Clinical Skills Lab	B0607A1	NA-SZ-xx-RD-400-295		Clinical Skills Lab	B0607A1	NSGH-02-MP-008	15.0 m²	30.4 m²	2.400 metres -	up to 10 persons	1) Using monitoring/diagnostic equipment. 2) Clinical hand washing. 3) Work assessment and training.	To be used as a training area.
NSGH-MP	G0940A	Parts store	G0940A	NA-SZ-xx-400-536		Parts store	G0940A	NSGH-02-MP-004	20.0 m²	20.9 m²	2.400 metres		1) Receiving and distributing parts.	Details: area and layout project specific
NSGH-MP	G0940C	Goods In Area	G0940C	NA-SZ-xx-RD-400-344		Goods In Area	G0940C	NSGH-02-MP-003	18.0 m²	18.1 m²	2.400 metres	Intermittent use	1) Receiving supplies.	Details: area and layout project specific
NSGH-MP	H0339C	Document Library	H0339C	NA-SZ-xx-RD-400-345		Document Library	H0339C	NSGH-02-MP-008	15.0 m²	15.0 m²	2.400 metres	5 x Persons 1 x Staff	1) Using specialised visual aids multi-media equipment. 2) Using computer workstation(s).	Access to IT services.
NSGH-MP	K0314C	Adult Workshop	K0314C	NA-SZ-xx-RD-400-369		Adult Workshop	K0314C	NSGH-02-MP-006	211.0 m²	219.7 m²	2.400 metres	3 x Staff Intermittent use	1) Maintenance: repair and testing of equipment and parts. 2) Mechanical fitting: metal work including use of machinery. 3) Repairing and servicing equipment. 4) Storing tools and equipment. 5) Hand washing. 6) Deskwork for 1 person. …	Equipment - project specific
NSGH-MP	K0336C1	Paediatric Workshop	K0336C1	NA-SZ-xx-RD-400-376		Paediatric Workshop	K0336C1	NSGH-02-MP-010	0.0 m²	127.9 m²	2.400 metres	1 x Person	1) Repairing and adjusting various types of boots: shoes: callipers or other body worn devices. 2) Holding of body worn devices (e.g. shoes: callipers) awaiting repair. 3) Storing materials. 4) Hand washing.	Equipment - project specific.
NSGH-MP	L1803C1	Live Test Area	L1803C1	NA-SZ-xx-RD-400-591		Live Test Area	L1803C1	NSGH-02-MP-001/002/003	10.0 m²	10.2 m²	2.400 metres	2 -3 Staff Intermittent use	1) Person servicing of Electronic and Medical Engineering (EME) equipment. …	In Critical Care - serving 16 beds. …
NSGH-MP	M0251B1	Office: 1 person	M0251B1	NA-SZ-xx-RD-400-202-01		Office: 1 person	M0251B1	NSGH-02-MP-009	13.0 m²	13.0 m²	2.400 metres	Up to 3 persons	1) Clinical administration. …	The following equipment is shown on the room layout but is optional: …
NSGH-MP	W0218C	Goods Out Area	W0218C	NA-SZ-xx-RD-400-470		Goods Out Area	W0218C	NSGH-02-MP-007	18.0 m²	19.9 m²	2.400 metres	Intermittent use	1) Unloading vehicles. 2) Transferring goods to unpacking area. 3) Transferring goods to or from goods reception or dispatch area. 4) Hand rinsing.	Canopy over vehicle unloading area. Fire alarm break glass point: push button: wall mounted may be required to suit Building Control Fire Requirements.
NSGH-MP	W0218C1	Reception with Goods in and out area	W0218C1	NA-SZ-xx-RD-400-470		Reception with Goods in and out area	W0218C1	NSGH-02-MP-005	50.0 m²	51.9 m²	2.400 metres	1 x Staff Intermittent use	(as above)	(as above)
NSGH-MP	W1236A1	Adults Devices Library	W1236A1	NA-SZ-xx-RD-400-491		Adults Devices Library	W1236A1	NSGH-02-MP-020	90.0 m²	90.9 m²	2.400 metres	1 - Staff Intermittent use	1) Holding of prosthetics. (e.g. shoes: callipers) awaiting collection. 2) Holding orthotic equipment. 3) Storing equipment.	
NSGH-MP	W1236C	Paeds Devices Library	W1236C	NA-SZ-xx-RD-400-492		Paeds Devices Library	W1236C	NSGH-02-MP-011	90.0 m²	89.9 m²	2.400 metres	1 - Staff Intermittent use	(as above)	
NSGH-MR	J0421A1	Reception and office: 5 staff	J0421A1	NA-SZ-xx-RD-400-198-01		Reception and office: 5 staff	J0421A1	NCH-00-ENT-010	23.0 m²	33.4 m²	2.400 metres	5 x Staff	1) Reception and registration of patients. …	Counter/reception desk should be accessible to all users. Induction loop hearing aid system.
NSGH-MR	M0218A1	Office: 1 staff	M0218A1	NA-SZ-xx-RD-400-011-01		Office: 1 staff	M0218A1	NSGH-03-HR-010	16.0 m²	16.0 m²	2.400 metres	Up to 7 persons	1) Deskwork for 1 person. …	Suitable for senior management: (as Control Manager Office). …
NSGH-MR	M0222A	Open Plan Office for 20 persons	M0222A	NA-SZ-xx-RD-400-395		Open Plan Office for 20 persons	M0222A	NSGH-03-HR-012	45.0 m²	60.8 m²	2.400 metres	20 x Person	1) Deskwork for 1 person. 2) Use of visual display terminal(s). 3) Using telephone(s). 4) Storing files and records. 5) Security for personal items.	Suitable for typing & clerical. …
NSGH-MR	M0252B2	Office: 2 person	M0252B2	NA-SZ-xx-RD-400-013-02		Office: 2 person	M0252B2	NSGH-03-HR-015	12.0 m²	13.0 m²	2.400 metres	2 x Persons	1) Clinical administration. …	A dimming switch is recommended if the room is used for viewing digital images.
NSGH-MR	M0254B1	Audit Office: 4 person	M0254B1	NA-SZ-xx-RD-400-068-01		Audit Office: 4 person	M0254B1	NSGH-03-HR-013	24.0 m²	11.1 m²	2.400 metres	4 x Persons	1) Clinical administration. …	
NSGH-MR	M0254B2	Office: 4 person	M0254B2	NA-SZ-xx-RD-400-068-02		Office: 4 person	M0254B2	NSGH-03-FM3-001	24.0 m²	23.2 m²	2.400 metres	4 x Persons	1) Clinical administration. …	
NSGH-MR	M0409A	Printer Stations	M0409A	NA-SZ-xx-RD-400-398		Printer Stations	M0409A	NSGH-03-HR-017	5.0 m²	3.1 m²	2.400 metres	1 - 2 Persons Intermittent use	1) Photocopying: sorting and collating. 2) Printing labels. 3) Sorting documents/files. 4) Shredding documents. 5) Storing stationery/paper.	Additional laser printer may be required.
NSGH-MR	M1033A	Office records and store: 1 staff	M1033A	NA-SZ-xx-RD-400-408		Office records and store: 1 staff	M1033A	NSGH-03-HR-003	12.0 m²	10.4 m²	2.400 metres	1 x Persons	1) Deskwork for 1 person. … 6) Security for personal items.	
NSGH-MR	M1034A	Main Records staff area	M1034A	NA-SZ-xx-RD-400-409		Main Records staff area	M1034A	NSGH-03-HR-009	180.0 m²	245.8 m²	2.400 metres	5 x Persons	1) Deskwork for 3 persons. … 6) Security for personal items.	Dividing screens: 1100mm height: provided when required.
NSGH-MR	M1099A	General Receipt/Sorting & Scanning	M1099A	NA-SZ-xx-RD-400-411		General Receipt/Sorting & Scanning	M1099A	NSGH-03-HR-006	45.0 m²	47.0 m²	2.400 metres	3 x Persons	1) Deskwork for 1 person. …	
NSGH-OPD	C0201A1	Lung Function Lab	C0201A1	NA-SZ-xx-RD-400-181		Lung Function Lab	C0201A1	NSGH-01-OPD1-118	40.0 m²	43.5 m²	2.400 metres	2 x Patient 2 x Staff	1) Testing lung function for patients with sleep apnoea and chronic obstructive airways disease. …	Testing equipment comprises: 1) Flow volume loop 9testing equipment: …
NSGH-OPD	C0237B	Consulting/examination room: double-sided couch access	C0237B	NA-SZ-xx-RD-400-180		Consulting/examination room: double-sided couch access	C0237B	NSGH-01-OPD1-038	16.0 m²	16.1 m²	2.400 metres	1 x patient 1-2 x staff 1 x other	1) Consultations. 2) Examinations from both sides of the couch. …	This room includes a 3-section couch …
NSGH-OPD	C0302B1	Assessment/Treatment room	C0302B1	NA-SZ-xx-RD-400-200-01		Assessment/Treatment room	C0302B1	NSGH-00-ORT-008	16.0 m²	14.9 m²	2.400 metres	1 x Patient 1 - 2 Staff 2 x Others (escort)	1) Patient may arrive on foot or in a wheelchair. …	Lamp indicator call situated over door outside room. Illuminated sign "IN USE" …
NSGH-OPD	C1401B1	Physical measurement bay	C1401B1	NA-SZ-xx-RD-400-184-01		Physical measurement bay	C1401B1	NSGH-01-OPD-046	3.5 m²	4.0 m²	2.400 metres	1 x Patient 1 x Staff	1) Patient may arrive on foot or in a wheelchair. 2) Weighing and measuring height of a patient. 3) Recording patient data/notes. 4) Hanging outdoor clothing.	Space required to accommodate: SCA083 - Chair weighing machine which is stored in adjacent area.
NSGH-OPD	H0520A	Seminar room: 15 person	H0520A	NA-SZ-xx-RD-400-174		Seminar room: 15 person	H0520A	NSGH-00-OPD0-063	27.5 m²	29.9 m²	2.400 metres	15 x Persons	1) Holding seminar. … 8) Hanging coats.	Chair upright with arms can be replaced by chair with writing arm - project team option. …
NSGH-OPD	J0232B1	Reception: 5 person Office:2 person	J0232B1	NA-SZ-xx-RD-400-175-01		Reception: 5 person Office:2 person	J0232B1	NSGH-00-OPD-015	19.0 m²	29.3 m²	2.400 metres	2 x Staff	1) Reception and registration of patients. … 6) Control of access to clinical or work area.	The reception desk should be accessible to all users …
NSGH-OPD	J1152B	Waiting area: 20 places (including 2 wheelchair places)	J1152B	NA-SZ-xx-RD-400-177		Waiting area: 20 places (including 2 wheelchair places)	J1152B	NSGH-00-OPD0-016	33.0 m²	106.2 m²	2.400 metres	20 x persons: including 2 x wheelchair user	1) Waiting by patients: relatives and escorts	This space includes 18 standard seats and two spaces for wheelchairs …
NSGH-OPD	M0114B	Office records: 2 staff	M0114B	NA-SZ-xx-RD-400-393		Office records: 2 staff	M0114B	NSGH-01-OPD1-078	14.0 m²	13.1 m²	2.400 metres	2 x Person	1) Deskwork. 2) Use of visual display terminal(s). …	
NSGH-OPD	V1323A	Shower room: semi-ambulant: standing use	V1323A	NA-SZ-xx-RD-400-997		Shower room: semi-ambulant: standing use	V1323A	NSGH-02-RENO-025	5.0 m²	4.1 m²	2.400 metres	1 x Patient Intermittent use	1) Use of shower by semi-ambulant person (whilst standing). …	The lamp repeat call is situated over the door outside the room. …
NSGH-OPD	V1406B	WC and handrinse: specimen: wheelchair accessible With pass-through h	V1406B	NA-SZ-xx-RD-400-994		WC and handrinse: specimen: wheelchair accessible With pass-through hatch	V1406B	NSGH-01-OPD-043	4.5 m²	5.1 m²	2.400 metres	1 x Person	1) Patient may be ambulant or in a wheelchair. 2) Using WC. 3) Collecting specimens. 4) Passing specimens through hatch to Dirty Utility/Test Bay. 5) Hand rinsing (whilst seated on the toilet).	DesignNotes: In HBN23 HACh & YP: door hinge protectors are required
NSGH-OPD	C0235B1	Clinic Nurse (BP & Vision)/Consulting Room	C0235B1	NA-SZ-xx-RD-400-185-01	c	Clinic Nurse (BP & Vision)/Consulting Room	C0235B1	NSGH-01-OPD1-053	12.0 m²	13.0 m²	2.400 metres	1 x patient 1-2 x staff 1 x other	1) Consultations. 2) Examinations from one side of the couch. …	The lamp repeat call is situated over the door outside the room. …
NSGH-OPD	C0235B2	Interview/Office/Consulting	C0235B2	NA-SZ-xx-RD-400-185-02		Interview/Office/Consulting	C0235B2	NSGH-01-OPD1-049	12.0 m²	13.0 m²	2.400 metres	1 x patient 1-2 x staff 1 x other	(as above)	(as above)
NSGH-OPD	C0701A2	Respiratory Investigation	C0701A2	NA-SZ-xx-RD-400-601	c	Respiratory Investigation	C0701A2	NSGH-01-OPD1-010	18.0 m²	18.7 m²	2.400 metres	1 x Patient 2 x Staff: occasionally 3 staff 1 x other (relative or chaperone)	1) Patient arrive on foot. 2) Patient may undergo through treadmill: body box: spirometry or oxygen assessment. 3) Recording test results. 4) Using computer workstation(s). 5) Clinical hand washing.	Lamp indicator call situated over door outside room
NSGH-OPD	E0113B2	Vascular Lab	E0113B2	NA-SZ-xx-RD-400-080-02	c	Vascular Lab	E0113B2	NSGH-01-OPD1-009	20.0 m²	19.1 m²	2.400 metres	1 x Patient 2 x Staff 2 x Additional staff intermittently Intermittent use	1) Patient may arrive on foot or in a wheelchair. 2) Patient may arrive on a trolley or in a bed. 3) Positioning/repositioning patients for examination. 4) Ultrasound examination. 5) Using oxygen and vacuum services for resuscitation. …	Lamp indicator call situated over door outside room. In the absence of changing cubicle: privacy screen is required. Link to departmental computer management system.
NSGH-OPD	J0611B1	Reception and office: 4 staff	J0611B1	NA-SZ-xx-RD-400-137-01		Reception and office: 4 staff	J0611B1	NSGH-01-OPD1-002	20.0 m²	31.4 m²	2.400 metres	4 x Staff	1) Meeting and greeting relatives and visitors. 2) Dealing with enquiries. 3) Clerical duties. 4) Deskwork for 3 persons. 5) Using computer workstation(s). 6) Using telecommunication equipment. 7) Displaying information.	Entry phone system for the area should be located in this room. Hatch between Reception and waiting area.
NSGH-OPD	V1323A/R	Shower room: semi-ambulant: standing use HANDED	V1323A/R	NA-SZ-xx-RD-400-997 HANDED		Shower room: semi-ambulant: standing use HANDED	V1323A/R	NSGH-02-RENO-025	5.0 m²	4.1 m²	2.400 metres	1 x Patient Intermittent use	1) Use of shower by semi-ambulant person (whilst standing). …	The lamp repeat call …
NSGH-OPD	V1406B/R	WC and handrinse: specimen: wheelchair accessible With pass-through h	V1406B/R	NA-SZ-xx-RD-400-994 HANDED		WC and handrinse: specimen: wheelchair accessible With pass-through hatch HANDED	V1406B/R	NSGH-01-OPD-043	4.5 m²	5.1 m²	2.400 metres	1 x Person	1) Patient may be ambulant or in a wheelchair. …	DesignNotes: In HBN23 HACh & YP: door hinge protectors are required
NSGH-OPD	X0240B2	Minor Procedures	X0240B2	NA-SZ-xx-RD-400-557-01	c	Minor Procedures	X0240B2	NSGH-01-OPD1-021	20.0 m²	19.9 m²	2.400 metres	1 x Patient 4 x Staff	1) Patient may arrive on foot or in a wheelchair. 2) Patient transferred to a treatment trolley. …	Lamp indicator call situated over door outside room. Computer keyboard should be with cleanable or disposable cover.
NSGH-OPD	W1591A	Store: linen	W1591A	NA-SZ-xx-RD-400-507		Store: linen	W1591A	NSGH-01-OPD1-110	3.0 m²	1.0 m²	2.400 metres	1 x Staff Intermittent use	1) Storing linen. 2) Storing bedding: blankets and pillows. 3) Storing disposable items.	
NSGH-OPD	Y0431B1	Dirty utility room	Y0431B1	NA-SZ-xx-RD-400-173		Dirty utility room	Y0431B1	NSGH-00-OPD0-025	8.0 m²	6.0 m²	2.400 metres	2 x Staff Intermittent use	1) Disposal of liquid waste. 2) Holding SHARPS in a container. …	This room represents one example layout of a dirty utility room …
NSGH-OPD/1	C1401B	Physical measurement bay	C1401B	NA-SZ-xx-RD-400-184		Physical measurement bay	C1401B	NSGH-01-OPD-046	3.5 m²	7.4 m²	2.400 metres	1 x Patient 1 x Staff	1) Patient may arrive on foot or in a wheelchair. 2) Weighing and measuring height of a patient. …	Space required to accommodate: SCA083 - Chair weighing machine which is stored in adjacent area.
NSGH-OPD/1	H0520A1	Seminar room: 15 person	H0520A1	NA-SZ-xx-RD-400-174-01		Seminar room: 15 person	H0520A1	NSGH-01-OPD1-068	27.5 m²	23.1 m²	2.400 metres	15 x Persons	1) Holding seminar. …	Chair upright with arms can be replaced by chair with writing arm - project team option. …
NSGH-OPD/1	C1408B3	Blood Lab	C1408B3	NA-SZ-xx-RD-400-272-03	c	Blood Lab	C1408B3	NSGH-01-OPD1-048	8.0 m²	7.7 m²	2.400 metres	1 x Patient 1 x Staff	1) Patient may arrive on foot or in a wheelchair. 2) Taking blood samples from patient. …	Lamp indicator call situated over door outside room/cubicle.
NSGH-OPD/1	W1587A	Store: general	W1587A	NA-SZ-xx-RD-400-506		Store: general	W1587A	NSGH-01-OPD1-044	6.0 m²	11.9 m²	2.400 metres		1) Storing sundries and small items. 2) Parking floor standing equipment. 3) Storing nursing equipment.	
NSGH-OPD/1	X0210A	Treatment room: chiropody/podiatry: 1 patient	X0210A	NA-SZ-xx-RD-400-245		Treatment room: chiropody/podiatry: 1 patient	X0210A	NSGH-01-OPD1-050	15.0 m²	13.9 m²	2.400 metres	1 x Patient 1 x Staff	1) Patient may arrive on foot or in a wheelchair. 2) Changing in privacy. 3) Patient transferred to chiropody chair. 4) Performing chiropody procedures. …	Lamp indicator call situated over door outside room.
NSGH-OPD/2	C0505A	Examination room: Hearing Assesment	C0505A	NA-SZ-xx-RD-400-179		Examination room: Hearing Assesment	C0505A	NSGH-01-OPD1-058	9.5 m²	13.7 m²	2.400 metres	1 x Staff 1 x Patient (baby) 1 x Other	1) Audiological testing neonate. 2) Examination of the eyes neonate. …	Lighting control dimmer (for incandescent luminaire only). Mother may be present. Use of computer - project team option.
NSGH-OPD/2	C0514B	Examination room: audiometric test Sound field testing: multi-occupancy	C0514B	NA-SZ-xx-RD-400-178		Examination room: audiometric test Sound field testing: multi-occupancy booth and control area	C0514B	NSGH-01-OPD1-033	51.0 m²	16.3 m²	2.400 metres	1 x Staff 1 x Other (escort) Up to 6 Staff	1) Audiological testing neonate. 2) Audiometric examination and test procedures. …	Some items will be located within the audiology booth: others in the control area. …
NSGH-OPD/2	J0205B	Reception: 1 staff	J0205B	NA-SZ-xx-RD-400-183		Reception: 1 staff	J0205B	NSGH-01-OPD1-034	4.0 m²	16.1 m²	2.400 metres	1 x Staff	1) Reception and registration of patients. … 6) Security of staff	Counter/reception desk should be accessible to all users. …
NSGH-OPD/3	C0510A	Assessment room with visual acuity facility: child	C0510A	NA-SZ-xx-RD-400-177		Assessment room with visual acuity facility: child	C0510A	NSGH-01-OPD1-030	12.5 m²	13.6 m²	2.400 metres	1 x Staff 1 x Patient (child) 1 x Other (escort)	1) Patient may arrive on foot or in a wheelchair. 2) Assessing child health. 3) Assessing the development of the visual and auditory senses. …	Lighting control dim (for incandescent luminaire only) for adjustable light position and intensity. Use of computer - project team option.
NSGH-OPD/3	C1010B	Consulting: examination room: Ophthalmology	C1010B	NA-SZ-xx-RD-400-187		Consulting: examination room: Ophthalmology	C1010B	NSGH-01-OPD1-072	13.0 m²	13.9 m²	2.400 metres	1 x Patient 2 x Staff 1 x Other (escort)	1) Patient may arrive on foot or in a wheelchair. 2) Interviewing and consultation. 3) Assessing x-ray images. 4) Assessment for error of refraction …	If optometry service provided as a separate space: reversed Snellen chart and mirror combination - project team option.
NSGH-OPD/3	C1010B1	Pre-op assess	C1010B1	NA-SZ-xx-RD-400-187-01		Pre-op assess	C1010B1	NSGH-01-OPD1-028	13.0 m²	13.4 m²	2.400 metres	1 x Patient 2 x Staff 1 x Other (escort)	(as above)	(as above)
NSGH-OPD/3	C1011A	Consulting: examination bay: Ophthalmology	C1011A	NA-SZ-xx-RD-400-176		Consulting: examination bay: Ophthalmology	C1011A	NSGH-01-OPD1-025	13.0 m²	13.6 m²	2.400 metres	1 x Patient 2 x Staff 1 x Other (escort)	(as above)	(as above)
NSGH-OPD/3	C1013B	Consulting: examination room: Orthoptic	C1013B	NA-SZ-xx-RD-400-186		Consulting: examination room: Orthoptic	C1013B	NSGH-01-OPD1-077	18.5 m²	18.9 m²	2.400 metres	1x Patient 2 x Staff 1 x Other	1) Patient may arrive on foot or in a wheelchair. 2) Examination and treatment by an orthoptist. …	Lamp indicator call situated over door outside room.
NSGH-OPD/3	C1010B2	Visual Field Testing	C1010B2	NA-SZ-xx-RD-400-187-02	c	Visual Field Testing	C1010B2	NSGH-01-OPD1-032	13.0 m²	9.2 m²	2.400 metres	1 x Patient 2 x Staff 1 x Other (escort)	1) Patient may arrive on foot or in a wheelchair. 2) Interviewing and consultation. …	If optometry service provided as a separate space: reversed Snellen chart and mirror combination - project team option.

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NSGH-OPD/3	C1013A	Retinal Screening	C1013A	NA-SZ-xx-RD-400-600	c	Retinal Screening	C1013A	NSGH-00-OPD0-018	14.0 m²	14.4 m²	2.400 metres	1x Patient 2 x Staff 1 x Other (escort)		1) Patient may arrive on foot or in a wheelchair. 2) Retinal Screening. 3) Examination and treatment by an orthoptist. 4) Examination and treatment of seated patient using a synoptophore. 5) Accessing and updating electronic patient records (EPRs). 6) Holding orthoptic equipment. 7) Clinical hand washing. 8) Recording patient data/notes.	
NSGH-OPD/3	C1013B2	Angio Exam Room	C1013B2	NA-SZ-xx-RD-400-186-02	c	Angio Exam Room	C1013B2	NSGH-01-OPD1-079	18.5 m²	17.4 m²	2.400 metres	1x Patient 2 x Staff 1 x Other (escort)		1) Patient may arrive on foot or in a wheelchair. 2) Examination and treatment by an orthoptist. 3) Examination and treatment of seated patient using a synoptophore. 4) Accessing and updating electronic patient records (EPRs). 5) Holding orthoptic equipment. 6) Clinical hand washing. 7) Recording patient data/notes.	
NSGH-OPD/3	X0215A	Treatment room: Ophthalmology: laser	X0215A	NA-SZ-xx-RD-400-510		Treatment room: Ophthalmology: laser	X0215A	NSGH-01-OPD1-073	15.5 m²	13.6 m²	2.400 metres	1 x Patients 2 x Staff		1) Patient may arrive on foot or in a wheelchair. 2) Patient to receive cataract treatment or repairing retinal damage. 3) Using ophthalmic laser. 4) Emergency resuscitation. 5) Clinical hand washing.	Lamp indicator call situated over door outside room. Illuminated sign "Laser in use" - outside the room. An two-way communication system is required.
NSGH-OPD/4	C1112B	Consulting: examination: fitting room: Orthotics	C1112B	NA-SZ-xx-RD-400-182		Consulting: examination: fitting room: Orthotics	C1112B	NSGH-00-OPD0-050	14.0 m²	13.8 m²	2.400 metres	1 x Patient 2 x Staff 1 x Other (escort)		1) Patient may arrive on foot or in a wheelchair. 2) Interviewing and consultation. 3) Examination of patient. 4) Fitting prosthetics. 5) Holding small items of equipment. 6) Clinical hand washing. 7) Accessing and updating electronic patient records (EPRs). 8) Use of visual display terminal(s). 9) Using telephone(s).	Lamp indicator call situated over door outside room Provision of dictating facilities - project team option.
NSGH-OPD/4	C1112B2	Orthopaedics Treatment Room (2 plinths)	C1112B2	NA-SZ-xx-RD-400-182-02	c	Orthopaedics Treatment Room (2 plinths)	C1112B2	NCH-00-OPD0-049	13.5 m²	22.9 m²	2.400 metres	1 x Patient 2 x Staff 1 x Other (escort)		1) Patient may arrive on foot or in a wheelchair. 2) Interviewing and consultation. 3) Examination of patient. 4) Fitting prosthetics. 5) Holding small items of equipment. 6) Clinical hand washing. 7) Accessing and updating electronic patient records (EPRs). 8) Use of visual display terminal(s). 9) Using telephone(s).	Lamp indicator call situated over door outside room Provision of dictating facilities - project team option.
NSGH-OPD/4	W1236A2	Orthotics Base: supply and fitting	W1236A2	NA-SZ-xx-RD-400-160-01	c	Orthotics Base: supply and fitting	W1236A2	NSGH-00-OPD0-040	24.0 m²	17.7 m²	2.400 metres	1 - Staff Intermittent use		1) Holding of prosthetics. (e.g. shoes: callipers) awaiting collection.	
NSGH-OPD/4	W1514A	Store: plaster equipment	W1514A	NA-SZ-xx-RD-400-503		Store: plaster equipment	W1514A	NSGH-00-OPD0-045	6.0 m²	12.0 m²	2.400 metres			1) Storing appliances. 2) Storing equipment. 3) Storing appliance samples: appliance sundries.	
NSGH-OPD/4	X0266C-2	Plaster Room 4 Bay	X0266C-2	NA-SZ-xx-RD-400-521-01	c	Plaster Room 4 Bay	X0266C-2	NCH-00-OPD-047	16.0 m²	42.5 m²	2.400 metres	1 x Patient 2 x Staff 1 x Other		1) Preparation and application of plaster casts. 2) Removal of plaster casts. 3) Undressing and dressing in privacy. 4) Disposal of plaster waste and discarded splints. 5) Use of clinical wash-hand basin. 6) Accessing and updating electronic patient records (EPRs). 7) Patient may arrive on a trolley.	This room includes general engineering services for plaster work. For further details see HTM 02-01 and HTM 08-03. The lamp repeat call is situated over the door outside the room. The following items are shown on the room layout but are optional: - room in use switch and indicator: - the ceiling hook. DesignNo
NSGH-OPD/4	X0266C-1	Plaster Room 4 Bay	X0266C-1	NA-SZ-xx-RD-400-521		Plaster Room 4 Bay	X0266C-1	NCH-00-OPD-047	16.0 m²	44.8 m²	2.400 metres	4 x Patient 2 x Staff 1 x Other		1) Preparation and application of plaster casts. 2) Removal of plaster casts. 3) Undressing and dressing in privacy. 4) Disposal of plaster waste and discarded splints. 5) Use of clinical wash-hand basin. 6) Accessing and updating electronic patient records (EPRs). 7) Patient may arrive on a trolley.	This room includes general engineering services for plaster work. For further details see HTM 02-01 and HTM 08-03. The lamp repeat call is situated over the door outside the room. The following items are shown on the room layout but are optional: - room in use switch and indicator: - the ceiling hook. DesignNo
NSGH-OPD/5	L0315A1	Cystoscopy	L0315A1	NA-SZ-xx-RD-400-538		Cystoscopy	L0315A1	NSGH-01-OPD1-091	16.0 m²	44.3 m²	2.400 metres	3 x Staff		1) Cystoscopy Lab 2) Plating specimens for culture. 3) Holding refrigerated specimens prior to despatch. 4) Holding specimens in an incubator prior to despatch. 5) Centrifugation of samples/specimens (urine: blood: fluids). 6) Testing urine specimens. 7) Disposal of liquid waste. 8) Use of clinical wash-hand basin.	Cystoscopy Lab: equipment and activities to be specified in user meetings.
NSGH-OPD/5	X0219A	Treatment room: Urodynamic	X0219A	NA-SZ-xx-RD-400-511		Treatment room: Urodynamic	X0219A	NSGH-01-OPD1-082	22.5 m²	16.5 m²	2.400 metres	1 x Patient 2 x Staff 1 x Other		1) Patient may arrive on foot or in a wheelchair. 2) Patient may arrive on a trolley or in a bed. 3) Patient to undress/dress in privacy. 4) Examination of patient. 5) Treatment of patients 6) Holding sterile packs. 7) Holding supply of medicines: lotions and drugs. 8) Disposal of contaminated dressings. 9) Disposal of wa	Lamp indicator call situated over door outside room. Commode requires liquid measure. Urodynamic power system is required. This sheet may be revised. Local specialist advice should be taken regarding the ... equipment in the light of the range of procedures to be performed. Room should
NSGH-OPD/REH	B0616A	Multi-bed room: Cardiac day care: 4 beds	B0616A	NA-SZ-xx-RD-400-228		Multi-bed room: Cardiac day care: 4 beds	B0616A	NSGH-01-OPD1-132	66.0 m²	36.7 m²	2.400 metres	4 x Patients 8 x Others		1) Patient may arrive on foot or in a wheelchair. 2) Patient may arrive on a trolley or in a bed. 3) Transfer patient to/from bed: stretcher trolley: or wheelchair. 4) Patient to undress/dress in vicinity of bed: with/without assistance. 5) Patient to receive therapeutic and clinical attention from health team staff. 6) Pat	Space may require to accommodate use of hoist. Second computer point per bed - project team option.
NSGH-OPD/REH	C0701A	Investigation room: stress electrocardiography (ECG)	C0701A	NA-SZ-xx-RD-400-227		Investigation room: stress electrocardiography (ECG)	C0701A	NSGH-01-OPD1-129	12.0 m²	18.1 m²	2.400 metres	1 x Patient 2 x Staff: occasionally 3 staff 1 x other (relative or chaperone)		1) Patient arrive on foot. 2) Patient to undergo electrocardiogram (ECG) exercise stress test. 3) Recording test results. 4) Using computer workstation(s). 5) Clinical hand washing.	Lamp indicator call situated over door outside room
NSGH-OPD/REH	C0709A	Investigation room: tilt electrocardiography (ECG)	C0709A	NA-SZ-xx-RD-400-226		Investigation room: tilt electrocardiography (ECG)	C0709A	NSGH-01-OPD1-121	16.0 m²	16.6 m²	2.400 metres	1 x Patient 2 x Staff: occasionally 3 staff 1 x other (relative or chaperone)		1) Patient arrive on foot. 2) Patient to undergo electrocardiogram test (ECG) and continuous blood pressure monitoring. 3) Recording test results. 4) Using telephone(s). 5) Clinical hand washing.	Lamp indicator call situated over door outside room
NSGH-OPD/REH	C0726A	Reporting room: echocardiography: 3 places	C0726A	NA-SZ-xx-RD-400-233		Reporting room: echocardiography: 3 places	C0726A	NSGH-01-OPD1-147	12.0 m²	12.6 m²	2.400 metres	Up to 4 Staff Intermittent use		1) Reading and reporting of echocardiography data. 2) Informal discussions and case conferences by staff.	Wireway for link to departmental computer management system.
NSGH-OPD/REH	H1313B	Group room: meeting: 16 places (including 1 wheelchair place)	H1313B	NA-SZ-xx-RD-400-232		Group room: meeting: 16 places (including 1 wheelchair place)	H1313B	NSGH-01-OPD1-140	32.0 m²	23.3 m²	2.400 metres	16 x persons Intermittent use		1) Holding meetings. 2) Use of multimedia equipment.	This room represents a typical sized large meeting room with 15 stacking chairs around a table and space for one wheelchair. This space may be used as a seminar room (see H1304) or exercise room (see H1322) by altering the furniture in the room. For flexibility in use: direct access to a store is required. The follo
NSGH-OPD/REH	J1110A	Waiting area: 15 person including 2 wheelchair user	J1110A	NA-SZ-xx-RD-400-230		Waiting area: 15 person including 2 wheelchair user	J1110A	NSGH-01-OPD1-134	25.5 m²	23.9 m²	2.400 metres	15 Persons including 2 wheelchair users.		1) Patient may arrive on foot or in a wheelchair. 2) Waiting by patients: relatives and escorts. 3) Displaying notices. 4) Displaying information.	TV screen display information and number being called from C/E room: activated at reception desk - project team option. In HBN Hosp. accom for children and young people - Display/notice board must be Velcro or magnetic. If used in Mental Illness Dept.: Where there is a significant risk of assault or self-harm in
NSGH-OPD/REH	J1231A	Waiting bay: 1 patient trolley/bed place	J1231A	NA-SZ-xx-RD-400-229		Waiting bay: 1 patient trolley/bed place	J1231A	NSGH-01-OPD1-133	4.5 m²	6.6 m²	2.400 metres	1 x Patient 1 x Staff		1) Parking patients trolley(s). 2) Patient to wait on trolley/bed: under nursing observation.	SpaceNotes: Height to suit surrounding area.
NSGH-OPD/REH	P0810A	Refreshment: drinking water dispenser	P0810A	NA-SZ-xx-RD-400-417		Refreshment: drinking water dispenser	P0810A	NSGH-01-OPD1-136	0.5 m²	1.0 m²	2.400 metres			1) Dispensing chilled water.	
NSGH-OPD/REH	V0411A	Staff changing room with cubicle and handwash: 17 places	V0411A	NA-SZ-xx-RD-400-438		Staff changing room with cubicle and handwash: 17 places	V0411A	NSGH-00-OPD0-002	20.0 m²	25.7 m²	2.400 metres	INTERMITTENT USE 30 x Staff		1) Changing into protective clothing and footwear from outer clothing. 2) Changing in privacy. 3) Hanging outdoor clothing. 4) Security of clothing and personal effects. 5) Holding protective clothing: uniforms and footwear. 6) Disposal of used protective clothing. 7) Grooming. 8) Hand washing.	
NSGH-OPD/REH	W0532B	Store: sterile supplies	W0532B	NA-SZ-xx-RD-400-231		Store: sterile supplies	W0532B	NSGH-01-OPD1-137	9.0 m²	14.6 m²	2.400 metres	1 x Staff Intermittent use		1) Storing sterile supplies.	
NSGH-OPD/REH	C0222A	Consulting: examination: with echocardiograph All-round couch access	C0222A	NA-SZ-xx-RD-400-607	c	Consulting: examination: with echocardiograph All-round couch access	C0222A	NSGH-01-OPD1-124	16.5 m²	18.4 m²	2.400 metres	1 x Patient 2 x Staff 1 x Other (escort)		1) Patient may arrive on foot or in a wheelchair. 2) Interviewing and consultation. 3) Patient to undress/dress in privacy. 4) Clinical examination and assessment in privacy. 5) Patient to undergo Echocardiography test. 6) Holding small items of equipment. 7) Clinical hand washing. 8) Accessing and updating electroni	Suitable for patient with congenital disorders. Lamp indicator call situated over door outside room.
