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

## Witness Statements – Volume 1

## Week Commencing 12 May 2025

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**Scottish Hospitals Inquiry**
**Witness Statement of**
**Emma Louise White**

**Preface**

Following receipt of the Scottish Hospitals Inquiry (SHI) Questionnaire at the beginning of 2025, almost 4 years from my initial investigation into some of the matters within the 65 ‘core’ questions, I initially intended to follow the approach of simply answering the questions. However, soon after I started to try to respond to the questions, I realised this would require more than my own recollections of the project, which for me started at the beginning of 2009, over 16 years ago. The task started to quickly become quite unwieldy. Whilst I was more than familiar with many of the processes, as I was often heavily involved in these as part of my role, the technical details requested within the questions were considerably more challenging, particularly as many delved into the domain of mechanical engineering, specifically specialist mechanical ventilation, which as an architect I have a limited understanding. Whilst the architect is often seen as the person who is responsible for all the design of a building, we are not qualified engineers, and we rely on the expertise of other members of the design team to provide these skills. We do however retain the responsibility to co-ordinate the design team. Likewise, a specialist healthcare architect means an architect familiar and experienced in the design of healthcare facilities. As healthcare facilities are technically complex buildings, a healthcare architect will normally have an increased technical expertise, and a knowledge of the technical design requirements and guidelines; they are still not a qualified engineer. A specialist healthcare mechanical and electrical engineer is critical to the design of healthcare buildings.

**Proposed Approach**

The approach of ‘simply’ answering the questions was also not the most effective way of demonstrating the inordinate amount of work it took from all the teams involved in the design and construction of the New South Glasgow Hospital. Nor would the approach necessarily provide the SHI with easy access to the answers to the questions it is seeking.

Therefore, I set about the task of creating a narrative of the abbreviated story of what I, as an architect, experienced working on this project. I have attempted to set out for the Inquiry my own account of my involvement in the project and the processes; and tried to place the questions within the context of the whole project, providing as simple as possible summary of what happened throughout the design stages of this hugely complex project.

This has not been a simple exercise; and given the time constraints and volumes of project history, I have focussed on areas I think would be most beneficial to the SHI; with the structure of the narrative following the sequence of the project and the design process.

**Personal Details and Professional Background**

This section addresses Part 2A of the Inquiry's Questionnaire, with my current CV appended to the back of the statement as requested. Thereafter, the ‘self-penned’ section follows, which has been structured in Chapters to sequentially cover the following items.

## 1. Project Background

This section includes a summary of the project stages, my role and IBI’s role. I should clarify to the reader who may get confused with the company names, you will see references to Nightingale (NA) and IBI throughout, which is essentially the same company I still work for, who are now part of the Arcadis group. In addition, you will see references to Brookfield, Brookfield Multiplex (BM) and Multiplex. Again, this is the same company.

## 2. Project Bid Stage

This section provides the context of how the design initially evolved as a response to the Client Brief, including the bid design dialogue meetings. I have used visual ‘snips’ throughout this section to assist the reader.

- The Employer’s Requirements (Client Brief)
- The Exemplar Design
- Competitive Dialogue Meetings
- Bid Submission and Compliance
- Bid Clarifications and RFIs

## 3. Project Contract Bible (2009)

This section provides a summary of my understanding of the ‘Project Bible’ (2009), the various Logs which are contained within this, and their influence on the Stage 2 design which followed. Again, I have used visual ‘snips’ assist the reader.

- The BIW Log
- The RFI Log
- The Clarifications Log
- M&E Clarifications Log
- The Sustainability Log
- Summary

## 4. Project Stage 2 – Detailed Design of the Adult and Children's Hospitals

This section captures a summary of the project set-up, structure and focuses on the architectural design, and processes to enable the project to achieve Full Business Case (FBC). Again, I have used visual 'snips' to assist the reader, with a particular focus on addressing the departments of interest to the SHI, namely Ward 4B – QEUH; Ward 4C – QEUH; Level 5 – QEUH; Critical Care – QEUH; Ward 2A & 2B – RHC; PICU – RHC; and Isolation rooms.

- Overview of Stage 2
- Team Structure
- User Group Meetings (UGM) / Stakeholder Process / Meeting Protocols
- 1:200 Department Layout Plans including a summary of the departments of interest
- Schedule of Accommodation
- Room Data Sheets including a summary of the departments of interest
- 1:50 Room Types
- Procurement Packages/Costing
- Appendix K/Full Business Case (FBC)

## 5. Project Contract Bible (2010)

This section provides a summary of my understanding of the updated 'Project Bible' (2010).

## 6. Project Stage 3 – Construction of the Adult and Children's Hospitals

This section continues the design process, with a focus on aspects of the design contained within the questions.

- Team Structure
- Programme
- 1:50 Fully Loaded Department Plans
- Room Data Sheets
- Reviewable Design Data
- 1:50 Reflected Ceiling Plans
- Sanitaryware and Taps
- Procurement Packages/Costing
- Construction Packages
- Handover and Site Inspections

Finally, for completeness I have maintained the SHI questionnaire structure to ensure that I have provided a response to the remaining questions. As I have developed the narrative and question responses together, some sections have been copied across from the narrative, and vice versa. As inferred earlier in my Preface, my answers to the questions are based on my recollections in the first instance. My answers are also supplemented with information I have gathered from the project record information, which I was required to research to supply a more fulsome response, other than 'I cannot recall'. The project record information I have researched includes both our internal records, and those that exist on Aconex, the online project management system.

Whilst answering the questions, I have tried to be clear about my role on the project, what I did and what my own actions were, as well as what actions were by my IBI team members, and what actions were by others.

**B. Review of the 'Works Information'**

**C. Full Business Case**

**D. Design Role in the QEUH/RHC Project**

**E. Ward 4B and 4C**

**F. Ward 2A RHC**

**G. Isolation Rooms**

**H. Water and taps**

**I. Commissioning and Validation**

**J. Handover**

**Personal Details and Professional Background**

I, EMMA LOUISE WHITE of Arcadis, Black Bull Yard, 18 - 22 Hatton Wall, London EC1N 8JH will say as follows:

My full name is EMMA LOUISE WHITE. I am employed as a Principal at Arcadis. I am a qualified architect and a recognised specialist in healthcare design with 25 years' experience in the UK and overseas in large-scale projects and healthcare facilities. I began working for Nightingale Architects Limited (**Nightingale**) in 2000. Nightingale was acquired by IBI Group (UK) Limited (**IBI**) in 2010. IBI was subsequently acquired by Arcadis in 2022 where I have continued in my role ever since. I hold the following qualifications: BA (Hons) Arch, BArch, RIBA Part 3; ARB Registered Architect/Corporate Member of RIBA since May 2001. My curriculum vitae is appended to this statement as Appendix 1.

1. **Project Background**

**1.1** I understand that Multiplex was appointed to carry out the design and construction of the New South Glasgow Hospital (now known as the Queen Elizabeth University Hospital (**QEUH**) (the **Project**) by contract dated 18 December 2009 between GGHB as Employer and Multiplex as Contractor (the **Building Contract**).

**1.2** Multiplex appointed Nightingale by a professional services contract dated 18 June 2010 to provide services as architect and lead consultant in connection with the Project (the **Appointment**). The Appointment provides that Nightingale was responsible for the design of the architectural works, architectural packages and the co-ordination of the design of other consultants, subcontractors, suppliers, authorities and other relevant parties/stakeholders into the overall design for the works. The Appointment comprised (i) the Agreement; (ii) the Conditions of Contract; (iii) the Contract Data Part One; and (iv) the Contract Data Part Two. The Conditions of Contract were the NEC Professional Services Contract, Option A: Priced Contract with activity schedules, June 2005 (as amended by the Contract Data).

**1.3** I carried out the Project Lead role for Nightingale and therefore have first-hand knowledge of the Project.

**1.4** The Project included the design and construction of a new Adult Acute Hospital and a new Children's Hospital. The Adult Acute Hospital (QEUH) comprises a thirteen-storey building, with a physical link corridor at level 1 to the existing Neurology Building; the four storey Children's Hospital (RHC) sits adjacent, with a physical corridor again at level 1 to the adjacent Maternity Building. Both hospitals are additionally linked to a basement level, including a basement services tunnel which in turn links both hospitals to the Facilities Management (FM) Hub and Laboratory (Labs) Buildings. An Energy Centre sits to the side of the Labs Building.

**1.5** The Project Contract was structured in three Stages:

- Stage 1 – Construction of the Laboratory – commenced in November 2009 and completed in March 2012. The NHS Client's Design Team were novated to Multiplex's Team to deliver Stage 1; this was outside IBI's Scope of Works.

- Stage 2 – Detailed Design of the Adult and Children's Hospitals – commenced in November 2009 and completed in November 2010

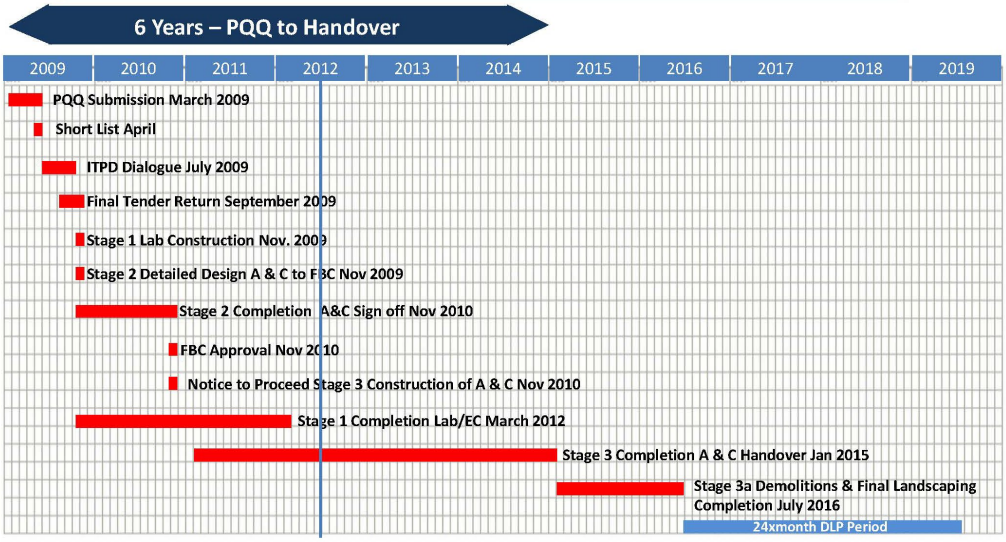
  This also included the new Energy Centre, which was part of the IBI scope of works. There was a phased handover of the Energy Centre to ensure part of this was operational to support the Laboratory Building, which also included the new FM Hub and Service Yard. The IBI scope interfaced with the Laboratory Building in the basement tunnel link between the two buildings.

- Stage 3 – Construction of the Adult and Children's Hospitals – commenced in December 2010 and completed in January 2015

- Stage 3a – Demolition of the Existing Buildings and Completion of Final Landscaping – commenced in July 2015 and completed in 2016

  The new Adult and Children's Hospitals were operational at the end of April 2015 and officially opened by the Queen on 3rd July 2015 and renamed the

Queen Elizabeth University Hospital (**QEUH**), and Royal Hospital for Sick Children (**RHSC**).




Project Timeline

**1.6** At the time of appointment, I had been a fully qualified architect for 9 years, with 11 years' experience in healthcare (I had worked in the healthcare sector at previous practices prior to joining Nightingales in 2000).

**1.7** My role on QEUH/RHC was a further evolution of the role I had on the Peterborough City Hospital PFI project, where I held a similar Project Lead role, working with the same Contractor and a number of the same Consultants/Subcontractors. Peterborough was a 95,000m2 major Acute Hospital including a dedicated Women's & Children's Unit, Cancer Unit including Radiotherapy outpatients and inpatients, Operating Theatres, Critical Care, A&E, Radiology, Pharmacy and Outpatients. In addition, there was a separate dedicated Energy Centre on site, with a below ground basement tunnel used for FM service links.

**1.8** My responsibilities as Project Lead for the Nightingale/IBI team included setting-up the team structure and resourcing strategy, and working closely with the Project Director, Neil Murphy, to agree a Project Delivery Strategy which included bringing together Senior Architects/ Designers from across our UK offices in Harwell, Cardiff and Rochdale, to effectively provide a 'whole practice' approach, broadening the expertise beyond the London team, which was the Lead Office. This network of Senior Architects was collectively responsible for the clinical design of the departments, and attended the relevant User Group Meetings acting as the Department Design Leads. I was the Lead Co-ordinator for the Multiplex Design Team during the early stages of the project, and worked closely with the NHS project team to develop the User Group Meeting Programmes, Meeting Timetables, and developed a number of Design Processes and Protocol documents to assist with management of the project. I also shared responsibility during this time with the Nightingale/IBI Project Director for leading the Design Team Meetings and reporting the design progress to the NSGH Hospital Design Group. During the design stages each respective member of our team would stay in Glasgow to attend their meetings, generally over a couple of sequential days, and then return to their home office to progress their design work. When work progressed on site, we adjusted our team structure and our site-based Lead Architect, Liane Edwards, began to take on more leadership

responsibilities, with continuous support from the wider team, who would continue to split their time between Glasgow and their home offices.

## 2. PROJECT BID STAGE

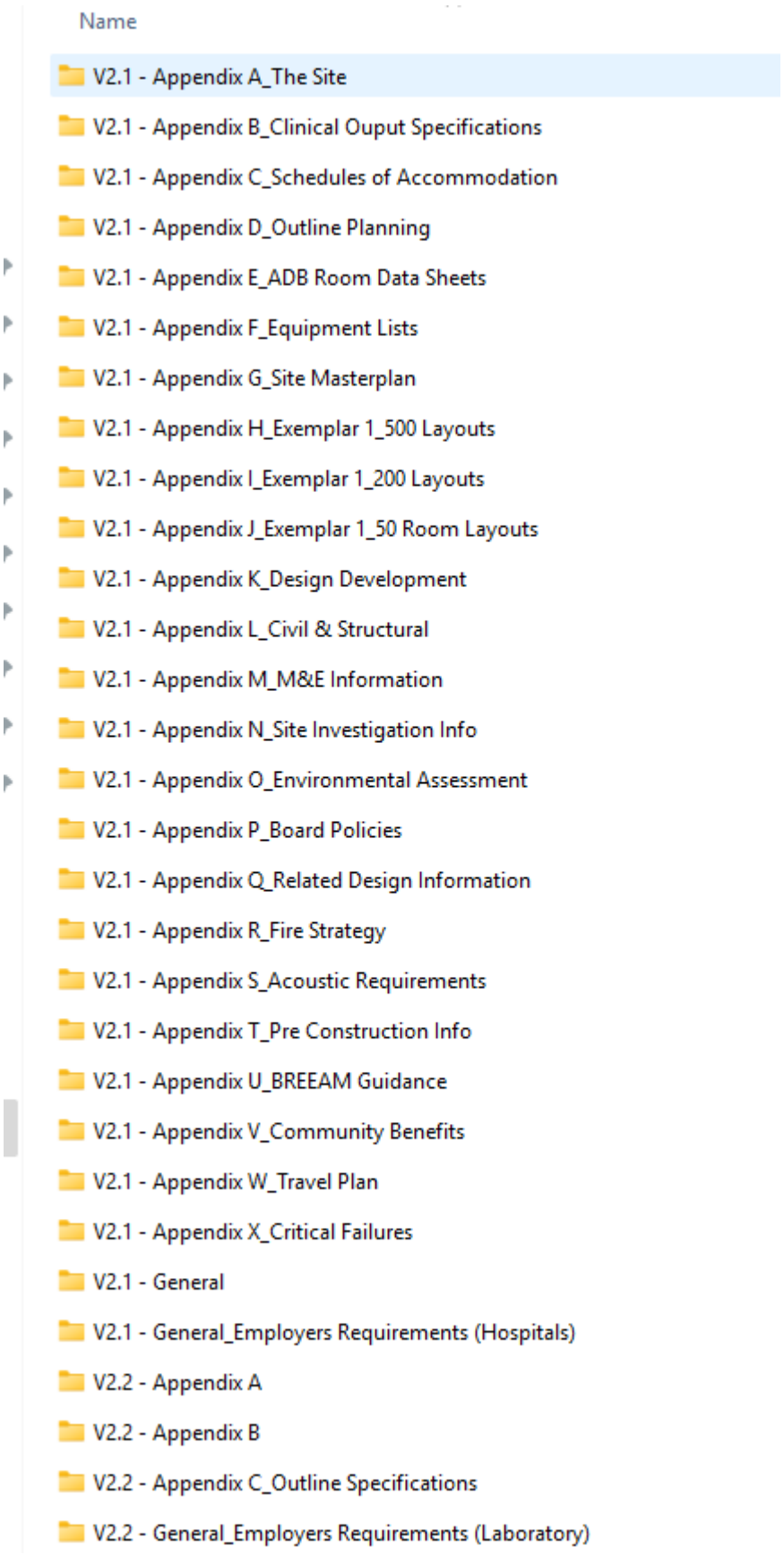
**2.1** Following the Official Journal of the European Union (OJEU) Notice, and release of the Pre-Qualification Questionnaire (PQQ) in March 2009; Brookfield Europe (Multiplex) formed a Design Team, which included several consultants it had been working with since 2004 on the Peterborough City Hospital PFI project and were successfully shortlisted in April 2009. [refer to Section D Nightingales PQQ response which includes a summary of Nightingale's Healthcare Experience] (**A52701483 – NSGH - Pre-Qualification Questionnaire - Section D – Information on Advisers – Undated – Bundle 43, Volume 4, Page 1132).**

**2.2** The Multiplex Design Team from Peterborough included Nightingale, Architecture/Lead Consultant; Tribal Consulting, Healthcare Planning; Gillespies, Landscape Architecture; and ZBP, Mechanical, Electrical and Plumbing Engineering (MEP). In addition, Key Supply Chain Subcontractors for Cladding (Structal and Praters) and MEP (Mercury Engineering) were members of the Design Team.

**2.3** The Multiplex led team were successfully shortlisted in April 2009 as one of three bidders, and following the Bidders Open Day and Site Visit on or around 12 May 2009 the Invitation to Participate in Dialogue (ITPD) Tender Documents were released to the successful Contractor teams. [refer to 090512 Presentation to Bidders] (**A52701467 - HLM Architects - Introductory presentation to Bidders - Bundle 43, Volume 4, Page 1022**).

**2.4** The ITPD Documents included Volume One – Project Scope and Commercial Document; Volume Two, which consisted of a series of Appendices including the Exemplar Design, Clinical Output Specifications, Schedules of Accommodation (SoA), ADB Room Data Sheets and Employer's

Requirements documents.




Extract from the IBI Project Folder

And Volume Three, which contained the ITPD Bid Deliverables and Evaluation criteria.

**2.5 Exemplar Design**

**2.6** The Employer's Requirements note that an Exemplar Design was provided in order to '…provide an advanced level of briefing that will enable the Contractor's response at the end of the bid period to be more advanced in terms of understanding of the Board's and User's functional, clinical and quality requirements'.

The Exemplar Design included the following:

'a) 1:500 departmental relationship drawings for all levels of each building indicating functional relationships, entrances and main circulation routes (Appendix H);

- **A52701469 – NSGH – 1:500 Departmental Adjacencies Level-1 – 28 April 2009 – Bundle 43, Volume 4, Page 1122**
- **A52701482 – NSGH – 1:500 Departmental Adjacencies Level 00 – 28 April 2009 – Bundle 43, Volume 4, Page 1125**
- **A52701462 – NSGH – Departmental Adjacencies – Level 01 – 28 April 2009 – Bundle 43, Volume 4, Page 879** [including the location of Critical Care – QEUH and PICU - RHC]
- **A52701458 – NSGH – 1:500 Departmental Adjacencies – Level 02 – 28 April 2009 – Bundle 43, Volume 4, Page 831** [including the location of Ward 2A & 2B – RHC]
- **A52701463 – NSGH – 1:500 Departmental Adjacencies – Level 03 – 28 April 2009 – Bundle 43, Volume 4, Page 880**
- **A52701473 – NSGH – 1:500 Departmental Adjacencies Level 04 – 28 April 2009 – Bundle 43, Volume 4, Page 1124**

These Exemplar 1:500 departmental relationship drawings were to provide the bidders with the brief of where to locate each department in each hospital, including the critical departmental adjacencies. Only four of the departments in question; Critical Care – QEUH and PICU – RHC, Ward 2A & 2B – RHC were shown in these briefing drawings. The locations of Ward 4B – QEUH; Ward 4C – QEUH; Level 5 – QEUH were not specified in the Exemplar Design, therefore it was left to the Contractor to propose locations for the remaining departments.

b) 1:200 departmental drawings for 7 no. key departments in the Adult's Hospital and 4no. key departments in the Children's Hospital indicating room adjacencies, circulation layouts, corridor widths, entrances and links to other departments/facilities. (Appendix I);

- **A52701471 – NSGH – 1:200 Acute Assessment (Adults) Room Adjacencies – 30 April 2009 – Bundle 43, Volume 4, Page 1120**
- **A52701472 – NSGH – Acute Assessment (Adult) Flow Diagram – 29 May 2009 – Bundle 43, Volume 4, Page 1123**
- **A52701453 – NSGH – 1:200 Emergency Department (Adults) Room Adjacencies – 30 April 2009**
- **A52701481 – NSGH – 1:200 Emergency Department (Adults) Flow Diagram – 01 June 2009 – Bundle 43, Volume 4, Page 1129**
- **A52701474 – NSGH – 1:200 Radiology (Adults) Room Adjacencies – 01 June 2009 – Bundle 43, Volume 4, Page 1128**
- **A52701475 – NSGH – 1:200 Radiology Department (Adult) Flow Diagram – 01 June 2019 – Bundle 43, Volume 4, Page 1127**
- **A52701468 – NSGH – 1:200 Critical Care Facility (Adults) Room Adjacencies – 30 April 2009 – Bundle 43, Volume 4, Page 1119**
- **A52701476 – NSGH – 1:200 Critical Care Unit (Adults) Flow Diagram – 01 June 2009 – Bundle 43, Volume 4, Page 1126** [Note this was the Critical Care – QEUH Exemplar]
- **A52701466 – NSGH – 1:200 Radiology (Adults) Room Adjacencies – 30 April 2009 – Bundle 43, Volume 4, Page 1021**
- **A52701470 – NSGH – Operating Theatres (Adults) Room Adjacencies – 30 April 2009 – Bundle 43, Volume 4, Page 1121**
- **A52701454 – NSGH – Operating Theatres (Adults) Flow Diagram – 01 June 2009 – Bundle 43, Volume 4, Page 772**
- **A52701457 – NSGH – Outpatient (Adults) Clinic Adjacencies – 02 June 2009 – Bundle 43, Volume 4, Page 830**
- **A52701452 – NSGH 1:200 OPD level 2 (Adult) Flow Diagram – 01 June 2009 – Bundle 43, Volume 4, Page 770**
- **A52701450 – NSGH 1:200 Generic Ward Floor (Adults) Room Adjacencies – 30 April 2009 – Bundle 43, Volume 4, Page 769**
- **A52701455 – NSGH – 1:200 generic Ward (Adult) Flow Diagram – 01 June 2009 – Bundle 43, Volume 4, Page 773**

- **A52701478 – NSGH – 1:200 Emergency Department (Children) – 07 May 2009 – Bundle 43, Volume 4, Page 1131**
- **A52701477 – NSGH – 1:200 Observation Ward (Children's) – 07 May 2009 – Bundle 43, Volume 4, Page 1130**
- **A52701460 – NSGH – 1:200 Outpatient (Adults) Clinic Adjacencies – 02 June 2009 – Bundle 43, Volume 4, Page 877**
- **A52701461 – NSGH – 1:200 OPD Level 0 (Adult) Flow Diagram – 01 June 2009 – Bundle 43, Volume 4, Page 878**

These Exemplar 1:200 departmental drawings were to provide the bidders with the brief of how each department should be laid out in each hospital, including the critical room adjacencies, and functional room shapes. Only one of the departments in question was included in the briefing drawings. There were no 1:200 department designs specified in the Exemplar Design for Ward 4B – QEUH; Ward 4C – QEUH; Ward 2A & 2B – RHC; PICU – RHC; Level 5 – QEUH. Ward 4B – QEUH, Ward 4C – QEUH and Level 5 – QEUH would have been assumed to be accommodated within the Adult Generic Ward template. Therefore, it was left to the Contractor to propose 1:200 layouts for the remaining departments.

c) 1:50 Room Layout Drawings indicating clinical functionality, room size and shape and compliance with ergonomic data. (Appendix J); and

- **A52701465 – NSGACL- Generic ADB Room Layouts – undated – Bundle 43, Volume 4, Page 957**

These Exemplar 1:50 room layout drawings were to provide the bidders with the brief of how each key room should be laid out, including locations of equipment such as the bed, shelves, dispensers; sanitaryware equipment such as the sink and shower and services equipment such as the medical gas outlets, power and data sockets. The drawings provided were 'pure' exports out of ADB and did not reflect the rooms in the Exemplar Design. Therefore, it was left to the Contractor to propose 1:50 room layouts.

d) ADB Room Data Sheets (Appendix E).'

- NSGACL-Generic ADB Room Data Sheets_iss2_rev1.pdf **(A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 5, Page 961)**

The Exemplar Design included ADB Room Data Sheets for a number of key rooms. Generic Single Bedrooms for both the Adult and Children's Hospitals, Isolation Single Bedrooms for Adult Critical Care, and Children's, and Gowning Lobby (Isolation). These can be referenced to demonstrate the level of environmental detail brief provided within the Exemplar ADB sheets. These also provided briefing information of the types of ceilings required, by reference to the HTM 60 ceiling types.

Single Bedroom for the Adult Hospital

- GEN-SGH - Generic Rooms - B0303 - Single bedroom: Adult acute with clinical support. Relative overnight stay. I refer to Page 2 NSGACL-Generic ADB Room Data Sheets_iss2_rev1 **(A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 5, Page 961)**. It can be noted that the Exemplar ADB sheet contains no information on the ventilation brief.

| ADB | Room Environmental Data | B0303 |
|---|---|---|

| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | B0303 | Single bedroom: Adult acute With clinical support. Relative overnight stay |
| **Room Number:** | | **Revision Date:** 07/04/2009 |

| AIR | Requirements | Notes |
|---|---|---|
| **Winter Temperature (DegC):** | 21 | |
| **Summer Temperature (DegC):** | | |
| **Mechanical Ventilation (Supply ac/hr):** | | |
| **Mechanical Ventilation (Extract ac/hr):** | | |
| **Pressure Relative to Adjoining Space:** | | |
| **Filtration (%DSE and % Arrestance):** | / | |
| **Humidity (%RH):** | | |

Page 2 **(A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 5, Page 962** And that the ceiling type is a **HTM 60 type 5**.

| ADB | Room Design Character | B0303 |
|---|---|---|

| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | B0303 | Single bedroom: Adult acute With clinical support. Relative overnight stay |
| **Room Number:** | | **Revision Date:** 07/04/2009 |

| | |
|---|---|
| **Walls:** | Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations |
| **Floor:** | Surface Finish (HTM 61): 3 i.e. Hard, impervious, jointless, smooth Cleaning Routine (HTM 61): To manufacturers recommendations |
| **Ceiling:** | Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations |
| **Doorsets:** | (HTM 58) Two sets of doors: 1x 1500mm, one & a half leaf, half glazed, obscurable; bed access. 1x2300mm, single leaf hinged with leaf and a half sliding/folding door, plain flush; wheelchair & ceiling hoist access, occupancy indicator, lockable, outside release. |
| **Windows:** | (HTM 55) Clear, solar control, privacy control |
| **Internal Glazing:** | (HTM 57) Clear with privacy control |

Page 3 **(A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 5, Page 963**

With reference to the tables contained in **HTM 60 Ceilings**, I note on page 7 Table 1, which provides the 'Physical and performance characteristics', that a Type 5 ceiling requires to be imperforate (i.e. no holes/perforations in the ceiling membrane), with normal humidity and Class 1 spread of flame.

TABLE 1

| Physical and performance characteristics | Categories of ceiling performance | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Soffit: | | | | | | |
| smooth | • | • | • | o | o | o |
| textured | | | | o | o | o |
| imperforate | • | • | • | o | • | o |
| perforated | | | | o | | o |
| jointless | • | o | o | o | o | o |
| jointed | | o | o | o | o | o |
| Humidity: | | | | | | |
| normal | • | | • | • | • | • |
| high | | • | | | | |
| Spread of flame: | | | | | | |
| Class 1 | • | • | • | | • | • |
| Class 0 | | | | • | | |

• – indicates essential requirement o – indicates options

On page 9 Table 2 the ceiling membrane options are provided, including both jointed and jointless options. A Type 5 ceiling has multiple options; however, we traditionally use a jointed membrane with either concealed or exposed grid.

TABLE 2

| Joint pattern and suspension grid | Membrane | | | Category | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Material | Finish | Soffit | 1 | 2 | 3 | 4 | 5 | 6 |
| Jointless membrane concealed grid | plasterboard | site decoration | smooth/imperforate after joints filled | § | o | o | o | o | o |
| Jointed membrane concealed grid | reinforced plaster | site decoration | smooth/imperforate | | | o | o | o | o |
| | | | smooth/perforated | | | | o | | o |
| | metal | factory finish, stove enamel etc | smooth/imperforate | | | o | o | o | o |
| | | | smooth/perforated | | | | o | | o |
| | calcium silicate | site decoration or factory finish | smooth/imperforate | | o | o | o | o | o |
| | | | smooth/perforated | | | | o | | o |
| | mineral fibre including compressed gas fibre | factory finish, emulsion-type paint | textured/imperforate or perforated | | | | o | | o |
| | | factory finish acrylic paint | textured/imperforate | | o | o | o | o | o |
| | perlite | self-finish | smooth/imperforate | | o | o | o | o | o |
| | | | textured/imperforate | | | | o | o | o |
| | vermiculite | self-finish | textured/imperforate | | | | o | o | o |
| | wood composite | site decoration | textured/imperforate or perforated | | | | o | | o |
| Jointed membrane exposed grid | plasterboard | factory finish plastic coating | smooth/imperforate | | | o | o | o | o |
| | calcium silicate | site decoration or factory finish | smooth/imperforate | | o | o | o | o | o |
| | | | smooth/perforated | | | | o | | o |
| | | factory finish, spatter paint | textured/imperforate | | | | o | o | o |
| | | | textured/perforated | | | | o | | o |
| | mineral fibre including compressed gas fibre | factory finish, emulsion-type paint | textured/imperforate or perforated | | | | o | | o |
| | wood composite | site decoration | textured/imperforate or perforated | | | | o | | o |
| Jointless traditional ceiling | plasterboard and/or plaster | site decoration | smooth/imperforate | § | o | o | o | o | o |

§ – requirement o – acceptable

<u>Single Bedroom (Critical Care) for the Adult Hospital</u>

- GEN-SGH - Generic Rooms - B0303A - Single bedroom: Critical Care With clinical support. Relative overnight stay. I refer to Page 7 NSGACL-Generic ADB Room Data Sheets_iss2_rev1 **(A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 5, Page 961)**. It can be noted that the Exemplar ADB sheet contains no information on the ventilation brief.

| ADB | Room Environmental Data | B0303A |
|---|---|---|

| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | B0303A | Single bedroom: Critical Care With clinical support. Relative overnight stay |
| **Room Number:** | | **Revision Date:** 07/04/2009 |

| AIR | Requirements | Notes |
|---|---|---|
| **Winter Temperature (DegC):** | 21 | |
| **Summer Temperature (DegC):** | | |
| **Mechanical Ventilation (Supply ac/hr):** | | |
| **Mechanical Ventilation (Extract ac/hr):** | | |
| **Pressure Relative to Adjoining Space:** | | |
| **Filtration (%DSE and % Arrestance):** | / | |
| **Humidity (%RH):** | | |

Page 7 **A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 5, Page 961**

And that the ceiling type is a **HTM 60 type 5**.

| ADB | Room Design Character | B0303A |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | B0303A | Single bedroom: Critical Care With clinical support. Relative overnight stay |
| **Room Number:** | | **Revision Date:** 07/04/2009 |
| **Walls:** | Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations | |
| **Floor:** | Surface Finish (HTM 61): 3 i.e. Hard, impervious, jointless, smooth Cleaning Routine (HTM 61): To manufacturers recommendations | |
| **Ceiling:** | Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations | |
| **Doorsets:** | (HTM 58) Two sets of doors: 1x 1500mm, one & a half leaf, half glazed, obscurable; bed access. 1x2300mm, single leaf hinged with leaf and a half sliding/folding door, plain flush; wheelchair & ceiling hoist access, occupancy indicator, lockable, outside release. | |
| **Windows:** | (HTM 55) Clear, solar control, privacy control | |
| **Internal Glazing:** | (HTM 57) Clear with privacy control | |
| **Hatch:** | | |
| **Notes:** | | |

Page 8 **A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 5, Page 961**

<u>Single Isolation Bedroom (Critical Care) for the Adult Hospital</u>

GEN-SGH – Generic Rooms – B1602 – Isolation single bedroom: Critical care. I refer to Page 17 NSGACL-Generic ADB Room Data Sheets_iss2_rev1 **(A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay - Bundle 43, Volume 5, Page 961).** It can be noted that the Exemplar ADB sheet contains the following information on the ventilation brief.

'Mechanical Ventilation (Supply ac/hr): 6.0 air changes/per hour.

Mechanical Ventilation (Extract ac/hr): 6.0 air changes/per hour.

Pressure Relative to Adjoining Space: BAL.

Mechanical ventilation (supply): To provide source or protective isolation. Mechanical ventilation (extract): To provide source or protective isolation.

Final filtration: EU10/11 to suit clinical requirements.'

| ADB | Room Environmental Data | B1602 |
|---|---|---|

| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | B1602 | Isolation single bedroom: Critical care |
| **Room Number:** | | **Revision Date:** 07/04/2009 |

| AIR | Requirements | Notes |
|---|---|---|
| **Winter Temperature (DegC):** | 27 | Summer and winter (local control) temperature control: 16 to 27 deg.C |
| **Summer Temperature (DegC):** | 16 | |
| **Mechanical Ventilation (Supply ac/hr):** | 6.0 | Mechanical ventilation (supply): To provide source or protective isolation. Mechanical ventilation (extract): To provide source or protective isolation. |
| **Mechanical Ventilation (Extract ac/hr):** | 6.0 | |
| **Pressure Relative to Adjoining Space:** | BAL | Final filtration: EU10/11 to suit clinical requirements. Humidity: 40-60 |
| **Filtration (%DSE and % Arrestance):** | / | |
| **Humidity (%RH):** | 60 | |

Page 17 **A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 5, Page 961**

I refer to Page 18 NSGACL-Generic ADB Room Data Sheets_iss2_rev1 **(A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay - Bundle 43, Volume 5, Page 961)** which notes that the ceiling type is a **HTM 60 type 1**. With reference to HTM60 table 1 and table 2 a Type 1 ceiling can only be provided with a jointless plasterboard membrane, with either a concealed grid or traditional ceiling. In practice traditional ceilings are not often adopted as modern hospitals are designed with services in a ceiling void above the rooms.

| ADB | Room Design Character | B1602 |
|---|---|---|

| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | B1602 | Isolation single bedroom: Critical care |
| **Room Number:** | | **Revision Date:** 07/04/2009 |

| | |
|---|---|
| **Walls:** | 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 |
| **Floor:** | Surface Finish (HTM 61): 3: Hard, impervious, jointless, smooth Cleaning Routine (HTM 61): To manufacturers recommendations |
| **Ceiling:** | 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 |
| **Doorsets:** | (HTM 58) Two sets of doors: 1x 1500mm, one & a half leaf, vision panel, obscurable; bed access. 1x 900mm, single leaf, vision panel, obscurable; person access |
| **Windows:** | (HTM 55) Clear, solar control, privacy control |
| **Internal Glazing:** | (HTM 57) Clear with privacy control |
| **Hatch:** | |
| **Notes:** | |

Page 18 **A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 5, Page 961**

Single Bedroom for the Children's Hospital

GEN-SGH - Generic Rooms - B1802 - Single bedroom: Children/young people, with relatives overnight stay. It can be noted that the Exemplar ADB sheet, Page 22 NSGACL-Generic ADB Room Data Sheets_iss2_rev1 **(A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay - Bundle 43, Volume 5, Page 961)**, suggests the following ventilation brief.

'mechanical ventilation (supply): refer to HBN text.

mechanical ventilation (extract): Inpatient barrier nursing. Refer to HBN text.'

It is also noted that negative pressure between the WC and bedroom.

| ADB | Room Environmental Data | B1802 |
|---|---|---|

| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | B1802 | Single bedroom: Children/young people, with relatives overnight stay |
| **Room Number:** | | **Revision Date:** 23/04/2009 |

| AIR | Requirements | Notes |
|---|---|---|
| **Winter Temperature (DegC):** | 21 | Winter temperature (degC): up to 24, independent control |
| **Summer Temperature (DegC):** | 23 | |
| **Mechanical Ventilation (Supply ac/hr):** | | Mechanical ventilation (supply): Refer to HBN text. Mechanical ventilation (extract): In-patient barrier nursing. Refer to HBN text. |
| **Mechanical Ventilation (Extract ac/hr):** | | |
| **Pressure Relative to Adjoining Space:** | | |
| **Filtration (%DSE and % Arrestance):** | / | |
| **Humidity (%RH):** | | |
| **General Notes:** | | Pressure relative: WC NEG to bedroom. |

Page 22 **A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 5, Page 961**

And that the ceiling type is a **HTM 60 type 5**.

| ADB | Room Design Character | B1802 |
|---|---|---|

| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | B1802 | Single bedroom: Children/young people, with relatives overnight stay |
| **Room Number:** | | **Revision Date:** 23/04/2009 |

| | |
|---|---|
| **Walls:** | Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations |
| **Floor:** | Surface Finish (HTM 61): 3 i.e. Hard, impervious, jointless, smooth Cleaning Routine (HTM 61): To manufacturers recommendations |
| **Ceiling:** | Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations |
| **Doorsets:** | (HTM 58) Two sets of doors: 1x 1500mm, one & a half leaf, half glazed, obscurable; bed access. 1x2300mm, single leaf hinged with leaf and a half sliding/folding door, plain flush; wheelchair & ceiling hoist access, occupancy indicator, lockable, outside release. |
| **Windows:** | (HTM 55) Clear, solar control, privacy control. Window opening restrictors max 100mm at bottom |
| **Internal Glazing:** | (HTM 57) Blinds for glazed screens |
| **Hatch:** | |
| **Notes:** | |

Page 23 **A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 5, Page 961**

Single Isolation Bedroom for the Children's Hospital

GEN-SGH - Generic Rooms - B1805 - Isolation single bedroom: Children/young people, with relatives overnight stay. It can be noted that the Exemplar ADB sheet, Page 27 NSGACL-Generic ADB Room Data Sheets_iss2_rev1 **(A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay - Bundle 43, Volume 5, Page 961**) contains the following information on the ventilation brief, including reference to 'HBN text', and negative pressure between the WC and bedroom.

'mechanical ventilation (supply): refer to HBN text.

mechanical ventilation (extract): Inpatient barrier nursing. Refer to HBN text.

Filtration: BS6540 Humidity: 65-42 summer, 68-38 winter

Pressure Relative: WC NEG to bedroom.'

| ADB | Room Environmental Data | B1805 |
|---|---|---|

| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | B1805 | Isolation single bedroom: Children/young people, with relatives overnight stay |
| **Room Number:** | | **Revision Date:** 23/04/2009 |

| AIR | Requirements | Notes |
|---|---|---|
| **Winter Temperature (DegC):** | 21 | Winter temperature (degC): up to 24. independent control |
| **Summer Temperature (DegC):** | 23 | |
| **Mechanical Ventilation (Supply ac/hr):** | | Mechanical ventilation (supply): Refer to HBN text. Mechanical ventilation (extract): In-patient barrier nursing. Refer to HBN text. |
| **Mechanical Ventilation (Extract ac/hr):** | | |
| **Pressure Relative to Adjoining Space:** | BAL | Filtration: BS6540 Humidity: 65-42 summer, 68-38 winter |
| **Filtration (%DSE and % Arrestance):** | 85/ | |
| **Humidity (%RH):** | | |
| **General Notes:** | | Pressure relative: WC NEG to bedroom. |

Page 27 **A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 5, Page 961**

And that the ceiling type is a **HTM 60 type 5**.

| ADB | Room Design Character | B1805 |
|---|---|---|

| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | B1805 | Isolation single bedroom: Children/young people, with relatives overnight stay |
| **Room Number:** | | **Revision Date:** 23/04/2009 |

| | |
|---|---|
| **Walls:** | Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations |
| **Floor:** | Surface Finish (HTM 61): 3 i.e. Hard, impervious, jointless, smooth Cleaning Routine (HTM 61): To manufacturers recommendations |
| **Ceiling:** | Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations |
| **Doorsets:** | (HTM 58) Two sets of doors: 1x 1500mm, one & a half leaf, vision panel, obscurable, lockable; bed access. 1x 1000mm, single leaf, plain flush, occupancy indicator, lockable, outside emergency release; wheelchair access. Door hinge protectors |
| **Windows:** | (HTM 55) Clear, solar control, privacy control. Window opening restrictors max 100mm at bottom, lockable, low sill |
| **Internal Glazing:** | (HTM 57) Observation window. Blinds, controlled by both sides |
| **Hatch:** | |
| **Notes:** | |

Page 28 **A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 5, Page 961**

<u>Single Bedroom for the Children's Hospital</u>

GEN-SGH - Generic Rooms - B1811 - Single bedroom: Children/young people day care. I refer to Page 32 NSGACL-Generic ADB Room Data Sheets_iss2_rev1 **(A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay - Bundle 43, Volume 5, Page 961**). It can be noted that the Exemplar ADB sheet contains no information on the ventilation brief.

| ADB | Room Environmental Data | B1811 |
|---|---|---|

| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | B1811 | Single bedroom: Children/young people day care |
| **Room Number:** | | **Revision Date:** 06/08/2007 |

| AIR | Requirements | Notes |
|---|---|---|
| **Winter Temperature (DegC):** | 21 | Winter Temperature (degC): up to 24, independent control |
| **Summer Temperature (DegC):** | 23 | |
| **Mechanical Ventilation (Supply ac/hr):** | | |
| **Mechanical Ventilation (Extract ac/hr):** | | |
| **Pressure Relative to Adjoining Space:** | | |
| **Filtration (%DSE and % Arrestance):** | / | |
| **Humidity (%RH):** | | |

Page 32 **A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 5, Page 961**

And that the ceiling type is a **HTM 60 type 5**, refer to Page 33 NSGACL-Generic ADB Room Data Sheets_iss2_rev1 **(A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay - Bundle 43, Volume 5, Page 961**).

| ADB | Room Design Character | B1811 |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | B1811 | Single bedroom: Children/young people day care |
| **Room Number:** | | **Revision Date:** 06/08/2007 |
| **Walls:** | Surface Finish (HTM 56): 5 Moisture Resistance (HTM 56): N i.e. Normal humidity. Cleaning Routine (HTM 56): To manufacturers recommendations | |
| **Floor:** | Surface Finish (HTM 61): 3 i.e. Hard, impervious, jointless, smooth Cleaning Routine (HTM 61): To manufacturers recommendations | |
| **Ceiling:** | Surface Finish (HTM 60): 5 i.e. Imperforate Moisture Resistance (HTM 60): N i.e. Normal Humidity Cleaning Routine (HTM 60): To manufacturers recommendations | |
| **Doorsets:** | (HTM 58 ) Two sets of doors: 1x 1500mm, one & a half leaf, half glazed, obscurable, lockable; bed access. 1x 1000mm, single leaf, plain flush, occupancy indicator, lockable, outside emergency release; wheelchair access. Door hinge protectors. | |
| **Windows:** | (HTM 55) Clear, solar control, privacy control. Window opening restrictors max 100mm, low level sill (a maximum of 600mm) | |
| **Internal Glazing:** | (HTM 57) Blinds for glazed screens | |
| **Hatch:** | | |
| **Notes:** | | |

Page 33 **A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 5, Page 961**

<u>Gowning Lobby</u>

GEN-SGH - Generic Rooms - G0507 - Lobby: gowning (isolation room) Entrance lobby for barrier nursing. It can be noted on Page 22 NSGACL-Generic ADB Room Data Sheets_iss2_rev1 **(A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay - Bundle 43, Volume 5, Page 961**) that the Exemplar ADB sheet notes state ‘Source and protective isolation. For ventilated lobby details see HBN Isolation facilities in acute settings’, and on page 159 that the lobby should have a ‘positive’ pressure relative to the adjoining space.

| ADB | Room Data Sheet | G0507 |
|---|---|---|

| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | G0507 | Lobby: gowning (isolation room) Entrance lobby for barrier nursing |
| **Room Number:** | | **Revision Date:** 07/04/2009 |

| | | | | |
|---|---|---|---|---|
| **Activities:** | 1) Clinical hand washing.<br>2) Dispensing disposable aprons.<br>3) Dispensing disposable gloves.<br>4) Disposal of clinical waste.<br>5) Disposal of non-clinical items. | | | |
| **Personnel:** | 2 x Persons | | | |
| **Planning Relationships:** | Direct access to single bedroom. | | | |
| **Space Data:** | **Area (m²):** | 6.00 | **Height (mm):** | 2,700 |
| **Notes:** | Source and protective isolation. For ventilated lobby details see HBN Isolation facilities in acute settings. The use of personal protective equipment (PPE) will be determined by local infection control policy. | | | |

Page 158 **A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 5, Page 961**

| ADB | Room Environmental Data | G0507 |
|---|---|---|

| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | G0507 | Lobby: gowning (isolation room) Entrance lobby for barrier nursing |
| **Room Number:** | | **Revision Date:** 07/04/2009 |

| AIR | Requirements | Notes |
|---|---|---|
| **Winter Temperature (DegC):** | 20 | |
| **Summer Temperature (DegC):** | | |
| **Mechanical Ventilation (Supply ac/hr):** | | |
| **Mechanical Ventilation (Extract ac/hr):** | | |
| **Pressure Relative to Adjoining Space:** | POS | |
| **Filtration (%DSE and % Arrestance):** | / | |
| **Humidity (%RH):** | | |

Page 159 **A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 5, Page 961**

And that the ceiling type is noted as **HTM 60 type 3**. With reference to HTM60 table 1 and table 2 a Type 3 ceiling has multiple options; however, we traditionally use either a jointless plasterboard membrane with concealed grid or a jointed membrane with a concealed grid.

| ADB | Room Design Character | G0507 |
|---|---|---|

| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | G0507 | Lobby: gowning (isolation room) Entrance lobby for barrier nursing |
| **Room Number:** | | **Revision Date:** 07/04/2009 |

| | |
|---|---|
| **Walls:** | 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 |
| **Floor:** | Surface Finish (HTM 61): 3: Hard, impervious, jointless, smooth Cleaning Routine (HTM 61): To manufacturers recommendations |
| **Ceiling:** | Surface Finish (HTM 60): 3:Smooth, imperforate Moisture Resistance (HTM 60): N:Normal humidity. Cleaning Routine (HTM 60): To manufacturers recommendations Ceiling to be sealed and solid. |
| **Doorsets:** | (HTM 58) Two sets of doors: each- 1500mm, one and half leaf, plain flush |
| **Windows:** | (HTM 55) N/A |
| **Internal Glazing:** | (HTM 57) Clear with privacy control |

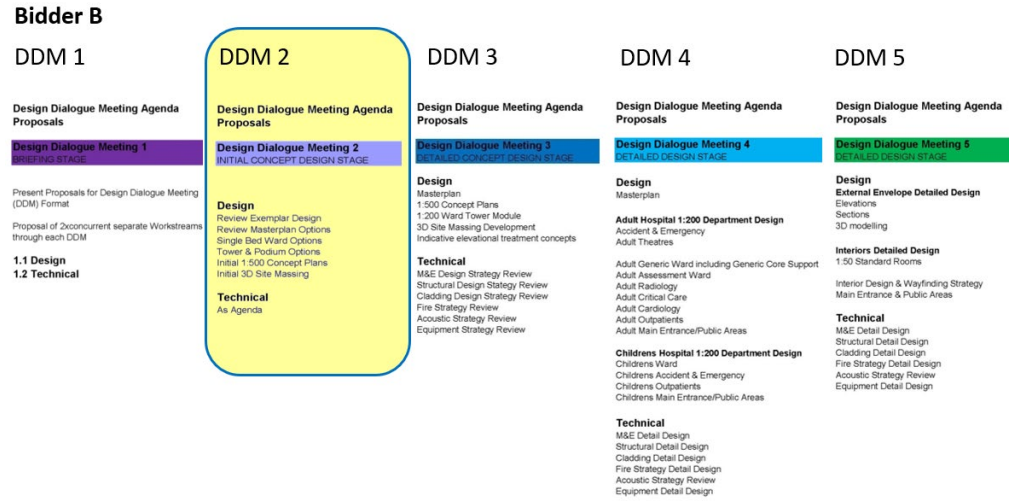
Page 160 **A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 5, Page 961**

## 2.7 Competitive Dialogue Meetings

The three shortlisted Bidders were invited to attend originally 5 Design Dialogue Meetings (DDM). These ran from April 2009 until July/August 2009. The NA-IBI strategy was to provide a clear Meeting Framework Structure from the outset, demonstrating a 'Road Map' of the accelerated design process and what would be presented during the client dialogue meetings. The structure was also built around the Bid Programme, to initially review the Exemplar Design; to assess and test the Board's appetite for alternative design approaches by producing a number of different options, which included breaking the single dominant adult ward tower into two lower blocks. It was clear that the NHS Board were keen to maintain the Exemplar Design main principles, which was essentially a single ward tower and podium for the Adult Hospital, and a separate but linked Children's Hospital. Therefore, we focused on refining and improving the Exemplar Design, initially focusing on the repeatable Adult Ward Tower, including reviewing the single bedroom/ensuite options through a series of pros and cons diagrams.