NSGH-OPD/REH	C0726A1	Cardiac tech tape read	C0726A1	NA-SZ-xx-RD-400-233-01	c	Cardiac tech tape read	C0726A1	NSGH-01-OPD1-116	12.0 m²	10.8 m²	2.400 metres	Up to 4 Staff Intermittent use		1) Reading and reporting of echocardiography data. 2) Informal discussions and case conferences by staff.	Wireway for link to departmental computer management system.
NSGH-OPD/REH	J0415B1	Reception and records office	J0415B1	NA-SZ-xx-RD-400-254-01		Reception and records office	J0415B1	NSGH-01-OPD1-138	14.0 m²	7.8 m²	2.400 metres	4 x Staff		1) Reception and registration of patients. 2) Dealing with enquiries. 3) Maintaining appointments and attendance register. 4) Receipt and dispatch of documents. 5) Using computer workstation(s). 6) Holding current patients records/case notes. 7) Displaying information.	Counter/reception desk should be accessible to all users. Induction loop hearing aid system.
NSGH-OPD/REH	X1020A1	Cardiac Treatment Room	X1020A1	NA-SZ-xx-RD-400-244-01	c	Cardiac Treatment Room	X1020A1	NSGH-01-OPD1-001	17.0 m²	16.0 m²	2.400 metres	1 x Patient 4 x Staff		1) Patient may arrive on foot or in a wheelchair. 2) Patient transferred to a treatment trolley. 3) Administration of local analgesics. 4) Minor surgical procedures under local anaesthetic. 5) Insertion and/or replacement of implantable devices. 6) Clinical procedures and dressings. 7) Use of visual display terminal(s).	Lamp indicator call situated over door outside room.
NSGH-OPD/REH	X0319A	Gym: exercise area	X0319A	NA-SZ-xx-RD-400-522		Gym: exercise area	X0319A	NSGH-00-OPD0-010	135.0 m²	139.7 m²	4.500 metres	15 patients - physotherapy activity area or 10 patients - physothrapy gymnasuim 3 - 4 Staff		1) Rehabilitation exercises 2) Deskwork. 3) Clinical hand washing.	Lamp indicator call situated over door outside room. Individual treatment or re-education of patients whose treatment does not require privacy: but does require the use of specialised equipment giving rise to greater activity than is possible in and needing more space than is available in the Individual Treatment cu
NSGH-PHA	011	CIVAS: Clean room	11	NA-SZ-xx-RD-400-308		CIVAS: Clean room	11	NCH-02-ASU-019	20.4 m²	20.4 m²	2.400 metres		4		
NSGH-PHA	012	TPN Supplies	12	NA-SZ-xx-RD-400-309		TPN Supplies	12	NCH-02-ASU-008	39.8 m²	19.5 m²	2.400 metres		2		
NSGH-PHA	014	TPN Clean room	14	NA-SZ-xx-RD-400-311		TPN Clean room	14	NCH-02-ASU-022	20.0 m²	25.5 m²	2.400 metres		4		
NSGH-PHA	032	Store -Aseptic	32	NA-SZ-xx-RD-400-313		Store -Aseptic	32	NCH-02-ASU-008	2.8 m²	1.1 m²	2.400 metres		2		
NSGH-PHA	10282	Chemo clean room	10282	NA-SZ-xx-RD-400-317		Chemo clean room	10282	NCH-02-ASU-005	33.9 m²	27.5 m²	2.400 metres		4		
NSGH-PHA	10371	TPN Dispatch	10371	NA-SZ-xx-RD-400-319		TPN Dispatch	10371	NCH-02-ASU-037/033	33.3 m²	28.3 m²	2.400 metres		2		
NSGH-PHA	10380	Preparation: aseptic	10380	NA-SZ-xx-RD-400-321		Preparation: aseptic	10380	NCH-02-ASU-023	13.5 m²	23.2 m²	2.400 metres		3		
NSGH-PHA	CH1	Change 1	CH1	NA-SZ-xx-RD-400-326		Change 1	CH1	NCH-02-ASU-005	5.8 m²	8.4 m²	2.400 metres	2 staff			
NSGH-PHA	CH2	Change 2	CH2	NA-SZ-xx-RD-400-327		Change 2	CH2	NCH-02-ASU-014	6.2 m²	5.7 m²	2.400 metres	2 staff			
NSGH-PHA	CH3	Change 3	CH3	NA-SZ-xx-RD-400-328		Change 3	CH3	NCH-02-ASU-015	6.5 m²	5.3 m²	2.400 metres	2 staff			
NSGH-PHA	W0214A	Goods reception and unpacking area Pharmacy support services: Purchas	W0214A	NA-SZ-xx-RD-400-469		Goods reception and unpacking area Pharmacy support services: Purchase & distribution	W0214A	NSGH-00-PHA-005	18.0 m²	10.3 m²	2.400 metres	3 x Staff		1) Receiving supplies. 2) Checking delivery of supplies. 3) Unpacking bulk supplies in conditions of minimal dust and draught. 4) Transferring checked goods into stores. 5) Removing empty containers. 6) Disposal of used packaging materials. 7) Displaying information.	Outlet to refuse collection area.
NSGH-PHA	W0220A	Store: general Pharmacy support services: Purchase and distribution	W0220A	NA-SZ-xx-RD-400-471		Store: general Pharmacy support services: Purchase and distribution	W0220A	NSGH-00-PHA-009	100.5 m²	189.6 m²	2.400 metres	4 x Staff 2 x Others		1) Receiving and checking bulk pharmaceutical supplies (not I.V. fluids: flammable solvents or drugs liable to misuse). 2) Stock checking and rotation. 3) Recording stock issues and receipts. 4) Using computer workstation(s). 5) Using printer. 6) Displaying staff notices: information and/or messages. 7) Observation for staff control and security. 8) Hand rinsing.	
NSGH-PHA	W0247A	Controlled drugs store	W0247A	NA-SZ-xx-RD-400-474		Controlled drugs store	W0247A	NSGH-00-PHA-006	10.0 m²	10.1 m²	2.400 metres	1 x Staff		1) Holding unlicensed drugs. 2) Refrigerated storage of drugs/medicines.	
NSGH-PHA	W0247A1	Unlicenced medicines	W0247A1	NA-SZ-xx-RD-400-475		Unlicenced medicines	W0247A1	NSGH-00-PHA-010	5.0 m²	10.2 m²	2.400 metres	1 x Staff		1) Holding unlicensed drugs. 2) Refrigerated storage of drugs/medicines.	this is a shelving area not a room
NSGH-PHA	W0254A1	Temperature controlled store - freezer	W0254A1	NA-SZ-xx-RD-400-476		Temperature controlled store - freezer	W0254A1	NSGH-00-PHA-012	5.0 m²	5.9 m²	2.400 metres	1 x Staff		1) Secure storage. 2) Storing pharmaceutical and laboratory sundries. 3) Storing intravenous fluids. 4) Refrigerated storage. 5) Storekeeping and maintaining stocks. 6) Checking supplies. 7) Recording supplies issues. 8) Using computer workstation(s). 9) Using telephone(s).	To be a freestanding freezer: not a room: Alarmed to switchboard with continuous temperature recording. Back up for general temp. controlled store.
NSGH-PHA	W0254A2	Temperature controlled store - general	W0254A2	NA-SZ-xx-RD-400-477		Temperature controlled store - general	W0254A2	NSGH-00-PHA-013	5.0 m²	5.1 m²	2.400 metres	1 x Staff		1) Secure storage. 2) Storing pharmaceutical and laboratory sundries. 3) Storing intravenous fluids. 4) Refrigerated storage. 5) Storekeeping and maintaining stocks. 6) Checking supplies. 7) Recording supplies issues. 8) Using computer workstation(s). 9) Using telephone(s).	To be a freestanding freezer: not a room: Alarmed to switchboard with continuous temperature recording. Back up for general temp. controlled store.
NSGH-PHA	W0254B	Store: satellite pharmacy Surgical procedure	W0254B	NA-SZ-xx-RD-400-479		Store: satellite pharmacy Surgical procedure	W0254B	NCH-01-THE-162	6.0 m²	5.8 m²	2.400 metres	1 x Staff		1) Secure storage. 2) Storing pharmaceutical and laboratory sundries. 3) Storing intravenous fluids. 4) Refrigerated storage. 5) Storekeeping and maintaining stocks. 6) Checking supplies. 7) Recording supplies issues. 8) Using computer workstation(s). 9) Using telephone(s).	Security requirement paramount.
NSGH-PHA	X0266C3	Plaster room	X0266C3	NA-SZ-xx-RD-400-521-01		Plaster room	X0266C3	NSGH-00-OPD-073	16.0 m²	15.0 m²	2.400 metres	1 x Patient 2 x Staff 1 x Other		1) Preparation and application of plaster casts. 2) Removal of plaster casts. 3) Undressing and dressing in privacy. 4) Disposal of plaster waste and discarded splints. 5) Use of clinical wash-hand basin. 6) Accessing and updating electronic patient records (EPRs). 7) Patient may arrive on a trolley.	This room includes general engineering services for plaster work. For further details see HTM 02-01 and HTM 08-03. The lamp repeat call is situated over the door outside the room. The following items are shown on the room layout but are optional: - room in use switch and indicator: - the ceiling hook. DesignNo
NSGH-PHA	Z0110A	Automated Dispensary area	Z0110A	NA-SZ-xx-RD-400-541		Automated Dispensary area	Z0110A	NSGH-00-AAW-170	15.0 m²	15.2 m²	2.400 metres	2 x Staff		1) Storing controlled and scheduled drugs. 2) Storing non-controlled medicines and pharmaceuticals. 3) Leaving/collecting prescriptions. 4) Preparing and dispensing medicines. 5) Collecting cash and temporary safe keeping. 6) Using call systems. 7) Security of staff. 8) Using library: reference material. 9) Refrigerate	Security is enhanced if the store for medicines is not within view from an external window.
NSGH-RAG/F	E0113B	Imaging room: Ultrasound: general With reporting workstation	E0113B	NA-SZ-xx-RD-400-080		Imaging room: Ultrasound: general With reporting workstation	E0113B	NSGH-00-RAG-085	16.0 m²	16.1 m²	2.400 metres	1 x Patient 2 x Staff 2 x Additional staff intermittently Intermittent use		1) Patient may arrive on foot or in a wheelchair. 2) Patient may arrive on a trolley or in a bed. 3) Positioning/repositioning patients for examination. 4) Ultrasound examination. 5) Using oxygen and vacuum services for resuscitation. 6) Daily holding/sorting of documents: records: radiology films in clinical or diagno	Lamp indicator call situated over door outside room. In the absence of changing cubicle: privacy screen is required. Link to departmental computer management system.
NSGH-RAG/F	E0125B	Imaging room: conventional: general x-ray With mobile examination lam	E0125B	NA-SZ-xx-RD-400-073		Imaging room: conventional: general x-ray With mobile examination lamp	E0125B	NSGH-00-RAG-032	30.0 m²	35.4 m²	3.100 metres	1 x Patient 2 x Staff		1) Patient may arrive on foot or in a wheelchair. 2) Positioning/repositioning patients for examination. 3) Using radiation protection equipment. 4) Imaging x-ray examination of patient. 5) Film cassette(s) taken to processing area. 6) Using oxygen and vacuum services for resuscitation. 7) Clinical hand washing. 8) D	Lamp indicator call situated over door outside room. In the absence of changing cubicle: privacy screen is required. Radiation protection as required. Lighting control panel(s) depending on specific function of the room giving variable levels of illumination. Socket outlets at two metre intervals on each wall. Link to
NSGH-RAG/F	E0141A	Imaging room: Mammography	E0141A	NA-SZ-xx-RD-400-087		Imaging room: Mammography	E0141A	NSGH-01-RAF-033	15.0 m²	15.8 m²	2.400 metres	1 x Patient 1 x Staff		1) Patient may arrive on foot or in a wheelchair. 2) Mammography examination. 3) Storing small items of equipment. 4) Using radiation protection equipment. 5) Clinical hand washing.	Storing attachments and accessories which are necessary in order to provide a full service. Medical oxygen & vacuum outlets - project team option. Privacy curtain required at access door. Lamp indicator Radiation Warning at eve level at outside entrance.
NSGH-RAG/F	E0305A	Imaging room: remote fluoroscopy: barium	E0305A	NA-SZ-xx-RD-400-069		Imaging room: remote fluoroscopy: barium	E0305A	NSGH-00-RAG-012	39.0 m²	41.8 m²	3.100 metres	1 x Patient 5 x Staff		1) Patient may arrive on foot or in a wheelchair. 2) Patient may arrive on a trolley or in a bed. 3) Patient to take barium contrast media. 4) Positioning/repositioning patients for examination. 5) Fluoroscopy examination of patient. 6) Using radiation protection equipment. 7) Using oxygen and vacuum services for re	Lamp indicator call situated over door outside room. Lamp indicator Radiation Warning at eve level at outside entrance. Diagnostic Investigations using an images intensifier will usually be carried out in conjunction with contrast media for a range of investigations. If clinical procedure using Endoscopes or Gastrosc
NSGH-RAG/F	E0311A	Imaging room: Interventional Radiology	E0311A	NA-SZ-xx-RD-400-092		Imaging room: Interventional Radiology	E0311A	NSGH-01-RAF-078	45.0 m²	65.6 m²	3.100 metres	1 x Patient Up to 6 Staff: (2 radiologists: 2 nurses: 2 radiographers).		1) Using contrast media warmer/mixer. 2) Patient may arrive on foot or in a wheelchair or in a bed. 3) Positioning/repositioning patients for examination. 4) Fluoroscopy examination of patient. 5) Administration of contrast media. 6) Vascular interventional or imaging procedure: (Angiography imaging). 7) Using radiation protect	Lamp indicator call situated over door outside room. Lamp indicator Radiation Warning at eve level at outside entrance. Power/generator cabinets will possibly be located in adjacent machine room. The contrast media used in the majority of vascular imaging and interventional procedures is an iodine compound:
NSGH-RAG/F	E0527A	Processing: viewing room: serving 2 imaging rooms Computed Radiograp	E0527A	NA-SZ-xx-RD-400-101		Processing: viewing room: serving 2 imaging rooms Computed Radiography unit (CR)	E0527A	NSGH-01-RAF-125	21.0 m²	45.2 m²	2.400 metres	5 x Staff Intermittent use		1) Loading/removing CR plates into/from Reader. 2) Automatic identification and scanning of plates. 3) Accessing digital image(s) from reader. 4) Maintaining digital processing equipment. 5) Cleansing equipment and containers. 6) Holding CR plates before and after processing. 7) Quality control and reject analysis.	Serve 2 Imaging rooms. Wireway for link to departmental computer management system/PACS.
NSGH-RAG/F	E0538A	Imaging review room: 6 workstations	E0538A	NA-SZ-xx-RD-400-098		Imaging review room: 6 workstations	E0538A	NSGH-01-RAF-104	16.0 m²	49.5 m²	2.400 metres	Up to 8 Staff Intermittent use		1) Radiologist to report on scans previously carried out or to study images on console. 2) Informal discussions and case conferences by staff.	Diagnostic console and hard copy unit - project team option. Position of X-ray illuminator - project team option. Wireway for link to departmental computer management system.
NSGH-RAG/F	E0608A	Control room: serving 2 CT rooms	E0608A	NA-SZ-xx-RD-400-070		Control room: serving 2 CT rooms	E0608A	NSGH-00-RAG-021	24.0 m²	24.1 m²	2.400 metres	6 x Staff With intermittent visitors.		1) Operating console: controlling each scan: monitoring VDT image. 2) Communicating with patient via two-way communication system. 3) Viewing x-ray films. 4) Retrieving stored data. 5) Producing hard copy of selected CT images. 6) Communicating with colleagues/offices/departments by telephone. 7) Reading	CT = Computed Tomography CT Operating console: data storage and hard copy unit - project team option. Good visual & voice contact with the CT scanner room. Activity note: Receiving colleagues/visitors for training/observation of C.T. session. Additional equipment notes: Direct wireway to CT scanner an
NSGH-RAG/F	E0701A	CT Preparation room	E0701A	NA-SZ-xx-RD-400-089		CT Preparation room	E0701A	NSGH-01-RAF-046	20.0 m²	20.3 m²	2.400 metres	5 x Patients: including 1 trolley and 1 wheelchair patient		1) Patient may be ambulant: in a wheelchair or on a trolley. 2) Patient to wait post radio isotope administration for fairly long period. 3) Displaying and reading notices. 4) Viewing television.	Lamp indicator call situated over door outside room. Space between the seats of approximately 0.80 metre: when measured centre to centre. The seating should have non-absorbent: wipe clean: finishes. Domestic environment desirable.
NSGH-RAG/F	E0811A	Control room: serving 2 MRI rooms	E0811A	NA-SZ-xx-RD-400-084		Control room: serving 2 MRI rooms	E0811A	NSGH-00-RAG-111	24.0 m²	28.5 m²	2.400 metres	6 x Staff (radiographers & a radiologist) Other persons may include radiographers: clinicians incl. surgeons & anesthetists. With intermittent visitors.		1) Operating console: controlling each scan: monitoring VDT image. 2) Communicating with patient via two-way communication system. 3) Viewing x-ray films. 4) Retrieving stored data. 5) Producing hard copy of selected MR images. 6) Communicating with colleagues/offices/departments by telephone. 7) Control	MRI Operating console: data storage and hard copy unit - project team option. Receiving colleagues/visitors for training/observation of MRI session. Wireways to MRI scanner to be via RF- shielded access ports (inc. spare capacity for future use). Direct wireway between diagnostic console position and departme
NSGH-RAG/F	E0815B	Scanner room: open Magnetic Resonance Imaging (MRI)	E0815B	NA-SZ-xx-RD-400-085		Scanner room: open Magnetic Resonance Imaging (MRI)	E0815B	NSGH-00-RAG-112	50.0 m²	67.1 m²	3.000 metres	1 x Patient 2 - 8 Staff Intermittent use		1) Patient to arrive on foot or on MRI trolley: having been prepared for examination. 2) Positioning/repositioning patient on the scanner table/couch. 3) Patient undergoes scanning with constant aural/visual contact and possible vital function monitoring. 4) Administration of contrast media. 5) Interventional work	Lamp indicator call situated over door outside room. Open MRI systems are available in two types of configuration: Type 1 - 'horizontal orientation coil systems' (hamburger system). Type 2 - 'vertical orientation coil system' (double doughnut magnets). Space required for the equipment MRI compatible which may
NSGH-RAG/F	E0902A	Control room: serving Interventional Radiology	E0902A	NA-SZ-xx-RD-400-093		Control room: serving Interventional Radiology	E0902A	NSGH-01-RAF-079	16.0 m²	24.4 m²	2.400 metres	3 x Staff (2 Radiographers: 1 Radiologist)		1) Operating console: controlling each scan: monitoring VDT image. 2) Communicating with patient via two-way communication system. 3) Viewing: retrieving and archiving x-ray films/images. 4) Producing hard copy of selected PET images. 5) Communicating with colleagues/offices/departments by telephone. 6)	Direct wireway between diagnostic console position and departmental laser imaging equipment. Variable lighting control. Link to departmental computer management system/PACS. Local temperature control required. Radiation protection advice required.
NSGH-RAG/F	G0101A	Parking bay: mobile 2 x-ray units	G0101A	NA-SZ-xx-RD-400-300		Parking bay: mobile 2 x-ray units	G0101A	NSGH-01-RAF-122	5.0 m²	6.4 m²	2.400 metres	1 x Staff Intermittent use		1) Parking mobile image unit. 2) Charging batteries of imaging x-ray machine. 3) Holding protective lead apron(s).	SpaceNotes: Height to suit surrounding area.
NSGH-RAG/F	G0119B	Parking bay: 6 wheelchairs	G0119B	NA-SZ-xx-RD-400-081		Parking bay: 6 wheelchairs	G0119B	NSGH-00-RAG-094	4.0 m²	4.0 m²	2.400 metres			1) Parking wheelchair(s).	SpaceNotes: Height to suit surrounding area.
NSGH-RAG/F	H0336B	Library: study room: 10 person	H0336B	NA-SZ-xx-RD-400-099		Library: study room: 10 person	H0336B	NSGH-01-RAF-109	30.0 m²	32.2 m²	2.400 metres	10 x Persons 1 x Staff		1) Using specialised visual aids multi-media equipment. 2) Using computer workstation(s).	Access to IT services.
NSGH-RAG/F	H0517B	Seminar: training room: 30 person	H0517B	NA-SZ-xx-RD-400-100		Seminar: training room: 30 person	H0517B	NSGH-01-RAF-112	55.0 m²	60.5 m²	2.400 metres	30 x Persons		1) Holding seminar. 2) Students/Participants to make use of books and to take notes. 3) Writing notes and/or reports. 4) Viewing film and/or computer generated images. 5) Using specialised visual aids multi-media equipment. 6) Secure storage of equipment.	Use for small committee work and similar activities Rail around room for flip charts to hang on during seminar. Fittings and furniture must permit flexible arrangement of seating layout and to be easily alterable. Activity note: Split-group and less formal teaching in the seminar mode.
NSGH-RAG/F	J0212B	Reception: 3 staff	J0212B	NA-SZ-xx-RD-400-067		Reception: 3 staff	J0212B	NSGH-00-RAG-002	13.0 m²	18.0 m²	2.400 metres	3 x Staff		1) Reception and registration of patients. 2) Dealing with enquiries. 3) Maintaining appointments and attendance register. 4) Using computer workstation(s). 5) Displaying information. 6) Security of staff.	Counter/reception desk should be accessible to all users. If audio privacy required: Glazed screen between the workstations - project team option. Induction loop hearing aid system. Next patient call system - to comply with DDA and Part M of the Building Regulations. SpaceNotes: Space includes circulation. Heigh
NSGH-RAG/F	J0420B	Reception and office: 4 staff	J0420B	NA-SZ-xx-RD-400-086		Reception and office: 4 staff	J0420B	NSGH-01-RAF-001	27.0 m²	28.8 m²	2.400 metres	4 x Staff		1) Reception and registration of patients. 2) Dealing with enquiries. 3) Maintaining appointments and attendance register. 4) Receipt and dispatch of documents. 5) Using computer workstation(s). 6) Holding current patients records/case notes. 7) Displaying information. 8) Holding working supply of stationery. 9) H	Counter/reception desk should be accessible to all users. Induction loop hearing aid system.
NSGH-RAG/F	J1112A	Waiting area: 40 person including 4 wheelchair user	J1112A	NA-SZ-xx-RD-400-066		Waiting area: 40 person including 4 wheelchair user	J1112A	NSGH-00-RAG-001	66.0 m²	77.2 m²	2.400 metres	40 Persons including 4 wheelchair users.		1) Patient may arrive on foot or in a wheelchair. 2) Waiting by patients: relatives and escorts. 3) Displaying information. 4) Displaying notices.	TV screen display information and number being called from C/E room: activated at reception desk - project team option. Dividing screen - project team option.
NSGH-RAG/F	M0254B	Office: 4 person	M0254B	NA-SZ-xx-RD-400-068		Office: 4 person	M0254B	NSGH-00-RAG-003	24.0 m²	20.4 m²	2.400 metres	4 x Persons		1) Clinical administration. 2) Using computer workstation(s). 3) Using telephone(s). 4) Storing files and records. 5) Hanging coats. 6) Secure holding of personal belongings.	
NSGH-RAG/F	M0326B	Office technical and data review	M0326B	NA-SZ-xx-RD-400-095		Office technical and data review	M0326B	NSGH-01-RAF-083	12.0 m²	20.2 m²	2.400 metres	2 x persons Up to 4 others		1) Assessment and planning of treatment/operation. 2) Using computer workstation(s). 3) Viewing film and/or computer generated images. 4) Using telephone(s). 5) Storing photographic equipment and records.	The following equipment is shown on the room layout but is optional: - lamp repeat calls for controlled drugs cupboards (but required if the office is used for clinical control). The following items may be provided if the office is used for clinical control: - a small safe: - a key cupboard: - an alarm panel: see HTM 08-
NSGH-RAG/F	T0126A	Staff base and clean utility bay: 2 staff With controlled drugs cupboard. R	T0126A	NA-SZ-xx-RD-400-428		Staff base and clean utility bay: 2 staff With controlled drugs cupboard. Recovery pre-discharge	T0126A	NSGH-01-RAF-029	11.0 m²	10.1 m²	2.400 metres	2 x Staff		1) Staff supervision and observation of patients. 2) Recording patient data/notes. 3) Monitoring patient/nurse call system. 4) Preparing patients for discharge. 5) Holding controlled and scheduled drugs. 6) Refrigerated storage. 7) Holding sterile supplies. 8) Clinical hand washing. 9) Using telephone(s). 10) Holding w	Computer keyboard should be with cleanable or disposable cover. Video player for pre-discharge area 2 TV.
NSGH-RAG/F	T0516A	Clean utility: barium preparation	T0516A	NA-SZ-xx-RD-400-305		Clean utility: barium preparation	T0516A	NSGH-01-RAF-054	5.5 m²	12.0 m²	2.400 metres	02 x Staff Intermittent use		1) Storing contrast media - barium suspensions and powders. 2) Storing controlled medicines and pharmaceuticals. 3) Storing sterile supplies. 4) Storing non-sterile supplies. 5) Storing equipment. 6) Storing glassware. 7) Preparing barium contrast media. 8) Preparing/laying up trolleys for clinical procedures. 9) Wash	Drainage to be suitable for disposal of barium.
NSGH-RAG/F	V0626B	Locker bay: 4 small lockers	V0626B	NA-SZ-xx-RD-400-076		Locker bay: 4 small lockers	V0626B	NSGH-00-RAG-042	0.5 m²	1.8 m²	2.400 metres	Intermittent use		1) Security of handbags or valuables.	SpaceNotes: Height to suit surrounding area.
NSGH-RAG/F	V0653B	Locker bay: 12 small lockers	V0653B	NA-SZ-xx-RD-400-079		Locker bay: 12 small lockers	V0653B	NSGH-00-RAG-080	1.5 m²	2.3 m²	2.400 metres	Intermittent use		1) Secure holding of personal belongings.	This space includes 12 small lockers. It represents just one example size and layout of a locker bay. SpaceNotes: 2400 mm is the anticipated minimum ceiling height. Should be sized to suit surrounding area/design. Sizing guide for different number of users: - 0.125 sqm per locker. For guidance on number of lockers
NSGH-RAG/F	V0703B	Patient changing cubicle: ambulant person	V0703B	NA-SZ-xx-RD-400-075		Patient changing cubicle: ambulant person	V0703B	NSGH-00-RAG-039	2.0 m²	1.5 m²	2.400 metres	1x Patient		1) Ambulant patient/user. 2) Changing before and/or after clinical examination or treatment. 3) Grooming. 4) Patient to wait for examination. 5) Patient to wait for treatment. 6) Patient to wait for an x-ray. 7) Patient to await checking of films and/or report.	Lamp indicator call situated over door outside room
NSGH-RAG/F	V0704B	Patient changing cubicle: independent wheelchair accessible	V0704B	NA-SZ-xx-RD-400-074		Patient changing cubicle: independent wheelchair accessible	V0704B	NSGH-00-RAG-037	4.0 m²	3.8 m²	2.400 metres	1 x Patient		1) Patient may be ambulant or in a wheelchair. 2) Changing before and/or after clinical examination or treatment. 3) Grooming. 4) Patient to wait for examination. 5) Patient to wait for treatment. 6) Patient to wait for an x-ray. 7) Patient to await checking of films and/or report.	Lamp indicator call situated over door outside room
NSGH-RAG/F	V0717B	Patient changing cubicle: wheelchair accessible: 2 door access	V0717B	NA-SZ-xx-RD-400-077		Patient changing cubicle: wheelchair accessible: 2 door access	V0717B	NSGH-00-RAG-052	4.5 m²	4.5 m²	2.400 metres	1x patient: 1x assistant if required		1) Patient may be ambulant or in a wheelchair. 2) Changing before and/or after clinical examination or treatment. 3) Grooming. 4) Patient to wait for examination. 5) Patient to wait for treatment. 6) Patient to wait for an x-ray. 7) Patient to await checking of films and/or report.	Lamp indicator call situated over door outside room DesignNotes: Inner door must be controlled from treatment/examination room only by the use of thumb turn lock or similar device. If use with x-ray room must be designed to provide protection from ionising radiation.
NSGH-RAG/F	V0725A	Changing room: semi-ambulant	V0725A	NA-SZ-xx-RD-400-078		Changing room: semi-ambulant	V0725A	NSGH-01-RAG-052	2.0 m²	2.5 m²	2.400 metres	1 x Person		1) Semi-ambulant person to undress/dress in privacy. 2) Hanging clothes.	The lamp repeat call is situated over the door outside the room. Where there is significant risk of assault or self-harm: fixtures: fittings and furniture need to be reviewed. Luminaires should be sufficiently robust and inherently safe for user groups. Diffusers should be tamper-proof and secure.
NSGH-RAG/F	V1631B	Shower room: independent wheelchair	V1631B	NA-SZ-xx-RD-400-998		Shower room: independent wheelchair	V1631B	NSGH-01-RAF-008	7.0 m²	7.7 m²	2.400 metres	1 x Person Intermittent use		1) Use of independent wheelchair accessible shower. 2) Use of independent wheelchair accessible toilet and adjacent hand-rinse basin. 3) Use of wheelchair accessible hand-wash basin. 4) Undressing and dressing in privacy. 5) Hanging clothes. 6) Hanging towels.	The lamp repeat call is situated over the door outside the room Where there is significant risk of assault or self-harm: fixtures: fittings and furniture need to be reviewed. Luminaires should be sufficiently robust and inherently safe for user groups. Diffusers should be tamper-proof and secure. The bin for the dispo
NSGH-RAG/F	W0120A	Store: catheters and sterile packs	W0120A	NA-SZ-xx-RD-400-090		Store: catheters and sterile packs	W0120A	NSGH-01-RAF-052	12.0 m²	18.6 m²	2.400 metres	1 x Staff Intermittent use		1) Storing sterile packs. 2) Storing catheters and catheter guide wires used in specialised interventional procedures.	
NSGH-RAG/F	E0601B1	Scanner room: Computed Tomography (CT)	E0601B1	NA-SZ-xx-RD-400-072-01		Scanner room: Computed Tomography (CT)	E0601B1	NSGH-00-RAG-020	36.0 m²	40.2 m²	3.100 metres	1 x Patient 4 x Staff Intermittent use		1) Patient may arrive on foot or in a wheelchair. 2) Patient may arrive on a trolley or in a bed. 3) Positioning/repositioning patient on the scanner table/couch. 4) Preparation of contrast media: I.V. injections and other sterile procedures. 5) Administration of contrast media. 6) Patient undergoes scanning with cons	Lamp indicator call situated over door outside room. Ancillary items required. Scanning apparatus selected and positioned as required. Space required for the following: which may be stored elsewhere: Infusion stand: twin hook: mobile: (STA142). Examination lamp: mobile: (LIG015). Anaesthesia unit: (ANA004). T
NSGH-RAG/F	V1631B/R	Shower room: independent wheelchair HANDED	V1631B/R	NA-SZ-xx-RD-400-998 HANDED		Shower room: independent wheelchair HANDED	V1631B/R	NSGH-01-RAF-008	7.0 m²	7.7 m²	2.400 metres	1 x Person Intermittent use		1) Use of independent wheelchair accessible shower. 2) Use of independent wheelchair accessible toilet and adjacent hand-rinse basin. 3) Use of wheelchair accessible hand-wash basin. 4) Undressing and dressing in privacy. 5) Hanging clothes. 6) Hanging towels.	The lamp repeat call is situated over the door outside the room Where there is significant risk of assault or self-harm: fixtures: fittings and furniture need to be reviewed. Luminaires should be sufficiently robust and inherently safe for user groups. Diffusers should be tamper-proof and secure. The bin for the dispo
NSGH-RAG/F	X1807A	Control room serving CT simulator room	X1807A	NA-SZ-xx-RD-400-091		Control room serving CT simulator room	X1807A	NSGH-01-RAF-076	20.0 m²	19.8 m²	3.100 metres	Up to 5 Staff Access to visitors: researchers		1) Radiographer operating x-ray Simulator. 2) Monitoring of patient on Simulator couch through leaded glass window. 3) Using computer workstation(s). 4) Viewing x-ray films. 5) Using telephone(s). 6) Displaying notices. 7) Using marker/wall board.	Two way speech to simulator area. A local area network (LAN) is needed to receive images directly from CT scanners or linear accelerators and to link to integrated clinical information systems (ICIS) for activity recording: link to Treatment Planning Computer etc. Picture archiving and communication systems (PAC
NSGH-RAG/F	Y0646B	Disposal hold: 3000 litres	Y0646B	NA-SZ-xx-RD-400-097		Disposal hold: 3000 litres	Y0646B	NSGH-01-RAF-097	12.0 m²	14.6 m²	2.400 metres	1 x Staff Intermittent use		1) Holding domestic: clinical and recyclable waste for disposal or reprocessing.	This disposal hold is based on the storage of approximately 3000 litres of waste. It represents just one example size and layout of a disposal hold. Separate bins/areas must be provided for: - clinical waste: - domestic waste: - recyclable items: - linen: - equipment requiring reprocessing. SpaceNotes: Ceiling height n
NSGH-RAG/F	Z0809B	Preparation and store: Radiopharmaceuticals	Z0809B	NA-SZ-xx-RD-400-082		Preparation and store: Radiopharmaceuticals	Z0809B	NSGH-00-RAG-103	20.0 m²	9.9 m²	2.400 metres	2 x Staff		1) Preparing radiopharmaceutical products by open procedures under laminar flow within a workstation using aseptic techniques. 2) Holding of radio-isotopes. 3) Storing drugs/medicines. 4) Storing equipment for use in preparing radiopharmaceuticals. 5) Disposal of radioactive liquid materials. 6) Holding contamin	3x Boxes lead lined & 1x set of Bricks lead are project specific. In preparation area: a section of worktop should be shielded in lead/plywood laminate lead equivalent thickness 1cm. Wall mounted telephone handset is required. "Controlled Area" warning sign.
NSGH-REH	G0130A	Parking bay: 3 wheelchairs	G0130A	NA-SZ-xx-RD-400-287		Parking bay: 3 wheelchairs	G0130A	NSGH-00-ORT-003	2.0 m²	2.1 m²	2.400 metres	Intermittent use		1) Parking wheelchair(s).	SpaceNotes: Height to suit surrounding area.
NSGH-REH	H0104B	Conference/meeting room: 10 person	H0104B	NA-SZ-xx-RD-400-284		Conference/meeting room: 10 person	H0104B	NSGH-00-ORT-026	20.0 m²	20.2 m²	2.400 metres	10 x Persons		1) Holding conference. 2) Holding meeting formal and/or informal. 3) Discussions.	Use of projector screen audio and visual aids when required.
NSGH-REH	H1102A	Group support room: 20 person Multi-purpose use	H1102A	NA-SZ-xx-RD-400-291		Group support room: 20 person Multi-purpose use	H1102A	NSGH-00-ORT-037	40.0 m²	53.4 m²	2.400 metres	20 x Patients 1 - 3 Staff		1) Group discussions. 2) Instructing with the aid of a television monitor for showing video tape recordings. 3) Displaying health education material. 4) Occupational therapy	In HBN Primary care: A Group Room is required for group functions: such as ante-natal classes or some health promotion activities. This space may be shared with: or double as the Community Psychiatric Group Room or Occupational Therapy.