**Exemplar Design Review Summary**

NA-IBI and the Multiplex Design Team completed a full review of the exemplar design and discussed the site masterplan, building design, building massing and clinical issues and improvements which could be made during the Design Dialogue Meetings (DDM). The initial site, architectural and clinical review of the exemplar design was presented during design dialogue meeting 2 (DDM2). Refer to page 2 - DDM_02_NA_Presentation_200509 for the Proposed Meeting Framework Structure (**A52701456 – Bidder B New South Glasgow Hospitals Design Dialogue Meeting 2 – undated – Bundle 43, Volume 4, Page 775**)




Proposed Meeting Framework Structure (**A52701456 – Bidder B New South Glasgow Hospitals Design Dialogue Meeting 2 – undated – Bundle 43, Volume 4, Page 775**)

Adult Ward Tower Review

The single bedroom with the Healthcare Building Note (HBN) option for an outboard ensuite created a dominant aesthetic on the ward tower, adding additional surface area and cost to the façade, impacting the quality of daylight and views for the patient rooms, as well as presenting potential future access and maintenance issues. In addition, the orientation of the splayed ward wings created patient privacy issues with overlooking between two of the 4 wings.

Adult Critical Care Review

Both the Acute Assessment Unit and Critical Care departments were split with a clinical link corridor, which was not ideal for the flexibility for either department and impacted the clinical functionality by separating nursing staff and patients.

Children's Hospital Review

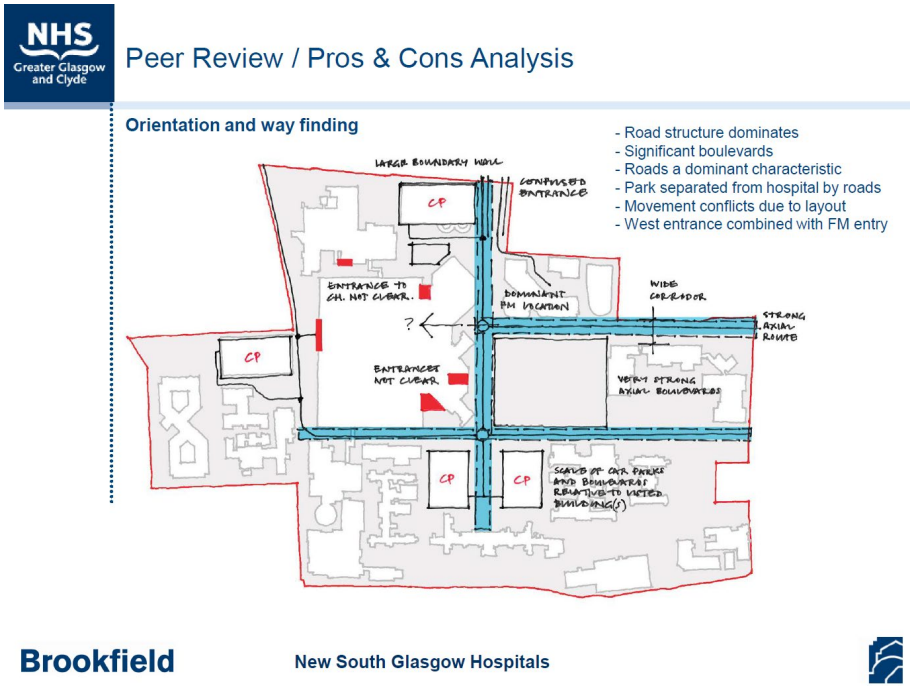
The exemplar design did not provide a clear and separate identity for the Children's Hospital, which was a requirement of the brief. In addition, the Children's Outpatient Departments (OPD) were split over multiple floors, which reduced the future flexibility of OPD. Other shared whole hospital departments, such as the Aseptic Suite, had migrated to the Children's

Hospital 'side', separating the Children's Day case unit from the Schiehallion Unit, i.e. Wards 2A & 2B – RHC. The Aseptic Suite is also a department that benefits from being internal due to the specialist ventilation and controlled environmental conditions required for the manufacturing processes.

It was clinically desirable to have 3 repeating generic wards for the level 3 children's inpatient wards, which was not achieved in the exemplar design, with one ward separated by a hospital street.

Public Realm Review

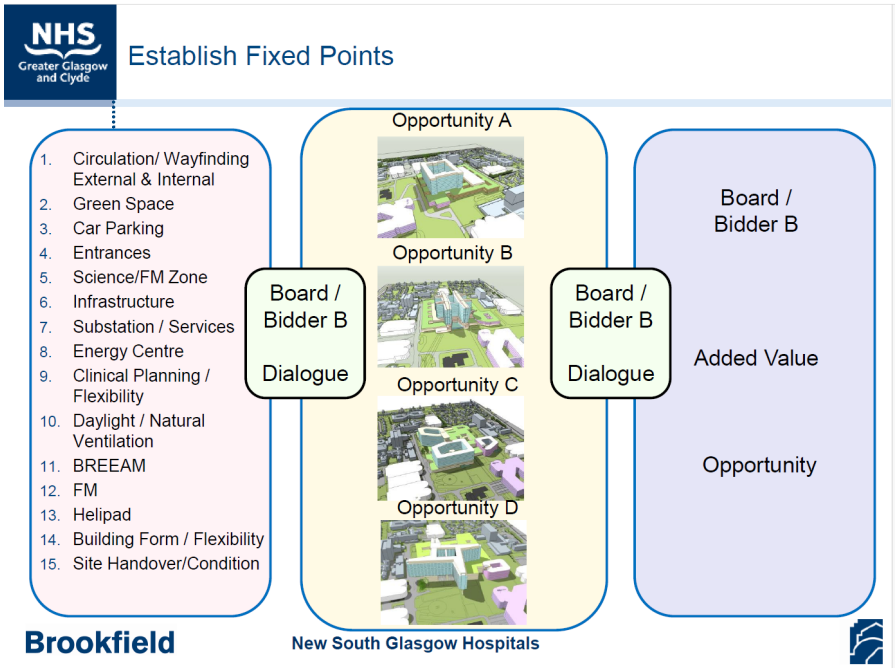
The exemplar design contained one long linear Atrium mall, connecting the Adult and Children's Hospitals. This was set-back and disassociated from the main public realm and drop-off area and resulted in a slightly confusing 3 main public entrances. Refer to Page 10 - DDM_02_NA_Presentation_200509 (**A52701456 – Bidder B New South Glasgow Hospitals Design Dialogue Meeting 2 – undated – Bundle 43, Volume 4, Page 783)** for an example diagram of the Public Realm Review.




DDM 02 Presentation **A52701456 – Bidder B New South Glasgow Hospitals Design Dialogue Meeting 2 – undated – Bundle 43, Volume 4, Page 783**

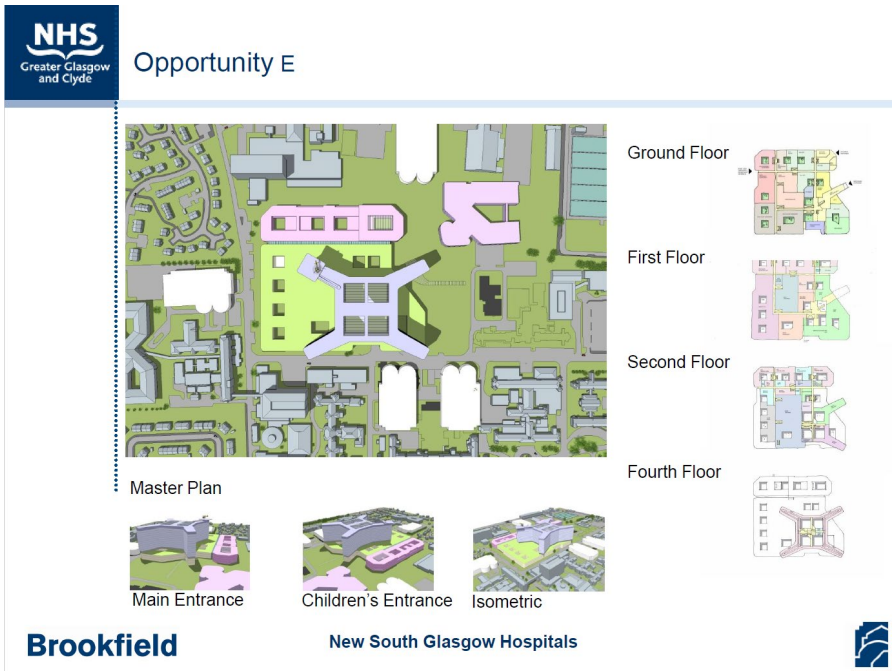
The improvements, or 'changes' proposed were identified as design opportunities which were presented through our structured approach to the

Competitive Dialogue process. The second DDM presentation (refer to page 6 DDM_02_NA_Presentation_200509) (**A52701456 – Bidder B New South Glasgow Hospitals Design Dialogue Meeting 2 – undated – Bundle 43, Volume 4, Page 779**) also captures the essence of the opportunities identified and developed during the design dialogue meetings.




DDM 02 Presentation – Review Design Opportunities **A52701456 – Bidder B New South Glasgow Hospitals Design Dialogue Meeting 2 – undated – Bundle 43, Volume 4, Page 779**

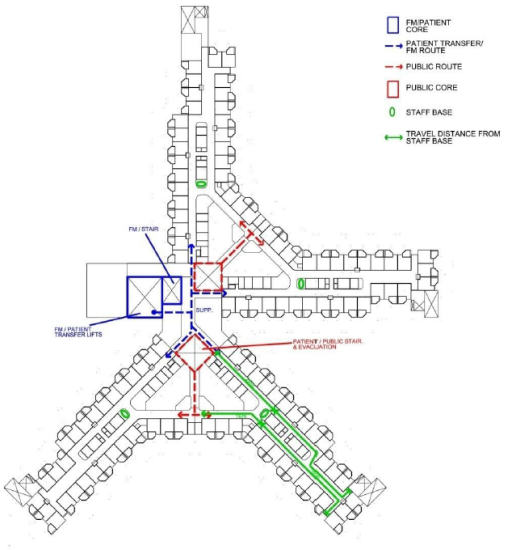
Elements of the design approach in Opportunity C, with its lower scale sensitivity and identity for the children's hospital, and Opportunity D, with the repeating adult ward tower wings were positively received during DDM 02; following this feedback further design options were developed to combine them into a more refined design Opportunity E, which can be seen in the diagram on page 65 DDM_03_NA_Presentation_100609 – Opportunity E (**A52701464 – Bidder B New South Glasgow Hospitals Design Dialogue Meeting 3 – undated – Bundle 43, Volume 4, Page 945).**




DDM 03 Presentation – Opportunity E (**A52701464 – Bidder B New South Glasgow Hospitals Design Dialogue Meeting 3 – undated – Bundle 43, Volume 4, Page 945).**

Adult Ward Tower Design Development

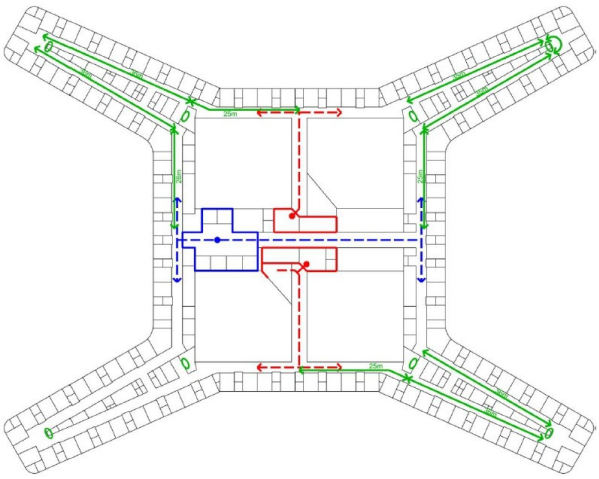
Opportunity E rotated and simplified the Exemplar ward tower wings, initially maintaining a similar circulation/core strategy. The Exemplar Ward Tower circulation analysis can be seen in Page 68 DDM_03_NA_Presentation_100609 (**A52701464 – Bidder B New South Glasgow Hospitals Design Dialogue Meeting 3 – undated – Bundle 43, Volume 4, Page 948**).




Exemplar Design

DDM 03 Presentation – Exemplar Ward Tower (**A52701464 – Bidder B New South Glasgow Hospitals Design Dialogue Meeting 3 – undated – Bundle 43, Volume 4, Page 948**)

The Opportunity E proposed design, which can be seen on page 69 of DDM_03_NA_Presentation_100609 (**A52701464 – Bidder B New South Glasgow Hospitals Design Dialogue Meeting 3 – undated – Bundle 43, Volume 4, Page 949**), provided four identical ward wings, with the ability to flex the bedrooms across each 28 bedded ward unit, which could assist in nursing different numbers of bedroom clusters, e.g. increase to 32 beds, or decrease to 24 beds. The feedback was positive on this design approach for the Adult Wards, but the Children's Ward design presented was seen as conservative in comparison, and we were challenged to provide a ward with a similar flexible design approach.

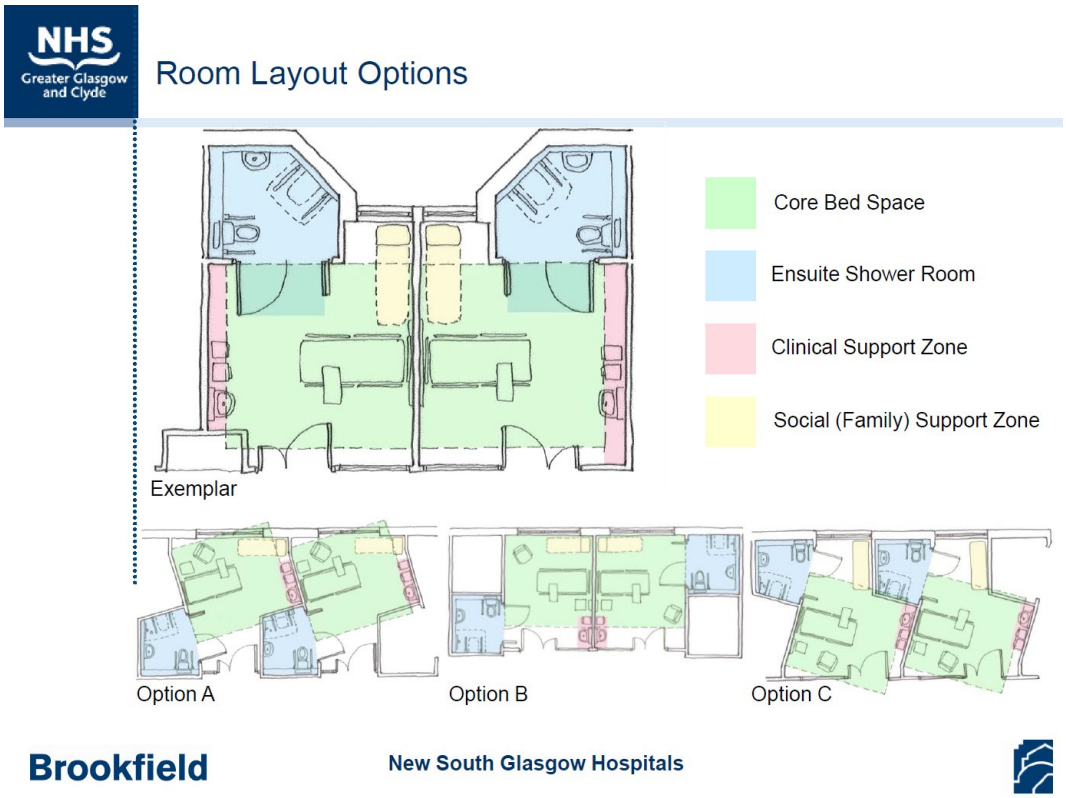


Opportunity 'E'

DDM 03 Presentation – Opportunity 'E' Ward Tower (**A52701464 – Bidder B New South Glasgow Hospitals Design Dialogue Meeting 3 – undated – Bundle 43, Volume 4, Page 949**)

The single bedroom exemplar design with an outboard ensuite was agreed to be changed to the Option B room layout with interstitial ensuites, providing more regular-shaped rooms, with improved daylighting and views. The outboard ensuite in the Exemplar design impacted the quality of daylight and views for the patient rooms; creating more irregular shaped rooms that 'stuck out' of the façade. The Single Room Layout Room Options can be seen on

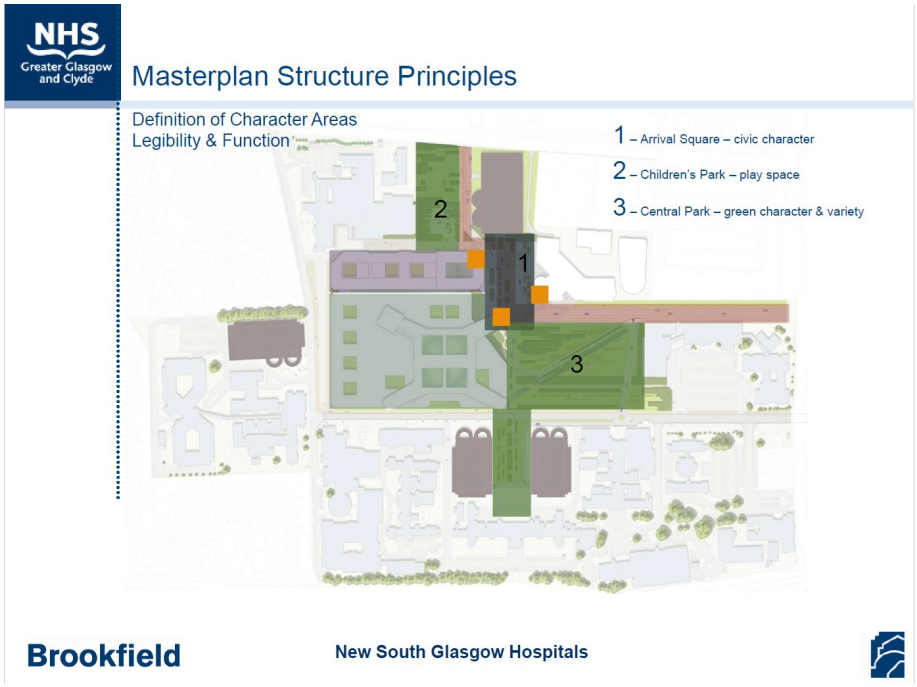
page 17 of DDM_03_NA_Presentation_10060 **(A52701464 – Bidder B New South Glasgow Hospitals Design Dialogue Meeting 3 – undated – Bundle 43, Volume 4, Page 897).**




page 17 DDM 03 Presentation – Single Patient Room Layouts **(A52701464 – Bidder B New South Glasgow Hospitals Design Dialogue Meeting 3 – undated – Bundle 43, Volume 4, Page 897)**

Masterplan Design Principles

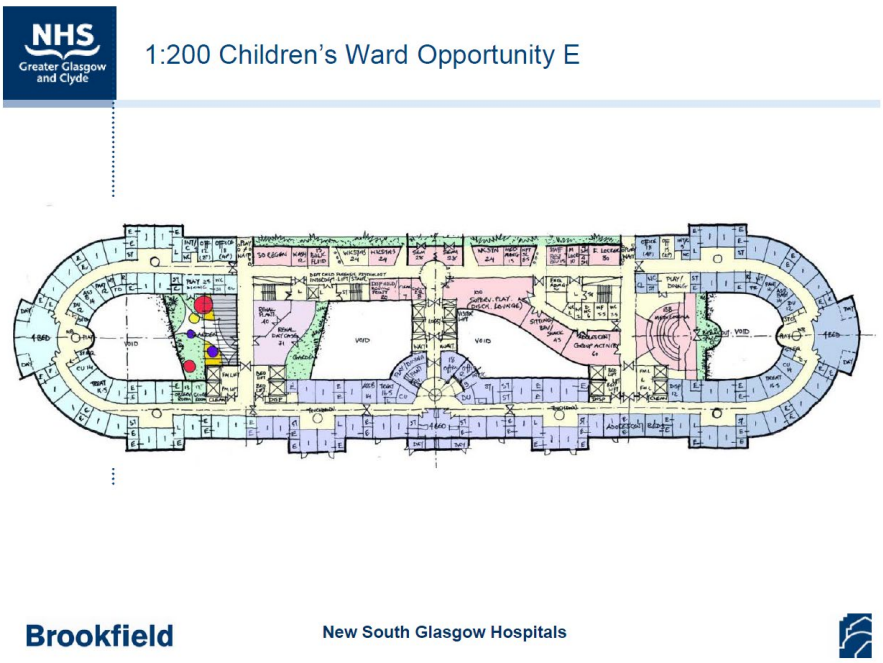
The public realm had improved legibility, with three clear functional areas; the Arrival Square; the Central Park and the Children's Park. The three main entrances to the Adult Hospital, Children's Hospital and Laboratory Building were each visible and clear for the public from the Arrival Square. And the Children's Hospital identity was starting to evolve, with direct access to the Children's Park and a visible separation from the Adult Hospital. The proposed Masterplan Public Realm Principles can be seen on page 25 of DDM_03_NA_Presentation_10060 **(A52701464 – Bidder B New South Glasgow Hospitals Design Dialogue Meeting 3 – undated – Bundle 43, Volume 4, Page 907).**




page 25 DDM 03 Presentation – Opportunity E – Public Realm Principles **(A52701464 – Bidder B New South Glasgow Hospitals Design Dialogue Meeting 3 – undated – Bundle 43, Volume 4, Page 907)**

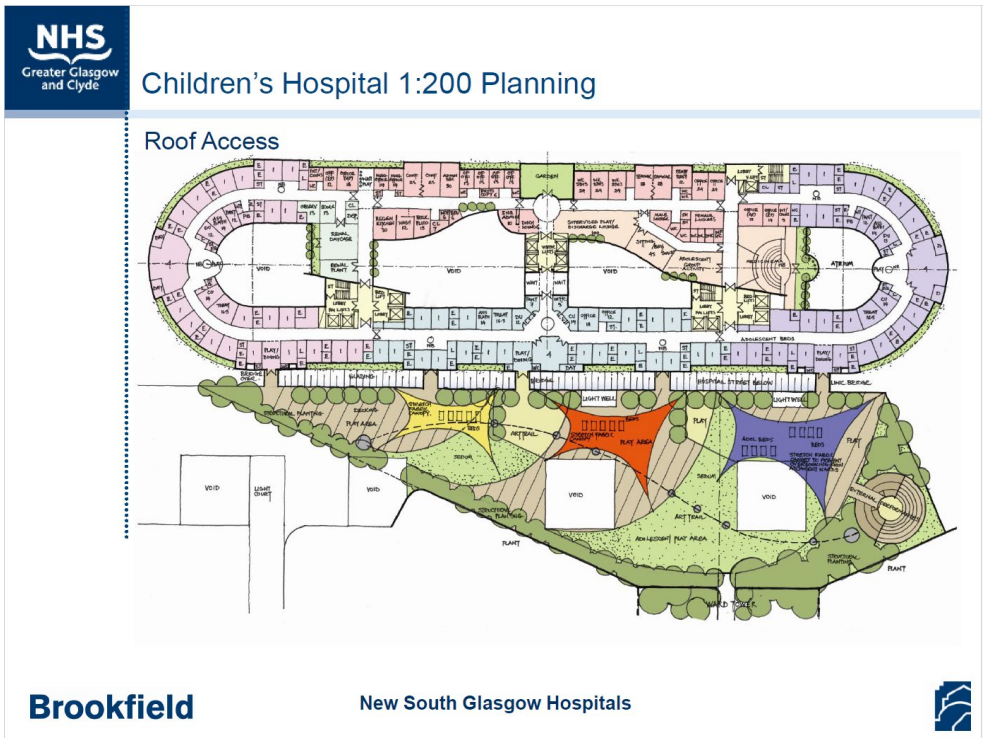
Children's Hospital Design Development

The focus on DDM 04 was on resolving the Children's Hospital design, in particular to address the feedback on the ward. This was when and why the distinctive lozenge shape was introduced. The circulation racetrack allowed the 3 wards to flex, with the ends of each ward forming the logical locations for the lift circulation cores. The initial Children's Ward Concept can be seen on page 31 of DDM_04_NA_Presentation_230609 Final NM (**Please refer to Bundle 17, Document 52, Page 2153**).