NSGH-REH	J0206A	Reception: 2 staff	J0206A	NA-SZ-xx-RD-400-285		Reception: 2 staff	J0206A	NSGH-00-ORT-001	10.0 m²	11.8 m²	2.400 metres	2 x Staff		1) Reception and registration of patients. 2) Dealing with enquiries. 3) Maintaining appointments and attendance register. 4) Using computer workstation(s). 5) Displaying information. 6) Security of staff.	Counter/reception desk should be accessible to all users. If audio privacy required: Glazed screen between the workstations - project team option. Induction loop hearing aid system. Next patient call system - to comply with DDA and Part M of the Building Regulations. In HBN Hosp. accom for children and young p
NSGH-REH	J1135B	Waiting area: 10 person including 3 wheelchair user	J1135B	NA-SZ-xx-RD-400-286		Waiting area: 10 person including 3 wheelchair user	J1135B	NSGH-00-ORT-002	19.5 m²	49.7 m²	2.400 metres	10 x Persons: including 3 wheelchair users.		1) Patient may be ambulant with/without walking aids: in wheelchairs or requiring assistance. 2) Waiting by patients: relatives and escorts. 3) Displaying information.	Selection of chair types to be made at project level.
NSGH-REH	P0811B	Drinking water dispenser	P0811B	NA-SZ-xx-RD-400-288		Drinking water dispenser	P0811B	NSGH-00-ORT-004	0.5 m²	0.7 m²	2.400 metres			1) Dispensing chilled water. 2) Disposal of used cups.	SpaceNotes: 2400 mm is the anticipated minimum ceiling height. Should be sized to suit surrounding area/design.
NSGH-REH	V0409A	Staff changing room with cubicle and handwash: 10 places Slimline locke	V0409A	NA-SZ-xx-RD-400-436		Staff changing room with cubicle and handwash: 10 places Slimline lockers: shoe lockers: coat rail	V0409A	NSGH-00-ORT-022	14.0 m²	14.2 m²	2.400 metres	Intermittent use 10 x Staff		1) Changing into protective clothing and footwear from outer clothing. 2) Changing in privacy. 3) Hanging outdoor clothing. 4) Security of clothing and personal effects. 5) Holding protective clothing: uniforms and footwear. 6) Disposal of used protective clothing. 7) Grooming. 8) Hand washing.	
NSGH-REH	V0410A	Staff changing room with cubicle and handwash: 20 places Slimline locke	V0410A	NA-SZ-xx-RD-400-437		Staff changing room with cubicle and handwash: 20 places Slimline lockers: shoe lockers: coat rail	V0410A	NSGH-00-ORT-015	18.0 m²	23.2 m²	2.400 metres	20 x Staff		1) Changing into protective clothing and footwear from outer clothing. 2) Changing in privacy. 3) Hanging outdoor clothing. 4) Security of clothing and personal effects. 5) Holding protective clothing: uniforms and footwear. 6) Disposal of used protective clothing. 7) Grooming. 8) Hand washing.	
NSGH-REH	V1321A2	Patient changing room with cubicles: shower & wash: 10 places	V1321A2	NA-SZ-xx-RD-400-458		Patient changing room with cubicles: shower & wash: 10 places	V1321A2	NSGH-00-ORT-034	16.0 m²	15.5 m²	2.400 metres	1 x person (staff or visitor) Intermittent use		1) Use of shower by ambulant person. 2) Undressing and dressing in privacy. 3) Hanging clothes. 4) Hanging towels.	This room is not recommended for patient use.
NSGH-REH	W1210B	Store: exercise equipment: activity area	W1210B	NA-SZ-xx-RD-400-488		Store: exercise equipment: activity area	W1210B	NSGH-00-ORT-031	6.0 m²	6.2 m²	2.400 metres			1) Storing therapy exercise equipment. 2) Storing exercise equipment/mats. 3) Secure storage of loose equipment.	
NSGH-REH	W1215B	Store: exercise equipment: therapy treatment cubicles	W1215B	NA-SZ-xx-RD-400-489		Store: exercise equipment: therapy treatment cubicles	W1215B	NSGH-00-ORT-033	6.0 m²	8.2 m²	2.400 metres			1) Secure storage of equipment. 2) Storing mobile equipment.	
NSGH-REH	W1310A	Store: splint: crutch	W1310A	NA-SZ-xx-RD-400-494		Store: splint: crutch	W1310A	NSGH-00-ORT-042	2.0 m²	6.5 m²	2.400 metres			1) Storing materials and supplies. 2) Storing of assorted crutches and walking aids.	
NSGH-REH	X0113A	Treatment room: Physiotherapy: 1 patient	X0113A	NA-SZ-xx-RD-400-508		Treatment room: Physiotherapy: 1 patient	X0113A	NSGH-00-ORT-006	0.0 m²	20.2 m²	2.400 metres	1-2 Staff & 1 patient		1) Patient may be ambulant with/without walking aids: in wheelchairs or requiring assistance. 2) Patient to undress/dress in privacy. 3) Patient receiving treatment on chair: traction table: plinth or couch. 4) Application of dressings 5) Emergency resuscitation. 6) Clinical hand washing	Treatment of conditions requiring discreet privacy: to be carried out by 1-2 physiotherapists.
NSGH-REH	P0625B2	Beverage Bay	P0625B2	NA-SZ-xx-RD-400-415-02		Beverage Bay	P0625B2	NSGH-06-WS6-031	6.0 m²	11.1 m²	2.400 metres	Intermittent use		1) Preparing snacks and beverages and associated activities. 2) Using microwave oven. 3) Storing dry goods in cupboards. 4) Refrigerated storage. 5) Storing trays: crockery and cutlery. 6) Mechanically dishwashing crockery and cutlery. 7) Disposal of waste. 8) Use of hand-rinse basin.	The following items are included on the room layout but are optional: - a microwave oven: - a dishwasher.
NSGH-REH	O0120A	Activities of daily living: kitchen	O0120A	NA-SZ-xx-RD-400-540-01		Activities of daily living: kitchen	O0120A	NSGH-00-AAW-043	30.0 m²	23.7 m²	2.400 metres	3 x Patients 1 x Staff All day use		1) Therapist to assess and rehabilitate disabled patients. 2) Preparing food. 3) Cooking food. 4) Washing utensils and pots. 5) Washing up of crockery and cutlery. 6) Serving and eating meals. 7) Assessment of patients in use of eating utensils and prescription of appropriate aids. 8) Storing food. 9) Refrigerated stora	Glazed partition for observation purposes. Lamp indicator call situated over door outside room
NSGH-REH	O0124A1	Activities of daily living: bathroom with hoists -ADL	O0124A1	NA-SZ-xx-RD-400-038-01		Activities of daily living: bathroom with hoists -ADL	O0124A1	NSGH-01-STW-082	13.0 m²	14.4 m²	2.400 metres	Intermittent use		1) Disabled patient may be ambulant with/without walking aids or in a wheelchair. 2) Undressing: dressing: using domestic bathroom: WC and aids. 3) Using mobile hoist. 4) Patient may require assistance during the activities.	Lamp indicator call situated over door outside room Bath not plumbed in
NSGH-REH	X0222B	Treatment cubicles: Physiotherapy: 10 patients	X0222B	NA-SZ-xx-RD-400-513		Treatment cubicles: Physiotherapy: 10 patients	X0222B	NSGH-00-ORT-012	100.0 m²	100.8 m²	2.400 metres	1 x Patient per cubicle. 2 x Staff per cubicle.		1) Patient may be ambulant with/without walking aids: in wheelchairs or requiring assistance. 2) Patient to undress/dress in privacy. 3) Patient receiving treatment on chair: traction table: plinth or couch. 4) Clinical hand washing. 5) Storing blankets: pillows and pillow cases.	Lamp patient/staff call is required 1 per cubicle. Treatment may be carried out by one or two physiotherapists using number traction table: suspension apparatus: variable height plinth: short wave diathermy: variable height couch and/or other mobile equipment.
NSGH-REH	X0224A	Preparation and splint fitting room: 1 patient	X0224A	NA-SZ-xx-RD-400-514		Preparation and splint fitting room: 1 patient	X0224A	NSGH-00-ORT-043	19.0 m²	39.1 m²	2.400 metres	1 x Patient & escort 2 x Staff		1) Treatment which may include application of plaster/plastic splints. 2) Manufacturing plastic splints. 3) Clinical hand washing. 4) Storing plastic sheeting. 5) Storing plaster bandage stock: allied equipment and supplies. 6) Storing splint making equipment. 7) Using hand hairdryer.	
NSGH-REH	O0507C1	OT Therapy Room	O0507C1	NA-SZ-xx-RD-400-611	c	OT Therapy Room	O0507C1	NSGH-00-ORT-040	30.0 m²	34.7 m²	2.400 metres	12 x Patients 3 x Staff		1) Patient may be ambulant with/without walking aids: in wheelchairs or requiring assistance. 2) Assessment and rehabilitative work under supervision by occupational therapy staff. 3) Assessment and training in mobility: self-care and social skills. 4) Work assessment and training. 5) Patient to use computer for the	OUT215-Telephone to have full range of telephone option e.g. handspeaker etc.
NSGH-REH	X0313A	Activity area: Physiotherapy: 10 patients	X0313A	NA-SZ-xx-RD-400-290		Activity area: Physiotherapy: 10 patients	X0313A	NSGH-00-ORT-029	80.0 m²	53.6 m²	3.200 metres	3-4 staff: up to 10 patients		1) Rehabilitation exercises 2) Deskwork. 3) Clinical hand washing	Lamp indicator call situated over door outside room. Individual treatment or re-education of patients whose treatment does not require privacy: but does require the use of specialised equipment giving rise to greater activity than is possible in and needing more space than is available in the Individual Treatment cu
NSGH-REH	X0318B	Activity area/gymnasium: Physiotherapy: 15 patients	X0318B	NA-SZ-xx-RD-400-289		Activity area/gymnasium: Physiotherapy: 15 patients	X0318B	NSGH-00-ORT-014	100.0 m²	100.0 m²	4.500 metres	15 patients - physotherapy activity area or 10 patients - physothrapy gymnasuim 3 - 4 Staff		1) Rehabilitation exercises 2) Deskwork. 3) Clinical hand washing.	Lamp indicator call situated over door outside room. Individual treatment or re-education of patients whose treatment does not require privacy: but does require the use of specialised equipment giving rise to greater activity than is possible in and needing more space than is available in the Individual Treatment cu
NSGH-RENO	C1104A	Training room for Peritoneal Dialysis (PD)	C1104A	NA-SZ-xx-RD-400-049		Training room for Peritoneal Dialysis (PD)	C1104A	NSGH-02-RENO-005	16.5 m²	16.5 m²	2.400 metres	1 x Staff 2 x Patient 2 x Escort (escort)		1) Teaching patients how to operate haemodialysis machine for home haemodialysis and self-care. 2) Teaching patients how to perform continuous ambulatory peritoneal dialysis. (CAPD) 3) Teaching patients how to perform automated peritoneal dialysis. 4) Holding small items of equipment. 5) Disposal of liquid	Lamp indicator call situated over door outside room The home haemodialysis patients and Continuous Ambulatory Peritoneal Dialysis (CAPD) patients are trained differently and therefore need different facilities/environments. Training should take place in an informal: non-clinical environment that relates to a pati
NSGH-RENO	C1402A	Physical measurement area: Renal	C1402A	NA-SZ-xx-RD-400-059		Physical measurement area: Renal	C1402A	NSGH-02-RENO-075	8.0 m²	8.0 m²	2.400 metres	1 x Patient 1 x Staff		1) Patient may arrive on foot or in a wheelchair. 2) Weighing patients. 3) Monitoring and recording patient blood pressure. 4) Recording patient general health. 5) Washing fistula arms. 6) Hanging outdoor clothing. 7) Clinical hand washing. 8) Recording patient data/notes. 9) Using computer workstation(s). 10) Usin	A clinical hand-wash basin: accessible by wheelchair patients.
NSGH-RENO	J0422A	Reception and office: 6 staff	J0422A	NA-SZ-xx-RD-400-058		Reception and office: 6 staff	J0422A	NSGH-02-RENO-070	39.0 m²	34.2 m²	2.400 metres	6 x Staff		1) Reception and registration of patients. 2) Dealing with enquiries. 3) Maintaining appointments and attendance register. 4) Receipt and dispatch of documents. 5) Using computer workstation(s). 6) Holding current patients records/case notes. 7) Displaying information.	Counter/reception desk should be accessible to all users. Induction loop hearing aid system.
NSGH-RENO	J1111A1	Waiting area: 30 person including 3 wheelchair user	J1111A1	NA-SZ-xx-RD-400-052		Waiting area: 30 person including 3 wheelchair user	J1111A1	NSGH-02-RENO-052	49.5 m²	51.2 m²	2.400 metres	30 Persons including 3 wheelchair users.		1) Patient may arrive on foot or in a wheelchair. 2) Waiting by patients: relatives and escorts. 3) Displaying notices. 4) Displaying information.	TV screen display information and number being called from C/E room: activated at reception desk - project team option. In HBN Hosp. accom for children and young people - Display/notice board must be Velcro or magnetic.
NSGH-RENO	K0607A	HD Store: 2 dialysis stations	K0607A	NA-SZ-xx-RD-400-592		HD Store: 2 dialysis stations	K0607A	NSGH-02-RENO-020	6.0 m²	28.0 m²	2.400 metres	1 - 2 Staff Intermittent use		1) Processing: filtration of water. 2) Maintaining of water treatment plant.	Project specific. The specification for the water treatment plant will be determined partly by the quality of the local water supply: project teams should seek the advice of the local water authority and the specialist water treatment plant supplier. Ref to HBN Renal dialysis Para 4.64
NSGH-RENO	K0608A	Renal Dialysis Technical Services Area	K0608A	NA-SZ-xx-RD-400-053		Renal Dialysis Technical Services Area	K0608A	NSGH-02-RENO-056	15.0 m²	95.7 m²	2.400 metres	1 - 2 Staff Intermittent use		1) Processing: filtration of water. 2) Maintaining of water treatment plant.	Project specific. The specification for the water treatment plant will be determined partly by the quality of the local water supply: project teams should seek the advice of the local water authority and the specialist water treatment plant supplier. Ref to HBN Renal dialysis Para 4.64
NSGH-RENO	V0534B	Staff changing room: 15 places Slimline lockers: coat rail: shoe rack	V0534B	NA-SZ-xx-RD-400-051		Staff changing room: 15 places Slimline lockers: coat rail: shoe rack	V0534B	NSGH-02-RENO-043	10.0 m²	42.3 m²	2.400 metres	15 x Staff		1) Changing into/out of outdoor clothing. 2) Changing footwear. 3) Hanging outdoor clothing. 4) Security of clothing and personal effects. 5) Disposal of used protective clothing. 6) Grooming.	
NSGH-RENO	W1531A	Store: equipment	W1531A	NA-SZ-xx-RD-400-047		Store: equipment	W1531A	NSGH-02-RENO-002	12.0 m²	25.1 m²	2.400 metres			1) Storing medical equipment. 2) Storing mobile equipment.	Equipment to suit local requirements. Shelves to be adjustable height and heavy duty. In Audiology Clinic: equipment stored in boxes. In Sexual health clinic: Space should be provided for the storage of equipment (eg microscopes: colposcopes: hyfrecator: scan machines and diathermy).
NSGH-RENO	X0251A4	8 Recliner Chair Bays	X0251A4	NA-SZ-xx-RD-400-535-02		8 Recliner Chair Bays	X0251A4	NSGH-02-RENO-031	55.0 m²	104.9 m²	2.400 metres	8 x Patient 1 x Staff		1) Patient may arrive on foot or in a wheelchair. 2) Positioning patient on bed for treatment. 3) Patient receiving dialysis treatment. 4) Clinical hand washing. 5) Patient to read: writes: listens to radio: views TV and use telephone. 6) Writing up patients notes. 7) Holding clothing and personal effects. 8) Holding small	Lamp indicator call situated on outside entrance of the bay. Clinical hand wash basin and clinical waste bins may be shared between two stations. Mobile examination lamp and shovemomanometer can be shared between the stations. Communication and entertainment system - project team option. Medical gase
NSGH-RENO	X0252A	Isolation treatment room: dialysis: 1 patient	X0252A	NA-SZ-xx-RD-400-050		Isolation treatment room: dialysis: 1 patient	X0252A	NSGH-02-RENO-013	13.5 m²	13.5 m²	3.000 metres	1 x Patient 1 x Staff		1) Patient may arrive on foot or in a wheelchair. 2) Positioning patient on reclining chair for treatment. 3) Patient receiving dialysis treatment. 4) Clinical hand washing. 5) Patient to read: writes: listens to radio: views TV and use telephone. 6) Writing up patients notes. 7) Holding clothing and personal effects. 8) Ho	Lamp indicator call situated over door outside room. A viewing window from the main dialysis area is required. Communication and entertainment system - project team option. Medical gases - oxygen and suction - project team option.
NSGH-RENO	X0255A	Treatment room: Continuous ambulatory peritoneal dialysis: 1 patient	X0255A	NA-SZ-xx-RD-400-048		Treatment room: Continuous ambulatory peritoneal dialysis: 1 patient	X0255A	NSGH-02-RENO-003	16.5 m²	16.5 m²	2.400 metres	1 x Patient 1 x Staff		1) Patient may be ambulant: in a wheelchair or on a trolley. 2) Patient transferred to a treatment chair/couch. 3) Performing clinical procedures requiring inserting and changing the lines: cannulae required by CAPD and haemodialysis patient. 4) Clinical hand washing. 5) Holding clothing and dressings and sharps	CAPD - Continuous ambulatory peritoneal dialysis. In Satellite dialysis unit used as "Line change room". Lamp indicator call situated over door outside room.
NSGH-RENO/M	B0305A2	Single-bed room - Renal	B0305A2	NA-SZ-xx-RD-400-001-10		Single-bed room - Renal	B0305A2	NSGH-04-RENW-039	16.5 m²	20.7 m²	2.400 metres	1 x Patient 4 x Others		1) Clinical discussions and delivery of minimally invasive clinical procedures at the bedside. 2) Use of monitoring equipment. 3) Use of mobile diagnostic and therapeutic equipment. 4) Undressing and dressing in privacy. 5) Resting and sleeping in bed. 6) Patient to take meals in bed or by the bed. 7) Using entertainm	This room is based on the use of a trolley with a worktop. It is assumed that computers will be handheld or brought into the room on a trolley. The lamp repeat call is situated over the door outside the room. The following items may be provided: - a ceiling-mounted hoist: - a small fridge for patient use: - a comb
NSGH-RENO/M	G0149A	Parking bay: equipment: general	G0149A	NA-SZ-xx-RD-400-600		Parking bay: equipment: general	G0149A	NSGH-04-RENW-245	5.0 m²	4.0 m²	2.400 metres	Intermittent use		1) Parking mobile equipment.	SpaceNotes: Height to suit surrounding area.
NSGH-RENO/M	H1335B	Group room: meeting: 7 places (including 1 wheelchair place)	H1335B	NA-SZ-xx-RD-400-063		Group room: meeting: 7 places (including 1 wheelchair place)	H1335B	NSGH-04-RENW-003	16.0 m²	15.4 m²	2.400 metres	7 x Persons		1) Holding meetings. 2) Use of multimedia equipment.	This room represents a typical sized standard meeting room with six stacking chairs around a table and space for one wheelchair. The following items may be provided: - a TV: - video-conferencing facilities: - a clinical wash-hand basin and gel dispenser for clinical use of the room: - CCTV for observation/monitorin
NSGH-RENO/M	M0712B	Interview: counselling: quiet room: 5 person	M0712B	NA-SZ-xx-RD-400-062		Interview: counselling: quiet room: 5 person	M0712B	NSGH-04-RENW-235	9.0 m²	18.1 m²	2.400 metres	1 x Staff Up to 4 others: including wheelchair person. Intermittent use		1) Interviewing. 2) Discussions. 3) Counselling patient after diagnosis. 4) Counselling relatives. 5) Comforting relatives/carers. 6) Security entrance from the waiting area under staff control.	Furniture subject to project specific requirements (e.g. settee or chairs). Where this room is to be used for interviews requiring a writing surface: the coffee table may be substituted by a desk & chair desk. In ENT & Audiology clinics - mother may use this room to breast feed her baby.
NSGH-RENO/M	T0535B	Clean utility room	T0535B	NA-SZ-xx-RD-400-064		Clean utility room	T0535B	NSGH-04-RENW-293	16.0 m²	15.5 m²	2.400 metres	2 x Staff		1) Holding and preparing dressing/instrument trolley. 2) Holding sterile supplies and consumables. 3) Storing controlled and scheduled drugs. 4) Storing non-controlled medicines and pharmaceuticals. 5) Storing intravenous fluids. 6) Refrigerated storage. 7) Storage of flammable medicines. 8) Holding and restocking	This room represents a typical example layout of a clean utility room of this size and type. See BS 2881 for requirements for medicines storage. See Misuse of Drugs (Safe Custody) Regulations for requirements for scheduled/controlled drugs storage. The following items may be provided: - a barcode reader and ch
NSGH-RENO/M	W1123A2	Store: bulk supplies: medical and surgical - Cluster	W1123A2	NA-SZ-xx-RD-400-025-01		Store: bulk supplies: medical and surgical - Cluster	W1123A2	NSGH-04-WS4-026	0.0 m²	37.8 m²	2.400 metres	2 x Staff		1) Reception of all supplies for use within the unit. 2) Storing bulk supplies. 3) Storing medical and surgical supplies. 4) Parking trolley(s). 5) Moving/manoeuvring trolley(s).	Bulk storage of all supplies: sub-divided as follows: a. sterile items: Instrument trays/packs Sterile consumable items Linen/gowns packs Utensils Gloves etc b. Non-sterile items: Surgical sundries: paper Lotions: pharmaceuticals supplies & intravenous fluids (excluding controlled drugs & drugs liab
NSGH-RENO/M	W1524A	Equipment Store – plumbed storage for machines	W1524A	NA-SZ-xx-RD-400-593		Equipment Store – plumbed storage for machines	W1524A	NSGH-04-RENW-237	6.0 m²	5.0 m²	2.400 metres			1) Storing equipment. 2) Storing spare parts: items.	
NSGH-RENO/M	W1585B3	Store: general	W1585B3	NA-SZ-xx-RD-400-027-03		Store: general	W1585B3	NSGH-04-RENW-209	0.0 m²	29.1 m²	2.400 metres	1 x Staff Intermittent use		1) Storing equipment. 2) Storing non-clinical supplies.	This store includes a mixture of shelving and racking. It represents just one example size and layout of a general store. SpaceNotes: For guidance on space allowances: see example schedules of accommodation.
NSGH-RENO/M	X0240B3	Major treatment/minor surgery room With resuscitation trolley	X0240B3	NA-SZ-xx-RD-400-517-01		Major treatment/minor surgery room With resuscitation trolley	X0240B3	NSGH-04-RENW-176	17.5 m²	21.0 m²	2.400 metres	1 x Patient 4 x Staff		1) Patient may arrive on foot or in a wheelchair. 2) Patient transferred to a treatment trolley. 3) Administration of local analgesics. 4) Minor surgical procedures under local anaesthetic. 5) Clinical procedures and dressings. 6) Emergency resuscitation. 7) Clinical hand washing. 8) Use of visual display terminal(s). 9) A	Lamp indicator call situated over door outside room. Computer keyboard should be with cleanable or disposable cover.
NSGH-RENO/M	X0251A	Treatment cubicle: dialysis: 1 patient With bed	X0251A	NA-SZ-xx-RD-400-061		Treatment cubicle: dialysis: 1 patient With bed	X0251A	NSGH-04-RENW-214	10.5 m²	54.2 m²	2.400 metres	1 x Patient 1 x Staff		1) Patient may arrive on foot or in a wheelchair. 2) Positioning patient on bed for treatment. 3) Patient receiving dialysis treatment. 4) Clinical hand washing. 5) Patient to read: writes: listens to radio: views TV and use telephone. 6) Writing up patients notes. 7) Holding clothing and personal effects. 8) Holding small	Lamp indicator call situated on outside entrance of the bay. Clinical hand wash basin and clinical waste bins may be shared between two stations. Mobile examination lamp and shovemomanometer can be shared between the stations. Communication and entertainment system - project team option. Medical gase
NSGH-RENO/M	X0251A1	4 Bay Trolley spaces: Renal Treatment	X0251A1	NA-SZ-xx-RD-400-535		4 Bay Trolley spaces: Renal Treatment	X0251A1	NSGH-04-RENW-125	55.0 m²	54.9 m²	2.400 metres	4 x Patient 1 x Staff		1) Patient may arrive on foot or in a wheelchair. 2) Positioning patient on bed for treatment. 3) Patient receiving dialysis treatment. 4) Clinical hand washing. 5) Patient to read: writes: listens to radio: views TV and use telephone. 6) Writing up patients notes. 7) Holding clothing and personal effects. 8) Holding small	Lamp indicator call situated on outside entrance of the bay. Clinical hand wash basin and clinical waste bins may be shared between two stations. Mobile examination lamp and shovemomanometer can be shared between the stations. Communication and entertainment system - project team option. Medical gase
NSGH-RNM	E0531A	Reporting room: 1 workstation PACS	E0531A	NA-SZ-xx-RD-400-238		Reporting room: 1 workstation PACS	E0531A	NSGH-01-RNM-014	10.0 m²	12.1 m²	2.400 metres	Up to 2 Staff Intermittent use		1) Radiologist to report on scans previously carried out or to study digital diagnostic images.	Picture Archive and Communication System (PACS) If Monitor Flat Panel is not in use: worktops required to be 850mm deep. Position of X-ray illuminator is a project specific. Two high-speed fibreoptic data connections are required. Wireway for link to departmental computer management system.
NSGH-RNM	E0604B	Control room: serving CT room	E0604B	NA-SZ-xx-RD-400-240		Control room: serving CT room	E0604B	NSGH-01-RNM-035	16.0 m²	19.1 m²	2.400 metres	3 x Staff With intermittent visitors.		1) Operating console: controlling each scan: monitoring VDT image. 2) Communicating with patient via two-way communication system. 3) Viewing x-ray films. 4) Retrieving and archiving stored data. 5) Producing hard copy of selected CT images. 6) Communicating with colleagues/offices/departments by telephon	CT Operating console: data storage and hard copy unit - project team option. Good visual & voice contact with the CT scanner room. Activity note: Receiving colleagues/visitors for training/observation of C.T. session. Additional equipment notes: Direct wireway to CT scanner and diagnostic console positions
NSGH-RNM	E0713A	Imaging room: Gamma Camera multi detector with stress facility Radion	E0713A	NA-SZ-xx-RD-400-237		Imaging room: Gamma Camera multi detector with stress facility Radionuclide	E0713A	NSGH-01-RNM-009	36.0 m²	21.3 m²	2.400 metres	Patient and 2-3 staff (including Escort where needed).		1) Patient may be ambulant: in a wheelchair or on a trolley. 2) Positioning patient on examination couch stress inducing equipment or chair. 3) Radionuclide imaging examination of patient. 4) Use of Multiformat Imager or other hard copy device. 5) Patient to undergo exercise stress/rest test. 6) Clinical hand wash	txtRoomNotes
NSGH-RNM	E0713A1	Imaging room: Gamma Camera multi detector with stress facility Radion	E0713A1	NA-SZ-xx-RD-400-239		Imaging room: Gamma Camera multi detector with stress facility Radionuclide	E0713A1	NSGH-01-RNM-033	36.0 m²	48.0 m²	2.400 metres	Patient and 2-3 staff (including Escort where needed).		1) Patient may be ambulant: in a wheelchair or on a trolley. 2) Positioning patient on examination couch stress inducing equipment or chair. 3) Radionuclide imaging examination of patient. 4) Use of Multiformat Imager or other hard copy device. 5) Patient to undergo exercise stress/rest test. 6) Clinical hand wash	txtRoomNotes
NSGH-RNM	E0714A	Imaging room: Gamma Camera multi detector SPECT Radionuclide	E0714A	NA-SZ-xx-RD-400-331		Imaging room: Gamma Camera multi detector SPECT Radionuclide	E0714A	NSGH-01-RNM-036	36.0 m²	39.9 m²	2.400 metres	Patient and 2-3 staff (including Escort where needed).		1) Patient may be ambulant: in a wheelchair or on a trolley. 2) Positioning patient on examination couch or chair. 3) Radionuclide imaging examination of patient. 4) Use of Multiformat Imager or other hard copy device. 5) Clinical hand washing. 6) Storing small items of equipment. 7) Storing floppy disks. 8) Holding	SPECT = Single photon emission computed tomography. Lamp indicator call situated over door outside room. Radiation protection mobile screen or fixed shielding is required. Drain must go direct to sewer for radiation protection purposes. "Supervised Area" warning sign. Gamma Camera PET and computer need
NSGH-RNM	J0207A	Reception: 3 staff Including 2 case-notes trolleys	J0207A	NA-SZ-xx-RD-400-242		Reception: 3 staff Including 2 case-notes trolleys	J0207A	NSGH-01-RNM-040	14.5 m²	7.6 m²	2.400 metres	3 x Staff		1) Reception and registration of patients. 2) Dealing with enquiries. 3) Preparation of case notes. 4) Maintaining appointments and attendance register. 5) Use of visual display terminal(s). 6) Parking case note trolley(s). 7) Control of waiting area loudspeakers and TV system. 8) Displaying information.	Parking space may be required for more than one case note trolley. Provision of interview bay/booth may be required. Counter/reception desk should be accessible to all users. Induction loop hearing aid system. Next patient call system - to comply with DDA and Part M of the Building Regulations. Video player for
NSGH-RNM	J0609B	Reception: administration office and communication base: 2 staff	J0609B	NA-SZ-xx-RD-400-243		Reception: administration office and communication base: 2 staff	J0609B	NSGH-01-RNM-042	13.0 m²	11.9 m²	2.400 metres	2 x Staff		1) Controlling departmental/unit entrance. 2) Reception and registration of patients. 3) Receiving visitors. 4) Dealing with enquiries. 5) View of indicating lights of patient/staff call systems. 6) Receipt and dispatch of specimens. 7) Receipt and dispatch of documents. 8) Recording patient data/notes. 9) Using computer workstation(s). 10) Using telephone(s). 11) Holding working supply of stationery. 12) Displaying staff notices: information and/or messages. 13) Displaying theatre suite allocation and staff location information. 14) Security of patients valuables.	
NSGH-RNM	J1232A	Waiting bay: 2 patients trolley/bed place	J1232A	NA-SZ-xx-RD-400-241		Waiting bay: 2 patients trolley/bed place	J1232A	NSGH-01-RNM-038	8.5 m²	6.7 m²	2.400 metres	2 x Patient 2 x Staff		1) Parking patients trolley(s). 2) Patient to wait on trolley/bed: under nursing observation.	SpaceNotes: Height to suit surrounding area.
NSGH-RNM	L0701A	Sample Countiers	L0701A	NA-SZ-xx-RD-400-387		Sample Countiers	L0701A	NSGH-01-RNM-026	8.0 m²	10.8 m²	2.400 metres	2 x Staff		1) Preparing samples for transmission electron microscopy (TEM) 2) Preparing samples for polymerase chain reaction (PCR) testing. 3) Embedding processed tissue in resin. 4) Cutting sections of tissue embedded in resin. 5) Dispensing disposable gloves. 6) Disposal of used gowns. 7) Clinical hand washing.	TEM- Transmission Electron Microscopy: is used in diagnostic pathology for a number of processes including renal biopsy interpretation: investigation of myopathies and neuropathies: and virus identification.
NSGH-RNM	V0510A	Staff changing room: 5 places	V0510A	NA-SZ-xx-RD-400-212		Staff changing room: 5 places	V0510A	NSGH-01-RNM-018	5.0 m²	5.7 m²	2.400 metres	5 x Staff		1) Changing into protective clothing (uniforms) from outer clothing. 2) Hanging outdoor clothing. 3) Security of clothing and personal effects. 4) Disposal of used protective clothing. 5) Grooming.	Shelving for storage of protective clothing - project team option. If used in Radionuclide Imaging or PET handheld radiation monitoring equipment is required.
NSGH-RNM	V0532A	Staff changing room: 10 places Slimline lockers: coat rail: shoe rack	V0532A	NA-SZ-xx-RD-400-445		Staff changing room: 10 places Slimline lockers: coat rail: shoe rack	V0532A	NSGH-01-RNM-011	8.0 m²	8.3 m²	2.400 metres	10 x Staff		1) Changing into/out of outdoor clothing. 2) Changing footwear. 3) Hanging outdoor clothing. 4) Security of clothing and personal effects. 5) Disposal of used protective clothing. 6) Grooming.	
NSGH-RNM	J0609B	Radio Nuclear Administration	J0609B	NA-SZ-xx-RD-400-243-01		Radio Nuclear Administration	J0609B	NSGH-01-RNM-027	13.0 m²	12.1 m²	2.400 metres	2 x Staff		1) Controlling departmental/unit entrance. 2) Reception and registration of patients. 3) Receiving visitors. 4) Dealing with enquiries. 5) View of indicating lights of patient/staff call systems. 6) Receipt and dispatch of specimens. 7) Receipt and dispatch of documents. 8) Recording patient data/notes. 9) Using computer workstation(s). 10) Using telephone(s). 11) Holding working supply of stationery. 12) Displaying staff notices: information and/or messages. 13) Displaying theatre suite allocation and staff location information. 14) Security of patients valuables.	
NSGH-RNM	X1020A	Cardiac Room	X1020A	NA-SZ-xx-RD-400-244		Cardiac Room	X1020A	NSGH-01-RNM-046	17.0 m²	11.7 m²	2.400 metres	1 x Patient 4 x Staff		1) Patient may arrive on foot or in a wheelchair. 2) Patient transferred to a treatment trolley. 3) Administration of local analgesics. 4) Minor surgical procedures under local anaesthetic. 5) Insertion and/or replacement of implantable devices. 6) Clinical procedures and dressings. 7) Use of visual display terminal(s).	Lamp indicator call situated over door outside room.
NSGH-RNM	L0605A	Blood cell Labeling Room	L0605A	NA-SZ-xx-RD-400-304	c	Blood cell Labeling Room	L0605A	NSGH-01-RNM-013	10.0 m²	11.9 m²	2.400 metres	Up to 6 Staff		1) Reception of specimens from specimen reception. 2) Sorting: batching and labelling/numbering specimens and processing request forms. 3) Transferring batched specimens to main laboratory/bench/automated machine with request forms. 4) Carrying out general bacteriological investigations: culture identificat	Bacteriological investigations: culture identification & sensitivity testing mainly on the following: Urines: wound swabs: genito-urinary specimens & faeces (general microbiology) & on miscellaneous specimens e.g. cerebrospinal fluids & other fluids etc. includes: (a) plating & inoculation of
NSGH-RNM	Z0809B2	Preparation and store: Radiopharmaceuticals	Z0809B2	NA-SZ-xx-RD-400-082-02		Preparation and store: Radiopharmaceuticals	Z0809B2	NSGH-01-RNM-028	20.0 m²	12.1 m²	2.400 metres	2 x Staff		1) Preparing radiopharmaceutical products by open procedures under laminar flow within a workstation using aseptic techniques. 2) Holding of radio-isotopes. 3) Storing drugs/medicines. 4) Storing equipment for use in preparing radiopharmaceuticals. 5) Disposal of radioactive liquid materials. 6) Holding contamin	3x Boxes lead lined & 1x set of Bricks lead are project specific. In preparation area: a section of worktop should be shielded in lead/plywood laminate lead equivalent thickness 1cm. Wall mounted telephone handset is required. "Controlled Area" warning sign.
NSGH-SAN	J0205B1	Reception: 1 staff	J0205B1	NA-SZ-xx-RD-400-183-01		Reception: 1 staff	J0205B1	NSGH-01-SAN-003	4.0 m²	11.2 m²	2.400 metres	1 x Staff		1) Reception and registration of patients. 2) Maintaining appointments and attendance register. 3) Dealing with enquiries. 4) Using computer workstation(s). 5) Displaying information. 6) Security of staff.	Counter/reception desk should be accessible to all users. Induction loop hearing aid system. SpaceNotes: Space includes circulation. Height to suit surrounding area.