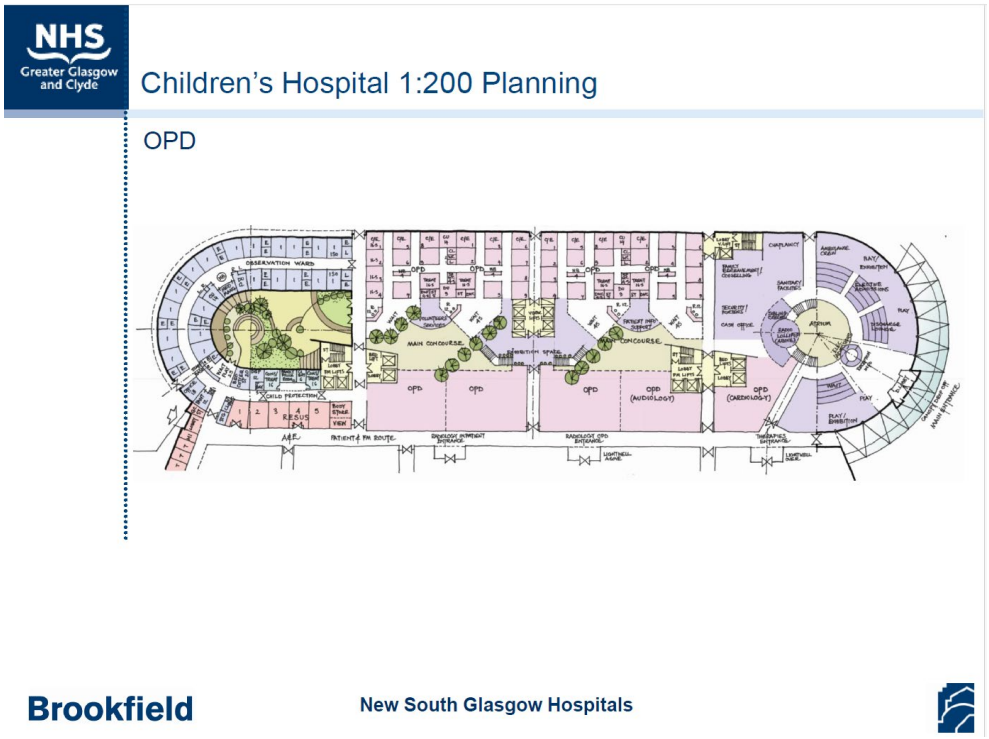

page 31 DDM 04 Presentation – Children's Ward Concept (**Bundle 17, Document 52, Page 2153**)

Further refinement of the ward concept took place between DDM4 and DDM5, which included the initial concepts for the children's rooftop terrace/gardens, and medicinema. The updated Children's Ward Concept with Garden can be seen on page 16 of DDM_05_NA_Presentation_070709 Final NM (**A52701459 – Bidder B New South Glasgow Hospitals Design Dialogue Meeting 5 – undated – Bundle 43, Volume 4, Page 847).**



page 16 DDM 05 Presentation - Children's Ward Concept with Garden (**A52701459 – Bidder B New South Glasgow Hospitals Design Dialogue Meeting 5 – undated – Bundle 43, Volume 4, Page 847)**

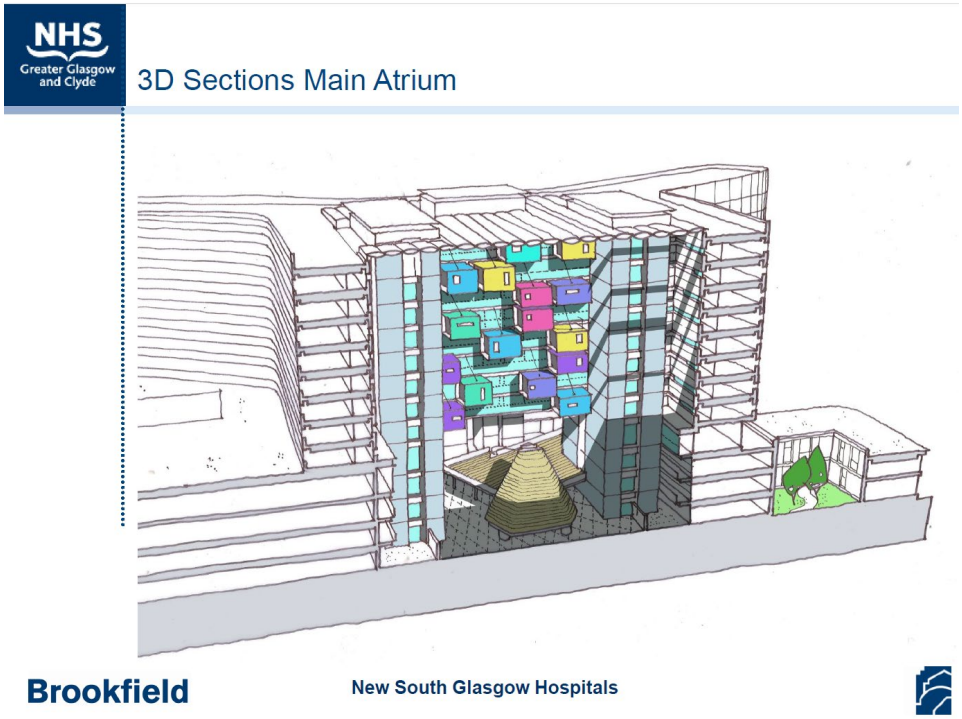
In addition, the Children's OPD evolved into a series of more flexible clinic clusters wrapped around a central dedicated Children's atrium; this ended in an external landscaped courtyard for the Children's Sanctuary. The Children's OPD Concept can be seen on page 17 of DDM_05_NA_Presentation_070709 Final NM (**A52701459 - Bidder B New South Glasgow Hospitals Design Dialogue Meeting 5 – undated – Bundle 43, Volume 4, Page 848).**



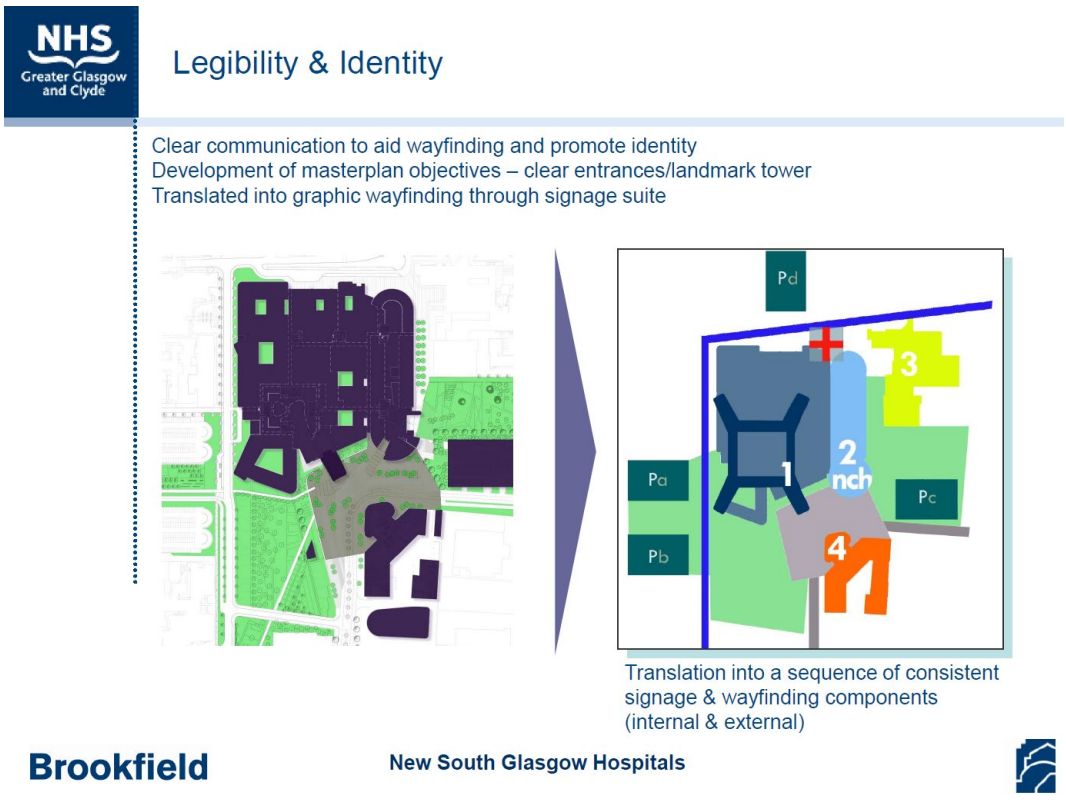

DDM 05 Presentation - Children's OPD Concept (**A52701459 - Bidder B New South Glasgow Hospitals Design Dialogue Meeting 5 – undated – Bundle 43, Volume 4, Page 848)**

The Adult's Atrium Concept also evolved, with the space opening up following a review of the locations for the main ward tower circulation cores. All the cores moved to the periphery of the atrium, allowing the omission of the public link bridge through the atrium. The central FM link bridge developed into the pod concept, providing the vertical atrium space with its now familiar design feature; refer to page 20 DDM_05_NA_Presentation_070709 Final NM

**(A52701459 - Bidder B New South Glasgow Hospitals Design Dialogue Meeting 5 – undated – Bundle 43, Volume 4, Page 851).**



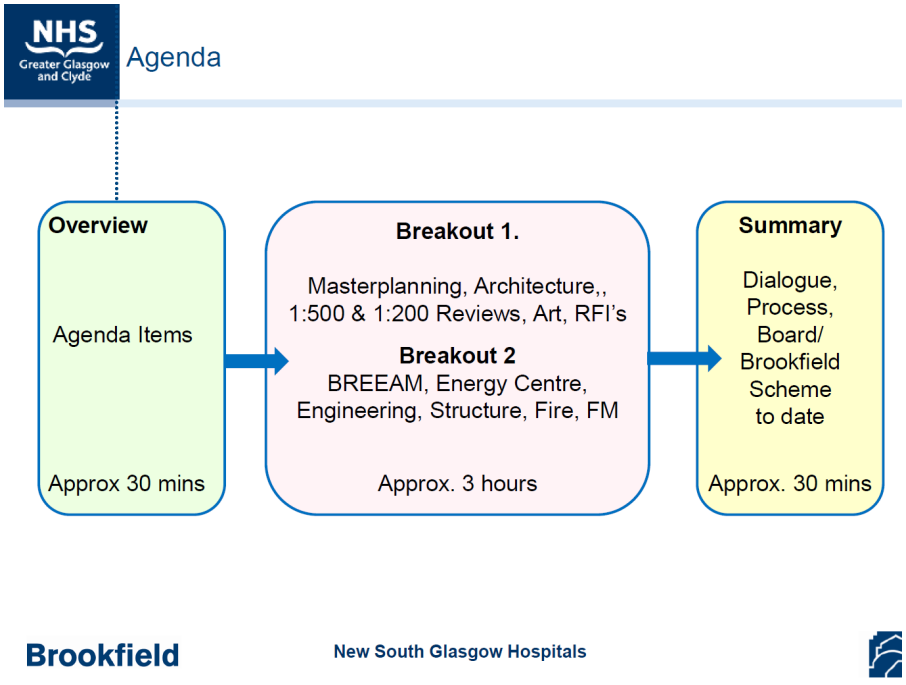

DDM 05 Presentation – Adult Atrium Concept **(A52701459 - Bidder B New South Glasgow Hospitals Design Dialogue Meeting 5 – undated – Bundle 43, Volume 4, Page 851).**




DDM 06 Presentation – Masterplan

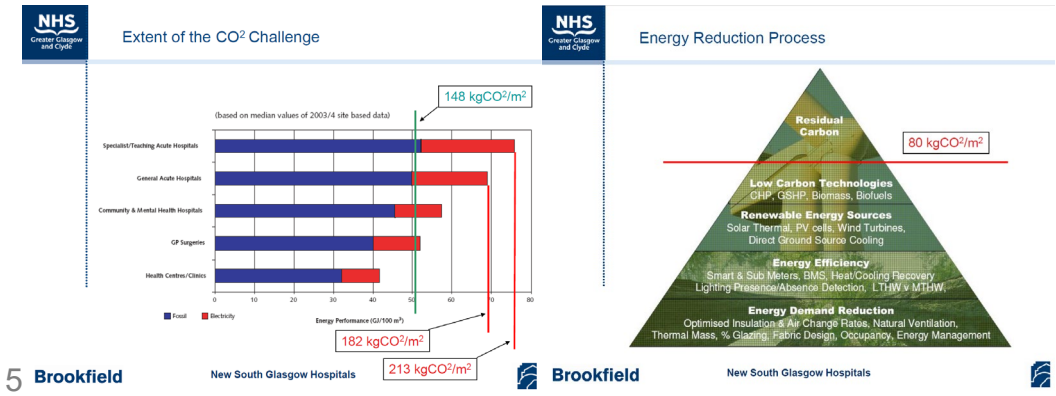
Technical Design Reviews

One further meeting, DDM6 (**A52701637 – Bidder B - Board Presentation Bundle, Bundle 43, Volume 5 – See Paper Apart)** was added in September, which was intended to be a final presentation of the design prior to the bid submission. At this stage there were more intensive technical reviews in the Engineering Breakout sessions to address the Technical RFIs; NA-IBI were only in attendance at the Breakout Session 1, with the engineering team (ZBP, Mercury, WSP and Multiplex) attending Breakout Session 2 which took place concurrently.



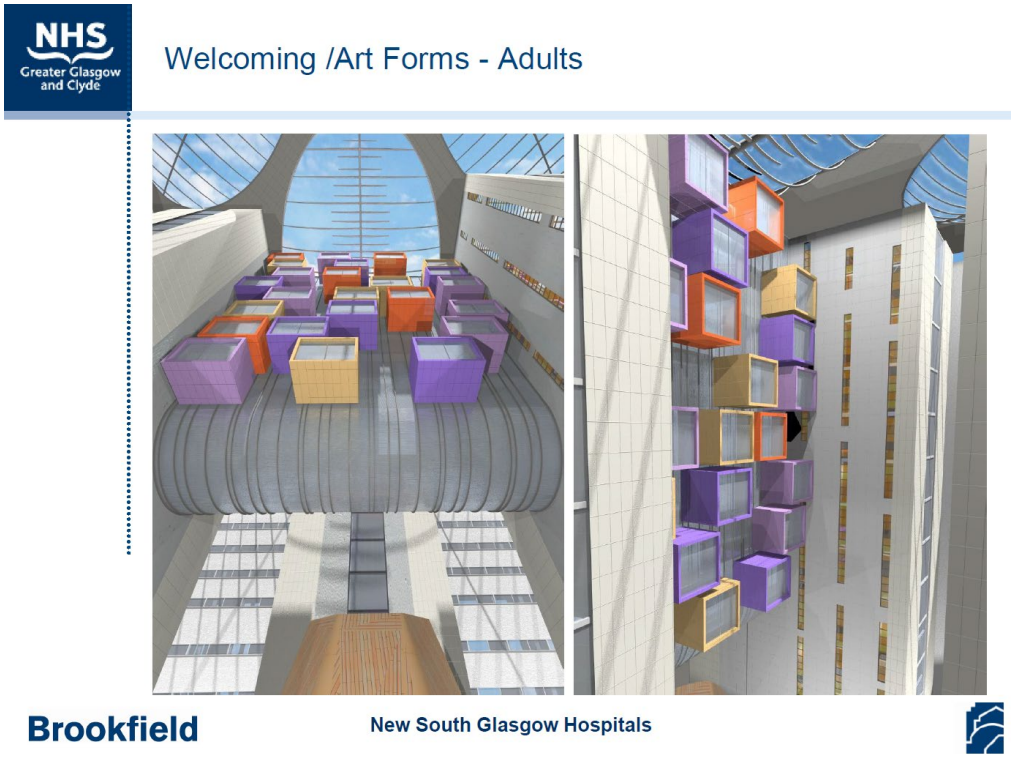

DDM 06 Presentation – Agenda (**A52701637 – Bidder B - Board Presentation Bundle, Bundle 43, Volume 5 – See Paper Apart)**

The technical breakout session included discussions on the detail of the low carbon challenge, which was reviewed with comparative data. To reduce the carbon to the 80kg CO2/m2 an energy reduction process was completed. Whilst NA-IBI were not in attendance in the meeting, and thus do not have records of the feedback, this would have been recorded by Multiplex and the NHS team. Refer to page 210 and page 211 Board_Presentation_04-08-09[1] **(A52701637 – Bidder B - Board Presentation Bundle, Bundle 43, Volume 5 – See Paper Apart)** for slides from the M&E breakout session demonstrating the Low Carbon Challenge.




DDM 06 Presentation – Low Carbon Challenge **(A52701637 – Bidder B - Board Presentation Bundle, Bundle 43, Volume 5 – See Paper Apart)**

The Adult's atrium design concept progressed into a 3-dimensional concept model, creating a 'built' piece of art. The evolved Final Adult Atrium Concept can be seen on page 99 of Board_Presentation_04-08-09[1] **(A52701637 – Bidder B - Board Presentation Bundle, Bundle 43, Volume 5 – See Paper Apart).**




DDM 06 Presentation – Final Adult Atrium Concept **(A52701637 – Bidder B - Board Presentation Bundle, Bundle 43, Volume 5 – See Paper Apart)**

## 2.8 BID SUBMISSION AND COMPLIANCE

A Post Tender Submission Presentation to support the evaluation of the 3 bidders' proposals was requested by GGC NHS. This was stipulated to be focused on Design and Compliance, i.e. present in summary how the bid submission responded to the ITPD requirements. This was separated into Planning and Delivery; and a Summary of Key Benefits and Added Value. The introduction section contains the Bid Stage – Tracked Scheme Development slide on page 2 Post Submission Presentation 2 **(A52701551 – Bundle 43, Volume 5 – See Paper Apart)**, which demonstrates the completion of the bid dialogue meeting process and includes design images of the evolving design from the **Exemplar** to the **Contractor's Proposal**.


Post Submission Presentation – Introduction **(A52701551 – Bundle 43, Volume 5 – See Paper Apart)**

The final Post Submission Presentation was structured to be a demonstration of the intent to comply with the Client Brief, albeit with an alternative approach to the exemplar design, which had been developed during the dialogue meetings.

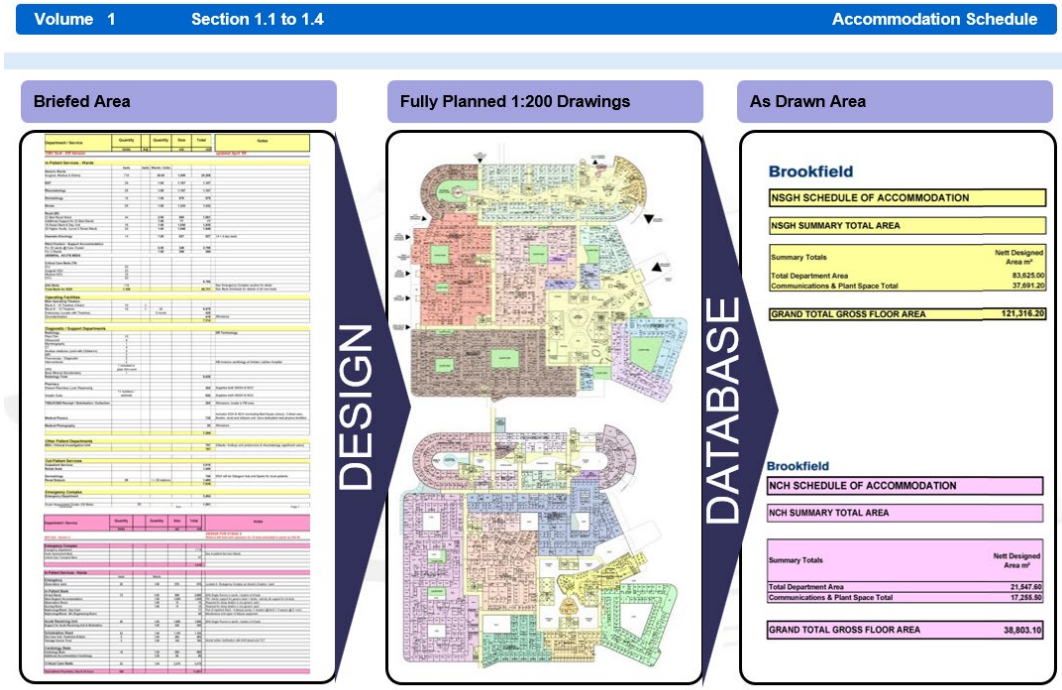
Final Concept

The Building Concept (page 30 - Post Submission Presentation 2) **(A52701551 – Bundle 43, Volume 5 – See Paper Apart),** consisted of the 'Beacon' ward tower, sat on the podium 'Dock' with adjacent the children's hospital 'Vessel'.


Building Concept **(A52701551 – Bundle 43, Volume 5 – See Paper Apart)**

Design Validation

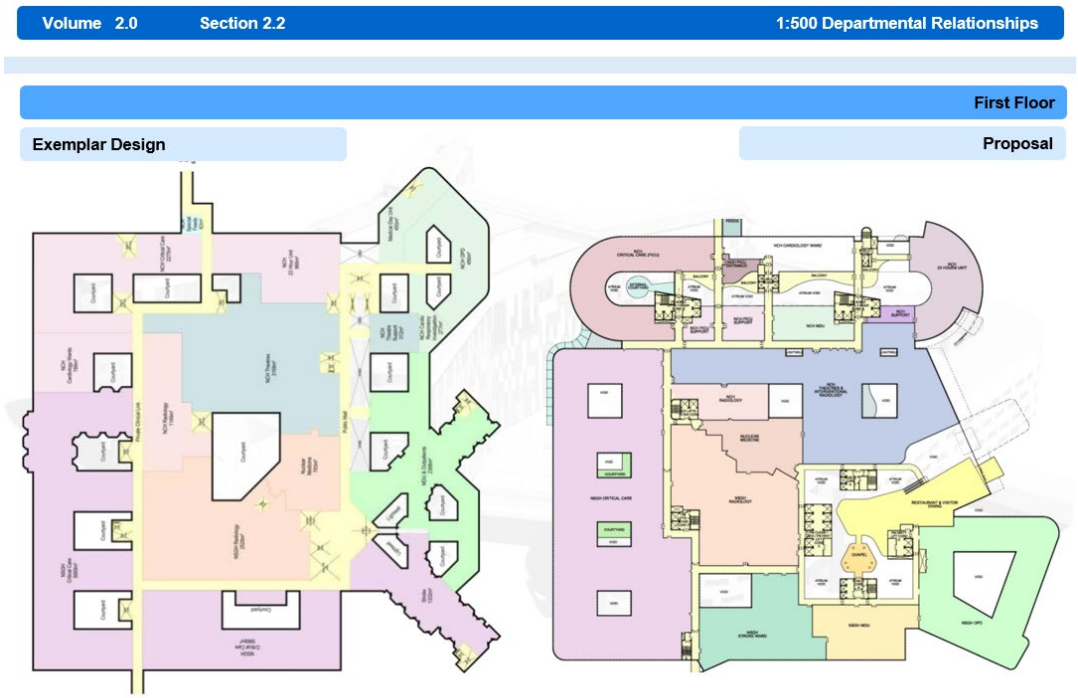
The approach to design ALL the departments, rather than only the 11 key departments, allowed the validation of the briefed areas in the Employer's Requirements, and de-risked the Bid Cost Plan; the diagram on page 5 - Post Submission Presentation 2 **(A52701551 – Bundle 43, Volume 5 – See Paper Apart)** demonstrated the Design validated against the SoA Database.



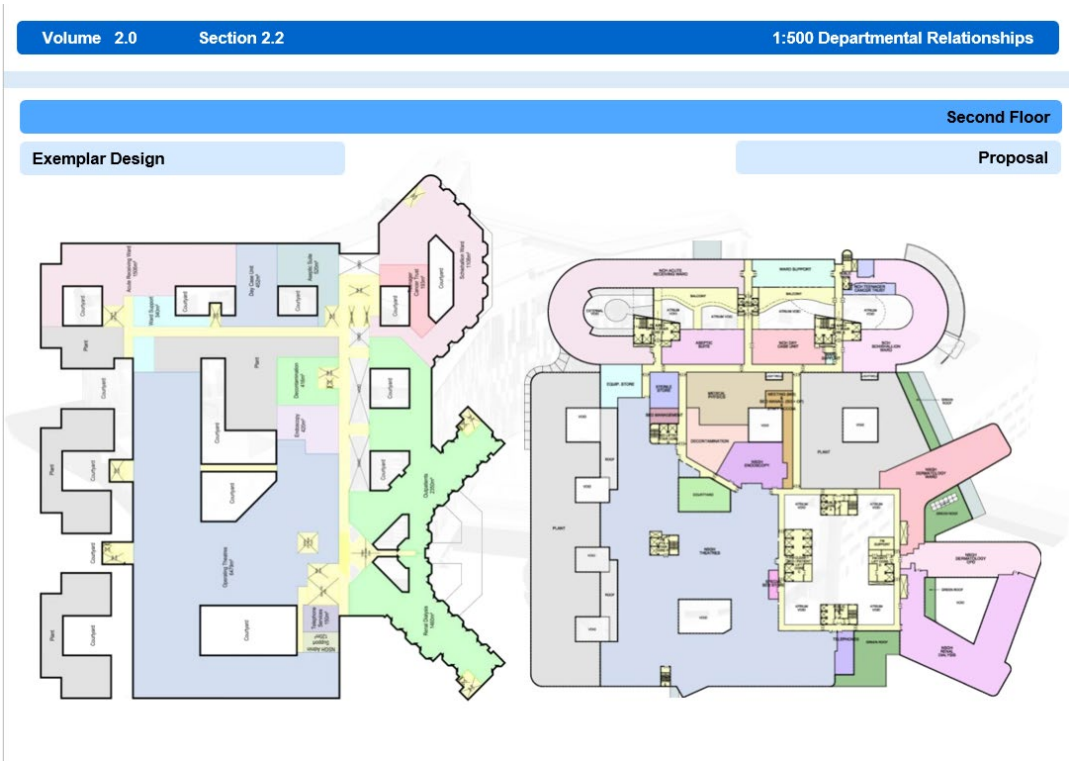

page 5 - Post Submission Presentation 2 **(A52701551 – Bundle 43, Volume 5 – See Paper Apart)**

A series of Exemplar v Proposed Design Comparison diagrams demonstrated that the proposed design followed the main department adjacencies stipulated within the exemplar design, however within a different building concept. These can be seen from page 8 to 12 of Post Submission Presentation 2 **(A52701551 – Bundle 43, Volume 5 – See Paper Apart).**

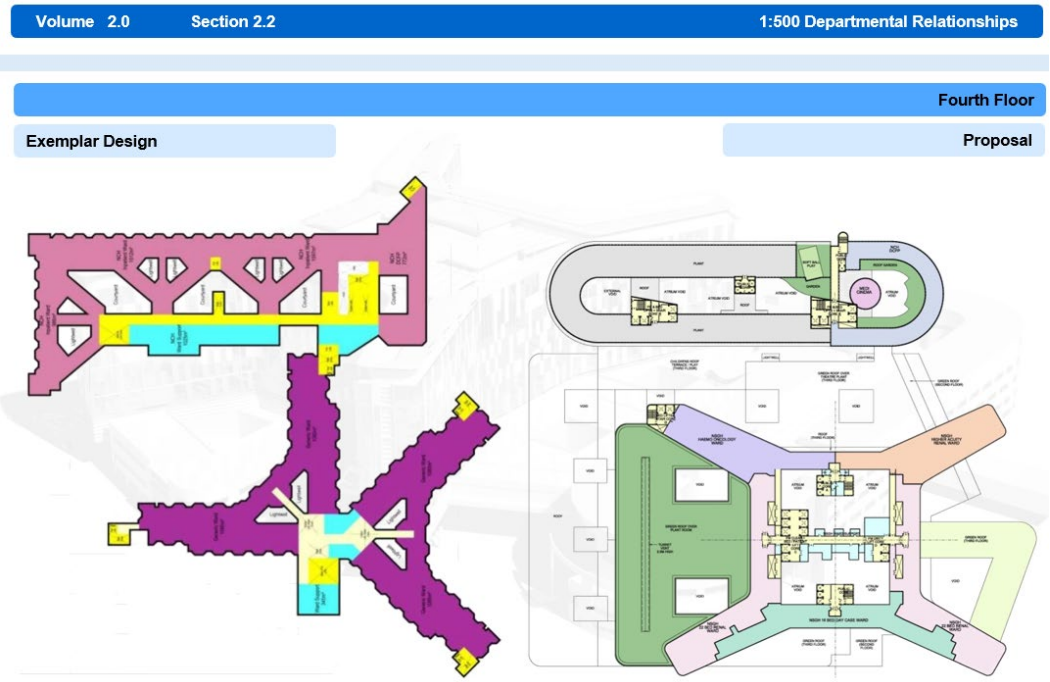

Ground Floor – Exemplar v Proposed Design Comparison **(A52701551 – Bundle 43, Volume 5 – See Paper Apart)**




First Floor – Exemplar v Proposed Design Comparison **(A52701551 – Bundle 43, Volume 5 – See Paper Apart)**

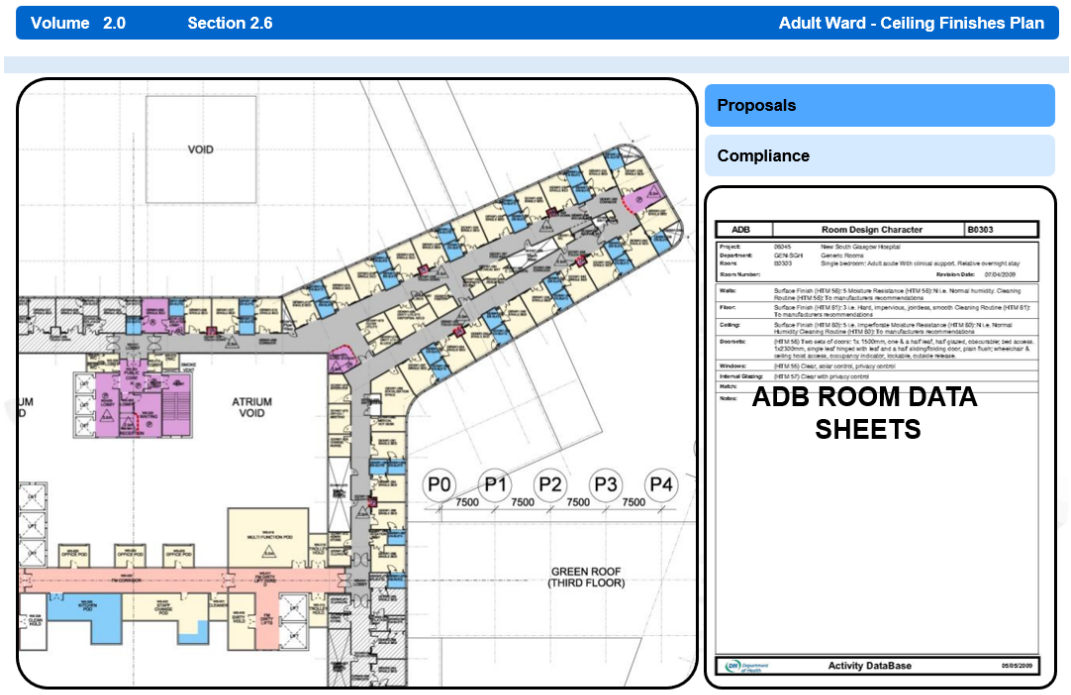



Second Floor – Exemplar v Proposed Design Comparison **(A52701551 – Bundle 43, Volume 5 – See Paper Apart)**

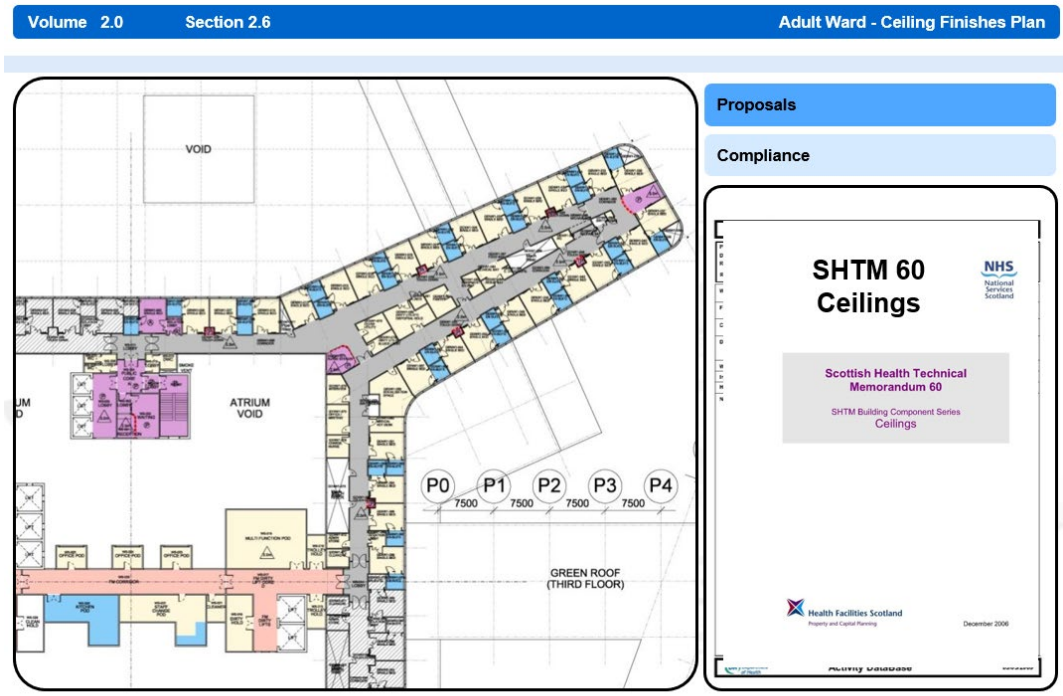



Fourth Floor – Exemplar v Proposed Design Comparison **(A52701551 – Bundle 43, Volume 5 – See Paper Apart)**

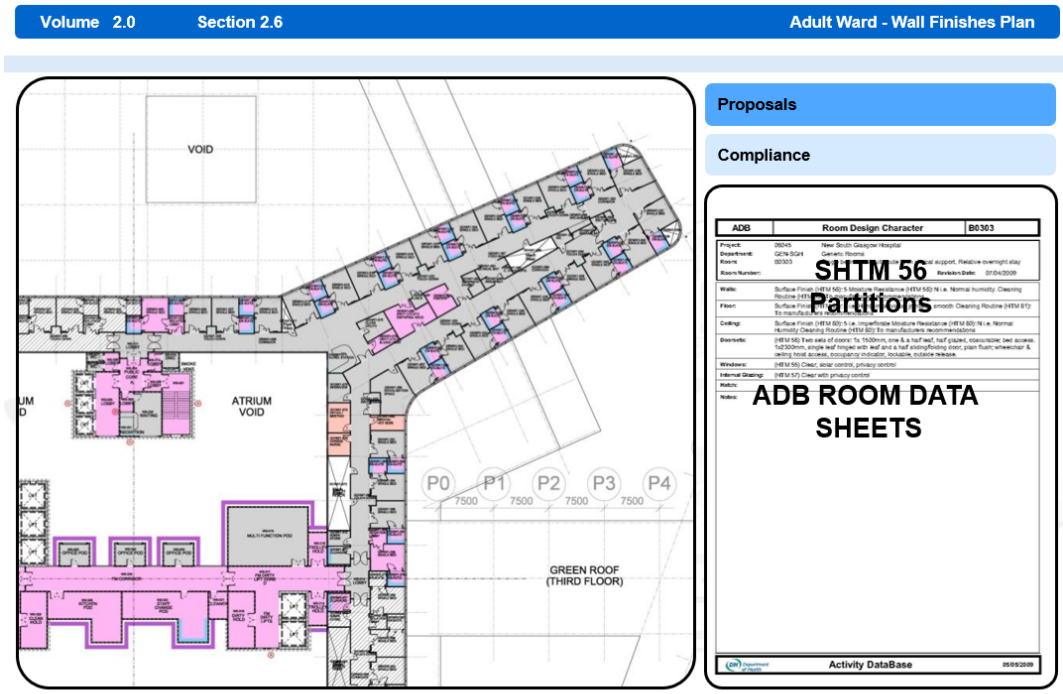
In addition, the compliance with both the ADB Room Data Sheets and SHTMs were demonstrated with a series of slides containing the Typical Generic Ward proposed Ceiling, Wall and Floor Finishes. These can be seen on page 18,19 and 20 of the Post Submission Presentation 2 **(A52701551 – Bundle 43, Volume 5 – See Paper Apart).**



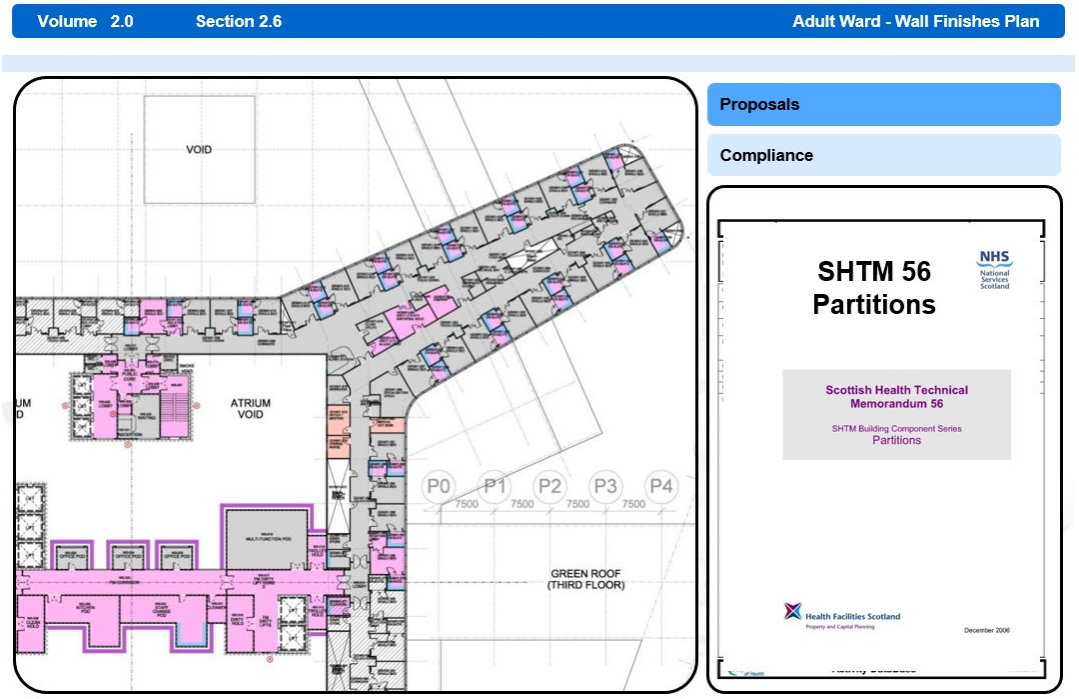

Typical Ward – Ceiling ADB Compliance **(A52701551 – Bundle 43, Volume 5 – See Paper Apart)**



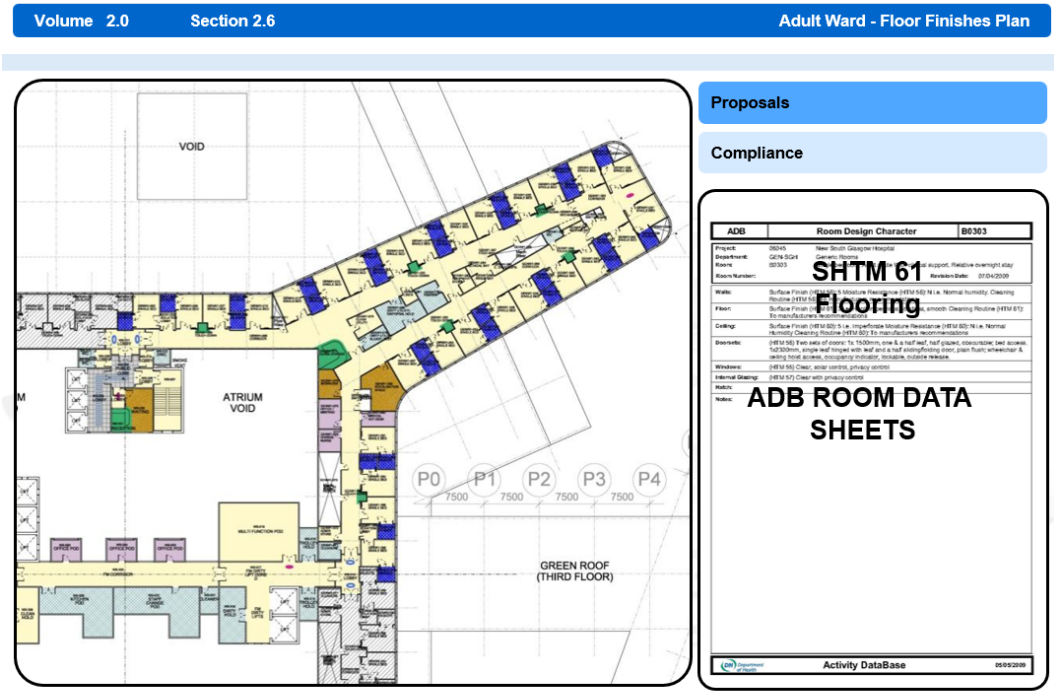

Typical Ward – Ceiling SHTM Compliance **(A52701551 – Bundle 43, Volume 5 – See Paper Apart)**



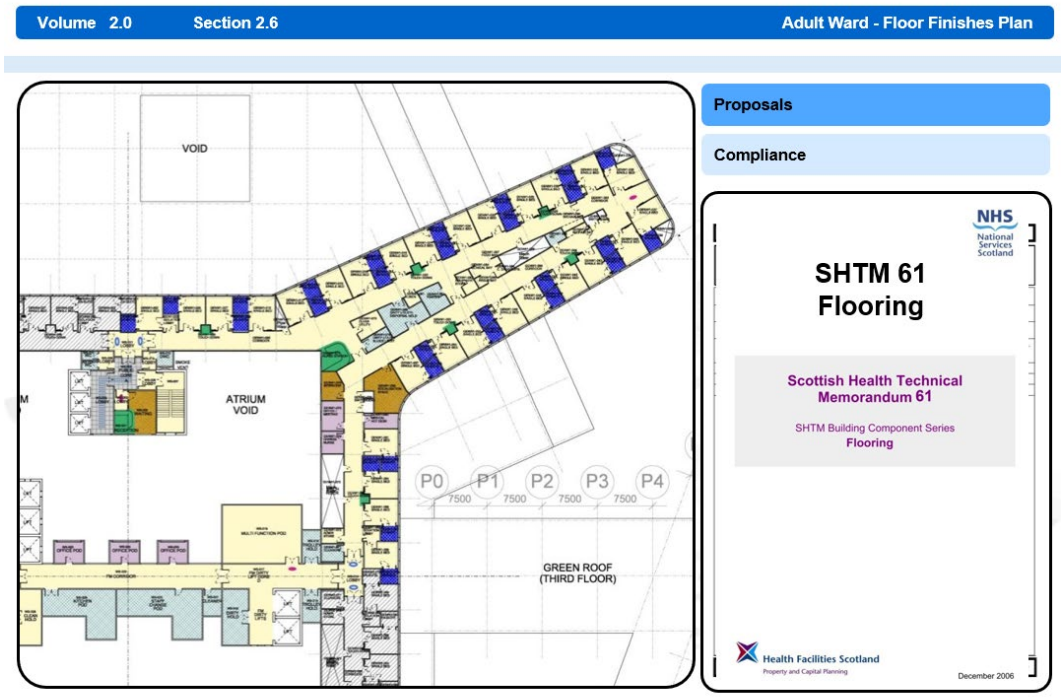

Typical Ward – Wall Finishes ADB Compliance **(A52701551 – Bundle 43, Volume 5 – See Paper Apart)**




Post Submission Presentation – Typical Ward – Wall Finishes SHTM Compliance **(A52701551 – Bundle 43, Volume 5 – See Paper Apart)**




Typical Ward – Floor Finishes ADB Compliance **(A52701551 – Bundle 43, Volume 5 – See Paper Apart)**




Typical Ward – Floor Finishes SHTM Compliance **(A52701551 – Bundle 43, Volume 5 – See Paper Apart)**

## 2.9 BID CLARIFICATIONS AND RFIS

BIW was the online collaboration platform adopted during the Bid Stage, which was set-up and operated by Gleeds on behalf of GGC NHS. The ITPD documents, and addendums, were shared to the bidders on this platform. In addition, bidders were to raise any RFIs formally on the platform, using the APPENDIX D – Request for Information Pro-Forma**.**

The RFIs raised during the bid stage, and responses, were collated in the RFI Log. The RFI Log concluded with a final agreed position for inclusion in the Main Contract.

**2.10** Following the assessment and scoring of the Bidder's Proposals Multiplex were announced as Preferred Bidder in November 2009. The Final Project Vision is captured within the 3D visualisation on page 1 of Post Submission Presentation 2 **(A52701551 – Bundle 43, Volume 5 – See Paper Apart).**

Final Project Vision **(A52701551 – Bundle 43, Volume 5 – See Paper Apart)**

## 3. PROJECT CONTRACT BIBLE (2009)

3.1 The Contract, including the final agreed 'Project Bible' was received by Nightingales on or around 26 March 2010.

**3.2** The Project Bible contained the Building Contract, Employers Requirements (ERs) & Logs and various related schedules and appendices for Stage 1 and Stage 2.

Effectively, this consisted of Multiplex's Contractor Bid Proposals, including IBI's drawings and outline specifications, as well as the agreed contractual position on the ER's and various Logs.

For Multiplex, this was the Stage 1 and Stage 2 Building Contract. Stage 1 (the Laboratory Construction) was completed with the GGHB novated Design Team.

For IBI, this was relevant only for the Stage 2 Building Contract (i.e. the detailed design of the Adult and Children's Hospitals to FBC).

**3.3 The BIW Log**

The BIW Log **(A52701631 – The BIW Log 2010 Bundle 43, Volume 5, Page 750)** confirmed whether the Contactor's Tender Proposals or the GGC Board Employer's Requirements were to take precedent.

‘*Brookfield agree with Board position that Clinical Output Specs should remain as being the core ER on the basis that the Board confirm that they accept the Accommodation Schedules included within the Bid Submission Volume 1 can satisfy the Clinical Output Specifications.’

The Contractor’s 1:500 Department Adjacency Plans replaced the Exemplar Design as the agreed Contractual position.

The Contactor’s 1:200 Department Layout Plans replaced the Exemplar Design as the agreed Contractual position subject to the attached commentary "4 Departments Drawing Note".

The remaining Department Layout Plans were agreed as acceptable to proceed to presentation to the user groups.

The Exemplar NSGACL-Generic ADB Room Layouts **(A52701465 – NSGACL – Generic ADB Room Layouts – undated – Bundle 43, Volume 4, Page 957)** were replaced with the Contractor Proposed 1:50 Generic Room Layouts as the agreed Contractual position. The Contractor proposals co-ordinated with the 1:200 Department Layout Plans, however both sets of drawings were subject to review during the Stage 2 stakeholder process, including the clinical user group meetings.

### 3.4 The RFI Log

The RFI Log captured the RFIs raised during the Competitive Dialogue Stage, and the agreed contractual position on the responses.

Of note it is confirmed that the items agreed in the RFI Log **(Please refer to Bundle 17, Document 16, Pages 866, 872, 896, 907 and 915)** take precedence over the M&E drawings where relevant.