NSGH-SAN	M1012B1	Office: 3 staff	M1012B1	NA-SZ-xx-RD-400-218-01		Office: 3 staff	M1012B1	NSGH-01-SAN-006	18.0 m²	22.0 m²	2.400 metres	3 x Persons		1) Deskwork for 3 persons. 2) Using computer workstation(s). 3) Using printer. 4) Using telephone(s). 5) Filing. 6) Holding working supply of stationery and office accessories. 7) Security for personal items.	Dividing screens: 1600 height: provided when required. Telephone switchboard may be included on one of the workstation. If use in Pharmacy for clinical trails a separate workbench may be require.
NSGH-SAN	S0045A	Sanctuary	S0045A	NA-SZ-xx-RD-400-568-01		Sanctuary	S0045A	NSGH-01-SAN-006	30.0 m²	67.6 m²	2.400 metres	20 persons		1) Worshiping and mediation.	A quiet room for reflection and counselling. Local policy decision on furnishings & provision of accommodation suitable for the range of denominations and faiths wishing to use the accommodation. This area is dividable into 2 spaces - space 1 at 40.5 sq.m. and space 2 at 43.5 sq.m. This area includes conse
NSGH-SAN	S0045A1	Washing Area (Foot)	S0045A1	NA-SZ-xx-RD-400-567-01		Washing Area (Foot)	S0045A1	NSGH-01-SAN-007	4.0 m²	4.9 m²	2.400 metres	1 Persons		1) Worshiping and mediation. 2) Hand washing.	
NSGH-STW	B0305A1	Single-bed room	B0305A1	NA-SZ-xx-RD-400-001-09		Single-bed room	B0305A1	NSGH-01-STW-055	16.5 m²	15.9 m²	2.400 metres	1 x Patient 4 x Others		1) Clinical discussions and delivery of minimally invasive clinical procedures at the bedside. 2) Use of monitoring equipment. 3) Use of mobile diagnostic and therapeutic equipment. 4) Undressing and dressing in privacy. 5) Resting and sleeping in bed. 6) Patient to take meals in bed or by the bed. 7) Using entertainm	This room is based on the use of a trolley with a worktop. It is assumed that computers will be handheld or brought into the room on a trolley. The lamp repeat call is situated over the door outside the room. The following items may be provided: - a ceiling-mounted hoist: - a small fridge for patient use: - a comb
NSGH-STW	H0515B	Seminar: training room: 15 person	H0515B	NA-SZ-xx-RD-400-036		Seminar: training room: 15 person	H0515B	NSGH-01-STW-011	27.5 m²	30.6 m²	2.400 metres	15 x Persons		1) Holding seminar. 2) Students/Participants to make use of books and to take notes. 3) Writing notes and/or reports. 4) Viewing film and/or computer generated images. 5) Using specialised visual aids multi-media equipment. 6) Secure storage of equipment.	Use for small committee work and similar activities. Rail around room for flip charts to hang on during seminar. Fittings and furniture must permit flexible arrangement of seating layout and to be easily alterable. Activity note: Split-group and less formal teaching in the seminar mode.
NSGH-STW	J0232B	Reception: 2 person	J0232B	NA-SZ-xx-RD-400-175		Reception: 2 person	J0232B	NSGH-01-STW-002	8.0 m²	9.3 m²	2.400 metres	2 x Staff		1) Reception and registration of patients. 2) Maintaining appointments and attendance register. 3) Using computer workstation(s). 4) Dealing with enquiries. 5) Using telephone(s). 6) Control of access to clinical or work area.	The reception desk should be accessible to all users and provide security for staff. In facilities for children and young people: it should be child friendly. It may control ingress and egress to a particular area (i.e. by door entry system). The following items may be provided: - a printer. A self-registration point may be
NSGH-STW	J1251B	Waiting area: 5 places (including 1 wheelchair place)	J1251B	NA-SZ-xx-RD-400-035		Waiting area: 5 places (including 1 wheelchair place)	J1251B	NSGH-01-STW-001	9.0 m²	14.3 m²	2.400 metres	5 x persons: including 1 x wheelchair user		1) Waiting by patients: relatives and escorts.	Where there is significant risk of assault or self-harm: fixtures: fittings and furniture need to be reviewed. Luminaires should be sufficiently robust and inherently safe for user groups. Diffusers should be tamper-proof and secure. The following items may be provided: - an enclosed noticeboard: - background musi
NSGH-STW	O0124A	Activities of daily living: bathroom with hoists	O0124A	NA-SZ-xx-RD-400-038		Activities of daily living: bathroom with hoists	O0124A	NSGH-01-STW-082	13.0 m²	14.4 m²	2.400 metres	Intermittent use		1) Disabled patient may be ambulant with/without walking aids or in a wheelchair. 2) Undressing: dressing: using domestic bathroom: WC and aids. 3) Using mobile hoist. 4) Patient may require assistance during the activities.	Lamp indicator call situated over door outside room Bath not plumbed in
NSGH-STW	V1645B	Shower room: en-suite chamfered	V1645B	NA-SZ-xx-RD-400-024		Shower room: en-suite chamfered	V1645B	NSGH-01-STW-047	4.5 m²	4.3 m²	2.400 metres	1 x patient 1-2 assistants Intermittent use		1) Use of assisted shower with fixed tip-up shower seat. 2) Use of assisted toilet. 3) Use of adjustable height hand-wash basin. 4) Undressing and dressing in privacy. 5) Hanging clothes. 6) Hanging towels. 7) Use of sanitary chair. 8) Use of shower chair. 9) Use of mobile hoist.	Assisted access to one side of the toilet requires the second door to the en-suite bedroom to be open. See HBN 00-02. The lamp repeat call is situated over the door outside the en-suite bedroom. Where there is significant risk of assault or self-harm: fixtures: fittings and furniture need to be reviewed. Luminaires
NSGH-STW	V1645B1	Shower room: en-suite chamfered: Dual-access	V1645B1	NA-SZ-xx-RD-400-024-01		Shower room: en-suite chamfered: Dual-access	V1645B1	NSGH-01-STW-047	4.5 m²	5.3 m²	2.400 metres	1 x patient 1-2 assistants Intermittent use		1) Use of assisted shower with fixed tip-up shower seat. 2) Use of assisted toilet. 3) Use of adjustable height hand-wash basin. 4) Undressing and dressing in privacy. 5) Hanging clothes. 6) Hanging towels. 7) Use of sanitary chair. 8) Use of shower chair. 9) Use of mobile hoist.	Assisted access to one side of the toilet requires the second door to the en-suite bedroom to be open. See HBN 00-02. The lamp repeat call is situated over the door outside the en-suite bedroom. Where there is significant risk of assault or self-harm: fixtures: fittings and furniture need to be reviewed. Luminaires
NSGH-STW	V1736B	Bathroom: assisted	V1736B	NA-SZ-xx-RD-400-995		Bathroom: assisted	V1736B	NSGH-01-STW-079	15.0 m²	16.2 m²	2.400 metres	1 x patient Up to 3 x staff		1) Use of assisted bath. 2) Use of assisted toilet. 3) Use of wheelchair accessible hand-wash basin. 4) Undressing and dressing in privacy. 5) Hanging clothes. 6) Hanging towels. 7) Use of sanitary chair. 8) Use of shower chair. 9) Use of mobile hoist.	If used as a treatment bath: space is required to accommodate stretcher hoist. The lamp repeat call is situated over the door outside the room. Where there is significant risk of assault or self-harm: fixtures: fittings and furniture need to be reviewed. Luminaires should be sufficiently robust and inherently safe for u
NSGH-STW	V1736B/R	Bathroom: assisted HANDED	V1736B/R	NA-SZ-xx-RD-400-995 HANDED		Bathroom: assisted HANDED	V1736B/R	NSGH-01-STW-079	15.0 m²	16.2 m²	2.400 metres	1 x patient Up to 3 x staff		1) Use of assisted bath. 2) Use of assisted toilet. 3) Use of wheelchair accessible hand-wash basin. 4) Undressing and dressing in privacy. 5) Hanging clothes. 6) Hanging towels. 7) Use of sanitary chair. 8) Use of shower chair. 9) Use of mobile hoist.	If used as a treatment bath: space is required to accommodate stretcher hoist. The lamp repeat call is situated over the door outside the room. Where there is significant risk of assault or self-harm: fixtures: fittings and furniture need to be reviewed. Luminaires should be sufficiently robust and inherently safe for u
NSGH-STW	W1212A	Store: materials and equipment Occupational therapy	W1212A	NA-SZ-xx-RD-400-037		Store: materials and equipment Occupational therapy	W1212A	NSGH-01-STW-077	9.0 m²	12.0 m²	2.400 metres	1 x Staff		1) Storing mobile equipment. 2) Storing materials. 3) Storing teaching aids.	Drawers units required to be lockable.
NSGH-STW	X0312B2	Activity area: Physiotherapy	X0312B2	NA-SZ-xx-RD-400-215-03		Activity area: Physiotherapy	X0312B2	NSGH-01-STW-075	50.0 m²	54.3 m²	3.200 metres	2-3 staff: up to 5 patients		1) Rehabilitation exercises 2) Deskwork. 3) Clinical hand washing.	Lamp indicator call situated over door outside room. Individual treatment or re-education of patients whose treatment does not require privacy: but does require the use of specialised equipment giving rise to greater activity than is possible in and needing more space than is available in the Individual Treatment cu
NSGH-STW	C0237B3	Consulting/examination room: double-sided couch access	C0237B3	NA-SZ-xx-RD-400-180-03	c	Consulting/examination room: double-sided couch access	C0237B3	NSGH-01-OPD1-038	16.0 m²	17.4 m²	2.400 metres	1 x patient 1-2 x staff 1 x other		1) Consultations. 2) Examinations from both sides of the couch. 3) Minimally invasive clinical procedures from both sides of the couch. 4) Holding sterile supplies and consumables on a trolley. 5) Undressing and dressing in privacy. 6) Accessing and updating electronic patient records (EPRs). 7) Use of clinical wash-h	This room includes a 3-section couch and is based on option 1 layout in HBN 00-03. Alternatively: it may accommodate a 2-section couch or specialist couch. The lamp repeat call is situated over the door outside the room. The following items are shown on the room layout but are optional: - patient/staff call (alth
NSGH-STW	V1645B1/R	Shower room: en-suite chamfered: Dual-access HANDED	V1645B1/R	NA-SZ-xx-RD-400-024-01 HANDED		Shower room: en-suite chamfered: Dual-access HANDED	V1645B1/R	NSGH-01-STW-047	4.5 m²	5.3 m²	2.400 metres	1 x patient 1-2 assistants Intermittent use		1) Use of assisted shower with fixed tip-up shower seat. 2) Use of assisted toilet. 3) Use of adjustable height hand-wash basin. 4) Undressing and dressing in privacy. 5) Hanging clothes. 6) Hanging towels. 7) Use of sanitary chair. 8) Use of shower chair. 9) Use of mobile hoist.	Assisted access to one side of the toilet requires the second door to the en-suite bedroom to be open. See HBN 00-02. The lamp repeat call is situated over the door outside the en-suite bedroom. Where there is significant risk of assault or self-harm: fixtures: fittings and furniture need to be reviewed. Luminaires
NSGH-THE	B2417B	Recovery bay: post anaesthetic: 1 place Bed space	B2417B	NA-SZ-xx-RD-400-159		Recovery bay: post anaesthetic: 1 place Bed space	B2417B	NSGH-02-THE-303	13.5 m²	13.6 m²	2.400 metres	1 x Patients		1) Post anaesthetic recovery of patients. 2) Observation by medical and nursing staff. 3) Preparing for clinical procedures. 4) Medical and nursing procedures will be performed by staff from the side or behind the patient. 5) Recording patient data/notes. 6) Holding sterile and disposable items. 7) Using services and	Lamp indicator call situated over door outside room Space required to accommodate use of hoist.
NSGH-THE	D0455A	Rest & dining room with beverage & snack preparation bay: 40 staff	D0455A	NA-SZ-xx-RD-400-162		Rest & dining room with beverage & snack preparation bay: 40 staff	D0455A	NSGH-02-THE-362	115.0 m²	123.9 m²	2.400 metres	40 x Staff		1) Rest and relaxation. 2) Reading. 3) Viewing television and/or DVDs/videos. 4) Preparing beverages and snacks. 5) Dining. 6) Consuming beverages and refreshments. 7) Displaying staff notices: information and/or messages. 8) Displaying staff location information. 9) Informal staff discussions. 10) Hand washing.	
NSGH-THE	D1504A	On-call overnight stay room	D1504A	NA-SZ-xx-RD-400-145		On-call overnight stay room	D1504A	NSGH-02-THE-080	13.0 m²	15.9 m²	2.400 metres	1 x Person (ambulant)		1) Overnight stays for on-call staff. 2) Deskwork. 3) Reading. 4) Storing journals: magazines: books.	DesignNotes: For wheelchair user doors will required to be 1000mm.
NSGH-THE	G0142B	Parking bay: mobile x-ray: ultrasound unit	G0142B	NA-SZ-xx-RD-400-155		Parking bay: mobile x-ray: ultrasound unit	G0142B	NSGH-02-THE-215	5.0 m²	6.4 m²	2.400 metres	Intermittent use		1) Parking mobile image unit. 2) Charging batteries of imaging x-ray machine. 3) Holding protective lead apron(s).	SpaceNotes: Height to suit surrounding area.
NSGH-THE	G0405B	Exit/parking bay: theatre: Shared	G0405B	NA-SZ-xx-RD-400-151		Exit/parking bay: theatre: Shared	G0405B	NSGH-02-THE-162/168	24.0 m²	35.0 m²	2.400 metres			1) Parking bed(s)/trolley(s) until required to remove patients from the operating theatre.	Illuminated sign "IN USE"- located over theatre door in exit bay. Controls for lighting: heating: and medical gas isolation valves should be located in dedicated exit bay. The bay may contain a local equipment store.
NSGH-THE	J0611B	Reception and office: 4 staff	J0611B	NA-SZ-xx-RD-400-137		Reception and office: 4 staff	J0611B	NSGH-02-THE-003	20.0 m²	21.1 m²	2.400 metres	4 x Staff		1) Meeting and greeting relatives and visitors. 2) Dealing with enquiries. 3) Clerical duties. 4) Deskwork for 3 persons. 5) Using computer workstation(s). 6) Using telecommunication equipment. 7) Displaying information.	Entry phone system for the area should be located in this room. Hatch between Reception and waiting area.
NSGH-THE	J1123A	Waiting area: 45 person including 4 wheelchair user	J1123A	NA-SZ-xx-RD-400-358		Waiting area: 45 person including 4 wheelchair user	J1123A	NSGH-02-THE-002	73.5 m²	78.5 m²	2.400 metres	45 x Persons		1) Patient may arrive on foot or in a wheelchair. 2) Waiting by patients: relatives and escorts. 3) Displaying information. 4) Displaying notices.	TV screen display information and number being called from C/E room: activated at reception desk - project team option. Dividing screen - project team option.
NSGH-THE	J1311B	Waiting area: 3 person	J1311B	NA-SZ-xx-RD-400-065		Waiting area: 3 person	J1311B	NSGH-02-THE-059	4.5 m²	7.4 m²	2.400 metres	3 x Persons		1) Waiting. 2) Displaying notices.	
NSGH-THE	K0107B	UPS room/data computer hub room	K0107B	NA-SZ-xx-RD-400-366		UPS room/data computer hub room	K0107B	NSGH-02-THE-210	9.0 m²	10.2 m²	2.400 metres	N/A		1) Using computer workstation(s).	Equipment to be project specific: may require independent ventilation. Activities notes: a) To house emergency batteries: charger: transformer and 4-way d.p. fuse board. b) Checking/servicing batteries and fuse board. Socket outlets and fused spur units as required. UPS - Uninterrupted Power Supply LAN - Local A
NSGH-THE	M0330B	Office/meeting room: 10 places (including 2 workstations)	M0330B	NA-SZ-xx-RD-400-142		Office/meeting room: 10 places (including 2 workstations)	M0330B	NSGH-02-THE-015	16.0 m²	33.7 m²	2.400 metres	10 x Staff		1) Clinical administration. 2) Using computer workstation(s). 3) Using telephone(s). 4) Holding meetings. 5) Holding working supply of stationery.	The following items may be provided if the office is used for clinical control: - lamp repeat calls for controlled drugs cupboards (but required if the office is used for clinical control). - a small safe: - a key cupboard: - an alarm panel: see HTM 08-03. The following items may be provided: - cube lockers for the stora
NSGH-THE	M1015B	Office: 7 staff	M1015B	NA-SZ-xx-RD-400-405		Office: 7 staff	M1015B	NSGH-02-THE-066	30.0 m²	33.3 m²	2.400 metres	5 x Persons		1) Deskwork for 5 persons. 2) Use of visual display terminal(s). 3) Using telephone(s). 4) Storing files and records.	
NSGH-THE	M1707B	Duty room: 2 porters	M1707B	NA-SZ-xx-RD-400-139		Duty room: 2 porters	M1707B	NSGH-02-THE-006	5.0 m²	11.7 m²	2.400 metres	2 x Staff		1) Waiting by duty porters. 2) Using telephone(s). 3) Storing protective clothing.	
NSGH-THE	N0106B	Operating theatre: general	N0106B	NA-SZ-xx-RD-400-146		Operating theatre: general	N0106B	NSGH-02-THE-085	55.0 m²	58.7 m²	3.000 metres	1 x Patient 7 x Staff		1) Patient transferred to operating table. 2) Positioning patient on operating table. 3) Connecting patient to anaesthetic machine. 4) Assembling and connecting mobile equipment. 5) Use of surgical instruments on instrument trolley. 6) Surgical procedures under local or general anaesthetic. 7) Viewing film and/or c	IN USE sign sited outside the doorway of the room. When laser surgery and X-rays are being undertaken: safety precautions should be employed: including the provision of the warning lights should be located in the corridor above the theatre doors which will be activated prior to laser surgery or X-rays being under
NSGH-THE	N0108A	Operating theatre: laminar flow	N0108A	NA-SZ-xx-RD-400-152		Operating theatre: laminar flow	N0108A	NSGH-02-THE-163	55.0 m²	54.6 m²	3.000 metres	1 x Patient 7 x Staff		1) Patient transferred to operating table. 2) Positioning patient on operating table. 3) Connecting patient to anaesthetic machine. 4) Assembling and connecting mobile equipment. 5) Use of surgical instruments on instrument trolley. 6) Surgical procedures under local or general anaesthetic. 7) Viewing film and/or c	This room is optional to general theatre (no additional areas required). Canopy to be provided with air diffuser ceiling and general lighting luminaires to manufacturers design/specification. "IN USE" sign sited outside the doorway of the room. When laser surgery and X-rays are being undertaken: safety precautions
NSGH-THE	N0216B	Scrub-up and gowning room: 3 places	N0216B	NA-SZ-xx-RD-400-149		Scrub-up and gowning room: 3 places	N0216B	NSGH-02-THE-160	11.0 m²	9.8 m²	2.400 metres	Up to 4 staff		1) Staff to don protective apron and face mask prior to scrubbing. 2) Staff to scrub up within sight of clock. 3) Donning sterile gowns and gloves: from a trolley: assisted by a circulating nurse. 4) Dispensing disposable aprons. 5) Holding sterile gown packs for one surgical session with a stock of glove packs and masks. 6) Disposal of pack wrappers and paper towels. 7) Displaying operating lists.	
NSGH-THE	N0305A	Anaesthetic room With patient trolley and ceiling hoist	N0305A	NA-SZ-xx-RD-400-148		Anaesthetic room With patient trolley and ceiling hoist	N0305A	NSGH-02-THE-159	19.0 m²	19.2 m²	2.400 metres	1 x Patient 4 x Staff 1 x Relative accompanying child patient		1) Positioning patient on a trolley. 2) Administration of general or local anaesthetic. 3) Holding anaesthetic sundries. 4) Holding controlled and scheduled drugs. 5) Holding sterile supplies. 6) Holding stock of infusion fluids. 7) Refrigerated storage of drugs/medicines. 8) Displaying statutory notices. 9) Displaying oper	Illuminated sign "IN USE" sited outside the doorway of the room. Lamp indicator call situated over door outside room. A music system should be provided to reduce patient anxiety.
NSGH-THE	V0218A	Staff changing room including boot change: 40 places Lockers: coat rail:	V0218A	NA-SZ-xx-RD-400-144		Staff changing room including boot change: 40 places Lockers: coat rail: racks	V0218A	NSGH-02-THE-036	30.0 m²	114.9 m²	2.400 metres	40 x Staff		1) Changing into protective clothing and footwear from outer clothing. 2) Hanging outdoor clothing. 3) Security for clothing: foot ware and personal effects. 4) Holding protective clothing. 5) Disposal of used protective clothing.	
NSGH-THE	W0108A	Store: equipment: local to theatre	W0108A	NA-SZ-xx-RD-400-147		Store: equipment: local to theatre	W0108A	NSGH-02-THE-112	1.0 m²	8.7 m²	2.400 metres			1) Storage of operating table accessories and items in frequent use.	
NSGH-THE	W0113A	Store: clinical equipment	W0113A	NA-SZ-xx-RD-400-154		Store: clinical equipment	W0113A	NSGH-02-THE-176	39.0 m²	40.0 m²	2.400 metres	Intermittent use		1) Storing mobile equipment. 2) Manoeuvring large: mobile items. 3) Charging and recharging medical equipment.	Typical mobile equipment: Diathermy machine with suction Anaesthetic machine/trolley Surgical microscope Ophthalmic magnet 2 x Bipolar Coagulation Units Cryopencil stand Surgical Laser Mobile operating lamp Operation table accessory stand Frame orthopaedic extension Anaesthetic ventilator Infant resuscit
NSGH-THE	W0115A	Store: bulk supplies	W0115A	NA-SZ-xx-RD-400-140		Store: bulk supplies	W0115A	NSGH-02-THE-009	80.0 m²	78.8 m²	2.400 metres	2 x Staff		1) Reception of all supplies for use within the operating department. 2) Storing bulk supplies. 3) Parking of tray supply trolleys. 4) Moving/manoeuvring trolley(s). 5) Using computer workstation(s). 6) Using printer.	4x Trolleys SSD distribution/collection - parked only. Activities notes: Bulk storage of all supplies: sub-divided as follows: a) Sterile items: Instrument trays/packs Sterile consumable items Linen/gown packs Utensils Gloves etc. b) Non-sterile items: Surgical sundries: paper Lotions an
NSGH-THE	W0121A	Store: catheters and sterile packs	W0121A	NA-SZ-xx-RD-400-138		Store: catheters and sterile packs	W0121A	NSGH-02-THE-004	6.0 m²	13.8 m²	2.400 metres	1 x Staff Intermittent use		1) Storing sterile packs. 2) Storing catheters and catheter guide wires used in specialised interventional procedures.	
NSGH-THE	W0650A	Blood bank refrigerator bay	W0650A	NA-SZ-xx-RD-400-161		Blood bank refrigerator bay	W0650A	NSGH-02-THE-345	3.0 m²	7.5 m²	2.400 metres	Intermittent use		1) Storing blood.	Blood refrigerator alarm.
NSGH-THE	W1236A	Store: orthotics supply and fitting	W1236A	NA-SZ-xx-RD-400-160		Store: orthotics supply and fitting	W1236A	NSGH-02-THE-339	25.0 m²	26.5 m²	2.400 metres	1 - Staff Intermittent use		1) Holding of prosthetics. (e.g. shoes: callipers) awaiting collection.	
NSGH-THE	W1313B	Store: ready to use medical gas cylinders	W1313B	NA-SZ-xx-RD-400-141		Store: ready to use medical gas cylinders	W1313B	NSGH-02-THE-013	9.0 m²	9.0 m²	2.400 metres	2 x Staff Intermittent use		1) Storing medical gas cylinders: various sizes: by group and type: empty separated from full. 2) Preparing cylinder for use and disposal. 3) Loading and unloading cylinder trolleys. 4) Displaying statutory notices.	Fire equipment: electrical equipment to be in accordance with BS5345 part 1 Natural ventilation grilles required on external wall.
NSGH-THE	X1012A	Control area: serving catheter laboratory	X1012A	NA-SZ-xx-RD-400-157		Control area: serving catheter laboratory	X1012A	NSGH-02-THE-220	16.0 m²	10.8 m²	2.400 metres	Up to 3 staff		1) Operating console: controlling each scan: monitoring VDT image. 2) Communicating with colleagues/offices/departments by telephone. 3) Recording test results. 4) Observation by medical and nursing staff. 5) Writing notes. 6) Reading reference books and notices. 7) Holding small items of equipment. 8) Storing	Good visual & voice contact with the laboratory. Radiation protection as required. Two computer workstations are required: one for use by a surgeon/visiting specialist (to observe procedures and take notes) and the other (which supports the X-ray controls) for use by a radiographer. DesignNotes: The choice of c
NSGH-THE	X1026A	Control room: serving neuroangiography	X1026A	NA-SZ-xx-RD-400-158		Control room: serving neuroangiography	X1026A	NSGH-02-THE-240	16.0 m²	14.4 m²	2.400 metres	Up to 3 staff		1) Operating console: controlling each scan: monitoring VDT image. 2) Retrieving and archiving stored data. 3) Producing hard copy of selected images. 4) Communicating with colleagues/offices/departments by telephone. 5) Reading reference books and notices. 6) Holding small items of equipment. 7) Storing stat	Good visual & voice contact with the laboratory. Radiation protection as required. Activity note: Receiving colleagues/visitors for training/observation of angiography session. DesignNotes: The choice of construction materials for floors: ceilings & walls must be agreed with the radiation protection advisor.
NSGH-THE	Y0418A	Cleansing: disinfection and store: endoscope: suction bottle: autoclave	Y0418A	NA-SZ-xx-RD-400-156		Cleansing: disinfection and store: endoscope: suction bottle: autoclave	Y0418A	NSGH-02-THE-217	19.0 m²	24.0 m²	2.400 metres	2 x Staff		1) Cleaning endoscopes. 2) Automatic washing: disinfecting and sterilizing endoscopes. 3) Storage of flexible endoscopes in a security cupboard. 4) Holding supplies of endoscope processing chemicals. 5) Wrapping endoscopes in packs for sterilization in SDU. 6) Sterilizing instruments and equipment. 7) Autoclaving.	Separate "clean" and "dirty" area is required. Washer: suction bottle - project team option. Depending on disinfectant being used local: extract ventilation may be needed. Protective clothing and equipment to meet any COSHH requirements.
NSGH-THE	Y0420A	Dirty utility: serving 1 theatre or cath. lab.	Y0420A	NA-SZ-xx-RD-400-150		Dirty utility: serving 1 theatre or cath. lab.	Y0420A	NSGH-02-THE-161	12.0 m²	11.6 m²	2.400 metres	2 x Staff		1) Cleansing and disinfecting utensils. 2) Disposal of liquid waste. 3) Holding specimen containers. 4) Examination of specimens. 5) Filling and emptying buckets and bowls. 6) Holding bucket. 7) Storing mop handles and disposable mop heads. 8) Bagging and holding materials and equipment prior to transfer to the di	Space required for Distribution/Collection trolley. Limited space for holding of materials requiring disposal or reprocessing. Sack holder and bags quantity should be limited: once full: should be sealed and taken to the disposal hold to await collection. The space required for holding will depend on the local hospital
NSGH-THE	Y0510B	Utility: footwear washing	Y0510B	NA-SZ-xx-RD-400-143		Utility: footwear washing	Y0510B	NSGH-02-THE-035	4.0 m²	5.5 m²	2.400 metres			1) Cleaning footwear in machine.	Quantity of racks project specific.