The Wards are agreed as clinical risk 4;

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 002 | Bedrooms – Clinical Risk Category: Page 184 of the ERs states that wards are to be classed as Clinical Risk Category 3. Page 27 of Appendix M&E3 lists bedrooms as IEE GN7 Group 1, which would normally be viewed as Clinical Risk Category 4. We believe that the latter statement is correct.<br><br>**RESPONSE: IEE GN7 GROUP 1 TAKES PRECEDENCE** | - | NC | Information is included in ERs and therefore need not be added. | Agreed | BCL offer based on Wards being Clinical Risk Category 4 which we do not believe is reflected within ER's. | It is agreed that wards are clinical risk 4 as SHTM | Agreed | |

refer to RFI no.2 – p3 RFI Log. **(Please refer to Bundle 17, Document 16, Page 866)**

GGC NHS acknowledges that it will confirm the ADB briefing room codes, in this instance for the ITPD submission; refer to RFI no.023 – p7 RFI Log.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 023 | With reference to ITPD Document Volume Three 'Bid Deliverables and Evaluation', Section 2.9 '1:50 Room Layout and Wall Elevations' please provide a list of the 1:50 Room Layouts required. If this is to match the Generic ADB Room Data Sheets already provided, please provide an Index of these to allow us to ensure we prepare the correct number/room types.<br><br>**RESPONSE: ADB CODES ARE BEING ADDED TO THE SOA. THE 1:50 REQUIREMENT ROOMS WILL BE HIGHLIGHTED BY A COLOURING/SHADING.** | - | Info | ERs and ITPD/ITSFB updates address this RFI. | Agreed | | n/c | | ERs and ITPD/ITSFB updates address this RFI. |

RFI no.023 – p7 RFI Log **(Please refer to Bundle 17, Document 16, Page 872)**

A series of RFIs were raised to confirm the NA-IBI initial equipment standardization proposals were to be included in the 1:50 room layouts following a review of the Room Data Sheets; refer to RFI no.099 – p31 RFI Log.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 099 | Following a review of the Room Data Sheets, we have a number of queries relating to the Standardisation of equipment which we would normally propose at the beginning of the Room Loading process. Please can you confirm whether you accept our proposals;<br><br>**QUERY 1 - Cleaner sockets:** OUT005 (SOCKET outlet switched 13amp single, wall mounted) to be added in all rooms, where not provided in the brief. Placed at 150mm cc from door opening. Exceptions are WC's, Shower Rooms, Bathrooms, En-suites, Changing Rooms and Parking Bays (Resus trolley, Wheelchair, mobile X-ray)<br><br>**RESPONSE: THIS RULE APPEARS REASONABLE** | - | NC | Equipment list on Watchlist to be rationalised and concluded as an element of design development. | Agreed | | n/c | | Equipment list on Watchlist to be rationalised and concluded as an element of design development. |

RFI no.099 – p31 RFI Log **(Please refer to Bundle 17, Document 16, Page 896)**

AIBI queried the use of duplicated ADB briefing codes and the GGC NHS acknowledges that the clinical briefing is not yet complete; refer to RFI no.133 – p42 RFI Log.

| Ref | Information Requested | Add | No Change / Info | Board Comment 1 | Status | Brookfield Comment | Board Comment 2 | Brookfield Comment 2 | Agreed Position |
|---|---|---|---|---|---|---|---|---|---|
| 133 | With reference to Tender Addendum **TAD-00023**, and the attached documents '**NSGH Suggested Drawn Rooms**' and '**NCH Suggested Drawn Rooms**', please clarify the following discrepancies in relation to the Document Volume Three 'Bid Deliverables and Evaluation', Section 2.9 '1:50 Room Layout and Wall Elevations' ITPD List of Key Rooms :<br>(1) There are duplicate Room Types (ADB Briefing Code);<br>**X0240** – used for:<br>NSGH Renal Wards 16 Beds + Day Unit – Minor Procedures & Treatment Room and<br>NSGH Accident & Emergency – Major Procedure Room –<br>**X0253** – used for:<br>NSGH Renal Wards 16 Beds + Day Unit – 4 Station Dialysis Room and<br>NSGH Dialysis Unit (30 Stations) – 4-Bed Dialysis -<br>**V1610** – used for:<br>NSGH Generic Wards 28 Beds – Patients En-Suite Assisted Shower, WC, & Wash Double Assist<br>NCH Assessment Area 20 Beds – Shower, WC, & Wash: Accessible, Wheelchair Assisted - **N0111** – used for:<br>NSGH Radiology – Radiological/Surgical Endovascular Laboratory Theatre<br>NCH Cardiac Cath Lab & Interventional Radiology Suite – Interventional Radiology Lab<br>**E0127** – used for:<br>NSGH Radiology – General Computed Radiography Room inc Control Area<br>NCH Radiology – General Computed Radiography X-Ray Room inc Control<br>**X0240** – used for:<br>NSGH Renal Wards 16 Beds + Day Unit – Minor Procedures & Treatment Room (inc prep)<br>NSGH Accident & Emergency – Major Procedure Room<br>**X0242A** – used for:<br>NSGH Accident & Emergency – MIU Assess / Treatment Room<br>NCH Accident & Emergency – Assess & Treatment Room A&E, Multi-Functional<br>Please confirm if this is correct? If any require a different Clinical Briefing please provide this to enable us to produce the drawings as requested<br><br>**RESPONSE:** Generally this is correct. In the absence of any dialogue with end users the same level of equipment has been assumed for costing purposes hence the allocation of the same room code to potentially different room types. The development of the detailed clinical brief won't happen until after the preferred bidder has been selected. For the purpose of the submission if the same ADB room code is allocated to more than one room then the same 1:50 drawing will do for both rooms provided they are the same area on the SoA. Where the areas differ then we would expect a drawing for each room albeit with the same level of equipment. | - | NC | Equipment list on Watchlist to be rationalised and concluded as an element of design development. | Agreed | *Subject to Brookfield bid submission | n/c | | Equipment list on Watchlist to be rationalised and concluded as an element of design development. |

RFI no.133 – p42 RFI Log **(Please refer to Bundle 17, Document 16, Page 907)**

Compliance of the Laboratory with the low carbon target of 80kgCO2/m2/annum was to be achieved by connection to the Energy Centre, with the shell and core as a minimum to be completed to co-ordinate with the completion of the Labs Building. Refer to RFI no.144 – p50 RFI Log and RFI no.147 – p50 RFI Log.

| Ref | Information Requested | Add | No Change / Info | Board Comment 1 | Status | Brookfield Comment | Board Comment 2 | Brookfield Comment 2 | Agreed Position |
|---|---|---|---|---|---|---|---|---|---|
| 144 | Have, and how have, the Labs team achieved the 80kgCO2/m2/annum design energy target?<br><br>**RESPONSE:** The Laboratory Design is ongoing and the model is being refined, however, the overall solution is integrated with the Energy centre. Further design information will be made available in due course. | Y | | This is an aspect of the design that the Contractor is responsible for and requires to develop and satisfy in the Laboratory element of the scheme. | Agreed | As clarified in Brookfield Bid submission, the ITSFB design does not currently meet this requirement and any fundamental change to the Labs Scheme that may be required to be implemented, if practical, to achieve this energy target will be a Change under the Contract | Compliance to be achieved upon connection to the Energy Centre. | Agreed | Compliance to be achieved upon connection to the Energy Centre. |

RFI no.144 – p50 RFI Log **(Please refer to Bundle 17, Document 16, Page 915)**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 147 | Re Energy Centre<br><br>We would be pleased if the Board would urgently confirm the start date of the Energy Centre as there appears to confusion as to the verbal advice given at the last dialogue meeting.<br><br>Response: The Energy centre forms part of the main hospital build and should commence in Nov.2010 at outset of stage 3 | - | Info | No action required in respect of this RFI. | Agreed | Brookfield would note that all Works in this regard is currently included in Stage 3 Works. | Energy Centre will be part of Stage 3 and expectation is that the shell, as a minimum, will be completed in year 1 to coincide with completion of laboratories. | | Energy Centre will be part of Stage 3 and expectation is that the shell, as a minimum, will be completed in year 1 to coincide with completion of laboratories. |

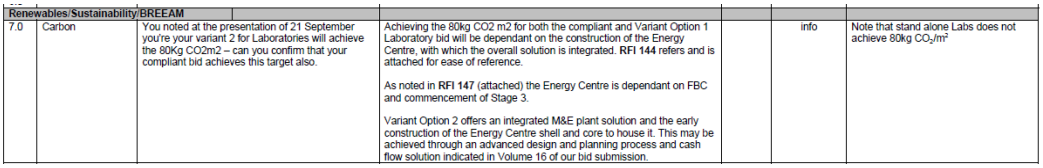
RFI no.147 – p50 RFI Log **(Please refer to Bundle 17, Document 16, Page 915)**

## 3.5 The Clarifications Log

The Clarifications Log **(Please refer to Bundle 17, Document 17, Page 918, 925 and 927)** captured the agreed contractual position on the Technical Design Clarifications raised initially by the GGC Board and their Technical advisors on the BM Bid response/ Contractor's proposals.

Technical Clarifications of note are as follows;

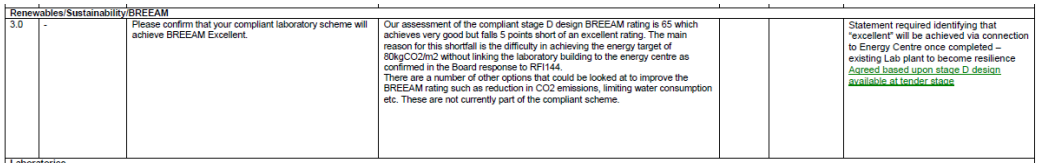
Technical Clarification 1, Item 7.0 – the Laboratory building would not achieve the 80kg CO2m2 low carbon as a stand-alone construction without including some aspect of the Energy Centre.



| | | | | | | |
|---|---|---|---|---|---|---|
| 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.<br><br>As noted in **RFI 147** (attached) the Energy Centre is dependant on FBC and commencement of Stage 3.<br><br>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. | | info | Note that stand alone Labs does not achieve 80kg $CO_2/m^2$ |

Technical Clarification 1, Item 7.0 **(Please refer to Bundle 17, Document 17, Page 916)**

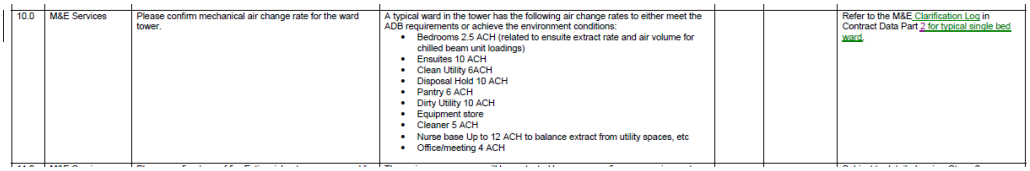
Technical Clarification 3, Item 3.0 – confirms that the Stage 3 Labs building design provided within the ERs would not achieve the required BREEAM 'excellent' rating without connection with the Energy Centre at handover.



| | | | | | | |
|---|---|---|---|---|---|---|
| Renewables/Sustainability/BREEAM | | | | | | |
| 3.0 | - | Please confirm that your compliant laboratory scheme will achieve BREEAM Excellent. | Our assessment of the compliant stage D design BREEAM rating is 65 which achieves very good but falls 5 points short of an excellent rating. The main reason for this shortfall is the difficulty in achieving the energy target of 80kgCO2/m2 without linking the laboratory building to the energy centre as confirmed in the Board response to RFI144.<br>There are a number of other options that could be looked at to improve the BREEAM rating such as reduction in CO2 emissions, limiting water consumption etc. These are not currently part of the compliant scheme. | | | Statement required identifying that "excellent" will be achieved via connection to Energy Centre once completed – existing Lab plant to become resilience Agreed based upon stage D design available at tender stage |

Technical Clarification 3, Item 3.0 **(Please refer to Bundle 17, Document 17, Page 925)**

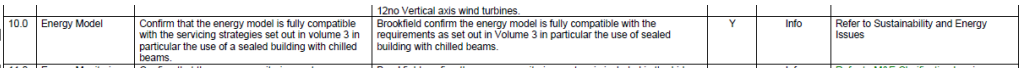
Technical Clarification 4, Item 10.0 M&E Services – confirms the proposed mechanical air change rates for the ward tower. This provides greater detail to the proposals for the typical rooms within a 'typical ward'. There is a link to the M&E Clarifications Log for a 'typical single bed ward'.



| | | | | | | |
|---|---|---|---|---|---|---|
| 10.0 | M&E Services | Please confirm mechanical air change rate for the ward tower. | A typical ward in the tower has the following air change rates to either meet the ADB requirements or achieve the environment conditions:<br>• Bedrooms 2.5 ACH (related to ensuite extract rate and air volume for chilled beam unit loadings)<br>• Ensuites 10 ACH<br>• Clean Utility 6ACH<br>• Disposal Hold 10 ACH<br>• Pantry 6 ACH<br>• Dirty Utility 10 ACH<br>• Equipment store<br>• Cleaner 5 ACH<br>• Nurse base Up to 12 ACH to balance extract from utility spaces, etc<br>• Office/meeting 4 ACH | | | Refer to the M&E Clarification Log in Contract Data Part 2 for typical single bed ward. |

Technical Clarification 4, Item 10.0 **(Please refer to Bundle 17, Document 17, Page 927)**

Renewables/Sustainability/BREEAM - Item 10 Energy Model confirms the acceptance of the strategy of a sealed building with chilled beams.



| | | | | | | |
|---|---|---|---|---|---|---|
| | | | 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. | Y | Info | Refer to Sustainability and Energy Issues |

Item 10 – p3 Clarifications Log **(Please refer to Bundle 17, Document 68, Page 2821)**

## 3.6 M&E Clarifications Log

The M&E Clarifications Log (Please refer to Bundle 16, Document 23, Page 1662) captured the agreed contractual position on the M&E related clarifications raised initially by the GGC Board/Technical advisors on the BM Contractor's M&E bid design proposals.

The main M&E Design Clarification of note being the agreement to reduce the Ward Air Changes from 6AC/HR to 2.5AC/HR, with the non-compliance noted and accepted as the Agreed Contract position. Refer to M&E Clarifications Log - Ventilation – pages 4-5 **(Bundle 16, Document 23, Page 1662)**.

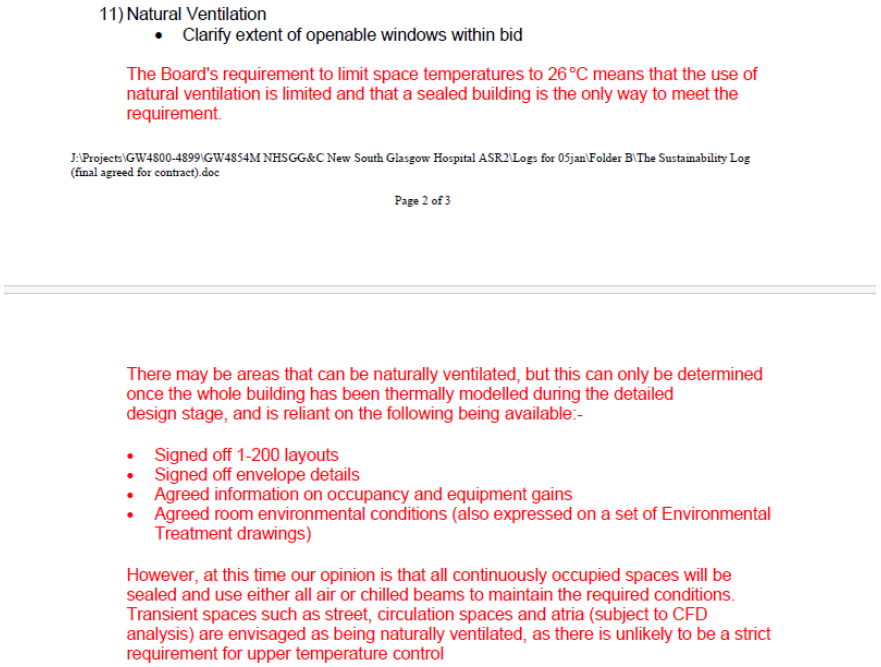
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | - | - | Ward Air change to be 6AC/HR, currently shown as 2.5AC/HR which is not in compliance with SHTM 03-01. | **Agreed** | Brookfield proposal as outlined within the bid submission is to incorporate chilled beams as a low energy solution to control the environment which do not rely on large volumes of treated air or variable natural ventilation. All accommodation is single bedrooms and therefore the need for dilution of airborne microbiological contamination should be reduced (rooms could also be at slightly negative pressure to corridor).<br>Providing 6 air changes is energy intensive and not necessary. | | **Agreed**<br>The proposal is accepted on the basis of 40 litres per second per single room (8 litres per second per second) for one patient and four others.<br><br>Joint review to be carried out between the Board and Brookfield of the energy model to determine any impact on the energy target/BREEAM rating.<br><br>Brookfield, however, remain responsible for achievement of the energy target/BREEAM, with £250,000 added to the contract sum in this regard. |
| | | | | | | | Negative pressure to be created in the design solution. |

Ventilation – p4-5 M&E Clarifications Log **(Bundle 16, Document 23, Page 1662)**

### 3.7 The Sustainability Log

The Sustainability Log **(Bundle 17, Document 18, Page 935 – 936)** was co-ordinated with the agreed Ventilation Strategy including reduced air changes to the Typical Wards (refer to page 2 of the Sustainability Log). To achieve the more stringent than HTM Guidance upper temperature limitations all continuously occupied spaces would require mechanical air cooling or chilled beams. There was an agreement to review the strategy during Stage 2 as the design developed to a point where the whole building could be thermally modelled. At the Bid Stage the focus was on the Ward Tower, given this was where there would be a preference for natural ventilation for patient control

and comfort. A large proportion of the podium departments contained specialist areas such as Theatres, Critical Care and Radiology, which would require a sealed façade to comply with the technical requirements.



11) Natural Ventilation

- Clarify extent of openable windows within bid

The Board's requirement to limit space temperatures to 26°C means that the use of natural ventilation is limited and that a sealed building is the only way to meet the requirement.

J:\Projects\GW4800-4899\GW4854M NHSGG&C New South Glasgow Hospital ASR2\Logs for 05jan\Folder B\The Sustainability Log (final agreed for contract).doc

Page 2 of 3

There may be areas that can be naturally ventilated, but this can only be determined once the whole building has been thermally modelled during the detailed design stage, and is reliant on the following being available:-

- Signed off 1-200 layouts
- Signed off envelope details
- Agreed information on occupancy and equipment gains
- Agreed room environmental conditions (also expressed on a set of Environmental Treatment drawings)

However, at this time our opinion is that all continuously occupied spaces will be sealed and use either all air or chilled beams to maintain the required conditions. Transient spaces such as street, circulation spaces and atria (subject to CFD analysis) are envisaged as being naturally ventilated, as there is unlikely to be a strict requirement for upper temperature control

Sustainability Log p2 **(Bundle 17, Document 18, Page 935 – 936)**

### 3.8 Summary

Sealed Building

The Sustainability Log confirms that the agreed Contract position was in order to achieve the Board's requirement to limit space temperatures to 26deg that a sealed building was the only way to achieve this. There was an agreement to review again during Stage 2 when the full Thermal Model would be available.

Ward Air Changes

The M&E Clarification Log confirmed the acceptance of the Contractor's proposed design solution for the Ward Air changes to be 2.5 AC/H. It is unclear whether this was the agreement for all Wards, although it should be noted at this stage the MEP Design addressed a 'Typical Ward' only. Section 2.45 **A52701549 – Typical Ward Supply System Schematic - July 2009 Bundle 43, Volume 5, Page 48** shows a Typical Ward Supply System Schematic of the proposed ventilation system. It should be noted that this was not the intended design solution for Isolation Rooms. Section 2.45 **A52701548 - Typical Isolation Room Supply Schematic - July 2009**

**Bundle 43, Volume 5, Page 47** is a Typical Isolation Room Supply Schematic of the proposed ventilation system.

Active Chilled Beams

The ventilation & air treatment design strategy proposed and agreed confirms that all ward rooms will be provided with a means of mechanical cooling in the form of an active chilled beam. The active chilled beams operate most effectively with the windows sealed as this reduces the likelihood of condensation. NA-IBI were familiar with the use of chilled beams in hospitals. These were adopted by ZBP in the heating and cooling strategy at Peterborough City Hospital, which was a mixed mode ventilation strategy. These are also installed historically in other UK Healthcare Projects, such as Great Ormond Street Hospital, London; Royal London and St Bart's Hospitals, London; Gartnavel General Hospital, Glasgow; Beaston Oncology, Glasgow; New Victoria Hospital, Glasgow.

Chilled beams were a more innovative and sustainable way of cooling rooms, which required less energy than using mechanical ventilation to cool the air. As seen on page 11, HTM 03-01 Specialised Ventilation (2007) **(Bundle 19, Document 36, Page 640)** chilled beams were permitted in HTM 03-01 and noted as increasingly common. There was limited design guidance and restrictions noted within the HTM at the time of the proposed design solution.

**Chilled beams**

2.43 The use of chilled beams for the provision of heating, cooling and ventilation is increasingly common in healthcare premises.

2.44 Active chilled beams providing tempered, filtered air to the room can provide effective local control of environmental conditions.

2.45 Care should be taken in positioning chilled beams to ensure that cold draughts are avoided, particularly when used in the cooling mode. The control settings should ensure that the external elements of the beam are always above dew-point. Manufacturers of these devices are able to provide specific advice on the siting and design limits of their equipment.

2.46 Chilled beam units should be easily accessible for cleaning and maintenance.

HTM 03-01 Specialised Ventilation (2007) p11 **(Bundle 19, Document 36, Page 640)**

## 4. STAGE 2 - DETAILED DESIGN OF THE ADULT AND CHILDREN'S HOSPITALS

### 4.1 Summary

**4.2** Stage 2 of the project involved development of the hospital designs. This part of the project commenced in November 2009 and was completed in November 2010. As part of my role, I was the designated lead for the set-up of the 1:200 and 1:50 design processes. I also assisted in the RDS process, which was led initially by Tribal Consulting, the healthcare planners. Throughout this stage, I managed the IBI team in the production of our design, and worked closely with GGHB, BM and the other members of the Design Team to oversee the "design deliverables" set out at Appendix K of the Invitation to Participate in Dialogue ("ITPD"), which were required for submission of GGHB's Full Business Case ("FBC") to the Scottish Government. Our Project Director, Neil Murphy, working closely with our Masterplanning and Architecture Lead, Jamie Brewster, and managed the process of achieving formal planning consent for the project from Glasgow City Council which was required to occur concurrently.

**4.3** The Stage 2 Design Programme was structured around the clinical stakeholder UGMs. Again, I was the IBI lead in the development of the UGM timetables, supporting the GGHB Project Team to develop meeting protocols and I prepared and managed the 1:200 UGM Tracking Schedule & Programme **(Please refer to Bundle 17, Document 30, Page 1387).** A total of 46 different clinical department groups were established, which went through three (in some cases four) rounds of clinical user consultations to achieve a "sign-off" from GGHB in May 2010.

**4.4** Following the conclusion and agreement of the 1:200 Department Design Stage, work commenced on the 1:50 Designs; initially to ensure the fixtures, fittings and equipment had been incorporated into one of every Room Type identified in the hospitals. A total of approximately 500 room type drawings were developed for Appendix K. I worked closely with our specialist 1:50 team based in Cape Town, who were led by Alex Van Den Berg. Alex had previously worked in the UK in Nightingale's Harwell Office and was a

specialist in 1:50 room loading and the management of the associated Codebook databases. We developed the programme and process together; Alex also worked closely with George Iliopoulos, who was Tribal's RDS and Equipment Lead, and they developed the methodology and information flows between the ADB database and Codebook database, including the exporting and importing of the environmental data. The production of the RDSs was managed and led at this stage by the Health Planners, Tribal. George liaised directly with the GGC NHS lead for the RDS, Frances Wrath, with the final agreed template RDSs imported into the IBI project Codebook database by Alex and his team.

**4.5** This was an important process in developing the specifications for each of the different types of room, which served as a detailed brief for the 1:50 design stage, and a brief for the mechanical and electrical engineers to progress their technical design **(A52701451 - NSGH 1:200 & 1:50 Design Process Map – undated – Bundle 43, Volume 4, Page 768).**

**4.6** Concurrently with the 1:200 UGMs, a formal dialogue commenced with Glasgow City Council Planning Department. This consisted of a series of meetings and presentations to the planning team and various stakeholders including Architecture Design Scotland and other statutory bodies (Scottish Water, SEPA etc) to ensure the external massing, materials and site masterplan responded to their various requirements prior to the formal planning submissions procedures. **A52701539 – New South Glasgow Hospital Project - Stage 2 Detailed Design to Full Business Case Programme – Bundle 43, Volume 5, Page 16.**

**4.7 Team Structure**

The intensive 18-week design period for the bid required a team of approximately 16 staff in the UK, supported by our specialist delivery team who were based in Cape Town. This team was reduced to a minimum to respond to the bid clarifications from September until the end of 2009. Following our Team's selection by the NSGH Board as their preferred partner on 4th November, 2009 the 'cooling-off' period was used to develop the

project plan and programme, review the fees and associated resources, and build a team and structure to deliver the project.

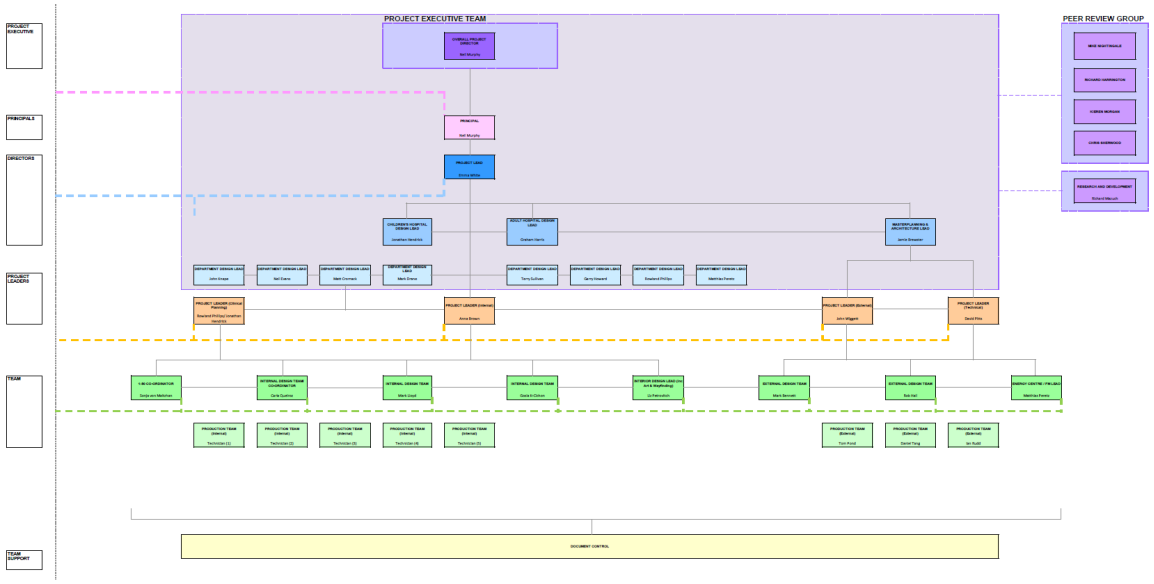
**4.8** The core project team were incrementally built up again to commence the Stage 2 Programme at the beginning of January 2010. As the IBI Project Lead I had the responsibility for developing our Project Delivery Strategy, including setting-up the team and structure to deliver the programme.

**4.9** The initial strategy was to have a Project Director/Lead for the Adult Hospital, Project Director/Lead for the Children's Hospital, a Project Director/Lead for Masterplanning & Architecture, and a Clinical Design Lead, with a set of Project Leaders for Internals, Clinical Planning and Externals managing a team beneath them following a similar structure.

**4.10** Due to the scale of the hospital, totaling approximately 175,000m2, and the challenging programme requirements to achieve the Appendix K/FBC submission in approximately 9 months, we needed to expand the Senior team to design the 46 departments and we brought together a team of Department Design Leads from across our UK offices in Harwell, Cardiff and Rochdale, who were our most experienced Senior Architects and Designers to effectively provide a 'whole practice' approach. We reviewed who had the most relevant experience for each department type and designated the Department Design Leads.

**4.11** The Stage 2 Department Design Leads were Graham Harris, Garry Howard, Rowland Phillips, Matthias Peretz, Terry Sullivan, Jonathan Hendrick, John Knape, Neil Evans, Mark Drane and Matt Cromack. This group led the design of their designated departments at each of the 46 User Group Meetings set up for the different areas of the hospitals. Each of the department leads was responsible for reviewing their designs against the department briefs, and generally in relation to work around their allocated departments. The department leads reported to myself, Anna Brown, Project Leader (Internals) and her assistant, Carla Queiroz, who were based with me in the London office, which was the lead office. The overall process was managed by me in my role as overall Project Lead. In terms of

other individual roles, Graham Harris maintained an overview role on clinical design issues relating to the Adult Hospital as well as actively participating in various aspects of the design/other stakeholder engagement requirements. Jonathan Hendrick had the equivalent role on the Children's Hospital, where he developed the design and led the user group meetings for the majority of its departments. **A52701540 - New South Glasgow Project - Organogram Stage 2 – Bundle 43, Volume 5, Page 22.**




Organogram showing IBI team structure - Stage 2. **A52701540 - New South Glasgow Project - Organogram Stage 2 – Bundle 43, Volume 5, Page 22.**

**4.12 User Group Meetings (UGM) / Stakeholder Process / Meeting Protocols**

As part of my role as Project Lead, I also led and set up a number of key project protocols and design management tools/schedules.

1:200 User Group Meeting Programme

The 1:200 User Group Meeting Tracking Schedule & Programme was developed to support both our management of this complex process, but also to provide the GGC Project Team with clarity over who from the NA-IBI team would the Department Design Lead, which drawing(s) would be issued, when they would be issued before the UGM meeting and the date of the meeting. This would also serve as a Tracking Schedule, to check and report on the progress of each Department. The Department Design Leads would report back to me and our Internal Project Leader after their meetings on the meeting progress and issues. I would then record the status and report back

through the NSGH Hospital Design Group for agreement with the NHS Project Team. **A52701547 – New South Glasgow Hospitals 1:200 User Group Meeting Tracking Schedule and Programme Rev 16 (FBC submission) Bundle 43, Volume 5, Page 45.**

1:200 User Group Meeting Timetable

This was supported with a meeting timetable, which was updated to take account of any amendments to meeting dates, and we used this to clarify our team attendance. In addition, a supplementary meeting schedule was used to confirm the locations for the meetings which was confirmed by the NHS Project Team. **A52701544 - Adult Design User Group Meetings 1 - 1:200 Stage (Week One) Bundle 43, Volume 5, Page 34;**
**A52701542 - Adult Design User Group Meetings 2 - 1:200 Stage (Week One) Bundle 43, Volume 5, Page 27;**
**A52701546 - Adult Design User Group Meetings 3 - 1:200 Stage (Week One) Bundle 43, Volume 5, Page 41;**
**A52701543 - Children's Design User Group Meetings 2 - 1:200 Stage (Week Three) Bundle 43, Volume 5, Page 30;**
**A52701545 - Children's Design User Group Meetings 3 - 1:200 Stage (Week Four), Bundle 43, Volume 5, Page 38;**
**A52701541 - Children's Design User Group Meetings 1 - 1:200 Stage (Week Four) Bundle 43, Volume 5, Page 24.**

Drawing & Correspondence Protocol

Although the standard for project communications was through Aconex, it was agreed by Multiplex that NA-IBI could issue and distribute the drawing packages to the NHS Project Team through Outlook, and we would subsequently issue the drawings to the rest of the Design Team on Aconex. This email issue of the 1:200 drawing packages was generally through myself, Anna and Carla. The NHS would also send their queries to us, so we could co-ordinate with our team. (**A52700909 – NSGH Drawing & Correspondence Protocol for UGMs – 03 February 2010 – Bundle 43, Volume 4, Page 296).**

This process allowed the NHS Project Team to easily locate the correct drawings for each of the 46 department meetings, and to issue internally to their wider users. We would receive a copy of these ‘briefing’ emails from the NHS, however we were not party to any ongoing correspondence between the NHS Project Team and their users. We were aware of the vast numbers

of stakeholders the NHS Project Team had to consult with, which was hugely complex as there were effectively five hospitals coming into one. This was particularly so for some of the larger Adult Hospital departments, such as Critical Care and the Inpatient Ward, which during some early meetings had up to 30 NHS attendees.

Change Control Process

At Stage 2, a key requirement was to agree the 1:200 Department Layouts, however as the Bid Design had been developed only with the feedback from the GGC Project Team and their Technical Advisors, it was important that the users were provided with the opportunity to comment on the design and ensure that it met their clinical requirements.

As a result, quite an 'open' definition of Design Development was proposed. This was captured in a key protocol document produced by myself and agreed between Multiplex and the NHS Project Team. **(A52700768 - NSGH - Scheme Design – 1:200 Stage of Design Development – undated- Bundle 43, Volume 4, Page 292).**

The NHS Project Team produced their own protocol document 1-200 Design Process Explained – Final (**A52697603 – 1:200 and 1:50 Design process Explanation by Emma White – undated – Bundle 43, Volume 4, Page 24**) to further explain their own internal process and procedures, to explain to the users what would be required if any changes were requested. In reality, the main concerns were any changes which impacted the boundary area of a department, as these could have impacts on an adjacent department, potentially impacting the overall building area/footprint and thus increasing the cost.

In addition, the NHS Project Team produced a **User Group Remit (A52701528 - User Group Terms of Reference - Haemato-Oncology Bundle 43, Volume 6, Page 74)** document which clarified the Terms of Reference for the User Group, confirming the name of each Group Lead, their responsibilities and the overall process. The aim of the User Group was clarified as follows;

'To provide a forum for agreement/sign off of the 1:200 and 1:50 architectural drawings for the Department. Please note that the architectural drawings will be based on the previously signed off Schedules of Accommodation which are now fixed. Sign-off of the drawings will follow a formal procedure and will be recorded on the "Design Acceptance Procedure" Form. This form will record the outcome of each meeting and be signed by the User Group Lead on behalf of the Directorates at the end of each meeting.'

It should be noted that the Multiplex team, including NA-IBI, were not involved in the development and approval of the Client Brief Schedule of Accommodation.

'**3. Membership**

- The membership of the group has been approved by the Acute Services Director(s)
- The Group will have an identified Lead
- Members will be responsible for (i) discussing the design with colleagues and in the user meetings (ii) for communicating the priorities and associated work plans agreed by the Group to their colleagues following each meeting'
-

'**4. Group Lead**

- The Group Lead will be responsible for the ensuring that Directorate priorities are reflected in the design
- The Group Lead will be responsible for keeping their Director appraised of the status of the design process
- Where differing options regarding the design arise the Project Team will take their instruction from the Group Lead'

It should be noted that the Multiplex team, including NA-IBI, were not involved in the decision of who was a group member or lead. All our dialogue was through the NHS Project Team.

**4.13 1:200 Department Layout Plans**

In general, all the 1:200 Department Layouts were signed-off and approved within the 3 rounds of clinical UGMs. There were a small number of departments which required a 4th meeting to resolve some outstanding concerns from the users.

The NHS signatories on the 1:200 department layout plans were the designated Department User Group Lead(s); the NHS Project Manager (Heather Griffin for the Adult Hospital and Mairi Macleod for the Children's Hospital); the NHS Project FM Lead (Karen Connelly); the NHS Project Nursing Lead (Fiona McCluskey) and the NHS Project Infection Control Lead (Jackie Stewart). You will also note the signature of the NA-IBI Department Lead.

I have reviewed our User Meeting records to provide a summary of the departments of interest to the SHI, namely Ward 4B – QEUH; Ward 4C – QEUH; Level 5 – QEUH; Critical Care – QEUH; Ward 2A & 2B – RHC; PICU – RHC; and Isolation rooms.

**Department #18 UGM - Adult Haemato-Oncology** – [Ward 4B – QEUH]

**UGM 01 - Date of Meeting 4th February, 2010**

The 1:200 Department Layout prepared as part of the ITPD Bid Submission was issued to the Users in the Briefing Pack UGM 01. New South Glasgow Hospital Haemato-Oncology User Group Meeting Thursday 4th February 2010 **(A52701416 - Design Acceptance Procedure Form - Haemato-Oncology User Group Meeting Action Points – 04 February 2010 – Bundle 43, Volume 4, Page 404)**. The User Group Remit identified Gary Jenkins as the designated Group Lead.

During UGM01 there was a considerable doubt as to whether the unit would be in the new Hospital. The recorded minutes of the meeting were issued by the NHS Action Points - Haemato-oncology 4 Feb 2010 **(A52701416 - Design Acceptance Procedure Form - Haemato-Oncology User Group Meeting Action Points – 04 February 2010 – Bundle 43, Volume 4, Page 404**).

'Item 2 noted 'Potential options for Haemato-Oncology are:

| | Inpatient Beds | Day Beds |
|---|---|---|
| Option 1 | 10 | 0 |
| Option 2 | 7 | 0 |
| Option 3 * | 0 | 0 |

***** Under this option Haemato-Oncology would be absorbed into current medicine beds and day activity to ACH.

14 inpatient beds and 4 day beds is no longer an option.'

Item 3 noted 'Ventilation – Options 1 & 2 – require Hepa Filtered and no opening windows, reliance on mechanical ventilation throughout.' and 'One Treatment Room negatively pressurised as before.'

A revised brief was issued FW Haemato-oncology - revised schedule (**A52701395 – Email chain from Emma White to Neil Evans and others – Haemato-oncology – revied schedule – 17 March 2010 – Bundle 43, Volume 4, Page 398).**

'As discussed Haemato-- oncology are reducing from 14 inpatient beds and a day case area to 10 beds and no day case area. However, as highlighted on the attached schedule, please note that the areas released by Haemato-oncology (ie 4 beds and day case area) should be ring fenced on the layouts for future development.'

- **UGM 01 Change Status – B (medium change)**

**UGM 02 - Date of Meeting 25th March, 2010**

A revised 1:200 department layout was prepared to reflect the revised brief and issued for comments to Heather Griffin prior to the issue for UGM02. Further updated 1:200 department layout plans were developed in sketch form initially (refer to NA-ZE-04-PL-252-403 REV02 and REV 03 HAEMATO-ONCOLOGY) prior to being updated in the CAD model and issued for UGM02.

NA-ZE-04-PL-252-403 REV02 HAEMATO-ONCOLOGY **(A52701536 - Fourth Floor Haemato-Oncology Ward 1:200 Design Development - 22 March 2010 – Bundle 43, Volume 4, Page 1495)**

NA-ZE-04-PL-252-403 REV03 HAEMATO-ONCOLOGY **(A52701534 – NA-ZE-04-PL-252-403 REV03 HAEMATO-ONCOLOGY Bundle 43, Volume 6, Page 13)**

The recorded minutes of the meeting were issued by the NHS Action Points - Haemato-oncology 25 March 2010 (**A52701531 – Bundle 43, Volume 6, Page 1130)**

Comments were also received from Tribal, the Healthcare Planner on email (refer to 2010-03-26 - Scott McCallum - Adult Haem Onc Ward.) **(A52701419 - Email from Scott McCallum to Mark Drane and Neil Evans - Adult Haemato - Oncology Ward - 26 March 2010 – Bundle 43, Volume 4, Page 1490).**

ZBP mark-up comments were received on or around 7th April 2010 (refer to 2010-04-07 NA-ZE-04-PL-252-403_03 COMMENTS.) **(A52701529 – ZBP comments on 1:200 Fourth Floor Haemato-oncology Ward – 30 March 2010 – Bundle 43, Volume 4, Page 1489).**

- **UGM 02 Change Status – B (medium change)**

**UGM 03 – Date of Meeting 7th May, 2010**

The updated 1:200 department layout was issued prior the UGM 03, which took place on 7th May, 2010. All the Action Points were addressed and the design was accepted by the users, with the Design Acceptance Form returned.

- **UGM 03 Change Status** – **SIGNED-OFF**

- Haemato-oncology - 7 May 2010 [NHS Design Acceptance Sign-Off Form] **(A52701532 – 1:200 Haemato-oncology User Group Meeting Bundle 43, Volume 6, Page 17)**
- 2010-05-07 NSGH UGM3 Haemato-oncology04 1-200 Signoff **(A52701417 – NSGH Haemato-oncology Ward – 1:200 Fourth Floor Plan – 02 September 2009 – Bundle 43, Volume 4, Page 406)**

**Department #4 UGM – Adult Renal Inpatients & Day Unit –** [Ward 4C – QEUH]

**UGM 01 - Date of Meeting 21st January, 2010**

The 1:200 Department Layout prepared as part of the ITPD Bid Submission was issued to the Users in the Briefing Pack UGM 01. New South Glasgow Hospital Renal User Group Meeting 21st Jan 2010 (**A52701394 - Email from Carol Craig to Isobel Brown and others - New South Glasgow Hospital: Renal User Group Meeting, 21st Jan 2010 - 15 January 2010 – Bundle 43, Volume 4, Page 1444).** The User Group Remit identified Julia Little as the designated Group Lead.

The recorded minutes of the meeting were issued by the NHS Action Points - Renal Meeting 210110 (**A52701017 - "Design Acceptance Procedure Form - Generic Ward User Group meeting Action Points - 20 January 2010 – Bundle 43, Volume 4, Page 360).** In addition, the IBI Department Lead prepared a mark-up to capture the user comments raised during the meeting. There was extensive dialogue during the meeting, with dialogue afterwards between the IBI Department Lead and Tribal. A request was also made to the NHS to visit the existing renal dialysis facilities at Stobhill.

- **UGM 01 Change Status – B (medium change)**

**UGM 02 - Date of Meeting 10th March, 2010**

The updated 1:200 department layout was issued prior the UGM 02, which took place on 10th March, 2010. The recorded minutes of the meeting were issued by the NHS Action Points - Renal Meeting 100310 (**A52701445 – NSGH – Medical Planning Group meeting No 2: 10th March 2010 – Action Note – Bundle 43, Volume 4, Page 747).**

- **UGM 02 Change Status** (L4 Renal Ward/Day Unit) - **A (minor change / nominal change)**

**UGM 03 - Date of Meeting 22nd April, 2010**

The updated 1:200 department layout was issued prior the UGM 03, which took place on 22nd April, 2010. There were a small number of outstanding Action Points recorded and the design was accepted by the users subject to addressing the remaining comments, with the Design Acceptance Form returned.

- **UGM 03 Change Status – SIGNED-OFF**

- Renal - 22 April 2010 [NHS Design Acceptance Sign-Off Form] **(A52701504 – 1:200 Renal User Group Meeting Bundle 43, Volume 6, Page 14)**
- 2010-04-22 NSGH UGM3 Renal Ward 04 1-200 Signoff (**A52701505 - NSGH - 1:200 Fourth Floor Plan - Higher Acuity Renal Ward/Renal Ward - 02 September 2009 – Bundle 43, Volume 4, Page 1433).**

**Department #1 UGM – Adult Generic Inpatients –** [Level 5 – QEUH]

Note Level 06 was reviewed to agree the 1:200 layout for the Generic Inpatient Wards. At this stage of the design the ward tower was designed as Generic Wards from Level 05 upwards.

**UGM 01 - Date of Meeting 20th January, 2010**

The 1:200 Department Layout prepared as part of the ITPD Bid Submission was issued to the Users in the Briefing Pack UGM 01. New South Glasgow Hospital Generic Ward Users Group Meeting 20th Jan 2010 **(A52701397 – Email from Carol Craig sent on behalf of Heather Griffin – New South Glasgow Hospital Generic Ward Users Group Meeting – 20 January 2010 – Bundle 43, Volume 4, Page 1497)**.

The User Group Remit identified John Stuart as the designated Group Lead. The recorded minutes of the meeting were issued by the NHS Action Points Ward User Group 210110 **(A52701142 – Generic Ward User Group Meeting - Action Points Bundle 43, Volume 6, Page 12).**

The isolation rooms/lobby were omitted (the ITPD Brief required 1 room per 28 bed ward to be used for isolation purposes and that will have an associated gowning lobby). The remaining comments related to the support rooms, and improving the visibility of the end bedrooms.

- **UGM 01 Change Status** - **A (minor change / nominal change)**

**UGM 02 - Date of Meeting 8th March, 2010**

The updated 1:200 department layout was issued prior the UGM 02, which took place on 8th March, 2010. The recorded minutes of the meeting were issued by the NHS. Action Points - Wards 8 March 2010 (**A527015444 - Management - BREEAM - 1 :200 & 1 :50 Design Process - 18 January 2010 – Bundle 43, Volume 4, Page 723**).

- **UGM 02 Change Status** - **A (minor change / nominal change)**

**UGM 03 - Date of Meeting 20th April, 2010**

The updated 1:200 department layout was issued prior the UGM 03, which took place on 20th April, 2010. In addition, the draft 1:50 room layouts were issued for a typical single bedroom, ensuite and clean utility. There were a small number of outstanding Action Points recorded on the generic ward and the design was accepted by the users subject to addressing the remaining comments, with the Design Acceptance Form returned.

- **UGM 03 Change Status – SIGNED-OFF**
- Wards - 20 April 2010 [NHS Design Acceptance Sign-Off Form] (**A52701526 - NSGACL - Ward Users Group - Attendance Sheet of the meeting on 20th of April 2010 – Bundle 43, Volume 4, Page 1482).**
- 2010-04-20 NSGH UGM3 Generic Inpatient Ward 06 1-200 Signoff01 (**A52701530 – UGM3 Generic Inpatient Ward 06 Sign off – 20 April 2010 – Bundle 43, Volume 4, Page 1488).**
- 2010-04-20 NSGH UGM3 Generic Inpatient Ward 06 1-200 Signoff02 (**A52701527 - UGM3 Generic Inpatient Ward 06 1:200 Sign off - 20 April 2010 – Bundle 43, Volume 4, Page 1487).**

**Department #11 UGM - Adult Critical Care** [Critical Care – QEUH]

**UGM 01 - Date of Meeting 1st February, 2010**

The 1:200 Department Layout prepared as part of the ITPD Bid Submission was issued to the Users in the Briefing Pack UGM 01. New South Glasgow Hospital Critical Care Users Group Meeting Monday 1st February 2010 (**A52701396 - Email from Carol Craig to Sandy Binning and others - New South Glasgow Hospital : Critical Care Users Group Meeting, Monday 1st February 2010 - 25 January 2010 – Bundle 43, Volume 4, Page 1420).**

The User Group Remit identified Jacquie Campbell (Surgical) and Michelle Boyd (Medical) as the designated Group Lead (s).

The recorded minutes of the meeting were issued by the NHS Action Points - Critical Care, 1 Feb 2010 (**A52701500 - Design Acceptance Procedure Form Critical Care User Meeting Action Points– 01 February 2010 – Bundle 34, Volume 4, Page 1411).**

There were extensive user comments during the meeting which were recorded on the Action Points.

A revised sketch 1:200 Department Layout 2010-02-01 UGM1 Critical Care 01 Sketch **(A52701501 - UGM1 Critical Care 01 Sketch - 01 February 2010**

**– Bundle 43, Volume 4, Page 1417)** was prepared to respond to the Critical Care user comments. There were significant changes required, primarily to move ICU (the most critically ill patients) to the middle of the department. The priority was to provide better lines of sight from the nurse bases, and to locate the support services within the clusters,

The layout for the Isolation Rooms were more diagrammatically representative of the layout within HBN 04 Supplement 01 – Isolation Facilities (p14 HBN 4 Supplement 1 - Isolation Facilities) **(Bundle 26, Document 4, Page 286),** rather than the layout in SHPN 57 Facilities for Critical Care (p83 SHPN 57 Facilities for Critical Care) (**A52701495 - Scottish Health Planning Note 57 Facilities for critical care - Draft for Consultation - December 2008 – Bundle 43, Volume 4, Page 1318).** The user preference was to push the bed through a lobby to the side of the room, and to maximize glazing and visibility.