Adjacencies	Finishes	Finishes	Finishes	Temperature	Temperature	Temperature Notes	Temperature	Ventilation	Ventilation
				Winter degC	Summer degC		Relative Humidity%	Extract ac/hr	Supply ac/hr
Direct access to treatment facilities. Close to Post ECT- lounge.	Surface Finish (HTM 56): 3:Impervious: jointless: smooth Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	23			15	15
Easy access to dirty utility. Easy access to exit areas.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3: Smooth: imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	23			15	15
Easy access to bed area. Easy access to outside play area.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Close to staff base. Close to supporting ancillary rooms. En-suite WC: shower: personal washbasin.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data Winter temperature (degC): up to		6	6
Adjacent to Pantry. Close to sitting room(s).	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	16	-			-	-
Within OPD clinical support space. Direct access from sub-wait. Easy access to reception:wc's.	Surface Finish (HTM 56): 3:Impervious: jointless: smooth Moisture Resistance (HTM 58): N:Normal humidity.Cleaning Routine (HTM 58): B: Weekly:	Surface Finish (HTM 61): 4: Hard: impervious: jointless: extra slip resistance	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N:Normal humidity.	21	25			6	6
Within OPD clinical support space. Direct access from sub-wait. Easy access to reception:wc's.	Surface Finish (HTM 56): 3:Impervious: jointless: smooth Moisture Resistance (HTM 58): N:Normal humidity.Cleaning Routine (HTM 58): B: Weekly:	Surface Finish (HTM 61): 4: Hard: impervious: jointless: extra slip resistance	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N:Normal humidity	21	25			6	6
Close to consultation room.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 3: hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 5: imperforate Moisture Resistance (HTM 60): N: normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Part of Non-Invasive Investigation Unit.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		6	6
Adjacent to control room.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6: Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Close to clinical area: particularly treatment rooms.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 56): 3: Impervious: jointless: smooth Moisture Resistance (HTM 56): N: Normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 60): 3/5: Smooth: imperforate Moisture Resistance (HTM 60): N: Normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10 Category 5 generally defined in HTM. 3 defined for theatres	20	25			-	6
Close to laboratories.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	18	-			-	-
Part of Non-Invasive Investigation Unit.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5: Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	22	26			6	6
	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Part of Non-Invasive Investigation Unit.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		6	6
	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	16	-			-	-
Close to staff base. Close to supporting ancillary rooms. En-suite shower/wc/wash.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data Winter temperature (degC): up to 24: independent control			
Access via gowning lobby. Close to staff base. Close to supporting ancillary rooms. En-suite shower/wc/wash.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data Winter temperature (degC): up to		-	-
Easy access to dirty utility. Easy access to exit areas.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3: Smooth: imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	23			15	15
Adjacent to Dept/Unit entrance.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	16	-			-	-
Close to clinical area: particularly treatment rooms.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 56): 3: Impervious: jointless: smooth Moisture Resistance (HTM 56): N: Normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 60): 3/5: Smooth: imperforate Moisture Resistance (HTM 60): N: Normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10 Category 5 generally defined in HTM. 3 defined for theatres	20	25			-	6
Close to a clean utility room. Close to a dirty utility room.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 56): 5 Hard: impervious: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 60): 3 i.e. smooth: imperforate Moisture Resistance (HTM 60): N i.e. normal humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	21	25			10	10
En-suite WC/shower.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data. but not on successive days		-	-
Access via gowning lobby.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 1 i.e. Smooth: imperforate: jointless Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	27	16	Summer and winter (local control) temperature control: 16 to 27 deg.C			
Access via gowning lobby.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 1 i.e. Smooth: imperforate: jointless Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	27	16	Summer and winter (local control) temperature control: 16 to 27 deg.C			
	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data. but not on successive days		6	5
	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data. but not on successive days		-	-
	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	None			-	-
Close to clinical area.	Surface Finish (HTM 56): 3: Impervious: jointless: smooth Moisture Resistance (HTM 56): N: normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 4: Hard: impervious: jointless: slip resistance Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 3/5: Smooth: imperforate Moisture Resistance (HTM 60): N: Normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10 Category 5 generally defined in HTM.	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data. but : -		-	-
Within admission office area.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	16	None			-	-
Part of staff accommodation. Away from main patient treatment and traffic areas.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Close to/direct access to pantry/beverage bay. Close to staff changing. Part of staff accommodation. Away from main patient treatment and traffic area.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Adjacent to overnight stay accommodation. Outside controlled area of department.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Close to staff base. Easy access to all spaces used by patients.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	16	-			-	-
Direct access to single-bed room.	Surface Finish (HTM 56): 3: Impervious: jointless: smooth Moisture Resistance (HTM 56): N: normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 3: hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 3: Smooth: imperforate Moisture Resistance (HTM 60): N: normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	21	-			-	-
Close to Library/Lecture theatre. Near to library/Lecture theatre: if in shared accommodation of the education centre.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	25			-	-
				18	-			-	-
Located in the main entrance lobby. With a clear view of entrance and waiting room.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Adjacent to neonatal unit - optional.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	18	-			-	-
Easy access from Communication Base. Easy access from bed area. Positioned to ensure staff surveillance against unauthorised entry.	Surface Finish (HTM 56): 3: Impervious: jointless: smooth Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4: Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3: Smooth: imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	25			-	6
Easy access from Main Entrance & limited access zone.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	-			-	1.5
	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5 i.e. Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	-			-	-
Easy access from waiting area. Direct access to one or two examination rooms.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6: Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
...al of sanitary towels will not be required in male only facilities.	Surface Finish (HTM 56): 4 i.e. Impervious: smooth Moisture Resistance (HTM 56): H i.e. high humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 4: Hard: impervious: jointless: slip resistance Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 2 i.e. Smooth: imperforate Moisture Resistance (HTM 60): H i.e. High humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	22	None			10	8
Part of overnight stay facilities.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
No direct access to Post-Mortem room. Overlooking cutting-up benches & P.M. tables.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		6	6
...al of sanitary towels will not be required in male only facilities.	Surface Finish (HTM 56): 4 i.e. Impervious: smooth Moisture Resistance (HTM 56): H i.e. high humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 4: Hard: impervious: jointless: slip resistance Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 2 i.e. Smooth: imperforate Moisture Resistance (HTM 60): H i.e. High humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	22	-			10	8
Close to a clean utility room. Close to a dirty utility room.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 3 i.e. hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 3 i.e. smooth: imperforate Moisture Resistance (HTM 60): N i.e. normal humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	21	25			10	10
Close to staff base. Close to supporting ancillary rooms. WC/shower/personal washbasin en-suite.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	23	Winter Temperature (degC): up to 24: independent control		-	-
Close to staff base. Close to supporting ancillary rooms. WC/shower/personal washbasin en-suite.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	23	Winter Temperature (degC): up to 24: independent control		-	-
Easy access from waiting area. Direct access to one or two examination rooms.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6: Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
...lamp if the room is used for multidisciplinary OMFS work. A dental lamp will be required in place of the general examination lamp if the room is used for multidisciplinary orthodontic work.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 3: hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 5: imperforate Moisture Resistance (HTM 60): N: normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Part of staff accommodation. Away from main patient treatment and traffic area.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Adjacent to servery.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5 i.e. Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Easy access to bed area. Easy access to outside play area.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Within In-Patient accommodation. External view/outlook.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Part of overnight stay facilities.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Within an administration area of the department.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	25			-	-
				-	-			-	-
Adjacent to Occupational Therapists office.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5 i.e. Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		6	6
Adjacent to sitting space.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5 i.e. Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	18	-			6	6
Within easy reach of main hospital street.	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Near Main Reception: next to Speech Therapy office.	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		6	6
Easy access from waiting area. Direct access to one or two examination rooms.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6: Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5 i.e. Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	None			2	2
Adjacent to stretcher entrance.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	16	None			3	-
Adjacent to garage. Convenient for other stores.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	16	None			-	-
Within Maternity Neonatal unit.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	18	None			10	-
Adjacent to reception area.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	25	Individual room temperature control required		6	6
Part of staff accommodation. Away from main patient treatment and traffic area.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Close to/direct access to pantry/beverage bay. Close to staff changing. Part of staff accommodation. Away from main patient treatment and traffic area.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	16	-			-	-
be provided: - a pneumatic tube to/from pathology.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 3: hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 3 i.e. smooth: imperforate Moisture Resistance (HTM 60): N i.e. normal humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Adjacent to visiting/viewing room. Sanitary facilities en-suite/or conveniently located - project option.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
In HBN57: Within the clinical area. In HBN26: Located so that it commands a clear: unobstructed view of the main entrance: the waiting room: the entrance to the main theatre corridor and the access route to the staff support areas.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3: Smooth: imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Direct access to sanitary facilities.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3: Smooth: imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	-			6	5
Direct access to sanitary facilities.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3: Smooth: imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	-			6	5
Close to a clean utility room. Close to a dirty utility room.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 56): 5 Hard: impervious: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 60): 3 i.e. smooth: imperforate Moisture Resistance (HTM 60): N i.e. normal humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	21	25			10	10
Easy access from consulting/examination/treatment spaces. Immediately adjacent to stretcher entrance.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3: Smooth: imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	27	16	Summer and winter temperature control 16 to 27 degC.		6	10
Close to a store.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 3 i.e. hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 3 i.e. smooth: imperforate Moisture Resistance (HTM 60): N i.e. normal humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		6	6
Control area immediately adjacent to Audiology booth. Easy access from waiting area.	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6: Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Part of discharge suite.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Visible from reception and enquiry desk.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	16	-			-	-
Close to waiting area. Close to treatment area.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	-			-	-
Access to public.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5 i.e. Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	-			-	-
With a clear view of entrance and waiting room.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Adjacent to reception area. Adjacent to treatment/examination room. Close to WCs facilities. In HBN12So4: Adjacent to prosthetics room.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20				-	-
Access to outside play area (if provided).	To manufacturers recommendations	To manufacturers recommendations	To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Access to outside play area (if provided).	To manufacturers recommendations	To manufacturers recommendations	To manufacturers recommendations	20	-			-	-
Close to bed area.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 5: Hard: impervious: smooth or 6 Soft: impervious: jointless Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N: Normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Within an administration space.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 5: Hard: impervious: smooth or 6 Soft: impervious: jointless Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N: Normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	18	-			2	-
Close to main entrance/concourse.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
I HBN29: Direct access form working area. Direct access from waiting area.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
In HBN12/3A - ENT/Audiology Clinics: Close to waiting area. In HBN36 - Primary health care: Close to C/E room. In HBN52 - DSU: Convenient for use by patient as they enter or leave the DSU.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6: Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
penser to allow for clinical use of the room.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 5: hard: impervious: smooth or 6 Soft: impervious: jointless if for admin areas only. Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N: Normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Adjacent to main entrance area & concourse.	Surface Finish (HTM 56): 3: Impervious: jointless: smooth Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4: Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3: Smooth: imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	-			-	-
Adjacent to Occupational Therapists office.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5 i.e. Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Easy access to male & female changing areas. Access to body store.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	-			-	-
Between two Assessment rooms.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6: Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		6	6
Close to staff base. Close to supporting ancillary rooms. En-suite shower/wc/wash.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data Winter temperature (degC): up to -		-	-
Access via gowning lobby. Close to staff base. Close to supporting ancillary rooms. En-suite shower/wc/wash.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data Winter temperature (degC): up to -		-	-
Close to staff base. Close to supporting ancillary rooms. En-suite WC: shower: personal washbasin.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data Winter temperature (degC): up to		6	6
...al of sanitary towels is only required in female WCs. The following items may be provided: - a ceiling-mounted hoist for transfer within the room.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 -2.4	Surface Finish (HTM 61): 4: hard: impervious: jointless: slip resistance Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9 Note: HTM 61 states category 2 but ADB data supersedes this guidance	Surface Finish (HTM 60): 5: imperforate Moisture Resistance (HTM 60): N: normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	20	None			10	-
En-suite to single-bed room.	Surface Finish (HTM 56): 4 i.e. Impervious: smooth Moisture Resistance (HTM 56): H i.e. high humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 4: Hard: impervious: jointless: slip resistance Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 2 i.e. Smooth: imperforate Moisture Resistance (HTM 60): H i.e. High humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	22	None			10	-
Adjacent to Pantry. Close to sitting room(s).	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		6	5
Easy access from waiting area.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 Note this space is not specifically noted in the HTM schedules.	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9 Note this space is not specifically noted in the HTM schedules.	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10 Note this space is not specifically noted in the HTM schedules.	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
...al of sanitary towels is only required in female WCs. The following items may be provided: - a ceiling-mounted hoist for transfer within the room.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 -2.4	Surface Finish (HTM 61): 4: hard: impervious: jointless: slip resistance Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9 Note: HTM 61 states category 2 but ADB data supersedes this guidance	Surface Finish (HTM 60): 5: imperforate Moisture Resistance (HTM 60): N: normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	20	-			10	-
En-suite to single-bed room.	Surface Finish (HTM 56): 4 i.e. Impervious: smooth Moisture Resistance (HTM 56): H i.e. high humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 4: Hard: impervious: jointless: slip resistance Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 2 i.e. Smooth: imperforate Moisture Resistance (HTM 60): H i.e. High humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	22	-			10	-
	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5 i.e. Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	-			-	-
	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 3: hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N i.e. Normal Humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	16	-			2	2
Close to treatment/diagnostic rooms. In HBN23 - Close to Clean utility.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 3: hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N i.e. Normal Humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	16	-			-	-
Close to staff base. Close to supporting ancillary rooms. En-suite shower/wc/wash.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data Winter temperature (degC): up to 24: independent control			
...ould isolate power supplies to all socket outlets connected via RCD protected circuit at this and any other medical equipment workstation in the same room. Socket outlets: RCD and emergency stop button are mounted on plastic trunking along top rear of workbench.		Surface Finish (HTM 61): 4 i.e. Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 1 i.e. Smooth: imperforate: jointless Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	18	-			-	-
Easy access to outpatient clinics. Easy access to C/E rooms. Easy access to utility rooms. Easy access to treatment rooms.	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5 i.e. Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	-			2	2
Part of multi-dialysis room. Adjacent to clean utility room/area. Close to dirty utility room/area.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Part of multi-dialysis room. Adjacent to clean utility room/area. Close to dirty utility room/area.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Close to staff base. Close to supporting ancillary rooms. En-suite WC: shower: personal washbasin.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data Winter temperature (degC): up to		6	6
Part of multi-bay. Close to Theatre room. Easy access to departmental exit.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations To meet radiation protection requirements each bay should be separated by le...	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	25			6	6
...ough expected where a patient will be left unattended): - room in use switch and indicator. The following items may be provided: - a small printer. A headset light and charger and dimmable lighting will be required for ENT and eye examinations. Piped medical gases may be required for some clinical specialties. De	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 3: hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 5: imperforate Moisture Resistance (HTM 60): N: normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	22	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data. but not on successive days		-	-
In HBN12/3A - ENT/Audiology Clinics: Close to waiting area. In HBN36 - Primary health care: Close to C/E room. In HBN52 - DSU: Convenient for use by patient as they enter or leave the DSU.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6: Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data. but not on successive days		-	-
Within a ward or clinical unit: adjacent to an individual clinical room: or patient bedroom(s).	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 3 i.e. hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 3: Smooth: imperforate Moisture Resistance (HTM 60): N: normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	22	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data. but not on successive days		-	-
Close to clinical area.	Surface Finish (HTM 56): 3: Impervious: jointless: smooth Moisture Resistance (HTM 56): N: normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 3: hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 3/5: Smooth: imperforate Moisture Resistance (HTM 60): N: Normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10 Category 5 generally defined in HTM.	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data. but : -		-	-
Easy access to outpatient clinics.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4 Note: For non clinical areas category 5/6	Surface Finish (HTM 61): 5 i.e. hard: impervious: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N i.e. Normal Humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	16	None			2	2
	Surface Finish (HTM 56): 4: Impervious: smooth Moisture Resistance (HTM 56): H: High humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4: Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 2 i.e. Smooth: imperforate Moisture Resistance (HTM 60): H i.e. High humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	18	-			-	-
Close to clinical area.	Surface Finish (HTM 56): 3: Impervious: jointless: smooth Moisture Resistance (HTM 56): N: normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 4: Hard: impervious: jointless: slip resistance Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 3/5: Smooth: imperforate Moisture Resistance (HTM 60): N: Normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10 Category 5 generally defined in HTM.	18	-			-	-
Close to patient bed areas.	Surface Finish (HTM 56): 2:Impervious: jointless: smooth Moisture Resistance (HTM 56): H:High humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4 i.e. Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 2 i.e. Smooth: imperforate Moisture Resistance (HTM 60): H i.e. High humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	-			10	8
Close to a clean utility room. Close to a dirty utility room.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 3 i.e. hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 3 i.e. smooth: imperforate Moisture Resistance (HTM 60): N i.e. normal humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	21	25			10	10
	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	16	-			-	-
...ough expected where a patient will be left unattended): - room in use switch and indicator. The following items may be provided: - a small printer. A headset light and charger and dimmable lighting will be required for ENT and eye examinations. Piped medical gases may be required for some clinical specialties. De	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 3: hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 5: imperforate Moisture Resistance (HTM 60): N: normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data. but not on successive days		-	-
	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data. but not on successive days		-	-
	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data. but not on successive days		-	-
Adjacent to duty room. Close to garage. Overlooking vehicle fuel pumps. Adjacent to station officer - where appropriate.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data. but not on successive days		-	-
				18	None			-	-
With a clear view of entrance and waiting area.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Adjacent to waiting area. Clearly visible from enquiry desk. Adjacent to nappy changing facilities. Close to pushchair parking bay (if provided). Access to outside play area (if provided).	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	-			-	-
Adjacent to waiting area. Clearly visible from enquiry desk. Adjacent to nappy changing facilities. Close to pushchair parking bay (if provided). Access to outside play area (if provided). May form part of main waiting area - project option.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	-			-	-
Close to preparation area. En-suite WC.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4: Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	-			6	5
Close to a clean utility room. Close to a dirty utility room.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 56): 5 Hard: impervious: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 60): 3 i.e. smooth: imperforate Moisture Resistance (HTM 60): N i.e. normal humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	21	25			10	10
Easy access from waiting area. Easy access to recovery room(s).	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		6	6
Easy access from waiting area. Easy access to patient reception area.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6: Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	22	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data. but not on successive days		-	-
Control area immediately adjacent to Audiology booth. Easy access from waiting area.	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6: Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	22	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data. but not on successive days		6	6
				None	None			-	-
Associated with ear mould workshop.	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5 i.e. Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Part of Non-Invasive Investigation Unit.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5: Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE TSY weather data		6	6
Part of Non-Invasive Investigation Unit.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		6	6
Ease of access to recovery room(s).	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		5	6
Within ophthalmic clinic.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5: Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5: Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Close to consulting/examination rooms. Close to waiting rooms/area.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	-			-	-
Close to consulting/examination rooms. Close to waiting rooms/area.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	-			-	-
Close to consulting/examination rooms. Close to waiting rooms/area.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	-			-	-
Adjacent to clinics. Adjacent to sub-waiting area.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Adjacent to clinics. Adjacent to sub-waiting area.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Close to beverage making facilities. En-suite sanitary facilities.	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N i.e. Normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N: Normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data. but not on successive days		-	-
Adjacent to control room.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6: Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data. but not on successive days		-	-
Close to dental surgeries.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	16	None			-	-
Adjacent to viewing room with interconnecting door.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	-			-	-
Convenient to consulting/treatment room.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
be provided: - a pneumatic tube to/from pathology.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 3: hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 3 i.e. smooth: imperforate Moisture Resistance (HTM 60): N i.e. normal humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
No direct access to Post-Mortem room. Overlooking cutting-up benches & P.M. tables.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		6	6
No direct access to Post-Mortem room. Overlooking cutting-up benches & P.M. tables.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		6	6
	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 5: hard: impervious: smooth or 6 Soft: impervious: jointless Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N: Normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
penser to allow for clinical use of the room.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 5: hard: impervious: smooth or 6 Soft: impervious: jointless if for admin areas only. Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N: Normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
penser to allow for clinical use of the room.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 5: hard: impervious: smooth or 6 Soft: impervious: jointless if for admin areas only. Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N: Normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Adjacent to building entrance. Easy access to Divisional Officer's Office. Easy access to Conference Room. Reception point for control centre.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Adjacent to working areas. Essentially within department.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	16	-			-	-
Close to a store.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 3 i.e. hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 3 i.e. smooth: imperforate Moisture Resistance (HTM 60): N i.e. normal humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		6	6
Close to dark room. Adjacent to ultrasound waiting/changing Adjacent to WC	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	25			6	6
Adjacent to Processing area.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	25			5	6
Direct access to imaging room.	Surface Finish (HTM 56): 3:Impervious: jointless: smooth Moisture Resistance (HTM 56): N: Normal humidity Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4 Note not specifically covered by HTM	Surface Finish (HTM 61): 2: Hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9 Note not specifically covered by HTM	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10 Note not specifically covered by HTM	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	25			5	6
Centrally located with easy access to theatres. In HBN06 Imaging: use in Mammography unit.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	25			10	8
Close to clean utility. Close to changing facilities. Close to sub-waiting. Close to holding/recovery bay. En-suite Anaesthetic Bay and Special Procedures Changing Room.	Surface Finish (HTM 56): 3:Impervious: jointless: smooth Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3: Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	23	Temperature: Control 21degC - 25degC		5	6
Adjacent to Fluoroscopy room with visual/aural contact & direct access. Close to digital viewing area.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless. Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	25	Temperature: Control 21degC - 25degC		5	6
Direct access to/from area served. Shared between four Radiodiagnostic Rooms with direct access. Access from Staff Circulation Route.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		10	8
	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Adjacent to Control room with visual contact/aural contact/direct access. Close to sub-waiting. Adjacent to WC.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 1: Hard: impervious: jointless: smooth: antistatic Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	25	Temperature: Control 21 deg C - 25 deg C		5	6
Adjacent to Injection Room & Gamma Camera Room.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Convenient to Reporting Room with visual contact. Adjacent to Control Room - full visibility via RF window. Close to sub-waiting. Close to anaesthetic bay. Close to recovery bay. Close to resuscitation. Close to technical equipment room incl. gradient amplifiers: RF generators. Convenient to service entrance for c	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 1: Hard: impervious: jointless: smooth: antistatic Cleaning Routine (HTM 61): To manufacturers recommendations Consider weight and floor reinforcement requirements.	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate: non-ferrous Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	21	+/-2 deg.C. Ref.to HBN for temperature control.		5	6
Adjacent to MRI scanner room with visual/aural contact. Adjacent to MRI office & reporting. Direct access to MRI suite corridor.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	25	Temperature: Control 20degC - 25degC		-	-
Adjacent to PET scanner room. Direct access to a corridor or other shared areas.	Surface Finish (HTM 56): 3:Impervious: jointless: smooth Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	23	Temperature: Control 20degC - 25degC		-	-
Adjacent to Imaging room.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	16	-			-	-
Close to class room. Close to Library/Lecture theatre.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	25		-	-	-
Within an MRI suite.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations Buffers to suit length of walls.	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	-			-	-
Part of sub-waiting area. Integrated with the A&E unit.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations Buffers to suit length of walls.	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	-			-	-
Adjacent to waiting area. Clearly visible from enquiry desk.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	-			-	-
Good access for plant and equipment.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	18	-			-	-
	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Within staff area.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4: Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	-			6	5
Easy access to/from sub-waiting area Direct access to treatment/examination/planning facilities. Close to WC facilities. Design to ensure patients privacy is maintained once changed into required hospital clothing.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	-			6	-
Adjacent to sub-waiting area (if provided). Close to WC facilities.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 5: hard: impervious: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9 Note: HTM 61 suggests category 6 is acceptable. ADB info supersedes this guidance. In areas like hydrotherapy: adjacent to wet areas: category 4 is	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N: normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	21	-			6	-
Adjacent to clean utility room/area. Adjacent to dirty utility room/area. Close to recovery room/area.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4 i.e. Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	23			-	-
Close to cardiac day case unit. Close to CCU & intensive & intermediate care unit. Adjacent to prep/recovery area Close to scrub-up sink or area.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4: Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate. Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations Option for loadbearing system for overhead equipment.	22	20	Summer and winter temperature control 15 to 25 degC.		5	6
	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4: Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	18	-			10	-
	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5: Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
...lamp if the room is used for multidisciplinary OMFS work. A dental lamp will be required in place of the general examination lamp if the room is used for multidisciplinary orthodontic work.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 3: hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 5: imperforate Moisture Resistance (HTM 60): N: normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	22	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data. but : -		-	-
	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5: Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	22	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data. but : 0 -		-	-
	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5: Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	22	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data. but : 0 -		-	-
Direct access from theatre.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	-	-			-	-
	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5: Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	22	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data. but : 0 -		-	-
	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5: Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	22	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data. but : 0 -		-	-
Within an administration area of the department.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	25			-	-
Access to outside play area (if provided).	To manufacturers recommendations	To manufacturers recommendations	To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Adjacent to medical equipment section.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	18	-			-	-
Good access for plant and equipment.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Close to in-patient beds and ward dining room: if provided	Surface Finish (HTM 56): 4: Impervious: smooth Moisture Resistance (HTM 56): H: High humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 4: Hard: impervious: jointless: slip resistance Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 2 i.e. Smooth: imperforate Moisture Resistance (HTM 60): H i.e. High humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	18	-			6	5
Adjacent to occupational therapy activity area.	Surface Finish (HTM 56): 4 i.e. Impervious: smooth Moisture Resistance (HTM 56): H i.e. High humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 2 i.e. Smooth: imperforate Moisture Resistance (HTM 60): H i.e. High humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		5	-
Adjacent to sitting space.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5 i.e. Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		6	6
. Temperature control of water between 34 to 40 deg.C. Lamp indicator call situated over door outside room.	Surface Finish (HTM 56): 4 i.e. Impervious: smooth Moisture Resistance (HTM 56): H i.e. High humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4 i.e. Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 2 i.e. Smooth: imperforate Moisture Resistance (HTM 60): H i.e. High humidity Cleaning Routine (HTM 60): To manufacturers recommendations	28	28	Winter temperature: To suit water temp.		-	-
Near to changing facilities with direct access to pool.	Surface Finish (HTM 56): 4 i.e. Impervious: smooth Moisture Resistance (HTM 56): H i.e. High humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4 i.e. Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 2 i.e. Smooth: imperforate Moisture Resistance (HTM 60): H i.e. High humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	-			6	5
Adjacent to a patient bed area. Unobstructed visual observation of patients.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3: Smooth: imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Close to treatment cubicles. Close to W.C.(s).	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	-			6	-
	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	16	-			-	-
Close to clinical area.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 3: hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 5: imperforate Moisture Resistance (HTM 60): N: normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	16	-			-	-
Direct access from pool area.	Surface Finish (HTM 56): 4 i.e. Impervious: smooth Moisture Resistance (HTM 56): H i.e. High humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4 i.e. Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 2 i.e. Smooth: imperforate Moisture Resistance (HTM 60): H i.e. High humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	-			6	-
Close to treatment area(s).	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5 i.e. Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	-			-	-
Close to a store.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 3 i.e. hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 3 i.e. smooth: imperforate Moisture Resistance (HTM 60): N i.e. normal humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		6	6
Near to Individual Treatment Area.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Near to Individual Treatment Area.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Patient/mould fitting/clinical section of mould workshop area.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	25			10	8
Near the entrance to the unit. Visible from staff base.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5 i.e. Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	-			-	-
	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 5: Hard: impervious: smooth or 6 Soft: impervious: jointless Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N: Normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Within easy reach of main hospital street. Wheelchair access. 1 x Bed access. Access to ablutions room.	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturer's instructions	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	-			-	-
Within easy reach of main hospital street.	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4: Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturer's instructions	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	-			10	-
Within easy reach of main hospital street.	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Access via gowning lobby. Close to staff base. Close to supporting ancillary rooms. En-suite shower/wc/wash.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data Winter temperature (degC): up to -		-	-
Close to staff base. Close to supporting ancillary rooms. En-suite WC: shower: personal washbasin.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data Winter temperature (degC): up to		6	6
Close to staff base. Close to supporting ancillary rooms. En-suite WC: shower: personal washbasin.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data Winter temperature (degC): up to		6	6
...ough expected where a patient will be left unattended): - room in use switch and indicator. The following items may be provided: - a small printer. A headset light and charger and dimmable lighting will be required for ENT and eye examinations. Piped medical gases may be required for some clinical specialties. De	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 3: hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 5: imperforate Moisture Resistance (HTM 60): N: normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Close to beverage making facilities. En-suite sanitary facilities.	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N: Normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N: Normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Adjacent to clinical nurse teacher's room when provided.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	25			-	-
Access to hospital. Access to department.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	-			-	-
03. A dimming switch is recommended if the room is used for viewing digital images.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 5: Hard: impervious: smooth or 6 Soft: impervious: jointless Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N: Normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 5: Hard: impervious: smooth or 6 Soft: impervious: jointless Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N: Normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Close to patient bed areas.	Surface Finish (HTM 56): 2:Impervious: jointless: smooth Moisture Resistance (HTM 56): H:High humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4 i.e. Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 2 i.e. Smooth: imperforate Moisture Resistance (HTM 60): H i.e. High humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	-			10	-
Close to patient bed areas.	Surface Finish (HTM 56): 2:Impervious: jointless: smooth Moisture Resistance (HTM 56): H:High humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4 i.e. Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 2 i.e. Smooth: imperforate Moisture Resistance (HTM 60): H i.e. High humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	-			10	-
Near main waiting room. Access to resuscitation facilities.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	25			6	6
...in seeds: Type B containers & pots Isotope calibrator.	Surface Finish (HTM 56): 1 i.e. Impervious: jointless: smooth: no corners. Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 1 i.e. Smooth: imperforate: jointless Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	25			6	5
Close to staff base. Close to ancillary rooms. En-suite WC/shower/personal washbasin.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	23			10	10
Adjacent to aseptic room.	Surface Finish (HTM 56): 3:Impervious: jointless: smooth Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	23				
External view/outlook.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Close to main entrance.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Close to beverage making facilities. En-suite sanitary facilities.	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N i.e. Normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N: Normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Adjacent to treatment areas. In HBN08 - Rehabilitation O.T.: Oversees activity area & view of the aids to daily living section via vision panel.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Close to operating theatre.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Adjacent to preparation room. Adjacent to anaesthesia room. Adjacent to scrub-up room. Adjacent to utility room. Direct access to corridor/exit bay.	Surface Finish (HTM 56): 1 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 1 i.e. Hard: impervious: jointless: smooth: antistatic Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 1 i.e. Smooth: imperforate: jointless Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	22	20	Summer and winter temperature control 15 to 25 degC.		-	-
Adjacent to preparation room. Adjacent to anaesthesia room. Adjacent to scrub-up room. Adjacent to utility room. Direct access to corridor/exit bay.	Surface Finish (HTM 56): 1: Impervious: jointless: smooth Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 1 i.e. Hard: impervious: jointless: smooth: antistatic Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 1: Smooth: imperforate: jointless Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	22	20	Summer and winter temperature control 15 to 25 degC.		-	-
Between corridor & theatre. Observation panel to associated Theatre.	Surface Finish (HTM 56): 1: Impervious: jointless: smooth Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4: Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 1: Smooth: imperforate: jointless Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	25			-	-
Adjacent to operating theatre. Anaesthetic rooms can be sited at right-angles to the operating theatres.	Surface Finish (HTM 56): 1: Impervious: jointless: smooth Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 1: Hard: impervious: jointless: smooth: antistatic Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 1: Smooth: imperforate: jointless Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	25			-	-
Between the corridor & theatre.	Surface Finish (HTM 56): 1: Impervious: jointless: smooth Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 1: Hard: impervious: jointless: smooth: antistatic Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 1: Smooth: imperforate: jointless Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	23			-	-
	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6: Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		10	10
Adjacent to W.C. Adjacent to wash/shower rooms. Easy access to/from departmental entrance.	Surface Finish (HTM 56): 3: Impervious: jointless: smooth Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4: Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	-			6	5
	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	-			2	2
Easy access from Main Entrance & limited access zone.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	-			-	1.5
Close to the second-stage recovery area.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5: Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	16	-			2	2
Within admission office area.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	16	-			-	-
Adjacent to the operating theatre.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4: Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	18	-			10	-
Close to theatre and corridor.	Surface Finish (HTM 56): 1 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4: Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 1 i.e. Smooth: imperforate: jointless Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	18	-			10	-
Part of multi-bay. Close to Theatre room. Easy access to departmental exit.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations To meet radiation protection requirements each bay should be separated by le...	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	23			15	15
With a clear view of entrance and waiting area.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
...al of sanitary towels will not be required in male only facilities.	Surface Finish (HTM 56): 4 i.e. Impervious: smooth Moisture Resistance (HTM 56): H i.e. high humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 4: Hard: impervious: jointless: slip resistance Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 2 i.e. Smooth: imperforate Moisture Resistance (HTM 60): H i.e. High humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	20	-			10	-
Close to dirty utility. Close to clean utility.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	25			8	10
Adjacent to reception area.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	25			6	6
Part of Non-Invasive Investigation Unit.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		6	6
Adjacent to clinical nurse teacher's room when provided.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	25			-	-
03. A dimming switch is recommended if the room is used for viewing digital images.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 5: Hard: impervious: smooth or 6 Soft: impervious: jointless Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N: Normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data. but not on successive days		-	-
Within Aids of Daily Living area.	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	22	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data. but : -		-	-
Easy access from Main Entrance & limited access zone.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	None			-	1.5
Within Day assessment unit.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	16	None			2	2
Close to a clean utility room. Close to a dirty utility room.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 56): 5 Hard: impervious: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 60): 3 i.e. smooth: imperforate Moisture Resistance (HTM 60): N i.e. normal humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	22	25			10	10
	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	-			-	-
Access from cross-matching and blood grouping laboratories. Location to provide out of hours access whilst maintaining the security of the department.	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		6	5
In HBN15 - Pathology: Near to consultant's office or person served.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Adjacent to treatment areas. In HBN08 - Rehabilitation O.T.: Oversees activity area & view of the aids to daily living section via vision panel.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Adjacent to other offices.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-	-
Adjacent to main entrance area & concourse.	Surface Finish (HTM 56): 3: Impervious: jointless: smooth Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4 i.e. Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3: Smooth: imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	-			-	-
Adjacent to occupational therapy activity area.	Surface Finish (HTM 56): 4 i.e. Impervious: smooth Moisture Resistance (HTM 56): H i.e. High humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 2 i.e. Smooth: imperforate Moisture Resistance (HTM 60): H i.e. High humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		5	-

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	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5: Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	22	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-
	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5: Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	22	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	6	6
Close to consulting/examination room. Close to ultrasound room. Close to recovery room.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	25		10	10
	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5: Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5: Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	22	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	10	10
	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5 i.e. Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	22	None		-	1.5
Easy access from plaster suite.	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5 i.e. Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	-		-	-
Close to a store.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 3 i.e. hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 3 i.e. smooth: imperforate Moisture Resistance (HTM 60): N i.e. normal humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	22	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	6	6
Close to a store.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 3 i.e. hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 3 i.e. smooth: imperforate Moisture Resistance (HTM 60): N i.e. normal humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	6	6
Close to clinical area and WCs used for specimen collection.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): H i.e. High humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 3 i.e. hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 3 i.e. smooth: imperforate Moisture Resistance (HTM 60): N i.e. normal humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		-
Adjacent to treatment room.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	25		8	10
WC/shower or bath/personal washbasin via lobby /or conveniently located - project team option.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	6	6
	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5: Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	23	Local temperature control required.	6	6
Part of Non-Invasive Investigation Unit. It is crucial that the tilt room is sound proofed or located at the end of the corridor/building where the level of noise is minimal.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	6	6
Adjacent to control room.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6: Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
Access is required to beverage making facilities	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3	Surface Finish (HTM 61): 5: hard: impervious: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 5: imperforate. Note HTM currently allows 5 or 6 but ADB data recommends 5. Moisture Resistance (HTM 60): N: normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
Easy access from departmental entrance. Adjacent to and overseen by reception area. Easy access to/from clinical rooms. Close to WCs facilities. Close to play area - if provided. Easy access to public telephone: (accessible by disabled person) - if provided. Easy access to beverage vending machine - if provided.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	-		-	-
Part of sub-waiting area. Integrated with the A&E unit.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations Buffers to suit length of walls.	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	-		-	-
	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	18	-		-	-
Adjacent to staff W.C. Close to department entrance.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4: Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	-		6	5
	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3: Smooth: imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	16	-		-	3
	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	22	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-
Adjacent to control room.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6: Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-
With a clear view of entrance and waiting area.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-
Adjacent to preparation room. Adjacent to anaesthesia room. Adjacent to scrub-up room. Direct access to dirty utility room.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4 i.e. Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3: Smooth: imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	22	20	Summer and winter temperature control 15 to 25 degC	10	10
Near to Individual Treatment area. Desirably near ADL.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Special To manufacturers recommendations	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	18	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	6	6
				20	23		-	-
				20	23		-	-
				20	23		-	-
				16	-		-	-
				20	23		-	-
				20	23		-	-
				20	23		-	-
				21	-		6	-
				21	-		6	-
				21	-		6	-
Adjacent to dispatch assembly area. Adjacent to stores. Easy access to the refuse collection area.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5 i.e. Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	-		-	-
Adjacent to Goods Dispatch. Adjacent to Unpacking/Packing Area. Adjacent to storekeepers or pharmacists office. Easy access to clerks office.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5 i.e. Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	-		-	-
Near to dispensary.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5 i.e. Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	-		-	-
Near to dispensary.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5 i.e. Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	-		-	-
	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	-20	-		-	-
	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	4	-		-	-
	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	16	-		-	3
Close to a store.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 3 i.e. hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 3 i.e. smooth: imperforate Moisture Resistance (HTM 60): N i.e. normal humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	6	6
Close to Reception.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	18	-		-	-
Close to dark room. Adjacent to ultrasound waiting/changing Adjacent to WC	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	25		6	6
Adjacent to Processing area.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	25		5	6
Close to consulting/examination room.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	25		5	6
Adjacent to Processing area. Close to changing facilities. Close to sub-waiting. Close to recovery room/area. Easy access to WC.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	25	Temperature: Control 21degC - 25degC	5	6
Close to clean utility. Close to changing facilities. Close to sub-waiting. Close to holding/recovery bay. En-suite Anaesthetic Bay and Special Procedures Changing Room.	Surface Finish (HTM 56): 3:Impervious: jointless: smooth Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	25	Temperature: Control 21degC - 25degC	5	6
Direct access to/from area served. Shared between two Radiodiagnostic Rooms with direct access from both. Access from Staff Circulation Route.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	10	8
Adjacent to control room.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6: Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
Adjacent to C.T. scanner room with visual/aural contact & direct access. Convenient to C.T. reporting room. Direct access to C.T. suite corridor.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	25	Temperature: Control 21degC - 25degC	-	-
Adjacent to Injection Room & Gamma Camera Room	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	5	6
Adjacent to MRI scanner room with visual/aural contact. Adjacent to MRI office & reporting. Direct access to MRI suite corridor.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	25	Temperature: Control 20degC - 25degC	-	-
Convenient to Reporting Room with visual contact. Adjacent to Control Room - full visibility via RF window. Close to sub-waiting. Close to anaesthetic bay. Close to recovery bay. Close to resuscitation. Close to technical equipment room incl. gradient amplifiers: RF generators. Convenient to service entrance for c	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 1: Hard: impervious: jointless: smooth: antistatic Cleaning Routine (HTM 61): To manufacturers recommendations Consider weight and floor reinforcement requirements.	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate: non-ferrous Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	21	+/-2 deg C. Ref. to HBN for temperature control.	5	6
Adjacent to PET scanner room. Direct access to a corridor or other shared areas.	Surface Finish (HTM 56): 3:Impervious: jointless: smooth Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	25	Temperature: Control 20degC - 25degC	-	-
Close to unit/dept entrance.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	-		-	-
Adjacent to entrance lobby.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	16	-		-	-
Quiet location.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
Close to Library/Lecture theatre. Near to Library/Lecture theatre: if in shared accommodation of the education centre.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	25		-	-
With a clear view of entrance and waiting area.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
With a clear view of entrance and waiting area.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
Easy access from departmental entrance. Adjacent to and overseen by reception area. Close to WCs facilities. Easy access to public telephone: (accessible by disabled person) - if provided. Easy access to beverage vending machine - if provided.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	-		-	-
	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 5: Hard: impervious: smooth or 6 Soft: impervious: jointless Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N: Normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
03. A dimming switch is recommended if the room is used for viewing digital images.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 5: Hard: impervious: smooth or 6 Soft: impervious: jointless Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N: Normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
Good visual overview of second stage recovery and pre-discharge lounge.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
Close to Fluoroscopy.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4: Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	25		-	6
Convenient to circulation route.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	-		6	5
Convenient to circulation route.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Hygiene and cleaning (HTM 56): Paragraph 2.3 - 2.4	Surface Finish (HTM 61): 5: Hard: impervious: smooth Hygiene and cleaning (HTM 61): Paragraph 2.7 - 2.9	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N: Normal humidity. Hygiene and cleaning (HTM 60): Paragraph 2.9	20	-		6	5
Close to WC facilities.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	-		6	-
Adjacent to sub-waiting area (if provided). Easy access to treatment/examination room. Close to WC facilities.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	-		6	-
Adjacent to sub-waiting area (if provided). Direct access to treatment/examination room. Close to WC facilities.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	-		6	-
Adjacent to sub-waiting area (if provided). Close to WC facilities. May be use in conjunction with changing area.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 5: hard: impervious: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9 Note: HTM 61 suggests category 6 is acceptable. ADB info supersedes this guidance. In areas like hydrotherapy: adjacent to wet areas: category 4 is...	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N: normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	21	-		6	-
In HBN09-03 Neonatal units: En-suite to parent overnight room.	Surface Finish (HTM 56): 4 i.e. Impervious: smooth Moisture Resistance (HTM 56): H i.e. high humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 4: Hard: impervious: jointless: slip resistance Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 2 i.e. Smooth: imperforate Moisture Resistance (HTM 60): H i.e. High humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	22	-		10	-
	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5 i.e. Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	-		-	-
Adjacent to Control room with visual contact/aural contact/direct access. Close to sub-waiting. Adjacent to WC.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 1: Hard: impervious: jointless: smooth: antistatic Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	25	Temperature: Control 21 deg C - 25 deg C	5	6
In HBN09-03 Neonatal units: En-suite to parent overnight room.	Surface Finish (HTM 56): 4 i.e. Impervious: smooth Moisture Resistance (HTM 56): H i.e. high humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 4: Hard: impervious: jointless: slip resistance Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 2 i.e. Smooth: imperforate Moisture Resistance (HTM 60): H i.e. High humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	22	None		10	-
Co-terminus to Simulator room. Access may be required to medical conference room.	Surface Finish (HTM 56): 3:Impervious: jointless: smooth Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	25	Temperature: Control 21degC - 25degC	-	-
Adjacent to main circulation route.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 2: Hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 5 i.e. imperforate Moisture Resistance (HTM 60): N i.e. normal humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	16	-		10	-
Adjacent to aseptic room.	Surface Finish (HTM 56): 3:Impervious: jointless: smooth Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	23		6	6
In A&E: Adjacent to the main ambulant patient entrance lobby. Adjacent to waiting area.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	16	-		-	-
	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
In HBN36: En-suite store room.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
With a clear view of entrance and waiting area. Convenient access to the C/E and treatment rooms.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
Adjacent to reception area. Adjacent to treatment/examination room. Close to WCs facilities. Easy access to public telephone: (accessible by disabled person) - if provided. Easy access to beverage vending machine - if provided.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	-		-	-
	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3	Surface Finish (HTM 61): 3: hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 5: imperforate Moisture Resistance (HTM 60): N: normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	18	-		-	-
Adjacent to staff W.C. Close to department entrance.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4: Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	-		6	5
Adjacent to staff W.C. Close to department entrance.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4: Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	-		6	5
Close to WC. Note: This room does not include a toilet.	Surface Finish (HTM 56): 4 i.e. Impervious: smooth Moisture Resistance (HTM 56): H i.e. high humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 4: Hard: impervious: jointless: slip resistance Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 2 i.e. Smooth: imperforate Moisture Resistance (HTM 60): H i.e. High humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	22	-		10	-
Adjacent to exercise area.	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5 i.e. Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	-		-	-
Adjacent to exercise area.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5 i.e. Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	-		-	-
Close to treatment area(s).	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5 i.e. Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	-		-	-
Adjacent to cubicles.	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	25		10	10
Located in staff: patient or visitors areas.	Surface Finish (HTM 56): 4: Impervious: smooth Moisture Resistance (HTM 56): H: High humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 4: Hard: impervious: jointless: slip resistance Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 2 i.e. Smooth: imperforate Moisture Resistance (HTM 60): H i.e. High humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	20	None		6	-
Adjacent to occupational therapy activity area.	Surface Finish (HTM 56): 4 i.e. Impervious: smooth Moisture Resistance (HTM 56): H i.e. High humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 2 i.e. Smooth: imperforate Moisture Resistance (HTM 60): H i.e. High humidity Cleaning Routine (HTM 60): To manufacturers recommendations	22	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but -	5	-
Adjacent to Occupational therapy area.	Surface Finish (HTM 56): 4 i.e. Impervious: smooth Moisture Resistance (HTM 56): H i.e. High humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4 i.e. Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 2 i.e. Smooth: imperforate Moisture Resistance (HTM 60): H i.e. High humidity Cleaning Routine (HTM 60): To manufacturers recommendations	22	None		10	8
Within treatment cubicle area. Nearby staff base.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	25		6	6
Close to treatment cubicles.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	25		6	5
Adjacent to Occupational Therapists office.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5 i.e. Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	22	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	6	6
Near to Individual Treatment Area.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
Near to Individual Treatment area. Desirably near ADL.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Special To manufacturers recommendations	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	6	6
ient home environment.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
Adjacent to waiting area. Adjacent to or within dialysis area.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5: Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	6	6
With a clear view of entrance and waiting area.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	28	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
Easy access from departmental entrance. Adjacent to and overseen by reception area. Close to WCs facilities. Easy access to public telephone: (accessible by disabled person) - if provided. Easy access to beverage vending machine - if provided.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	-		-	-
	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Special	To manufacturers recommendations	16	-		-	-
	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5 i.e. Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	To manufacturers recommendations	18	-	Winter temperature: Frost protection only when plant is shutdown.	5	-
Adjacent to staff W.C.	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	-		6	5
Easy access to outpatient clinics. Easy access to C/E rooms. Easy access to utility rooms. Easy access to treatment rooms.	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5 i.e. Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	-		2	2
Part of multi-dialysis room. Adjacent to clean utility room/area. Close to dirty utility room/area.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
Accessible from main dialysis area. En-suite Shower/WC/Wash.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	10	10
Adjacent to the dialysis area. Adjacent to clean utility. Adjacent to dirty utility.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4: Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
En-suite sanitary facilities.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 3 i.e. hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 5 i.e. imperforate Moisture Resistance (HTM 60): N i.e. normal humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		
Adjacent to Dept/Unit entrance.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	16	-		-	-
ng activity in the room for elsewhere. SpaceNotes: Sizing guide for different number of users: - 2 sqm per stacking chair and part use of table: - 4 sqm per wheelchair place. For guidance on number of places: see example schedules of accommodation.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 5: hard: impervious: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 5: imperforate. Note HTM currently allows 5 or 6 but ADB data recommends 5. Moisture Resistance (HTM 60): N: normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
In HBN12/3A - ENT/Audiology Clinics: Close to waiting area. In HBN36 - Primary health care: Close to C/E room. In HBN52 - DSU: Convenient for use by patient as they enter or leave the DSU.	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6: Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
Close to clinical area: particularly treatment rooms.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 56): 3: Impervious: jointless: smooth Moisture Resistance (HTM 56): N: Normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 60): 3/5: Smooth: imperforate Moisture Resistance (HTM 60): N: Normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10 Category 5 generally defined in HTM. 3 defined for theatres	20	25		-	6
Near to unit entrance.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	16	-		-	-
	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5 i.e. Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	-		-	-
Easy access to outpatient clinics.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4 Note: For non clinical areas category 5/6	Surface Finish (HTM 61): 5 i.e. Hard: impervious: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N i.e. Normal Humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	16	-		2	2
Adjacent to clean utility room/area. Adjacent to dirty utility room/area. Close to recovery room/area.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4 i.e. Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	23		-	-
Part of multi-dialysis room. Adjacent to clean utility room/area. Close to dirty utility room/area.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
Part of multi-dialysis room. Adjacent to clean utility room/area. Close to dirty utility room/area.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
Adjacent to C.T. scanner room with visual/aural contact & direct access. Convenient to C.T. reporting room. Direct access to C.T. suite corridor.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	25	Temperature: Control 21degC - 25degC	-	-
txtPlanningRelationships	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	23	See text ref. control of rate of cooling for crystal detector.	5	6
txtPlanningRelationships	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	23	See text ref. control of rate of cooling for crystal detector.	5	6
Adjacent to "Hot" waiting room.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	23	See text ref. control of rate of cooling See text ref. control of rate of cooling for crystal detector.	5	6
With a clear view of entrance: waiting area and children play area. Direct access to general office.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
Located in the main entrance lobby. With a clear view of entrance and waiting room.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
Part of sub-waiting area. Integrated with the A&E unit.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations Buffers to suit length of walls.	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	-		-	-
Close to darkroom. Close to office.				20	25		-	-
In HBN06 - Radiology: En-suite to Special Procedures Radiodiagnostic Rooms served.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	-		6	5
Adjacent to staff W.C.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	-		6	5
Located in the main entrance lobby. With a clear view of entrance and waiting room.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-
Adjacent to preparation room. Adjacent to anaesthesia room. Adjacent to scrub-up room. Direct access to dirty utility room.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4 i.e. Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3: Smooth: imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	22	20	Summer and winter temperature control 15 to 25 degC	-	-
Easy access for rapid & convenient transfer of specimens from laboratory main specimen reception. Easy access to Containment Level III room & Autoclave/wash-up area. Close to Blood culture room: Bacterial & Viral Serology & Antibiotic section & the Media preparation/plate pouring areas. Near to Hot room.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	25		-	-
Adjacent to aseptic room.	Surface Finish (HTM 56): 3:Impervious: jointless: smooth Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	23			
With a clear view of entrance and waiting area.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
Adjacent to other offices.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
Within easy reach of main hospital street. Wheelchair access. 1 x Bed access. Access to ablutions room.	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturer's instructions	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	-		-	-
Within easy reach of main hospital street.	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4: Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturer's instructions	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	-		10	-
En-suite sanitary facilities.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 3 i.e. hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 5 i.e. imperforate Moisture Resistance (HTM 60): N i.e. normal humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	21	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data		
Close to class room. Close to Library/Lecture theatre.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	25	-	-	-
With a clear view of entrance and waiting area. Close to clinical or work area. Where paper records are still used: access to records store.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 3: hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 5: imperforate Moisture Resistance (HTM 60): N: normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
Close to clinical or work area. Close to WC facilities.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth: HTM allows category 6 or to match surrounds Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 5: imperforate Moisture Resistance (HTM 60): N: normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	20	-		-	-
Adjacent to Occupational therapy area.	Surface Finish (HTM 56): 4 i.e. Impervious: smooth Moisture Resistance (HTM 56): H i.e. High humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4 i.e. Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 2 i.e. Smooth: imperforate Moisture Resistance (HTM 60): H i.e. High humidity Cleaning Routine (HTM 60): To manufacturers recommendations	22	-		-	10
En-suite to single-bed room.	Surface Finish (HTM 56): 4 i.e. Impervious: smooth Moisture Resistance (HTM 56): H i.e. high humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 4: Hard: impervious: jointless: slip resistance Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 2 i.e. Smooth: imperforate Moisture Resistance (HTM 60): H i.e. High humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	22	-		10	-
En-suite to single-bed room.	Surface Finish (HTM 56): 4 i.e. Impervious: smooth Moisture Resistance (HTM 56): H i.e. high humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 4: Hard: impervious: jointless: slip resistance Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 2 i.e. Smooth: imperforate Moisture Resistance (HTM 60): H i.e. High humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	22	-		10	-
user groups. Diffusers should be tamper-proof and secure. The bin for the disposal of sanitary towels will not be required in male only facilities.	Surface Finish (HTM 56): 4 i.e. Impervious: smooth Moisture Resistance (HTM 56): H i.e. high humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 -2.4	Surface Finish (HTM 61): 4: Hard: impervious: jointless: slip resistance Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 2 i.e. Smooth: imperforate Moisture Resistance (HTM 60): H i.e. High humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	22	-		10	8
user groups. Diffusers should be tamper-proof and secure. The bin for the disposal of sanitary towels will not be required in male only facilities.	Surface Finish (HTM 56): 4 i.e. Impervious: smooth Moisture Resistance (HTM 56): H i.e. high humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 -2.4	Surface Finish (HTM 61): 4: Hard: impervious: jointless: slip resistance Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 2 i.e. Smooth: imperforate Moisture Resistance (HTM 60): H i.e. High humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	22	-		10	8
Adjacent to occupational therapy activity area.	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5 i.e. Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	-		-	-
Near to Individual Treatment Area.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
ough expected where a patient will be left unattended): - room in use switch and indicator. The following items may be provided: - a small printer. A headset light and charger and dimmable lighting will be required for ENT and eye examinations. Piped medical gases may be required for some clinical specialties. De	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 3: hard: impervious: jointless: smooth Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 5: imperforate Moisture Resistance (HTM 60): N: normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	22	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data, but not on successive days	-	-
En-suite to single-bed room.	Surface Finish (HTM 56): 4 i.e. Impervious: smooth Moisture Resistance (HTM 56): H i.e. high humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 4: Hard: impervious: jointless: slip resistance Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 2 i.e. Smooth: imperforate Moisture Resistance (HTM 60): H i.e. High humidity Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	22	None		10	-
Part of multi-bay. Close to Theatre room. Easy access to departmental exit.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations To meet radiation protection requirements each bay should be separated by le...	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	21	23		15	15
Close to staff changing. Part of staff accommodation. Away from main patient treatment and traffic area.	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
En-suite WC/shower.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
Close to the Clinical Equipment Store.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	16	-		-	-
Direct access from theatre.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	-		-	-
With a clear view of entrance and waiting room.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26°C not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
Adjacent to consulting suites. Adjacent to treatment/examination room. Ease of access to WCs. Overlooked from reception office counter.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	20	-		-	-
Close to department entrance.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	-		-	-
Central to operating theatre.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	16	25	Summer temperature control maybe required depending on type of battery used.	-	-
Close to bed area.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N: normal humidity. Hygiene and cleaning (HTM 56): Paragraphs 2.3 - 2.4	Surface Finish (HTM 61): 5: Hard: impervious: smooth or 6 Soft: impervious: jointless Hygiene and cleaning (HTM 61): Paragraphs 2.7 - 2.9	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N: Normal humidity. Hygiene and cleaning (HTM 60): Paragraphs 2.9 - 2.10	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6 i.e. Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
Located in the main entrance lobby.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	26	26oC not to be exceeded for more than 50 hours per annum against CIBSE DSY weather data	-	-
Adjacent to preparation room. Adjacent to anaesthesia room. Adjacent to scrub-up room. Adjacent to utility room. Direct access to corridor/exit bay.	Surface Finish (HTM 56): 1 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 1 i.e. Hard: impervious: jointless: smooth: antistatic Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 1 i.e. Smooth: imperforate: jointless Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	22	20	Summer and winter temperature control 15 to 25 degC.	-	-
Adjacent to preparation room. Adjacent to anaesthesia room. Adjacent to scrub-up room. Adjacent to utility room. Direct access to corridor/exit bay.	Surface Finish (HTM 56): 1 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 1 i.e. Hard: impervious: jointless: smooth: antistatic Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 1 i.e. Smooth: imperforate: jointless Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	22	20	Summer and winter temperature control 15 to 25 degC.	-	-
Between corridor & theatre. Observation panel to associated Theatre.	Surface Finish (HTM 56): 1: Impervious: jointless: smooth Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4: Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 1: Smooth: imperforate: jointless Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	25		-	-
Adjacent to operating theatre. Anaesthetic rooms can be sited at right-angles to the operating theatres.	Surface Finish (HTM 56): 1: Impervious: jointless: smooth Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 1: Hard: impervious: jointless: smooth: antistatic Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 1: Smooth: imperforate: jointless Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	25		-	-
Adjacent to W.C. Adjacent to wash/shower rooms. Easy access to/from departmental entrance.	Surface Finish (HTM 56): 3: Impervious: jointless: smooth Moisture Resistance (HTM 56): N: Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4: Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5: Imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	-		6	5
In the operating theatre suite.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	-		-	-
Easy access of the recovery unit. Adjacent to the equipment service room.	Surface Finish (HTM 56): 4 i.e. Impervious: smooth Moisture Resistance (HTM 56): H i.e. High humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	-		-	-
Easy access from Main Entrance & limited access zone.	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	-		-	1.5
	Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	-		-	-
Within operating department.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 2 i.e. Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 4 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	18	-		-	-
	Surface Finish (HTM 56): 6 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 5 i.e. Hard: impervious: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 6 Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	16	-		-	-
On outside wall for natural ventilation	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 5:Imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	10	-	Temperature: Above 10deg C if nitrous oxide/oxygen mixtures are stored.	-	-
En-suite to laboratory room.	Surface Finish (HTM 56): 5: Moisture Resistance (HTM 56): N:Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 3: Hard: impervious: jointless: smooth Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3: Smooth: imperforate Moisture Resistance (HTM 60): N: Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	21	25	Temperature: Control 21degC - 25degC	-	-
En-suite to laboratory room.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 6: Soft: impervious: jointless Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3:Smooth: imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations	20	25	Temperature: Control 21degC - 25degC	-	-
Direct access to Endoscopy Treatment Room.	Surface Finish (HTM 56): 3 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4 i.e. Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 3 i.e. Smooth: imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	18	-		10	6
Direct access from theatre and corridor.	Surface Finish (HTM 56): 1 i.e. Impervious: jointless: smooth Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations	Surface Finish (HTM 61): 4: Hard: impervious: jointless: extra slip resistance Cleaning Routine (HTM 61): To manufacturers recommendations	Surface Finish (HTM 60): 1 i.e. Smooth: imperforate: jointless Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations	18	-		10	-
Close to staff changing facilities.				18	-		10	-

Mechanical Ventilation Notes		Ventilation	Ventilation	Ventilation	Filtration Humidity Notes	Ventilation	Lighting	Lighting	Lighting	Lighting	Lighting	Lighting
		BAL	0	0			500	Trolley/bed	0		0	Examination luminaire to provide 1000 lux.
		BAL	0	0			500	Trolley/bed	0		0	Examination luminaire to provide 1000 lux.
Air volume to suit occupancy at 10 litres per second per person			0	0			300	Table	0		0	
		NEG to corridor	0	0			0	Daytime - general (lux): 100 1. Average at floor level of	0	Floor. 1-5 Bed centre. 1 Bedhead. Evening (lux): 50 Bed centre.	0	Local task illumination (lux): 300 1. Average at bedhead for patient reading and general nursing purposes. 2. Maximum point illuminance 520 Lux. 3. Average of 1000 Lux at bedhead where examination or treatment is to be carried out.
Air volume to suit occupancy at 10 litres per second per person		NEG	0	0			200	Tables	0		0	
			0	0			200	Floor.	0		0	
		BAL	0	0			300	Bench	0		0	
		BAL	0	0			300	Bench	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Couch	0		0	Local task illumination (lux): 1000 1. At couch level. 2. Medical examination lamp.
		BAL	0	0			300	Bench	0		0	
Air volume to suit occupancy at 10 litres per second per person			0	0			300	Working plane. Dimming facilities are required.	0		0	
		POS	0	0			500	Working plane	0		0	
			0	0			300	Bench	0		0	
		BAL	0	0			300	Bed	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Couch	0		1000	Examination lamp.
		BAL	0	0			300	Bed	0		1000	Examination lamp.
			0	0			200	Floor.	0		0	
Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0			0	Daytime - general (lux): 100 1. Average at floor level of	0	Floor. 1-5 Bed centre. 1 Bedhead. Evening (lux): 50 Bed centre.	0	Local task illumination (lux): 300 1. Average at bedhead for patient reading and general nursing purposes. 2. Maximum point illuminance 520 Lux. 3. Average of 1000 Lux at bedhead where examination or treatment is to be carried out.
Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0	1. See Table 1 of HBN 04-01 Supplement 1 for further details relating to pressure differentials. 2. Mechanically ventilated to allow positive pressure of Isolation Room relevant to en-suite and negative pressure relative to lobby space. 3. 10 pascals pressure differential from lobby to bedroom 4. Negative pressure differential between en-suite and Isolation Room. 5. All supply air to bedroom to be de		0	Daytime - general (lux): 100 1. Average at floor level of	0	Floor. 1-5 Bed centre. 1 Bedhead. Evening (lux): 50 Bed centre.	0	Local task illumination (lux): 300 1. Average at bedhead for patient reading and general nursing purposes. 2. Maximum point illuminance 520 Lux. 3. Average of 1000 Lux at bedhead where examination or treatment is to be carried out.
		BAL	0	0			500	Trolley/bed	0		0	Examination luminaire to provide 1000 lux.
			0	0			200	Floor	0		0	
		POS	0	0			150	Working plane	0		0	
		BAL	0	0			300	Couch	0		0	
Air volume to suit occupancy at 10 litres per second per person		BAL	0	0			150	Floor: 300 lux Desk	0		150	Bed
		BAL	0	0			0	Daytime - general (lux): 100 1. Average at floor level of	0	Night - general (lux) 5 maximum Night - watch (lux): 20 1. Average at pillow 2. Maximum point illuminance 40 lux. Night - bedhead (lux): range 5-10 average	0	Simple observation / exam: clinical: 400 lux 1. Average over bed Local examination lamp (lux): 1000. 1. Average over bed
		BAL	0	0			0	0 - Daytime - general (lux): 100 1. Average at floor leve	0	0 Night - general (lux) 5 maximum Night - watch (lux): 20 1. Average at pillow 2. Maximum point illuminance 40 lux. Night - bedhead (lux): range 5-10 average	0	Simple observation / exam: clinical: 400 lux 1. Average over bed Local examination lamp (lux): 1000. 1. Average over bed
Mechanical ventilation (supply): To suit heat gains from equipment. Mechanical ventilation (extract): To suit supply		NEG	0	0			500	Bench	0	Task lighting to suit procedure	0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Bench	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
			0	0			200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person. Local extract ventilation at food prep. area			0	0			200	Working plane.	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			50	Working plane.	0		0	
Air volume to suit occupancy at 10 litres per second per person			0	0			200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person			0	0			500	Desk	0		0	
			0	0			200	Floor.	0		0	
See HBN 04-01 Supplement 1 for further details of specific requirements.		POS	0	0	1. See Table 1 of HBN 04-01 Supplement 1 for further details relating to pressure differentials. 2. Mechanically ventilated to allow positive pressure of Isolation Room relevant to en-suite and negative pressure relative to lobby space. 3. Negative pressure differential between en-suite and Isolation Room. 4. All supply air to bedroom to be derived from the lobby. 5. Local control.		200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person			0	0			300	Table	0		0	
			0	0			300	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
			0	0			300	Worktop	0		0	
		POS	0	0			150	Working plane	0		0	
Mechanical ventilation (supply): Minimum 0.1m3/s.		POS	0	0			200	Floor	0		0	
			0	0			200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk	0		0	
		NEG	0	0			200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person			0	0			200	Floor	0		0	
		BAL	0	0			150	Variable. Floor	0		0	
		NEG	0	0			200	Floor	0		0	
		BAL	0	0			300	Couch	0		0	
Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0			0	Daytime - general (lux): 100 1. Average at floor level of	0	Floor. 1-5 Bed centre. 1 Bedhead. Evening (lux): 50 Bed centre.	0	Local task illumination (lux): 300 1. Average at bedhead for patient reading and general nursing purposes. 2. Maximum point illuminance 520 Lux. 3. Average of 1000 Lux at bedhead where examination or treatment is to be carried out.
Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0			0	Daytime - general (lux): 100 1. Average at floor level of	0	Floor. 1-5 Bed centre. 1 Bedhead. Evening (lux): 50 Bed centre.	0	Local task illumination (lux): 300 1. Average at bedhead for patient reading and general nursing purposes. 2. Maximum point illuminance 520 Lux. 3. Average of 1000 Lux at bedhead where examination or treatment is to be carried out.
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Couch	0		1000	Examination lamp.
Air volume to suit occupancy at 10 litres per second per person. Local extract ventilation at food prep. area			0	0			200	Working plane	0		0	
Air volume to suit occupancy at 10 litres per second per person			0	0			200	Tables	0		0	
Air volume to suit occupancy at 10 litres per second per person			0	0			300	Table	0		0	
Air volume to suit occupancy at 10 litres per second per person			0	0			200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person			0	0			200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person			0	0			300	Table	0		0	
			0	0			200	Floor	0		0	
			0	0			300	Floor	0		0	
			0	0			300	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			150	Chairs	0		0	
		BAL	0	0			300	Couch	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk	0		0	
		BAL	0	0			200	Floor	0		0	
		NEG	0	0			500	Bench	0		0	
			0	0			200	Floor	0		0	
		NEG	0	0			200	Working plane	0		0	
		BAL	0	0			500	Couch	0		1000	Examination lamp.
Air volume to suit occupancy at 10 litres per second per person. Local extract ventilation at food prep. area			0	0			200	Working plane.	0		0	
Air volume to suit occupancy at 10 litres per second per person			0	0			200	Working plane.	0		0	
			0	0			200	Floor	0		0	
			0	0			300	Bench	0		0	
Local extract ventilation at food prep. area			0	0			300	Bier	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk	30	Floor	200	Desk (night only)
		NEG	0	0			100	Floor	0		0	
		NEG	0	0			100	Floor	0		0	
		BAL	0	0			300	Couch	0		0	
		POS To corridor	0	0	Final filtration EU10/11 to suit clinical requirements.		500	Couch	0		30000	Head of trolley
Local extraction from plaster saws		BAL	0	0			500	Trolley/Couch	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			150	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person			0	0			200	Minimum: Floor	0		0	
			0	0			200	Floor.	0		0	
Local extract ventilation at food prep. area			0	0			300	Desk/table	0		0	
			0	0			200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk	0		0	
			0	0			200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk	0		0	
		NEG	0	0			300	Equipment	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person			0	0			300	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk	0		0	
Mechanical ventilation (supply): Local extract over beverage preparation area to suit design.		NEG	0	0			300	Counter	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			200	Floor	0		0	
			0	0			200	Floor	0		0	
		BAL	0	0			300	Desk	0		0	
Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0		Pressure relative: WC NEG to bedroom.	0	Daytime - general (lux): 100 1. Average at floor level of	0	Floor. 1-5 Bed centre. 1 Bedhead. Evening (lux): 50 Bed centre.	0	Local task illumination (lux): 300 1. Average at bedhead for patient reading and general nursing purposes. 2. Maximum point illuminance 520 Lux. 3. Average of 1000 Lux at bedhead where examination or treatment is to be carried out.
See Table 1 of HBN 04-01 Supplement 1 for guide to air volumes and pressure differentials.		-	0	0	1. See Table 1 of HBN 04-01 Supplement 1 for further details relating to pressure differentials. 2. Mechanically ventilated to allow positive pressure of Isolation Room relevant to en-suite and negative pressure relative to lobby space. 3. 10 pascals pressure differential from lobby to bedroom 4. Negative pressure d	Pressure relative: WC NEG to bedroom.	0	Daytime - general (lux): 100 1. Average at floor level of	0	Floor. 1-5 Bed centre. 1 Bedhead. Evening (lux): 50 Bed centre.	0	Local task illumination (lux): 300 1. Average at bedhead for patient reading and general nursing purposes. 2. Maximum point illuminance 520 Lux. 3. Average of 1000 Lux at bedhead where examination or treatment is to be carried out.
		NEG to corridor	0	0			0	Daytime - general (lux): 100 1. Average at floor level of	0	Floor. 1-5 Bed centre. 1 Bedhead. Evening (lux): 50 Bed centre.	0	Local task illumination (lux): 300 1. Average at bedhead for patient reading and general nursing purposes. 2. Maximum point illuminance 520 Lux. 3. Average of 1000 Lux at bedhead where examination or treatment is to be carried out.
		NEG	0	0			200	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person		NEG	0	0			200	Tables	0		0	
Mechanical ventilation (supply): To suit heat gains from equipment. Mechanical ventilation (extract): To suit supply		NEG	0	0			500	Bench	0	Task lighting to suit procedure	0	
		NEG	0	0			100	At floor	0		0	
		NEG	0	0			200	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
			0	0			200	Floor	0		0	
		BAL	0	0			200	Floor	0		0	
			0	0			200	Floor	0		0	
Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0			0	Daytime - general (lux): 100 1. Average at floor level of	0	Floor. 1-5 Bed centre. 1 Bedhead. Evening (lux): 50 Bed centre.	0	Local task illumination (lux): 300 1. Average at bedhead for patient reading and general nursing purposes. 2. Maximum point illuminance 520 Lux. 3. Average of 1000 Lux at bedhead where examination or treatment is to be carried out.
			0	0			300	Bench	0		0	
		BAL	0	0			200	Floor	0		0	
Supply air rate at 40 litres per second per cubicle		BAL	0	0			500	Trolley	0		0	
Supply air rate at 40 litres per second per cubicle		BAL	0	0			500	Bed	0		0	
		NEG to corridor	0	0			0	Daytime - general (lux): 100 1. Average at floor level of	0	Floor. 1-5 Bed centre. 1 Bedhead. Evening (lux): 50 Bed centre.	0	Local task illumination (lux): 300 1. Average at bedhead for patient reading and general nursing purposes. 2. Maximum point illuminance 520 Lux. 3. Average of 1000 Lux at bedhead where examination or treatment is to be carried out.
		BAL	0	0			300	Floor	0		500	Minimum at any point on the bed. 1. maximum point illuminance at bed 850 lux Examination luminaire to provide 1000 lux.
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Couch	0		1000	Examination lamp.
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk	30	Floor	200	Desk (night only)
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater			0	0			500	Desk	0		0	
		BAL	0	0			200	Floor	0		0	
Local extract ventilation at food prep. area		NEG	0	0			100	Floor	0		0	
			0	0			500	Working plane	0		0	
		NEG	0	0			200	Floor	0		0	
		BAL	0	0			300	Couch	0		0	
			0	0			200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Couch	0		1000	Examination lamp.
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk/table: dimmmer/selective switching required.	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk/table: dimmmer/selective switching required.	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
			0	0			100	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			200	Floor	0		0	
		NEG	0	0			100	Floor	0		0	
		BAL	0	0			300	Couch	0		0	
		BAL	0	0			100	Couch.	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Couch	0		1000	Examination lamp.
		BAL	0	0			150	Couch.	0		0	
			0	0			200	Floor	0		0	
			0	0			300	Bench	0		0	
		BAL	0	0			300	Bed	0		1000	Examination lamp.
		BAL	0	0			300	Bed	0		1000	Examination lamp.
		POS	0	0			500	Couch	0		20000	Up to 22000: Mouth (dental lamp unit)
Mechanical ventilation (supply): To suit heat gains from equipment. Fresh air at 10 l/s per person		BAL	0	0			300	Couch. Test workstation dimmer required.	0		1000	Examination lamp.
Mechanical ventilation (supply): To suit heat gains from equipment. Fresh air at 10 l/s per person		BAL	0	0			300	Couch. Test workstation dimmer required.	0		1000	Examination lamp.
			0	0			150	Floor	0		0	
			0	0			150	Floor	0		0	
			0	0			150	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Couch/chair	0		0	Mobile examination lamp required.
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Couch/chair	0		0	Mobile examination lamp required.
Air volume to suit occupancy at 10 litres per second per person		BAL	0	0			150	Working plane	0		0	
Air volume to suit occupancy at 10 litres per second per person		BAL	0	0			300	Working plane. Dimming facilities are required.	0		0	
			0	0			200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			200	Floor	0		0	
		NEG	0	0			500	Bench	0		0	
			0	0			300	Bench	0		0	
		BAL	0	0			150	Variable. Floor	0		0	
		BAL	0	0			150	Variable. Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
			0	0			200	Floor	0		0	
Local extraction from plaster saws		BAL	0	0			500	Trolley/Couch	0		0	
Mechanical ventilation (supply & extract): To suit overall equipment design of area.		POS	0	0			300	Average at bed height. Dimming facilities are required.	0		0	20-100 Couch Variable. Examination luminaire to provide 1000 lux.
Mechanical ventilation (supply): Up to 6 ac/hr depending on local conditions. Mechanical ventilation (extract): To suit overall design of area		POS	0	0			300	Working plane	0		0	
Air volume to suit occupancy at 10 litres per second per person			0	0	Humidity control to suit equipment.		300	Working plane. Dimming facilities are required.	0		0	
Mechanical ventilation (supply): Up to 6 ac/hr to suit equipment & depending on local conditions. Mechanical ventilation (extract): To suit overall equipment design of area.		POS	0	0	Humidity control to suit equipment.		300	1m AFFL	0		0	
Mechanical ventilation (supply): to suit ventilation extract rate. Mechanical ventilation (extract): to suit equipment requirements and COSHH regulations		NEG	0	0			50	Bench	0		0	
Mechanical ventilation (supply): Up to 6 ac/hr depending on local conditions. Mechanical ventilation (extract): To suit overall design of diagnostic & processing areas.		POS	0	0			300	Working plane	0		0	
Mechanical ventilation (supply): Up to 6 ac/hr depending on local conditions. Mechanical ventilation (extract): To suit overall design of diagnostic & processing areas.		POS	0	0	Humidity control to suit equipment.		300	Bench	0		0	
Mechanical ventilation (supply): to suit ventilation extract rate. Mechanical ventilation (extract): to suit equipment requirements and COSHH regulations		NEG	0	0			300	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person			0	0			300	Working plane. Dimming facilities are required.	0		0	
Mechanical ventilation (supply): Air volume to suit heat gains from equipment. Mechanical ventilation (extract): Medical gas scavenging required.		POS	0	0	Humidity control to suit equipment.		300	Equipment. Dimming facilities are required.	0		0	10-100 Variable Couch
Air volume to suit occupancy at 10 litres per second per person			0	0			200	Floor	0		0	
Mechanical ventilation (supply): Air volume to suit heat gain from equipment.		POS	0	0			300	Trolley. Dimming facilities are required.	0		200	For patient examination. Dimmers or individual lamp device rectifiers should be used.
Air volume to suit occupancy at 10 litres per second per person			0	0	Humidity control to suit equipment.		300	Desk	0		0	Remote switching of lighting in MRI room. Dimmable
Air volume to suit occupancy at 10 litres per second per person			0	0			300	Desk	0		0	Remote switching of lighting in Catheter Laboratory. Dimmable
			0	0			150	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person			0	0			300	Table	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			200	Floor	0		0	
			0	0			300	Bench	0		0	
			0	0			500	Desk	0		0	
		NEG	0	0			100	Floor	0		0	
Mechanical ventilation (supply): Supply to supplement extract as necessary.		NEG	0	0			100	Floor	0		0	
Mechanical ventilation (supply): Supply to supplement extract as necessary.		NEG	0	0			100	Floor	0		0	
Mechanical Vent. (supply): 0.3 m3/s.		POS	0	0			500	Trolley/Couch	0		30000	Trolley/couch
Mechanical ventilation (extract): To include gas scavenging.		POS	0	0			300	Counter	0		30000	Patient table
Mechanical ventilation (supply): Minimum to suit heat gain.		NEG	0	0			200	Working plane	0		0	
Mechanical ventilation (supply): To suit heat gains from equipment. Fresh air at 10 l/s per person		BAL	0	0			300	Couch	0		1000	Examination lamp.
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Couch	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL					300	Couch	0		1000	Examination lamp.
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL					300	Couch	0		1000	Examination lamp.
			0	0			200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL					300	Couch	0		1000	Examination lamp.
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk/table: dimmmer/selective switching required.	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL					300	Couch	0		1000	Examination lamp.
Air volume to suit occupancy at 12 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Table	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk	0		0	
			0	0			300	Bench	0		0	
Mechanical ventilation: Supply & extract vent required to suit heat gain from equipment.		BAL	0	0			300	Bench	0		0	
Minimum air changes per hour (AC/hr): 6		NEG	0	0			500	Counter	0		0	
Mechanical ventilation (extract): Local to cookers.		NEG	0	0			500	Cookers/table	0		0	
			0	0			300	Floor	0		0	
Mechanical ventilation (supply): 30.025 m3/sec per m2 wetted area of pool+10% refer to BN text. Mechanical ventilation (extract): 3 to suit overall design.Refer to B.N text.		NEG	0	0			200	Water level	0		0	
		NEG	0	0			300	Bench	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk	30	Floor	200	Desk (night only)
Mechanical ventilation (supply): Supply to supplement extract as necessary.		NEG	0	0			100	Floor	0		0	
Mechanical Ventilation (extract) is required.			0	0			200	Floor	0		0	
			0	0			200	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
			0	0			200	Floor	0		0	
Local extraction from plaster saws		BAL	0	0			500	Trolley/Couch	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			200	Floor	0		0	
		NEG	0	0			300	Couch	0		0	
			0	0			200	Floor.	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			250	Chairs	0		0	
			0	0			150	Chairs	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			150	Chairs	0		0	
Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0	1. See Table 1 of HBN 04-01 Supplement 1 for further details relating to pressure differentials. 2. Mechanically ventilated to allow positive pressure of Isolation Room relevant to en-suite and negative pressure relative to lobby space. 3. 10 pascals pressure differential from lobby to bedroom 4. Negative pressure differential between en-suite and Isolation Room. 5. All supply air to bedroom to be de		0	Daytime - general (lux): 100 1. Average at floor level of	0	Floor. 1-5 Bed centre. 1 Bedhead. Evening (lux): 50 Bed centre.	0	Local task illumination (lux): 300 1. Average at bedhead for patient reading and general nursing purposes. 2. Maximum point illuminance 520 Lux. 3. Average of 1000 Lux at bedhead where examination or treatment is to be carried out.
		NEG to corridor	0	0			0	Daytime - general (lux): 100 1. Average at floor level of	0	Floor. 1-5 Bed centre. 1 Bedhead. Evening (lux): 50 Bed centre.	0	Local task illumination (lux): 300 1. Average at bedhead for patient reading and general nursing purposes. 2. Maximum point illuminance 520 Lux. 3. Average of 1000 Lux at bedhead where examination or treatment is to be carried out.
		NEG to corridor	0	0			0	Daytime - general (lux): 100 1. Average at floor level of	0	Floor. 1-5 Bed centre. 1 Bedhead. Evening (lux): 50 Bed centre.	0	Local task illumination (lux): 300 1. Average at bedhead for patient reading and general nursing purposes. 2. Maximum point illuminance 520 Lux. 3. Average of 1000 Lux at bedhead where examination or treatment is to be carried out.
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Couch	0		1000	Examination lamp.
Air volume to suit occupancy at 10 litres per second per person			0	0			150	Working plane	0		0	
Air volume to suit occupancy at 10 litres per second per person			0	0			300	Table	0		0	
			0	0			200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
		NEG	0	0			200	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
		BAL	0	0			300	Couch	0		0	
		NEG	0	0			150	Floor	0		300	Worktop
		BAL	0	0			300	Couch	0		0	
As HBN 14 -01			0	0			500	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person. Local extract ventilation at food prep. area			0	0			200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person			0	0			200	Minimum: Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person			0	0			150	Working plane	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
			0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Design in accordance with SHTM03-01		POS	30	0	Refer to HBN26		1000	Operating Table	0		50000	Minimum Operating cavity
Mechanical ventilation (supply): Designed to Operating Theatre ventilation systems (UCV).			0	0	Refer to HBN26		1000	Operating Table	0		50000	Minimum Operating cavity
Design in accordance with SHTM 03-01		POS	0	0			500	Sink Top	0		0	
Design in accordance with SHTM 03-01		POS	0	0			500	Couch/Trolley	0		1000	Couch/Trolley head
Design in accordance with SHTM03-01		POS	0	0			500	Couch/Trolley	0		1000	Couch/Trolley head
			0	0			500	Average at couch/desk. 1. Max. point illuminance 850	0		1000	Examination lamp.
		NEG	0	0			100	Floor	0		0	
		BAL	0	0			200	Floor	0		0	
Mechanical ventilation (supply): Minimum 0.1m3/s.		POS	0	0			200	Floor	0		0	
		BAL	0	0			200	Floor	0		0	
			0	0			200	Floor	0		0	
		NEG	0	0			200	Working plane	0		0	
		NEG	0	0			200	Working plane	0		0	
		BAL	0	0			500	Trolley/bed	0		0	Examination luminaire to provide 1000 lux.
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
		NEG	0	0			200	Floor	0		0	
		POS	0	0			300	Couch	0		0	
		BAL	0	0			500	Couch	0		1000	Examination lamp.
		BAL	0	0			300	Bed	0		1000	Examination lamp.
Air volume to suit occupancy at 10 litres per second per person		BAL	0	0			300	Table	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			150	Floor	0		0	
Mechanical ventilation (supply): Minimum 0.1m3/s.		POS	0	0			200	Floor	0		0	
		BAL	0	0			200	Floor	0		0	
		BAL	0	0			300	Couch	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		POS	0	0			200	Floor	0		0	
Mechanical ventilation (supply): To suit heat gains from equipment. Mechanical ventilation (extract): To suit supply		NEG	0	0			500	Bench	0	Task lighting to suit procedure	0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater			0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Mechanical ventilation (supply): Local extract over beverage preparation area to suit design.		NEG	0	0			300	Counter	0		0	
Mechanical ventilation (extract): Local to cookers.		NEG	0	0			500	Cookers/table	0		0	

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Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			150	Floor	0		0	
		NEG	0	0			150	Floor	0		0	
Extract air change rate can include sanitary accommodation associated with changing room.		NEG	0	0			100	Floor	0		0	
Extract air change rate can include sanitary accommodation associated with changing room.		NEG	0	0			100	Floor	0		0	
		NEG	0	0			100	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			200	Floor	0		0	
		BAL	0	0			0	Daytime - general (lux): 100 1. Average at floor level of	0	Night - general (lux) 5 maximum Night - watch (lux): 20 1. Average at pillow 2. Maximum point illuminance 40 lux. Night - bedhead (lux): range 5-10 average	0	Simple observation / exam: clinical: 400 lux 1. Average over bed Local examination lamp (lux): 1000. 1. Average over bed
See Table 1 of HBN 04-01 Supplement 1 for guide to air volumes and pressure differentials.			0	0			0	Daytime - general (lux): 100 1. Average at floor level of	0	Night - general (lux) 5 maximum Night - watch (lux): 20 1. Average at pillow 2. Maximum point illuminance 40 lux. Night - bedhead (lux): range 5-10 average	0	Simple observation / exam: clinical: 400 lux 1. Average over bed Local examination lamp (lux): 1000. 1. Average over bed
See Table 1 of HBN 04-01 Supplement 1 for guide to air volumes and pressure differentials.			0	0			0	Daytime - general (lux): 100 1. Average at floor level of	0	Night - general (lux) 5 maximum Night - watch (lux): 20 1. Average at pillow 2. Maximum point illuminance 40 lux. Night - bedhead (lux): range 5-10 average	0	Simple observation / exam: clinical: 400 lux 1. Average over bed Local examination lamp (lux): 1000. 1. Average over bed
		BAL	0	0			0	Daytime - general (lux): 100 1. Average at floor level of	0	Night - general (lux) 5 maximum Night - watch (lux): 20 1. Average at pillow 2. Maximum point illuminance 40 lux. Night - bedhead (lux): range 5-10 average	0	Simple observation / exam: clinical: 400 lux 1. Average over bed Local examination lamp (lux): 1000. 1. Average over bed
See Table 1 of HBN 04-01 Supplement 1 for guide to air volumes and pressure differentials.			0	0			0	Daytime - general (lux): 100 1. Average at floor level of	0	Night - general (lux) 5 maximum Night - watch (lux): 20 1. Average at pillow 2. Maximum point illuminance 40 lux. Night - bedhead (lux): range 5-10 average	0	Simple observation / exam: clinical: 400 lux 1. Average over bed Local examination lamp (lux): 1000. 1. Average over bed
See Table 1 of HBN 04-01 Supplement 1 for guide to air volumes and pressure differentials.			0	0			0	Daytime - general (lux): 100 1. Average at floor level of	0	Night - general (lux) 5 maximum Night - watch (lux): 20 1. Average at pillow 2. Maximum point illuminance 40 lux. Night - bedhead (lux): range 5-10 average	0	Simple observation / exam: clinical: 400 lux 1. Average over bed Local examination lamp (lux): 1000. 1. Average over bed
Air volume to suit occupancy at 10 litres per second per person			0	0			150	Working plane	0		0	
Mechanical ventilation (supply): Air volume to suit heat gain from equipment.			0	0			200	Tables/Counter.	0		0	
			0	0			200	Floor	0		0	
See HBN 04-01 Supplement 1 for further details of specific requirements.		POS	0	0	1. See Table 1 of HBN 04-01 Supplement 1 for further details relating to pressure differentials. 2. Mechanically ventilated to allow positive pressure of Isolation Room relevant to en-suite and negative pressure relative to lobby space. 3. Negative pressure differential between en-suite and Isolation Room. 4. All supply air to bedroom to be derived from the lobby. 5. Local control.		200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person			0	0			300	Table	0		0	
Air volume to suit occupancy at 10 litres per second per person		BAL	0	0			300	Table	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Mechanical ventilation (supply): To suit heat gains from equipment. Mechanical ventilation (extract): To suit supply		NEG	0	0			500	Bench	0	Task lighting to suit procedure	0	
Mechanical ventilation (supply): Supply to suit heat gains or extract ventilation rate.			0	0			500	Bench	0		0	As required.
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater			0	0			300	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk	30	Floor	200	Desk (night only)
Extract air change rate can include sanitary accommodation associated with changing room.		NEG	0	0			100	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
Mechanical ventilation (supply): Minimum 0.1m3/s.		POS	0	0			200	Floor	0		0	
			0	0			200	Floor	0		0	
			0	0			200	Floor	0		0	
			0	0			200	Floor	0		0	
See Table 1 of HBN 04-01 Supplement 1 for guide to air volumes and pressure differentials.			0	0	1. See Table 1 of HBN 04-01 Supplement 1 for further details relating to pressure differentials. 2. Mechanically ventilated to allow positive pressure of Isolation Room relevant to en-suite and negative pressure relative to lobby space. 3. 10 pascals pressure differential from lobby to bedroom 4. Negative pressure differential between en-suite and Isolation Room. 5. All supply air to bedroom to be de		0	Daytime - general (lux): 100 1. Average at floor level of	0	Floor. 1-5 Bed centre. 1 Bedhead. Evening (lux): 50 Bed centre.	0	Local task illumination (lux): 300 1. Average at bedhead for patient reading and general nursing purposes. 2. Maximum point illuminance 520 Lux. 3. Average of 1000 Lux at bedhead where examination or treatment is to be carried out.
Air volume to suit occupancy at 10 litres per second per person		BAL	0	0			150	Working plane	0		0	
Mechanical ventilation (supply): Natural or mechanical ventilation may be required depending on type of battery used.			0	0			300	Floor.	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
			0	0			200	Floor	0		0	
			0	0			200	Floor	0		0	
Mechanical Vent. (supply): 0.3 m3/s.		POS	0	0			500	Trolley/Couch	0		30000	Trolley/couch
		NEG	0	0			200	Working plane	0		0	
		POS	0	0			200	Floor	0		0	
			0	0			200	Floor	0		0	
			0	0			300	Floor	0		0	
Mechanical ventilation to suit equipment.			0	0			300	Bench	0		0	
			0	0			300	Bench	0		0	
			0	0			200	Floor	0		0	
Mechanical ventilation (supply): To BS5295 part 1 class J.		POS	0	0		Pressure Relative: POS to exit; NEG to suite.	300	Bench	0		0	
Mechanical ventilation (supply): To BS5295 part 1 class J unless stated otherwise.		POS	0	0		Pressure Relative: POS to transfer hatch & cont.prep.	200	Floor	0		0	
Mechanical ventilation (supply): To BS5295 part 1 class J unless stated otherwise.		POS	0	0		Pressure Relative: POS & NEG POS to sterile.loading area. NEG to filling area.	200	Floor	0		0	
			0	0			200	Floor	0		0	
		NEG to corridor	0	0			0	Daytime - general (lux): 100 1. Average at floor level of	0	Floor. 1-5 Bed centre. 1 Bedhead. Evening (lux): 50 Bed centre.	0	Local task illumination (lux): 300 1. Average at bedhead for patient reading and general nursing purposes. 2. Maximum point illuminance 520 Lux. 3. Average of 1000 Lux at bedhead where examination or treatment is to be carried out.
		NEG	0	0			200	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
		BAL	0	0			500	Couch	0		0	Local task illumination (lux): 15000 to 30000 1. At couch level. 2. Medical examination lamp.
		BAL	0	0			500	Couch	0		0	
		BAL	0	0			300	Couch	0		0	
		BAL	0	0			500	Couch	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Couch	0		1000	Examination lamp.
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk/table	0		0	
		NEG	0	0			500	Bench	0		0	
		POS	0	0			500	Working plane	0		0	
Mechanical Vent. (supply): 0.3 m3/s.		POS	0	0			500	Trolley/Couch	0		30000	Trolley/couch
		BAL	0	0			500	Couch	0		1000	Examination lamp.
			0	0			200	Floor.	0		0	
			0	0			0	Daytime - general (lux): 100 1. At floor level. 2. Permiss	0	Night - general (lux): Night - specific (lux):	0	Local task illumination (lux): 300 1. At working plane within the telephone booth. 2. Permissible range 300-520 Lux.
Air volume to suit occupancy at 10 litres per second per person		BAL	0	0			300	Working plane. Areas for VDT's: See CIBSE Lighting Gui	0		0	
			0	0			200	Floor.	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			200	Floor	0		0	
		NEG	0	0			150	Bier	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
		BAL	0	0			500	Couch	0		1000	Examination lamp.
			0	0			200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk	0		0	
Independent mechanical ventilation and possibly air-conditioning		BAL	0	0			100	Average at floor. Refer to HBN: regarding lights fitting.	5	Floor. 1 Bedhead.	150	Bedhead
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater			0	0			500	Desk	0		0	
Mechanical ventilation (extract): To suit overall design of area		NEG	0	0			200	Floor	0		0	
		BAL	0	0			300	Couch	0		0	
		BAL	0	0			300	Couch	0		0	
Independent mechanical ventilation and possibly air-conditioning.			0	0			100	Average at floor. Refer to HBN: regarding lights fitting.	5	Floor. 1 Bedhead.	150	Bedhead
			0	0			200	Floor	0		0	
Extract air change rate can include sanitary accommodation associated with changing room.		NEG	0	0			100	Floor	0		0	
		NEG	0	0			100	Floor	0		0	
		NEG	0	0			150	Floor	0		0	
			0	0			200	Floor	0		0	
			0	0			200	Floor	0		0	
			0	0			200	Floor	0		0	
			0	0			200	Floor	0		0	
			0	0			200	Floor	0		0	
Mechanical ventilation (supply): Minimum to suit heat gains.		POS To corridor	0	0	Final filtration EU10/11 to suit clinical requirements.		500	Couch	0		30000	Head of trolley
Mechanical ventilation: To suit heat gains.		POS	0	0			300	Couch	0		0	
Mechanical ventilation: To suit heat gains.		POS	0	0			300	Couch	0		0	
Mechanical ventilation (extract): Exhaust connector & discharge pipe required for use with cryo-surgery equipment. Ref BN text.		BAL	0	0			300	Couch	0		0	
		NEG	0	0			200	Working plane	0		0	
			0	0			300	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person			0	0			200	Minimum: Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater			0	0			50	General	0		200	tables
			0	0			200	Average at floor	0		0	
			0	0			0	Daytime - general (lux): 100 1. At floor level. 2. Permiss	0	Night - general (lux): Night - specific (lux):	0	Local task illumination (lux): 300 1. At working plane within the telephone booth. 2. Permissible range 300-520 Lux.
			0	0			0	Daytime - general (lux): 100 1. At floor level. 2. Permiss	0	Night - general (lux): Night - specific (lux):	0	Local task illumination (lux): 300 1. At working plane within the telephone booth. 2. Permissible range 300-520 Lux.
			0	0			0	Daytime - general (lux): 100 1. Average at floor level. 2	0		0	Local task illumination (lux): 300 1. Average at working plane within the telephone booth. 2. Maximum point illuminance 520 Lux.
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk	0		0	
			0	0			200	Floor.	0		0	
			0	0			200	Floor.	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater			0	0			150	Working plane	0		0	
		NEG	0	0			200	Floor	0		0	
		NEG	0	0			100	Floor	0		0	
			0	0			100	Floor	0		0	
		NEG	0	0			100	At floor	0		0	
		NEG	0	0			200	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
Mechanical ventilation (supply): Mechanical ventilation required if internal location.		POS	0	0			200	Floor	0		0	
		BAL	0	0			200	Floor	0		0	
			0	0			200	Floor	0		300	Desk
Air volume to suit occupancy at 10 litres per second per person		BAL	0	0			300	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person			0	0			300	Working plane Main or secondary lighting to be dimma	0		0	Light over board
Mechanical ventilation (extract): Filtered extract recirculated. Extract from woodworking machinary. Local extract from adhesives bay.			0	0			300	Floor.	0		500	Workstation/equipment.
Mechanical ventilation (extract): Filtered extract recirculated. Extract from woodworking machinary. Local extract from adhesives bay.			0	0			200	Floor.	0		500	Workstation/equipment.
			0	0			500	Bench	0		0	
Mechanical ventilation (supply) to suit equipment heat gains. Mechanical extract to suit supply.		BAL	0	0			300	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person			0	0			300	Working plane. Dimming facilities are required.	0		0	
Air volume to suit occupancy at 10 litres per second per person			0	0			300	Working plane. Dimming facilities are required.	0		0	
Air volume to suit occupancy at 10 litres per second per person			0	0			500	Desk	0		0	
		BAL	0	0			300	Working plane. Main or secondary lighting to be dimm	0		0	
			0	0			200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
							200	Floor	0		0	
Mechanical ventilation (supply): Mechanical ventilation required if internal location.							200	Floor	0		0	
			0	0			200	Floor	0		0	
Extract air change rate can include sanitary accommodation associated with changing room.		NEG	0	0			100	Floor	0		0	
Extract air change rate can include sanitary accommodation associated with changing room.		NEG	0	0			100	Floor	0		0	
			0	0			200	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
Mechanical ventilation (extract): To suit overall design of area		NEG	0	0			200	Floor	0		0	
			0	0			200	Floor	0		0	
			0	0			200	Floor	0		0	
			0	0			200	Floor	0		0	
Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0			0	Daytime - general (lux): 100 1. Average at floor level of	0	Floor. 1-5 Bed centre. 1 Bedhead. Evening (lux): 50 Bed centre.	0	Local task illumination (lux): 300 1. Average at bedhead for patient reading and general nursing purposes. 2. Maximum point illuminance 520 Lux. 3. Average of 1000 Lux at bedhead where examination or treatment is to be carried out.
Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0			0	Daytime - general (lux): 100 1. Average at floor level of	0	Floor. 1-5 Bed centre. 1 Bedhead. Evening (lux): 50 Bed centre.	0	Local task illumination (lux): 300 1. Average at bedhead for patient reading and general nursing purposes. 2. Maximum point illuminance 520 Lux. 3. Average of 1000 Lux at bedhead where examination or treatment is to be carried out.
Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0			0	Daytime - general (lux): 100 1. Average at floor level of	0	Floor. 1-5 Bed centre. 1 Bedhead. Evening (lux): 50 Bed centre.	0	Local task illumination (lux): 300 1. Average at bedhead for patient reading and general nursing purposes. 2. Maximum point illuminance 520 Lux. 3. Average of 1000 Lux at bedhead where examination or treatment is to be carried out.
Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0			0	Daytime - general (lux): 100 1. Average at floor level of	0	Floor. 1-5 Bed centre. 1 Bedhead. Evening (lux): 50 Bed centre.	0	Local task illumination (lux): 300 1. Average at bedhead for patient reading and general nursing purposes. 2. Maximum point illuminance 520 Lux. 3. Average of 1000 Lux at bedhead where examination or treatment is to be carried out.
Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0			0	Daytime - general (lux): 100 1. Average at floor level of	0	Floor. 1-5 Bed centre. 1 Bedhead. Evening (lux): 50 Bed centre.	0	Local task illumination (lux): 300 1. Average at bedhead for patient reading and general nursing purposes. 2. Maximum point illuminance 520 Lux. 3. Average of 1000 Lux at bedhead where examination or treatment is to be carried out.
Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0			0	Daytime - general (lux): 100 1. Average at floor level of	0	Floor. 1-5 Bed centre. 1 Bedhead. Evening (lux): 50 Bed centre.	0	Local task illumination (lux): 300 1. Average at bedhead for patient reading and general nursing purposes. 2. Maximum point illuminance 520 Lux. 3. Average of 1000 Lux at bedhead where examination or treatment is to be carried out.
Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0			0	Daytime - general (lux): 100 1. Average at floor level of	0	Floor. 1-5 Bed centre. 1 Bedhead. Evening (lux): 50 Bed centre.	0	Local task illumination (lux): 300 1. Average at bedhead for patient reading and general nursing purposes. 2. Maximum point illuminance 520 Lux. 3. Average of 1000 Lux at bedhead where examination or treatment is to be carried out.
Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0			0	Daytime - general (lux): 100 1. Average at floor level of	0	Floor. 1-5 Bed centre. 1 Bedhead. Evening (lux): 50 Bed centre.	0	Local task illumination (lux): 300 1. Average at bedhead for patient reading and general nursing purposes. 2. Maximum point illuminance 520 Lux. 3. Average of 1000 Lux at bedhead where examination or treatment is to be carried out.
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			200	Working plane	0		0	
			0	0			200	Average at floor 1. Max point illuminance 350 lux	0		0	
			0	0			100	Average at floor 1. Max point illuminance 170 lux	0		0	
			0	0			200	Floor.	0		0	
			0	0			200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person		BAL	0	0			300	Table	0		0	
Air volume to suit occupancy at 10 litres per second per person			0	0			300	Table	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			200	Floor	0		0	
			0	0			150	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk	0		0	
Minimum air changes per hour (AC/hr): 6		NEG	0	0			300	Counter	0		0	
Minimum air changes per hour (AC/hr): 6		NEG	0	0			300	Counter	0		0	
Supply air to balance extract from other areas			0	0			300	Desk	30	Floor	200	Desk (night only)
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk	30	Floor	200	Desk (night only)
		POS	0	0			150	Working plane	0		0	
Extract air change rate can include sanitary accommodation associated with changing room.		NEG	0	0			100	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
			0	0			200	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
			0	0			200	Floor	0		0	
			0	0			200	Floor	0		0	
		BAL	0	0			200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			200	Floor	0		0	
		NEG	0	0			200	Working plane	0		0	
		NEG	0	0			200	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0			0	Daytime - general (lux): 1001. Average at floor level of	5	Floor. maximum 0.5 lux over pillow.	0	Local task illumination (lux): 3001. Average at bedhead for patient reading and general nursing purposes.2. Maximum point illuminance 520 Lux.3. Average of 1000 Lux at bedhead where examination or treatment is to be carried out.
Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0			0	Daytime - general (lux): 1001. Average at floor level of	5	Floor. maximum 0.5 lux over pillow.	0	Local task illumination (lux): 3001. Average at bedhead for patient reading and general nursing purposes.2. Maximum point illuminance 520 Lux.3. Average of 1000 Lux at bedhead where examination or treatment is to be carried out.
Supply air rate at 40 litres per second	1. Bedroom balanced or negative with respect to the adjoining corridor. 2. Bedroom positive with respect to the en-suite sanitary room	NEG to corridor	0	0			0	Daytime - general (lux): 1001. Average at floor level of	5	Floor. maximum 0.5 lux over pillow.	0	Local task illumination (lux): 3001. Average at bedhead for patient reading and general nursing purposes.2. Maximum point illuminance 520 Lux.3. Average of 1000 Lux at bedhead where examination or treatment is to be carried out.
		BAL	0	0			200	Floor	0		0	
		BAL	0	0			300	Couch	0		0	
		BAL	0	0			300	Couch	0		0	
		BAL	0	0			300	Floor	0		500	Minimum at any point on the bed. 1. maximum point illuminance at bed 850 lux Examination luminaire to provide 1000 lux.
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Couch/chair	0		0	Mobile examination lamp required.
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			200	Floor	0		0	
Mechanical ventilation (supply): To suit equipment heat gain. Mechanical ventilation (extract): To suit supply.		NEG To plate pouring.POS to washup	0	0			300	Bench	0		0	
		NEG	0	0			100	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk	30	Floor	200	Desk (night only)
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Couch	0		1000	Examination lamp.
Mechanical ventilation (supply): To suit heat gains from equipment. Mechanical ventilation (extract): To suit supply		NEG	0	0			500	Bench	0	Task lighting to suit procedure	0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
		BAL	0	0			200	Floor	0		0	
		BAL	0	0			300	Couch	0		0	
Mechanical ventilation (supply): To suit heat gains from equipment. Fresh air at 10 l/s per person		BAL	0	0			150	Floor	0		1000	Couch: Examination lamp.
Mechanical ventilation (supply): To suit heat gains from equipment. Fresh air at 10 l/s per person		BAL	0	0			150	Floor	0		1000	Couch: Examination lamp.
Air volume to suit occupancy at 10 litres per second per person		POS	0	0			300	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		-	0	0			100	Floor. 200-400 Bed centre. 30-50 Bedhead.	5	Floor. 1-5 Bed centre. 1 Bedhead. Evening (lux): 50 Bed centre.	150	Bedhead
			0	0			200	Floor	0		0	
			0	0			200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person		BAL	0	0			300	Table	0		0	
Mechanical ventilation to suit equipment.			0	0			300	Bench	0		0	
			0	0			300	Bench	0		0	
			0	0			500	Bench	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
			0	0			200	Floor	0		0	
			0	0			300	Desk	0		0	
			0	0			200	Floor	0		0	
			0	0			200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater			0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
			0	0			300	Equipment	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater			0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk	0		0	
		BAL	0	0			300	Bench	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Couch	0		1000	Examination lamp.
		BAL	0	0			500	Couch	0		1000	Examination lamp.
			0	0			150	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person			0	0			300	Table	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
		NEG	0	0			200	Floor	0		0	
Mechanical Ventilation (extract) is required.		NEG	0	0			200	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Couch	0		1000	Examination lamp.
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Couch	0		1000	Examination lamp.
		BAL	0	0			300	Bed	0		0	
Mechanical ventilation (supply & extract): To suit overall equipment design of area.		POS	0	0			300	Bed. Dimming facilities are required.	0		0	20-100 Couch Variable. Examination luminaire to provide 1000 lux.
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			500	Desk	0		0	
		NEG	0	0			200	Floor	0		0	
		NEG	0	0			200	Floor	0		0	
Mechanical Vent. (supply): 0.3 m3/s.		POS	0	0			500	Trolley/Couch	0		30000	Trolley/couch
			0	0			200	Floor	0		0	
		NEG	0	0			200	Working plane	0		0	
			0	0			150	Floor	0		0	
Air volume to suit occupancy at 10 litres per second per person			0	0			300	Table	0		0	
		BAL	0	0			300	Couch	0		0	
		BAL	0	0			200	Floor	0		0	
		NEG	0	0			500	Couch	0		0	
Mechanical ventilation (extract): Locally controlled. REF to BN text - ventilation.		NEG	0	0			150	Couch	0		1000	Chair: Examination lamp.
		BAL	0	0			150	Couch.	0		0	
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	Desk	0		0	
Mechanical ventilation (extract): Locally controlled. REF to BN text - ventilation.		NEG	0	0			150	Couch	0		1000	Chair: Examination lamp.
Mechanical ventilation (supply): To suit heat gains from equipment. Fresh air at 10 l/s per person		BAL	0	0			300	50 minimum. Test workstation dimmer required.	0		1000	Chair: Examination lamp. 300 at desk.
Mechanical ventilation (supply): To suit heat gains from equipment. Fresh air at 10 l/s per person		BAL	0	0			300	50 minimum. Test workstation dimmer required.	0		1000	Chair: Examination lamp. 300 at desk.
Mechanical ventilation (supply): To suit heat gains from equipment. Fresh air at 10 l/s per person		BAL	0	0			300	50 minimum. Test workstation dimmer required.	0		1000	Chair: Examination lamp. 300 at desk.
Air volume to suit occupancy at 10 litres per second per person or cooling requirement: whichever the greater		BAL	0	0			300	50 minimum. Test workstation dimmer light is required	0		1000	Chair: Examination lamp. 300 at desk.
Mechanical ventilation (supply): To suit heat gains from equipment. Fresh air at 10 l/s per person		BAL	0	0			300	Couch. Test workstation dimmer required.	0		0	

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Mechanical ventilation (supply): To suit heat gains from equipment. Fresh air at 10 l/s per person		BAL	0	0			330	Couch. Test ventilation dimmer light is required.	0		0
		BAL	0	0			330	3D Intraop. Test ventilation dimmer light is required.	0		0
Mechanical ventilation (extract): Supply and extract ventilation to suit heat gains from equipment.		BAL	0	0			330	Couch	0		
Mechanical ventilation: To suit heat loss from equipment. Fresh air at 10 l/s per person		BAL	0	0			330	Couch	0	1000	Examination lamp.
		BAL	0	0			330	Couch	0		
Mechanical ventilation (supply): Mechanical ventilation required if internal location.		POS	0	0			230	Floor	0		0
			0	0			230	Floor	0		0
Local extraction from cloister rows		BAL	0	0			530	Trolley/Couch	0		0
Local extraction from cloister rows		BAL	0	0			340	Trolley/Couch	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		POS	0	0			330	Counter	0		0
		BAL	0	0			330	Couch	0		0
		NEG to corridor	0	0			0	Daytime - simple examination average over bed (lux)	0	1000	Local
		BAL	0	0			330	Couch	0		0
		BAL	0	0			330	Bed	0	1000	Examination lamp.
Mechanical ventilation (supply): To suit heat gains from equipment. Fresh air at 10 l/s per person			0	0			530	Desk	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			330	Couch	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			230	Floor	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			230	Floor	0		0
			0	0			330	Couch	0		0
Extract air cham rate can include sanitary accommodation associated with chamaine room		NEG	0	0			530	Floor	0		0
		POS	0	0			260	Floor	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			330	Couch	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			530	Desk	0		0
Air volume to suit occupancy at 10 litres per person or cooling requirement, whichever the greater		BAL	0	0			530	Desk	0		0
		BAL	0	0			330	Couch	0		0
Mechanical ventilation (supply): Vent mode required to suit location.		NEG	0	0			330	Floor	0		0
Mechanical ventilation to BS EN ISO 14644-3		POS	0	0			330	Bench	0		0
Mechanical ventilation to BS EN ISO 14644-7		POS	0	0			230	Floor	0		0
Mechanical ventilation to BS EN ISO 14644-7		POS	0	0			230	Floor	0		0
Mechanical ventilation to BS EN ISO 14644-9		POS	0	0			330	Floor	0		0
Mechanical ventilation to BS EN ISO 14644-14		POS	0	0			330	Floor	0		0
Mechanical ventilation to BS EN ISO 14644-16		POS	0	0			330	Bench	0		0
Mechanical ventilation to BS EN ISO 14644-18		POS	0	0			260	Floor	0		0
			0	0			130	Floor	0		0
			0	0			230	Floor	0		0
			0	0			130	Floor	0		0
			0	0			280	Floor	0		0
			0	0			260	Floor	0		0
			0	0			530	Desk	0		0
			0	0			260	Floor	0		0
			0	0			280	Floor	0		0
			0	0			230	Floor	0		0
			0	0			540	Desk	0		0
Local extraction from cloister rows		BAL	0	0			530	Trolley/Couch	0		0
			0	0			560	Bench	0		0
Mechanical ventilation: Supply & extract: To suit overall equipment design of area.		POS	0	0			330	Average at bed heights. Dimmine facilities are required.	0	3	20-100 Couch Variable. Examination luminaire to provide 1000 lux.
Mechanical ventilation: Supply & extract: To suit overall equipment design of area. Mechanical ventilation (extract): To suit overall design of area		POS	0	0 Humidity control to suit equipment.			330	Average at bed heights.	0	3	
Mechanical ventilation: Up to 6 ac/hr to suit equipment & dependie on local conditions. Mechanical ventilation (extract): To suit overall equipment design of area		POS	0	0			130	Worktop plane	0		0
Mechanical ventilation: Supply: Up to 6 ac/hr depending on local conditions. Mechanical ventilation (extract): Extract to suit overall design of diagnostic & processing areas.		POS	0	0			330	Worktop plane	0		0
Mechanical ventilation: Supply: Up to 6 ac/hr depending on local conditions. Mechanical ventilation (extract): To suit overall design of diagnostic & processing areas.		POS	0	0			330	Working plane	0		0
Mechanical ventilation: Supply to suit ventilation extract rate. Mechanical ventilation (extract): to suit equipment requirements and CIBSH resolutions		NEG	0	0			330	1m above floor. Luminaire with luminance limitine as	0		
Air volume to suit occupancy at 10 litres per second per person			0	0			330	Working plane. Dimmine facilities are required.	0	3	Areas for VDT's. See CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001.
Air volume to suit occupancy at 10 litres per second per person			0	0			330	Desk	0	3	Remote switchine of lightine in Simulator room. Dimmable
Mechanical ventilation: Supply: Air volume to suit heat gains from equipment. Mechanical ventilation (extract): Medical/vas scavenaine required.		POS	0	0			530	Bench	0		
Mechanical ventilation: Air volume to suit heat gains from equipment. Extract to suit design.			0	0			340	Desk	0	3	Remote switchine of lightine in MRI room. Dimmable
Mechanical ventilation: Air volume to suit heat gain from equipment		POS	0	0 Humidity control to suit equipment.			330	Trolley. Dimmine facilities are required.	0	200	For patient examination. Dimmers or individual lamp device rectifiers should be used.
Air volume to suit occupancy at 10 litres per second per person			0	0			330	Desk	0	3	Remote switchine of lightine in Interventional Radiology room. Dimmable
			0	0			260	Average at floor	0		
			0	0			280	Floor	0		0
Air volume to suit occupancy at 10 litres per second per person		BAL	0	0			240	Table	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			330	Table	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			330	Desk	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			530	Desk	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			530	Desk	0		0
			0	0			540	Desk	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			530	Desk	0		
			0	0			340	Desk	0	20	Desk (night only)
		POS	0	0			130	Worktop plane	0		0
		NEG	0	0			330	Floor	0		0
		NEG	0	0			130	Floor	0		0
Mechanical ventilation: Supply To supplement extract as necessary:		NEG	0	0			330	Floor	0		0
Mechanical ventilation: Supply to supplement extract as necessary.		NEG	0	0			330	Floor	0		0
Mechanical ventilation: Supply to supplement extract as necessary.		NEG	0	0			530	Floor	0		0
Mechanical ventilation: Supply to supplement extract as necessary.		NEG	0	0			340	Floor	0		0
		NEG	0	0			280	Floor	0		0
			0	0			230	Floor	0		0
Mechanical ventilation: Supply: Air volume to suit heat gains from equipment. Mechanical ventilation (extract): Medical/vas scavenaine required.		POS	0	0			340	Equipment. Dimmine facilities are required.	0	3	20-100 Variable Couch
		NEG	0	0			200	Floor	0		0
Mechanical Ventilation: Supply & Extract to suit equipment heat gain with independent control.			0	0			360	Desk	0	3	Remote switchine of lightine in Simulator room. Dimmable
		NEG	0	0			200	Floor	0		0
Ventilation to be balanced with BSC or fume hood. Extract to be stand alone. Desian to: HBN16-01		POS	0	0			200	Floor	0		0
			0	0			280	Floor	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			330	Desk/table. dimmeniarfarlectue switchine reauired.	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		NEG	0	0			340	Equipment	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			330	Desk	0		0
Air volume to suit occupancy at 10 litres per person or cooling requirement, whichever the greater		BAL	0	0			230	Floor	0		0
			0	0			330	Floor	0		0
Extract air chamee rate can include sanitary accommodation associated with chamaine room		NEG	0	0			330	Floor	0		0
Extract air chanee rate can include sanitary accommodation associated with changing room		NEG	0	0			330	Floor	0		0
		NEG	0	0			130	Floor	0		0
			0	0			260	Floor	0		0
			0	0			230	Floor	0		0
			0	0			330	Floor	0		0
		BAL	0	0			330	Couch	0		0
Mechanical ventilation (extract): Local to cookers.		NEG	0	0			330	Floor	0		0
		NEG	0	0			340	Lockers/table	0		0
Mechanical ventilation: Supply: Cubicle area only. Mechanical ventilation (extract): Ref to B.N. text		NEG	0	0			530	Floor	0		0
Mechanical ventilation (extract): Extract rate to take account of dust ext unit & fume hood uses		BAL	0	0			330	Couch	0		0
		NEG	0	0			330	Couch	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			280	Floor	0		0
Mechanical ventilation: Supply: Vent mode required to suit location.		NEG	0	0			200	Floor	0		0
Mechanical ventilation: Supply: To suit heat gains from equipment. Fresh air at 10 l/s per person		BAL	0	0			360	Desk. Areas for VDT's. See CIBSE Lighting Guide LG3 "T	0		0
		BAL	0	0			130	Floor	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			230	Floor	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			330	Floor	0		0
			0	0			280	Floor	0		0
		NEG	0	0			360	Bench	0		0
Extract to included WC/shower cubicles within chamine area		NEG	0	0			330	Floor	0		0
		BAL	0	0			330	Floor	0		0
Supply air rate at 40 litres per second per cubicle		BAL	0	0			260	Floor	0		0
		BAL	0	0			280	Floor	0		0
Supply air rate at 40 litres per second per cubicle		BAL	0	0			540	Trolley	0		0
Supply air rate at 40 litres per second 1. Bedroom balanced or negative with respect to the adjoining corridor 2. Bedroom positive with respect to the en-suite sanitary room		NEG to corridor	0	0			0	Daytime - general (lux) 100 l. Average at floor level of	0	3	Local task illumination (lux) 300 1. Average at bedhead for patient reading and general nursing purposes 2. Maximum point illuminance 120 Lux 3. Average of 1000 Lux at bedhead where examination or treatment is to be carried out
			0	0			330	Floor	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			330	Desk	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			330	Desk	0		0
		POS	0	0			130	Worktop plane	0		0
			0	0			230	Floor	0		0
			0	0			280	Floor	0		0
			0	0			230	Floor	0		0
Mechanical vent. (supply): 0.5 m3/s.		BAL	0	0			330	Floor	0		0
		POS	0	0			530	Trolley/Couch	0	3000	Trolley/couch
Supply air rate at 40 litres per second per cubicle		BAL	0	0			330	Floor	0		0
Supply air rate at 40 litres per second per cubicle		BAL	0	0			540	Trolley	0		0
Air volume to suit occupancy at 10 litres per second per person			0	0			330	Working plane. Dimming facilities are required.	0	3	Areas for VDT's. See CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001.
Air volume to suit occupancy at 10 litres per second per person		POS	0	0 Humidity control to suit equipment.			330	Desk	0	3	Remote switchine of lightine in Simulator room. Dimmable
Mechanical ventilation: Supply: Up to 6 ac/hr depending on local conditions. Extract to suit design		POS	0	0			330	Worktop plane	0		0
Mechanical ventilation: Supply: Up to 6 ac/hr depending on local conditions. Extract to suit design		POS	0	0			330	Worktop plane	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			330	Desk	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			530	Desk	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			265	Floor	0		0
			0	0			330	Bench	0		0
			0	0			330	Bench	0		0
Extract air chamee rate can include sanitary accommodation associated with chamaine room		NEG	0	0			330	Floor	0		0
Extract air chamee rate can include sanitary accommodation associated with chamaine room		NEG	0	0			130	Floor	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			530	Desk	0		0
Mechanical Vent. (supply): 0.3 m3/s.		POS	0	0			340	Couch	0		0
Mechanical ventilation (supply): To suit equipment heat gain. Mechanical ventilation (extract): To suit supply.		BAL	0	0			330	Bench	0	500	Bench
As HBN 16-01			0	0			330	Floor	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			330	Desk	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			330	Desk	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			230	Chairs	0		0
			0	0			330	Chairs	0		0

Supply air rate at 40 litres per second 1. Bedroom balanced or negative with respect to the adjoining corridor 2. Bedroom positive with respect to the en-suite sanitary room		NEG to corridor	0	0			0	Daytime - general (lux) 100 l. Average at floor level of	0	3	Local task illumination (lux) 300 1. Average at bedhead for patient reading and general nursing purposes 2. Maximum point illuminance 120 Lux 3. Average of 1000 Lux at bedhead where examination or treatment is to be carried out
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			260	Table	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			330	Desk	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			330	Couch	0		0
		NEG	0	0			130	Floor	0		0
		NEG	0	0			330	Floor	0		0
		NEG	0	0			260	Floor	0		0
		NEG	0	0			330	Floor	0		0
		NEG	0	0			280	Floor	0		0
		NEG	0	0			230	Floor	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			280	Floor	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			330	Couch	0		0
		NEG	0	0			330	Floor	0		0
		BAL	0	0		Part of multi bed.	560	Trolley/bed	0		Examination luminaire to provide 1000 lux.
			0	0			330	Working plane	0		0
Air volume to suit occupancy at 10 litres per second per person			0	0			330	Desk/Table/bed	0	150	Bed
			0	0			230	Floor	0		0
			0	0			330	Average at Bed/Trolley 1. Max point illuminance 120 lx	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			330	Desk	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			200	Floor	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			265	Floor	0		0
Mechanical ventilation: Supply: Up to 6 ac/hr depending on local conditions. Extract to suit design		POS	0	0			330	Worktop plane	0		0
Mechanical ventilation: Supply: Up to 6 ac/hr depending on local conditions. Mechanical ventilation failure or mechanical extract must be resulted disposable source of batteries used.		POS	0	0			330	Worktop plane	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			530	Desk	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			530	Desk	0		0
Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater		BAL	0	0			130	Worktop plane	0		0
Design in accordance with SHTM05-01		POS	30	0 Refer to HBN26			1000	Operating Table	0	50000	Minimum Operating cavity
Design in accordance with SHTM05-01		POS	30	0 Refer to HBN26			1000	Operative Table	0	50000	Minimum Operative cavity
Design in accordance with SHTM 03-01		POS	0	0			530	Desk/PC	0		0
Design in accordance with SHTM 03-01		POS	0	0			530	Couch/Trolley	0	1000	Couch/Trolley head
Extract air chamee rate can include sanitary accommodation associated with chamaine room		NEG	0	0			330	Floor	0		0
			0	0			280	Floor	0		0
			0	0			330	Floor	0		0
Mechanical ventilation (supply): Minimum 0.1m3/s.		POS	0	0			330	Floor	0		0
			0	0			330	Bench	0		0
			0	0			330	Bench	0		0
Natural ventilation or mechanical extract ventilation if not practical			0	0			330	Floor	0		0
Mechanical ventilation (supply): Vent mode required to suit location. Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater			0	0			360	Desk	0	3	Remote switchine of lightine in Catheter Laboratory. Dimmable
Mechanical ventilation (supply): Vent. mode required to suit location. Air volume to suit occupancy at 10 litres per second per person or cooling requirement, whichever the greater			0	0			360	Desk	0	3	Remote switchine of lightine in Neurosciences suite room. Dimmable
Mechanical ventilation (supply): Minimum to suit heat gain.		NEG	0	0			330	Working plane	0		0
		NEG	0	0			330	Worktop plane	0		0
		NEG	0	0			200	Worktop plane	0		0

Lighting	Lighting	Lighting	Safety: Hot Surface Temperature deg C	Safety: Hot Water Temperature deg C	Safety: Safety Temperature Notes	General Safety Notes	Commented	Commented: ZBP Commented on Activities	Column1	ID_RoomKey: Column14	ID_RoomInstKey: Column15
TRUE	Ra 90	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		596	596
TRUE	Ra 90	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		597	597
TRUE	Ra 80	A	43	-			1	1		613	613
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		973	973
TRUE	Ra 80	A	43	-			1	1		612	612
TRUE	Ra 80	A	43	-				1		947	947
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		979	979
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		980	980
TRUE	Colour rendering characteristics - general (Ra): 80 Local (Ra) 90. Minimum colour appearance of 4000K	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		344	344
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		997	997
TRUE	Ra 80	A		-			1	1		625	625
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		998	998
TRUE	Ra 80	A		-			1	1		725	725
TRUE	General room illumination Ra 85 Exam lamp Ra 90.	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves					1066	1066
TRUE	Ra 90	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		599	599
TRUE	General room illumination Ra 80 Exam lamp Ra 90.	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		603	603
TRUE	Ra 80	A	43	-			1	1		634	634
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		967	967
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		966	966
TRUE	Ra 90	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		970	970
TRUE	Ra 80	A	43	-				1		968	968
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		969	969
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		971	971
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves					1027	1027
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		911	911
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		834	834
TRUE	Ra 85	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves					1026	1026
TRUE	Ra 80	A	43	-						1053	1053
TRUE	Ra 80	A	43	-						1054	1054
TRUE	Ra 80	A		-			1	1		1198	1198
TRUE	Ra 80	A		-						1056	1056
TRUE	Ra 80	A		60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1		608	608
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		349	349
TRUE	Ra 80	A	43	-			1	1		618	618
TRUE	Ra 80	A		60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1		626	626
TRUE	Ra 80	A	43	-			1	1		631	631
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		910	910
TRUE	Ra 80	A	43	-			1	1		640	640
TRUE	Ra 80	A	43	-			1	1		644	644
TRUE	Ra 80	A	43	-			1	1		648	648
TRUE	Ra 80	A		60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1		677	677
TRUE	Ra 80	A		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		685	685
TRUE	Ra 80	A		-				1		835	835
TRUE	Ra 80	A		-			1	1		710	710
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		963	963
TRUE	Ra 80	A	43	44	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1			1203	1203
TRUE	Ra 80	A	43	-			1	1		619	619
TRUE	Ra 80	A	43	-				1		869	869
TRUE	Ra 80	A	43	44	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		699	699
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		880	880
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		595	595
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		938	938
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		940	940
TRUE	Ra 90	A		-	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		600	600
TRUE	Ra 80	A		60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1		609	609
TRUE	Ra 80	A	43	-			1	1		611	611
TRUE	Ra 80	A	43	-				1		937	937
TRUE	Ra 80	A	43	-			1	1		614	614
TRUE	Ra 80	A	43	-				1		958	958
TRUE	Ra 80	A	43	-				1		939	939
TRUE	Ra 80	A		-			1	1		312	312
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		932	932
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		819	819
TRUE	Ra 80	A	43	-				1		959	959
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		715	715
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		598	598
TRUE	Ra 80	A		-						1094	1094
TRUE	Ra 80	A		-						1093	1093
TRUE	Ra 80	A		-						1095	1095
TRUE	Ra 80	A		60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1			724	724
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		304	304
TRUE	Ra 80	A		60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1		607	607
TRUE	Ra 80	A		60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1		610	610
TRUE	Ra 80	A	43	-			1	1		635	635
TRUE	Ra 80	A	43	-			1	1		666	666
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		682	682
TRUE	Ra 80	A	43	-			1	1		684	684
TRUE	Ra 80	A		-			1	1		690	690
TRUE	Ra 80	A		-			1	1		691	691
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		267	267
TRUE	Ra 90	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		716	716
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		717	717
TRUE	Ra 80	A				…ly with CIBSE Lighting Guides LG2: LG3: & LG7 as applicable. 2. Default values to be used where surface reflectance factors not known: Ceilings: 0.7 : Walls: 0.5: Floors: 0.2 3. The working plane is 0.85 metres above finished floor level.		1		862	862
TRUE	Ra 80	A	43	41				1		923	923
TRUE	Ra 80	A	43	-			1	1		632	632
TRUE	Ra 80	A	43	60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1		642	642
TRUE	Ra 80	A	43	-				1		864	864
TRUE	Ra 80	A		-				1		865	865
TRUE	Ra 80	A	43	-				1		867	867
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		656	656
TRUE	Ra 80	A	43					1		868	868
TRUE	Ra 80	A		-				1		871	871
TRUE	Ra 80	A		-			1	1		671	671
TRUE	Ra 80	A		60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)			1		872	872
TRUE	Ra 80	A	43	-			1	1		672	672
TRUE	Ra 80	A	43	-				1		854	854
TRUE	Ra 80	A	43	-				1		874	874
TRUE	Ra 80	A	43	60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)			1		946	946
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		679	679
TRUE	Ra 80	A		-				1		878	878
TRUE	Ra 80	A	43	-			1	1		718	718
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		301	301
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		302	302
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		303	303
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1			1217	1217
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1			1216	1216
TRUE	Ra 80	A	43	-				1		949	949
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		951	951
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		327	327
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		823	823
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		334	334
TRUE	Ra 80	A		-				1		950	950
TRUE	Ra 80	A		-			1	1		336	336
TRUE	Ra 80	A		-			1	1		337	337
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		852	852
TRUE	Ra 80	A		60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1		769	769
TRUE	Ra 80	A		-				1		941	941
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		833	833
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		832	832
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		859	859
TRUE	Ra 90	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		858	858
TRUE	Ra 90	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves					1063	1063
TRUE	Ra 80	A	43	-						1064	1064
TRUE	Ra 80	A	43	-						1070	1070
TRUE	Ra 80	A		-			1			1197	1197
TRUE	Ra 80	A		-						1065	1065
TRUE	Ra 80	A		60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1		676	676
TRUE	Ra 80	A		-			1	1		686	686
TRUE	Ra 80	A	43	44	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		897	897
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		879	879
TRUE	Ra 80	A		-			1	1		709	709
TRUE	Ra 90	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		907	907
TRUE	Ra 80	A	43	-						1050	1050
TRUE	Ra 80	A	43	-						1076	1076
TRUE	Ra 80	A		-						1071	1071
TRUE	Ra 80	A		-						1075	1075
TRUE	Ra 80	A	43	-						1090	1090
TRUE	Ra 80	A	43	-			1	1		647	647
TRUE	Ra 80	A	43	-			1	1		654	654
TRUE	Ra 80	A	43	-			1	1		655	655
TRUE	Ra 80	A		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		688	688
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		908	908
TRUE	Ra 90	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		601	601
TRUE	Ra 90	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves					1043	1043
TRUE	Ra 90	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves					1045	1045
TRUE	Ra 80	A		-						1051	1051
TRUE	Ra 80	A		-			1	1		668	668
TRUE	General room illumination Ra 80 Exam lamp Ra 90.	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		602	602
TRUE	General room illumination Ra 80 Exam lamp Ra 90.	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		345	345
TRUE	General room illumination Ra 80 Exam lamp Ra 90.	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		604	604
TRUE	Ra 90	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		1002	1002
TRUE	Ra 90	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		909	909
TRUE	Ra 80	A	43	-			1	1		606	606
TRUE	Ra 80	A	43	-				1		1003	1003
TRUE	Ra 80	A	43	-				1		1004	1004
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		348	348
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		1006	1006
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves					1047	1047
TRUE	Ra 80	A		-						1048	1048
TRUE	Ra 80	A		-						1055	1055
TRUE	Ra 80	A	43	-			1	1		653	653
TRUE	Ra 80	A		60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1		665	665
TRUE	Ra 80	A	43	-				1		1009	1009
TRUE	Ra 80	A	43	-			1	1		667	667
TRUE	Ra 80	A	43	-				1		1013	1013
TRUE	Ra 80	A		-				1		1008	1008
TRUE	Ra 80	A	43	-			1	1		319	319
TRUE	Ra 80	A	43	-				1		1001	1001
TRUE	Ra 80	A		-			1	1		673	673
TRUE	Ra 80	A		-			1	1		713	713
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		1010	1010
TRUE	Ra 80	A	43	-				1		900	900
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		902	902
TRUE	Ra 80	A		-			1	1		621	621
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		622	622
TRUE	Ra 80	A		60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1		623	623
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		984	984
TRUE	Ra 80	A		-			1	1		624	624
TRUE	Ra 80	A		60	Softened or filtered water supply. Drainage to take account of volume & chemical waste - to be easily accessible. Sign required: Caution 'Very Hot Water' above the sink.		1	1		627	627
TRUE	Ra 80	A		-			1	1		628	628
TRUE	Ra 80	A	43	-			1	1		353	353
TRUE	Ra 80	A	43	-			1	1		629	629
TRUE	Ra 80	A	43	-				1		901	901
TRUE	Ra 80	A		-			1	1		630	630
TRUE	Ra 80	A		-				1		985	985
TRUE	Ra 80	A	43	-			1	1		633	633
TRUE	Ra 80	A	43	-			1	1		639	639
TRUE	Ra 80	A	43	-			1	1		651	651
TRUE	Ra 80	A	43	-			1	1		652	652
TRUE	Ra 80	A	43	-			1	1		657	657
TRUE	Ra 80	A		-			1	1		663	663
TRUE	Ra 80	A		-			1	1		670	670
TRUE	Ra 80	A		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		689	689
TRUE	Ra 80	A	43	-			1	1		694	694
TRUE	Colour rendering characteristics - general (Ra): 80 Local (Ra) 90. Minimum colour appearance of 4000K	A	43	-			1	1		695	695
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		413	413
TRUE	Ra 80	A	43	-			1	1		719	719
TRUE	Ra 90	A		60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1		339	339
TRUE	General room illumination Ra 85 Exam lamp Ra 90.	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		986	986
TRUE	General room illumination Ra 85 Exam lamp Ra 90.	A		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1			1194	1194
TRUE	General room illumination Ra 85 Exam lamp Ra 90.	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves					1192	1192
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves					1191	1191
TRUE	General room illumination Ra 85 Exam lamp Ra 90.	A		-			1	1		636	636
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves					1193	1193
TRUE	General room illumination Ra 85 Exam lamp Ra 90.	A	43	-				1		988	988
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves					1190	1190
TRUE	Ra 80	A	43	-			1	1		310	310
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		990	990
TRUE	Ra 80	A		60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1		661	661
TRUE	Ra 80	A		60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1		999	999
TRUE	Ra 80	A		60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1		675	675
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		678	678
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		981	981
TRUE	Ra 80	A	43	-			1	1		680	680
TRUE	Ra 80	A		60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1		681	681
TRUE	Ra 80	A	43	-			1	1		683	683
TRUE	Ra 80	A	43	-			1	1		693	693
TRUE	Ra 80	A		-			1	1		556	556
TRUE	Ra 80	A		-			1	1		705	705
TRUE	Ra 80	A		-			1	1		708	708
TRUE	Ra 80	A		-				1		992	992
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		994	994
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		987	987
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		989	989
TRUE	Ra 80	A	43	60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)			1		982	982
TRUE	Ra 80	A	43	-				1		863	863
TRUE	Ra 80	A		-				1		870	870
TRUE	Ra 80	A	43	-				1		875	875
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		876	876
TRUE	Ra 80	A	43	-				1		877	877
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		954	954
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		860	860
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		861	861
TRUE	Ra 90	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		953	953
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		948	948
TRUE	Ra 80	A	43	-				1		956	956
TRUE	Ra 80	A	43	-				1		942	942
TRUE	Ra 80	A		-				1		952	952
TRUE	Ra 80	A		-				1		957	957
TRUE	Ra 80	A	43	44	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		698	698
TRUE	Ra 80	A	43	44	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		1222	1222
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		720	720
TRUE	Ra 80	A	43	60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1		704	704
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		721	721
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		955	955
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		615	615
TRUE	Ra 80	A	43	-			1	1		616	616
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		617	617
TRUE	Ra 80	A		-			1	1		387	387
TRUE	Ra 80	A		-			1	1		669	669
TRUE	Ra 90	A		-			1	1		320	320
TRUE	Ra 90	A		-				1		851	851
TRUE	Ra 80	A		-			1	1		674	674
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		850	850
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		849	849
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		323	323
TRUE	Ra 80	A	43	-			1	1		325	325
TRUE	Ra 80	A		-			1	1		687	687
TRUE	Ra 80	A		-			1	1		700	700
TRUE	Ra 80	A		-			1	1		703	703
TRUE	Ra 80	A		-			1	1		711	711
TRUE	Ra 80	A		-			1	1		714	714
TRUE	Ra 80	A		60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1		722	722
TRUE	Ra 80	A		60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1		723	723
TRUE	Ra 90	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		1000	1000
TRUE	Ra 80	A	43	-			1	1		479	479
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		540	540
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		581	581
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1		883	883
TRUE	General room illumination Ra 80 Exam lamp Ra 90.	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		346	346
TRUE	Ra 80	A	43	-						1029	1029
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves					1201	1201
TRUE	Ra 80	A	43	-			1			1195	1195
TRUE	Ra 80	A		-						1030	1030
TRUE	Ra 80	A		-						1031	1031
TRUE	Ra 85	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves					1028	1028
TRUE	Ra 80	A	43	-			1	1		315	315
TRUE	Ra 80	A		-	-		1	1		382	382
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		383	383
TRUE	Ra 80	A		-			1	1		499	499
TRUE	Ra 80	A		-			1	1		239	239
TRUE	Ra 80	A		-			1	1		321	321
TRUE	Ra 80	A	43	60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1		398	398
TRUE	Ra 80	A	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1		802	802

TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	509	509
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		44	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	510	510
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	526	526
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	530	530
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	402	402
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 General lighting notes: 1. Healthcare environment lighting installations to comply with CIBSE Lighting Guides LG2; LG3; & LG7 as applicable. 2. Default values to be used where surface refl	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	414	414
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control N/So/S	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	826	826
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control N/So/S	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	219	219
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control N/So/S	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	925	925
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control N/So/S	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	926	926
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control N/So/S	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	927	927
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control N/So/S	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	928	928
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): - Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment lig	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	974	974
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in compli		-	60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1	452	452
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	460	460
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	231	231
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-					1	976	976
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-						1087	1087
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	480	480
TRUE	Ra 85	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1080	1080
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	498	498
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-					1	975	975
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li			60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1	391	391
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	503	503
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	515	515
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-					1	289	289
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	260	260
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	1221	1221
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	544	544
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	563	563
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	570	570
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	265	265
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in com	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	218	218
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): - Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment lig	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1058	1058
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	490	490
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-						1033	1033
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	561	561
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	568	568
TRUE	Colour rendering characteristics - general (Ra): 80 Local (Ra) 90. Minimum colour appearance of 4000K	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 General lighting notes: 1. Healthcare environment lighting installations to comply with CIBSE Lighting Guides LG2; LG3; & LG7 as applicable. 2. Default values to be used where surface refl	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	830	830
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li			60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1	271	271
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	230	230
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	95	95
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	726	726
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	727	727
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	728	728
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	729	729
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li			60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1	730	730
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li			60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1	731	731
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Luminaires to IPS4. Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healtl		-				1	1	732	732
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	733	733
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in com	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	417	417
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		44	Wash Hand basin 41: Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1038	1038
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		44	Wash Hand basin 41: Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1214	1214
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		44	Wash Hand basin 41: Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1100	1100
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		44	Wash Hand basin 41: Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1215	1215
TRUE	Ra 90	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Emergency escape route lighting required? (Yes/No)	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1		1189	1189
TRUE	Ra 90	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1040	1040
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	576	576
TRUE	Ra 90	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	266	266
TRUE	Ra 90	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	221	221
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	365	365
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	929	929
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-					1	914	914
TRUE	Colour rendering characteristics - general (Ra): 80 Local (Ra) 90. Minimum colour appearance of 4000K	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 General lighting notes: 1. Healthcare environment lighting installations to comply with CIBSE Lighting Guides LG2; LG3; & LG7 as applicable. 2. Default values to be used where surface refl	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	930	930
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	223	223
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	358	358
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	465	465
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment	43	-				1	1	363	363
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	473	473
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	481	481
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	483	483
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	376	376
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment	43	-				1	1	384	384
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	240	240
TRUE	Ra 85	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1081	1081
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1082	1082
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-						1017	1017
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-						1015	1015
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-						1018	1018
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li			60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1	502	502
TRUE	Ra 85	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-						1083	1083
TRUE	Ra 85	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1084	1084
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1085	1085
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	513	513
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li			41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	516	516
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	528	528
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li			41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	400	400
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	537	537
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	558	558
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	410	410
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	567	567
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	571	571
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	573	573
TRUE	Ra 90	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	583	583
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	584	584
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	924	924
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	585	585
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li			60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1	270	270
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in compli	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	430	430
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in compli	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	431	431
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in compli	43	-				1	1	450	450
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	454	454
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment	43	-				1	1	466	466
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment	43	-				1	1	467	467
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	359	359
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	471	471
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	474	474
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	475	475
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	369	369
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	390	390
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-					1	893	893
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li			60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1	392	392
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	242	242
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-					1	917	917
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	393	393
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	507	507
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1		1206	1206
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)			1	894	894
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	324	324
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	326	326
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	533	533
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	534	534
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	535	535
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	536	536
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	404	404
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	539	539
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	560	560
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-					1	892	892
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in compli		-				1	1	428	428
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-					1	840	840
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	641	641
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li			60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1	491	491
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li			60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1	492	492
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-					1	841	841
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment		-				1	1	381	381
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	386	386
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-					1	842	842
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	317	317
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	395	395
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-						1089	1089
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-						1049	1049
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-						1092	1092
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment		-						1067	1067
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-						1068	1068
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-						1091	1091
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-						1200	1200
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-						1199	1199
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-						1088	1088
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-					1	843	843
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-					1	844	844
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-						1069	1069
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	697	697
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	557	557
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-					1	845	845
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	707	707
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-					1	846	846
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in com	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	813	813
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in com	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	812	812
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in com	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	811	811
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in com	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	814	814
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in com	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	808	808
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in com	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	810	810
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in com	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	81	81
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in compli	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	815	815
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	350	350
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	88	88
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	89	89
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	90	90
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	91	91
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-					1	807	807
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	171	171
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	313	313
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	100	100
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	101	101
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	102	102
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	195	195
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	105	105
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	107	107
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1	169	169
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li			60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1	111	111
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	112	112
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	249	249
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 General lighting notes: 1. Healthcare environment lighting installations to comply with CIBSE Lighting Guides LG2; LG3; & LG7 as applicable. 2. Default values to be used where surface refl	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	115	115
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	170	170
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	118	118
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	119	119
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	202	202
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1		1205	1205
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1211	1211
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	257	257
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1		1207	1207
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1		1204	1204
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1		1208	1208
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	258	258
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1		1209	1209
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	124	124
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-					1	188	188
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	126	126
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	127	127
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 General lighting notes: 1. Healthcare environment lighting installations to comply with CIBSE Lighting Guides LG2; LG3; & LG7 as applicable. 2. Default values to be used where surface refl	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	809	809
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li			60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1	273	273
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	160	160
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	159	159
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	158	158
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	134	134
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li			60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1	135	135
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li			60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)			1	157	157
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-					1	945	945
TRUE	Not applicable to night lighting.General lighting - Colour rendering characteristics (Ra): 85Examination lighting - Colour rendering characteristics (Ra): 90Minimum colour appearance of 4000K	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/NN = Normal S = Selective V = Variable EM = Energy Management SystemUnified glare rating limit (UGRL): 19Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001Y = Dedicated emergency lighting required in compli	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1202	1202
TRUE	Not applicable to night lighting.General lighting - Colour rendering characteristics (Ra): 85Examination lighting - Colour rendering characteristics (Ra): 90Minimum colour appearance of 4000K	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/NN = Normal S = Selective V = Variable EM = Energy Management SystemUnified glare rating limit (UGRL): 19Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001Y = Dedicated emergency lighting required in compli	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1099	1099
TRUE	Not applicable to night lighting.General lighting - Colour rendering characteristics (Ra): 85Examination lighting - Colour rendering characteristics (Ra): 90Minimum colour appearance of 4000K	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/NN = Normal S = Selective V = Variable EM = Energy Management SystemUnified glare rating limit (UGRL): 19Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001Y = Dedicated emergency lighting required in compli	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1098	1098
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-					1	944	944
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	935	935
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	936	936
TRUE	Ra 90	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	856	856
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	882	882
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-					1	896	896
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-					1	866	866
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li			60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1	494	494
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)			1	397	397
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-					1	857	857
TRUE	Ra 90	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1062	1062
TRUE	Ra 85	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1101	1101
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-						1060	1060
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-						1061	1061
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	922	922
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Workstation dimmer required. Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting note	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	756	756
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Workstation dimmer required. Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting note	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	757	757
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Dimming facilities are required. Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting note		-				1	1	758	758
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	770	770
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in compli	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	755	755
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	798	798
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	759	759
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment	43	-				1	1	760	760
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	761	761
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li			60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1	765	765
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 General lighting notes: 1. Healthcare environment lighting installations to comply with CIBSE Lighting Guides LG2; LG3; & LG7 as applicable. 2. Default values to be used where surface refl		-					1	913	913
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-					1	898	898
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li			60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)	Sign required: "Caution Very hot water" above the sink.		1	772	772
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li			60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)			1	915	915
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	773	773
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	774	774
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-					1	895	895
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-					1	918	918
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	500	500
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-					1	919	919
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-					1	920	920
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-					1	921	921
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	501	501
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	504	504
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	505	505
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	506	506
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	338	338
TRUE	Ra 90	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	222	222
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	887	887
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-					1	884	884
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	885	885
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-					1	234	234
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	374	374
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	385	385
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	259	259
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	333	333
TRUE	Ra 85	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1072	1072
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1074	1074
TRUE	General room illumination Ra 85 Exam lamp Ra 90.	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in compli	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1034	1034
TRUE	Ra 85	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment	43	-						1037	1037
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-						1024	1024
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1		1212	1212
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1		1213	1213
TRUE	Colour rendering characteristics - general (Ra): 85 Local (Ra) 90. Minimum colour appearance of 4000K	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 General lighting notes: 1. Healthcare environment lighting installations to comply with CIBSE Lighting Guides LG2; LG3; & LG7 as applicable. 2. Default values to be used where surface refl	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1025	1025
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	575	575
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li			60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1	274	274
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	307	307
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-					1	469	469
TRUE	Ra 85	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1023	1023
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li		-				1	1	574	574
TRUE	Ra 90	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	578	578
TRUE	Ra 90	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in compli	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	419	419
TRUE	Ra 90	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	343	343
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	1	233	233
TRUE	Ra 90	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in com	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	420	420
TRUE	Ra 90	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	305	305
TRUE	Ra 90	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	886	886
TRUE	Ra 90	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in compli	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	425	425
TRUE	Ra 90	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	347	347
TRUE	Ra 85	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43		41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1021	1021

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TRUE	Ra 85	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 General lighting notes: 1. Healthcare environment lighting installations to comply with CIBSE Lighting Guides LG2: LG3: & LG7 as applicable. 2. Default values to be used where surface refl	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1035	1035
TRUE	Ra 90	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1022	1022
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	579	579
TRUE	Ra 90	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	306	306
TRUE	Ra 85	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in compli	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1036	1036
TRUE	Ra 85	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-					1039	1039
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	572	572
TRUE	Ra 85	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1019	1019
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	836	836
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-				1	800	800
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	580	580
TRUE	Ra 90 local light	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in com	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	418	418
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in compli	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	421	421
TRUE	General room illumination Ra 80 Exam lamp Ra 90.	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	423	423
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment lighting installations to comply with CIBSE Lighting Guides LG2: LG3: & LG7 as applicable. 2. Default values to be used where surface reflectance factors not known: Ceilings: 0.7 : Walls: 0.5: Floors: 0.2 3. The working plane is 0.85 metres above finished floor level.					1	1	424	424
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	366	366
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	484	484
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	488	488
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	508	508
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	522	522
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	407	407
TRUE	Ra 90	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1044	1044
TRUE	Ra 85	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment lighting installations to comply with CIBSE Lighting Guides LG2: LG3: & LG7 as applicable. 2. Default values to be used where surface reflectance factors not known: Ceilings: 0.7 : Walls: 0.5: Floors: 0.2 3. The working plane is 0.85 metres above finished floor level.							1046	1046
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-					1032	1032
TRUE	Ra 85	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1057	1057
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 General lighting notes: 1. Healthcare environment lighting installations to comply with CIBSE Lighting Guides LG2: LG3: & LG7 as applicable. 2. Default values to be used where surface refl	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	589	589
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	777	777
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	778	778
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	781	781
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	783	783
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	788	788
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	790	790
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	792	792
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	793	793
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	794	794
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	795	795
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	549	549
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1	550	550
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	552	552
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	553	553
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	554	554
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	555	555
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	406	406
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	1007	1007
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	804	804
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment	43	-			1	1	352	352
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in compli	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	308	308
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in compli	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	433	433
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in compli	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	434	434
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in compli	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	435	435
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in compli	-	60	Softened or filtered water supply. Drainage to take account of volume & chemical waste - to be easily accessible. Sign required: Caution 'Very Hot Water' above the sink.		1	1	436	436
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in compli	-	-			1	1	439	439
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 General lighting notes: 1. Healthcare environment lighting installations to comply with CIBSE Lighting Guides LG2: LG3: & LG7 as applicable. 2. Default values to be used where surface refl	-	-			1	1	440	440
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	831	831
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 General lighting notes: 1. Healthcare environment lighting installations to comply with CIBSE Lighting Guides LG2: LG3: & LG7 as applicable. 2. Default values to be used where surface refl	-	-			1	1	444	444
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment	43	-			1	1	355	355
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 General lighting notes: 1. Healthcare environment lighting installations to comply with CIBSE Lighting Guides LG2: LG3: & LG7 as applicable. 2. Default values to be used where surface refl	-	-			1	1	445	445
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	453	453
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	357	357
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment	43	-			1	1	362	362
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	364	364
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	368	368
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	370	370
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	486	486
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	316	316
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	388	388
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	514	514
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 General lighting notes: 1. Healthcare environment lighting installations to comply with CIBSE Lighting Guides LG2: LG3: & LG7 as applicable. 2. Default values to be used where surface refl	-	60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1	517	517
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	401	401
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	403	403
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	329	329
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	330	330
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	331	331
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	254	254
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	405	405
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	546	546
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment	43	-					1042	1042
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1		1218	1218
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 General lighting notes: 1. Healthcare environment lighting installations to comply with CIBSE Lighting Guides LG2: LG3: & LG7 as applicable. 2. Default values to be used where surface refl	-	-			1	1	593	593
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	342	342
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 General lighting notes: 1. Healthcare environment lighting installations to comply with CIBSE Lighting Guides LG2: LG3: & LG7 as applicable. 2. Default values to be used where surface refl	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	416	416
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	455	455
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment	43	-			1	1	361	361
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	470	470
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	476	476
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	235	235
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	399	399
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	520	520
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	521	521
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	538	538
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	408	408
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	409	409
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	566	566
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	577	577
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)				1020	1020
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Emergency escape route lighting required? (Yes/No): N Escape route lighting provisions may be required subject to BS 5266-1. General lighting notes: 1. Healthcare environment lighting in	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1		1196	1196
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	44	Wah hand basin 41: Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1		1210	1210
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	412	412
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	582	582
TRUE	Ra 85	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1096	1096
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 General lighting notes: 1. Healthcare environment lighting installations to comply with CIBSE Lighting Guides LG2: LG3: & LG7 as applicable. 2. Default values to be used where surface refl	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	588	588
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 General lighting notes: 1. Healthcare environment lighting installations to comply with CIBSE Lighting Guides LG2: LG3: & LG7 as applicable. 2. Default values to be used where surface refl	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	415	415
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in compli	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	426	426
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	427	427
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	482	482
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	485	485
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 General lighting notes: 1. Healthcare environment lighting installations to comply with CIBSE Lighting Guides LG2: LG3: & LG7 as applicable. 2. Default values to be used where surface refl	-	-				1	931	931
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	493	493
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	253	253
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	262	262
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	848	848
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	269	269
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	587	587
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in com	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	847	847
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	461	461
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	367	367
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	318	318
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 General lighting notes: 1. Healthcare environment lighting installations to comply with CIBSE Lighting Guides LG2: LG3: & LG7 as applicable. 2. Default values to be used where surface refl	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	250	250
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-				1	962	962
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-				1	934	934
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-				1	961	961
TRUE	Colour rendering characteristics - general (Ra): 80 Local (Ra) 90. Minimum colour appearance of 4000K	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 General lighting notes: 1. Healthcare environment lighting installations to comply with CIBSE Lighting Guides LG2: LG3: & LG7 as applicable. 2. Default values to be used where surface refl	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	960	960
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	268	268
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	803	803
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in compli	-	-			1	1	437	437
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 General lighting notes: 1. Healthcare environment lighting installations to comply with CIBSE Lighting Guides LG2: LG3: & LG7 as applicable. 2. Default values to be used where surface refl	43	-			1	1	354	354
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in compli	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	441	441
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in compli	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	797	797
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in compli	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	442	442
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	477	477
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	371	371
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	489	489
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	496	496
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	525	525
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	527	527
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-					1086	1086
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	591	591
TRUE	Ra 85	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1		495	495
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 General lighting notes: 1. Healthcare environment lighting installations to comply with CIBSE Lighting Guides LG2: LG3: & LG7 as applicable. 2. Default values to be used where surface refl	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	996	996
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-				1	890	890
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-				1	891	891
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N/S/V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environme	43	-				1	888	888
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	889	889
TRUE	Not applicable to night lighting. General lighting - Colour rendering characteristics (Ra): 80 Examination lighting - Colour rendering characteristics (Ra): 90 Minimum colour appearance of 4000K	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in com	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	965	965
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	232	232
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	899	899
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	314	314
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	44	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	511	511
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	977	977
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	817	817
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	44	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	335	335
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	44	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	1220	1220
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	564	564
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 General lighting notes: 1. Healthcare environment lighting installations to comply with CIBSE Lighting Guides LG2: LG3: & LG7 as applicable. 2. Default values to be used where surface refl	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves			1	818	818
TRUE	Ra 90	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1059	1059
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves				1219	1219
TRUE	Ra 90	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves	Part of multi-bay.	1	1	220	220
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in compli	43	60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1	429	429
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 Y = Dedicated emergency lighting required in compli	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	432	432
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	309	309
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	228	228
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	372	372
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	487	487
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	-			1	1	375	375
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	377	377
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	389	389
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	394	394
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	396	396
TRUE	Ra 90	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment	-	-			1	1	322	322
TRUE	Ra 90	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: S/V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment	-	-			1	1	244	244
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	245	245
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N/S N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment	43	41	Maximum hot water temperature to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves		1	1	246	246
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	519	519
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	541	541
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	542	542
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	543	543
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	547	547
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	559	559
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	565	565
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	-			1	1	411	411
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 General lighting notes: 1. Healthcare environment lighting installations to comply with CIBSE Lighting Guides LG2: LG3: & LG7 as applicable. 2. Default values to be used where surface refl	-	-			1	1	590	590
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: V N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 General lighting notes: 1. Healthcare environment lighting installations to comply with CIBSE Lighting Guides LG2: LG3: & LG7 as applicable. 2. Default values to be used where surface refl	-	-			1	1	592	592
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1	594	594
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 19 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1	272	272
TRUE	Ra 80	A	Lighting of the level and quality equal or nearly equal to that provided by normal lighting	Type of control: N N = Normal S = Selective V = Variable EM = Energy Management System Unified glare rating limit (UGRL): 22 Areas in which VDT present to comply with CIBSE Lighting Guide LG3 "The Visual Environment for Display Screen Use" Addendum 2001 General lighting notes: 1. Healthcare environment li	-	60	Sign required: 'Caution Very hot Water' above the sink. Hot Water Max.Temp: Washbasin 41(to be achieved in compliance with SHTN 6 'The Safe Operation and Maintenance of Thermostatic Mixing Valves)		1	1	341	341

SCOTTISH HOSPITALS INQUIRY

Bundle of documents for Oral hearings commencing from 13 May 2025 in relation to the Queen Elizabeth University Hospital and the Royal Hospital for Children, Glasgow

Bundle 43 – Volume 3

Procurement, Contract, Design and Construction, Miscellaneous Documents