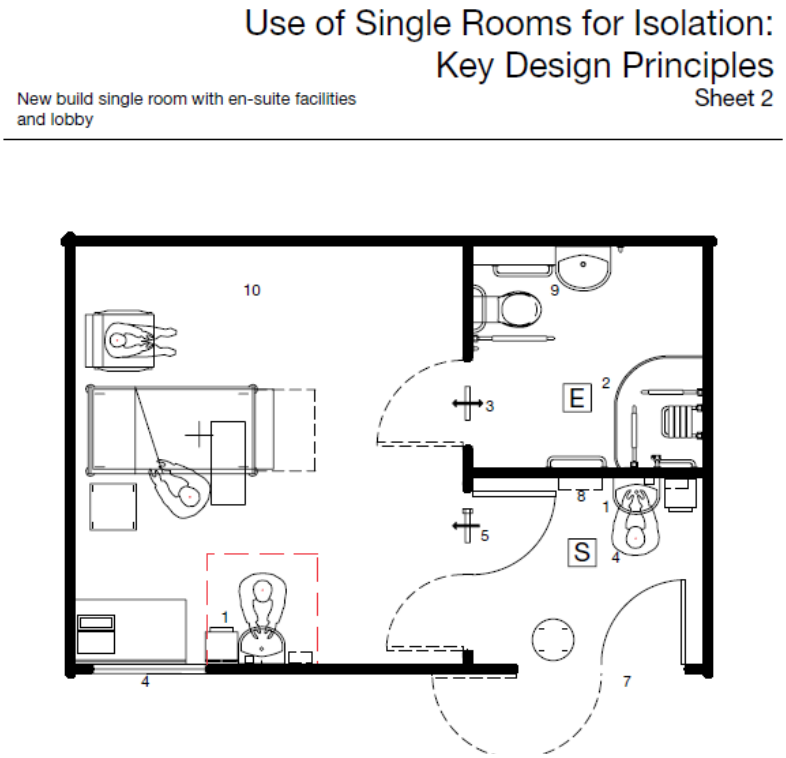



Diagram p14 HBN 4 Supplement 1 - Isolation Facilities **(Bundle 26, Document 4, Page 286)**

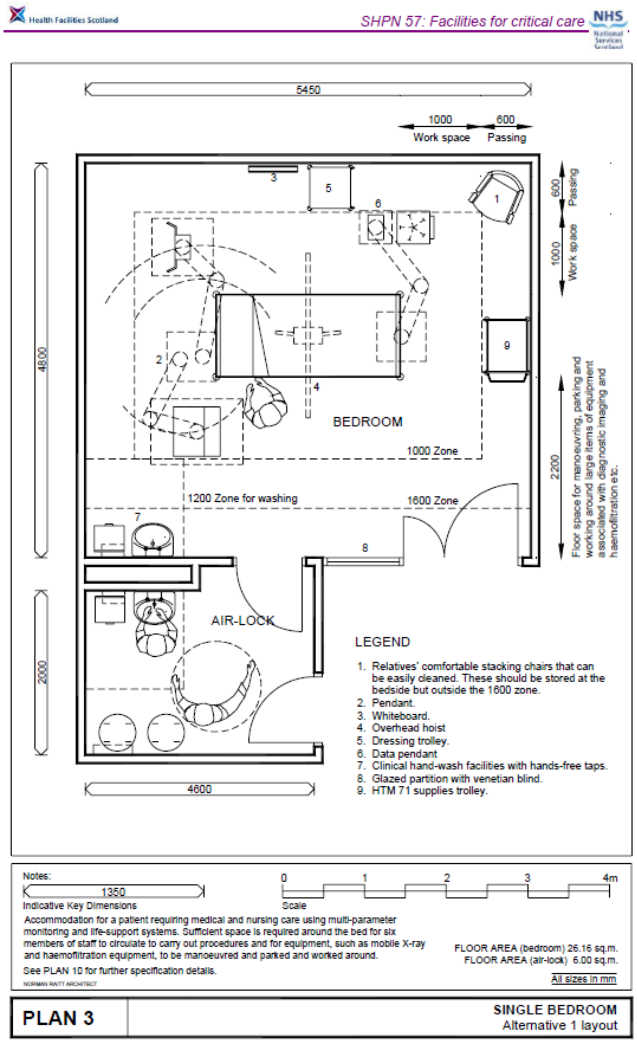
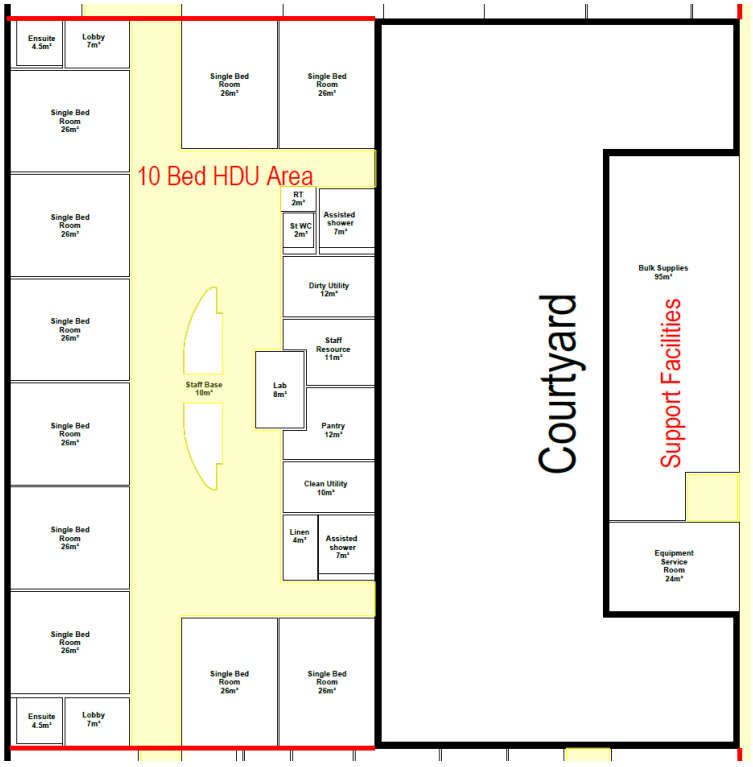
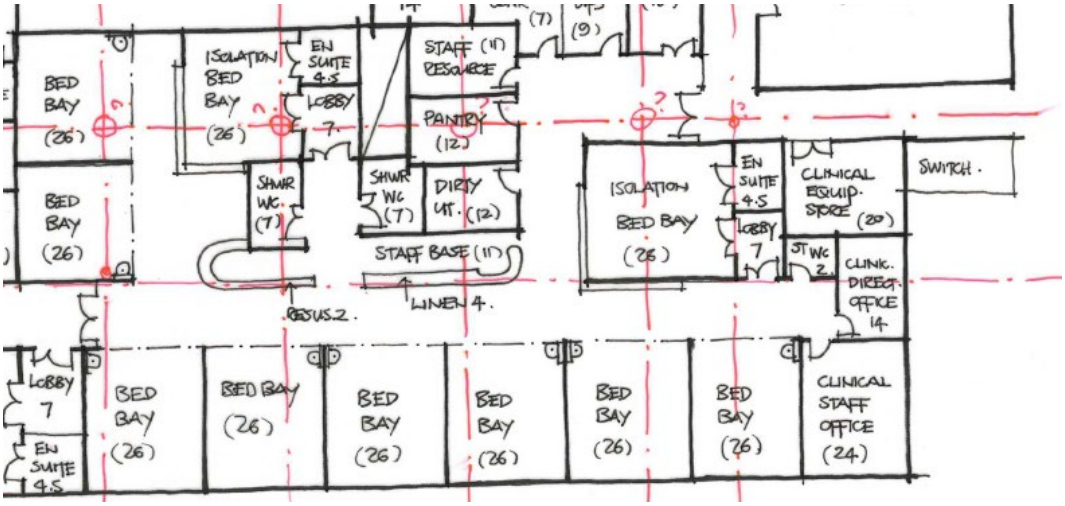



Diagram p83 SHPN 57 Facilities for Critical Care



Extract from Exemplar Design - **A52701468 – NSGH – 1:200 Critical Care Facility (Adults) Room Adjacencies – 30 April 2009 – Bundle 43, Volume 4, Page 1119**

It should be noted that the revised sketch was also closer to the Exemplar Design, with the lobby and ensuite adjacent to the Isolation Bed.




Extract from 2010-02-01 UGM1 Critical Care 01 Sketch **A52701468 – NSGH – 1:200 Critical Care Facility (Adults) Room Adjacencies – 30 April 2009 – Bundle 43, Volume 4, Page 1417**

- **UGM 01 Change Status - C (severe / significant change)**

**UGM 02 - Date of Meeting 19th March, 2010**

The updated 1:200 department layout was issued prior the UGM 02, which took place on 19th March, 2010. The recorded minutes of the meeting were issued by the NHS. Action Points - Critical Care 19 March 2010 (**A52701496 - Design Acceptance Procedure Form Critical Care User Meeting Action Points – 19th March 2010 – Bundle 43, Volume 4, Page 1317).**

A revised sketch 1:200 Department Layout 2010-04-07 UGM2 Critical Care 01 Sketch **(A52701503 - UGM2 Critical Care 01 Sketch - 07 April 2010 – Bundle 43, Volume 4, Page 1419)** was prepared to respond to the Critical Care user comments. A series of 3D interior images of the ICU and HDU areas showing layout of the beds and views from the central staff base were also produced to demonstrate the improvements to visibility.

- **UGM 02 Change Status – B (medium change)**

**UGM 03 - Date of Meeting 22nd April, 2010**

The updated 1:200 department layout was issued prior the UGM 03, which took place on 22nd April, 2010. There were a small number of outstanding Action Points recorded Critical Care - 22 April 2010 (**A52701498 - NSGACL - Critical Care User Group - Attendance Sheet of the meeting on 22nd of April 2010 – Bundle 43, Volume 4, Page 1412),** and the design was accepted by the users subject to addressing the remaining comments, with the Design Acceptance Form returned. Item 7 noting 'isolation room arrangement to be as sketch proposal to improve visibility'. This is captured within 2010-04-22 UGM3 Critical Care 01 Signoff Sketch 2 **(A52701493 - Sketch addressing Bullet point 9 on Notes from 20 April 2010 Critical Care Meeting – Bundle 43, Volume 4, Page 1315).**

There was also further correspondence on one Isolation Bedroom which had an odd shape to achieve natural daylight. 'With regard to Adults Critical Care 'Isolation Bedroom CCW-165' can you please retain the original layout for the bedroom and square off the en-suite so that it will be usable. The clinical users prefer this option as it gives them better visibility from the nurse's station, and they accept the fact that there will be no natural light from the courtyard into the bedroom.' The option with better visibility was subsequently agreed.

- **UGM 03 Change Status** – **SIGNED-OFF**
- **A52701498 - NSGACL - Critical Care User Group - Attendance Sheet of the meeting on 22nd of April 2010 – Bundle 43, Volume 4, Page 1412**
- **A52701499 - NSGH - 1:200 First Floor Plan- Critical Care - 02 September 2009 – Bundle 43, Volume 4, Page 1418**
- **A52701502 - Sketch Answering Query from Bullet Points 17&18 of Tuesday 20 April 2010 Critical Care Feedback – Bundle 43, Volume 4, Page 1416**
- **A52701493 - Sketch addressing Bullet point 9 on Notes from 20 April 2010 Critical Care Meeting – Bundle 43, Volume 4, Page 1315**

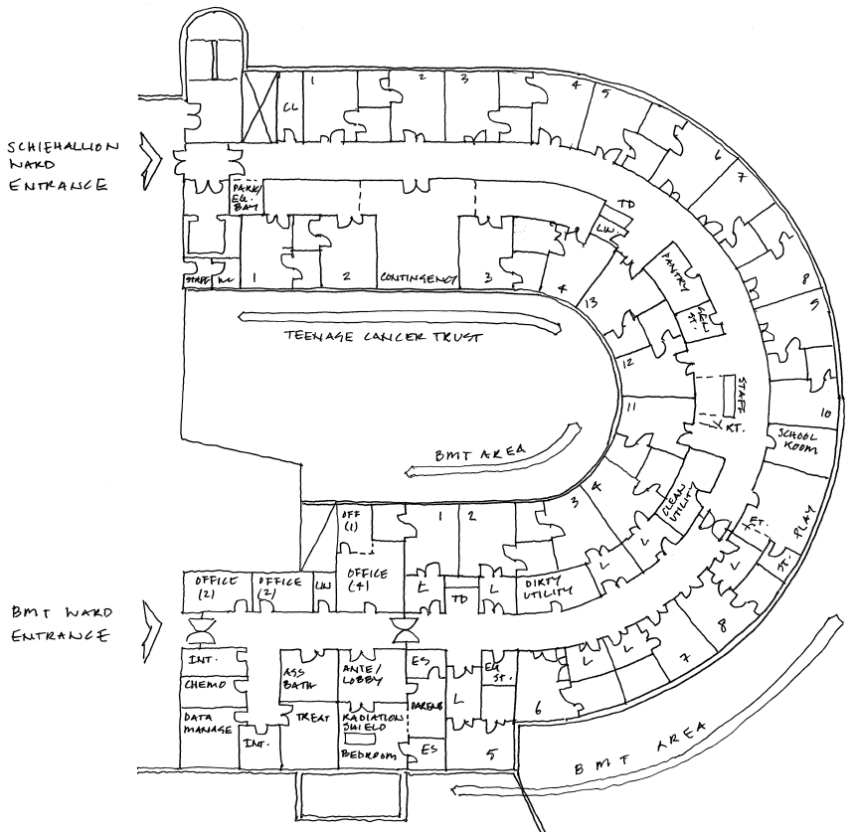
**Department #37 UGM – Children's Schiehallion, Day Case & TCT** [Ward 2A & 2B – RHC]

Note that at this stage Ward 2A was known as the Schiehallion Ward, and Ward 2B was the Day Case Unit. The Teenage Cancer Trust (TCT) was allocated ward space within the area known as the Schiehallion Ward.

**UGM 01 - Date of Meeting 18th February, 2010**

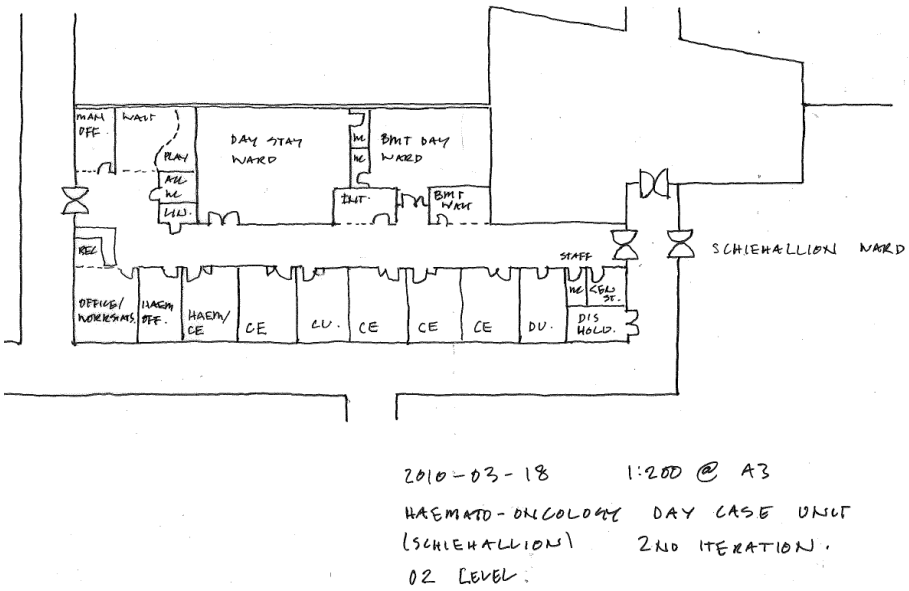
The 1:200 Department Layout prepared as part of the ITPD Bid Submission was issued to the Users in the Briefing Pack UGM 01. The recorded minutes of the meeting were issued by the NHS. ACTION NOTES - HAEMATO-ONCOLOGY **(A52701508 - Design Acceptance Procedure Form Action Points for Haemato-Oncology - 18 February 2010 – Bundle 43, Volume 4, Page 1435).**

There were extensive user comments during the meeting which were recorded on the Action Points; Mark-Up 1:200 drawing and further detailed comments which were shared after the meeting by Mairi Macleod (Children's Hospital NHS PM). 'New Children' which were comments on the 1:200 design, and 'RP draftSpec_Schiehallion Ward0210' **(A52701509 - Schiehallion Ward, Radiotherapy Treatment Suite RPA comments on the proposed 1:200 layouts (for discussion 18/02/10) – undated – Bundle 43, Volume 4, Page 1439)** which were specific technical comments from the Radiation Protection Advisor for the Radiation Treatment Suite.
A revised sketch 1:200 Department Layout; 2010-03-17 NCH Schiehallion 02 2nd iteration **(A52701511 - NCH Day Case (Schiehallion) Ward 02 2nd Iteration - 17 March 2010 – Bundle 43, Volume 4, page 1442)** was prepared to respond to the Schiehallion Ward/TCT user comments. The significant changes addressed comments on the separation of flows, with the BMT beds now accessed through the south entrance adjacent to Core K, and a lobby created by the additional doors separating the entrance support rooms and Radiation Treatment Suite from the ward. This allowed the BMT area to be 'stand-alone', preventing walk through, and all the Isolation Rooms with lobbies were re-located to this area. The TCT and remaining beds were to be accessed through the north entrance adjacent to Core L. The TCT was also separated from the ward with doors/partitions, to enable it to be identified as a separate stand-alone department.




2010-03-17 NCH Schiehallion 02 2nd iteration **(A52701511 - NCH Day Case (Schiehallion) Ward 02 2nd Iteration - 17 March 2010 – Bundle 43, Volume 4, page 1442)**

A revised sketch 1:200 Department Layout 2010-03-18 NCH Day Case Schiehallion 02 2nd **(A52701510 - NCH Day Case (Schiehallion) Ward 02 2nd Iteration - 18 March 2010 – Bundle 43, Volume 4, Page 1441).** It was prepared to respond to the Day Case user comments. The main comments of note swapped the Day Case and BMT Day Wards, provided partitions and a door to the BMT wait and added the additional ensuite WC which was required for the BMT ward.




2010-03-18 NCH Day Case Schiehallion 02 2nd Iteration **(A52701510 - NCH Day Case (Schiehallion) Ward 02 2nd Iteration - 18 March 2010 – Bundle 43, Volume 4, Page 1441)**

- **UGM 01 Change Status (Ward/TCT) - C (severe / significant change)**
- **UGM 01 Change Status (Day Case) - B (medium change)**
- **A52701508 - Design Acceptance Procedure Form Action Points for Haemato-Oncology - 18 February 2010 – Bundle 43, Volume 4, Page 1435**
- **A52701513 - 1:200 Second Floor Plan - NCH Schiehallion Ward/ Day Case Unit/ Theatres And Anaesthetics Service Offices - 18 February 2010 – Bundle 43, Volume 4, Page 1458**
- **A52701511 - NCH Day Case (Schiehallion) Ward 02 2nd Iteration - 17 March 2010 – Bundle 43, Volume 4, Page 1442**
- **A52701507 - Schiehallion Unit, New Children's Hospital Comments from Nan D McIntosh - 16 February 2010 – Bundle 43, Volume 4, Page 1437**
- **A52701537 – Fourth Floor Plan - NSGH Higher Acuity Renal Ward / Renal Ward – Bundle 43, Volume 5, Page 15**

**UGM 02 - Date of Meeting 16th April, 2010**

The updated 1:200 department layout was issued prior the UGM 02, which took place on 16th April, 2010. The recorded minutes of the meeting were issued by the NHS. ACTION NOTES - HAEMATO-ONCOLOGY 2ND

DESIGN REVIEW **A52701535 - Design Acceptance Procedure Form - Action Points - 2nd Design Review Meeting – 16 April 2010 – Bundle 43, Volume 4, Page 1496**

The majority of the UGM 01 comments were addressed in the updated design. The Day Case layout was agreed as acceptable in the meeting. Further work was required to the main Schiehallion ward for some support rooms, with the main issue of note related to the Radiation Suite.

- **UGM 02 Change Status – B (medium change)**
- **A52701535 - Design Acceptance Procedure Form - Action Points - 2nd Design Review Meeting - 16 April 2010 – Bundle 43, Volume 4, Page 1496**
- **A52701618 – Second Floor Plan, NCH Schiehallion Ward/Day Case Unit/Theatres and Anesthetics Service Offices Rev. 04 Bundle 43, Volume 5, Page 720**
- **A52701610 – NCH Sciehallion Ward and Day Case Unit Sketch 1:200 and A2 - Bundle 43, Volume 5, Page 632.**

**UGM 03 - Date of Meeting 17th May, 2010**

The updated 1:200 department layout was issued prior the UGM 02, which took place on 17th May, 2010. The recorded minutes of the meeting were issued by the NHS. ACTION NOTES - HAEMATO-ONCOLOGY 170510 **(A52701506 - Design Acceptance Procedure Form - Action Points for Haemato-Oncology - 17 May 2010 – Bundle 43, Volume 4, Page 1434).**

It should be noted that only 1 comment remained, which was to swap a store and staff WC. However, during his update following the completion of the Children's Hospital 1:200 UGMs Jonathan Hendrick, our Department Lead noted the following;

'2010-05-17 Schiehallion Ward – signed off subject to a minor drawing change, switching a wc and general store. However, this user group is refusing to sign off the drawing for operational reasons. They feel they are not getting the same accommodation as they have now.'

A further email response from Jonathan on the status of the sign-off record drawings on 22/06/2010 was as follows;

'Schiehallion, Day Case, TCT – the users refused to sign any drawings for operational reasons as they were not happy with their SOA. Mairi was to get signatures from the users or Directorate.'

The drawing NA-xx-02-PL-252-402_07 **(A52701512 - NSGH - 1:200 Second Floor Plan, NCH Schiehallion Ward/Day Case Unit/ Theatres and Anaesthetics Services Offices - 02 September 2009 – Bundle 43, Volume 4, Page 1443**) was updated to address the final comments from the UGM and issued to as a record copy to the NHS Board and Multiplex on 16/07/2010 on Aconex-NA-TRANSMIT-000105-Record Drawings from final 1-200 UGM comments & signoff **A52701611 – Aconex - NSGH - Adults & Children's - Record Drawings from final 1:200 UGM comments & signoff Bundle 43, Volume 5, Page 638**. I could not locate the user signed record copy but understood this was obtained by Mairi Macleod following additional internal NHS meetings.

Revision 09 was subsequently signed and approved by the NHS Board, returned to NA-IBI on Aconex-BMCE-TRANSMIT-006859 **(A52701427 - Mail from Glasgow DocControl - Brookfield Multiplex Construction Europe to David Bower and others - 1:200 Department Plan Drawings for RDD Review Returned with Comments and Review Status - 25 November 2011 – Bundle 43, Volume 4, Page 655)** on 25/11/2011.

- **UGM 03 Change Status – SIGNED-OFF** (Note this occurred during the 1:50 Room Type stage)

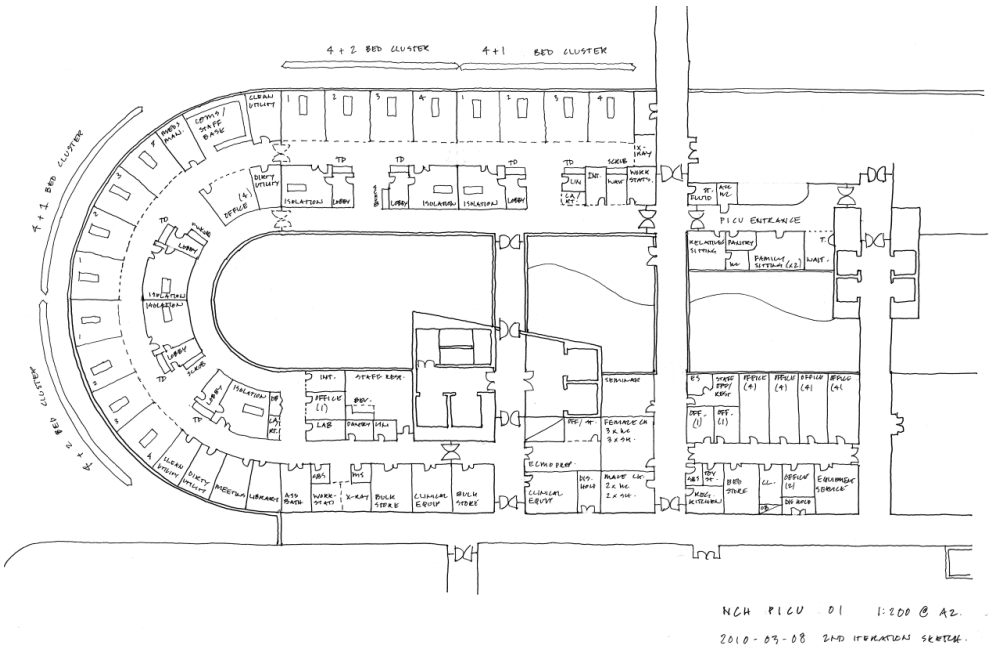
**Department #45 UGM – Children's Critical Care –** [PICU – RHC]

**UGM 01 - Date of Meeting 25th February, 2010**

The 1:200 Department Layout prepared as part of the ITPD Bid Submission was issued to the Users in the Briefing Pack UGM 01. 2010-02-17 - 1st Design Review Meeting 25th February @ 1.30 **(A52701409 - Email from Allyson Hirst to Andrew McInture and others - 1st Design Review Meeting 25th February at 1.30 - 17 February 2010 – Bundle 43, Volume 4, Page 1474)**

The User Group Remit identified Andrew McIntyre and Jennifer Scarth as the designated Group Lead (s).

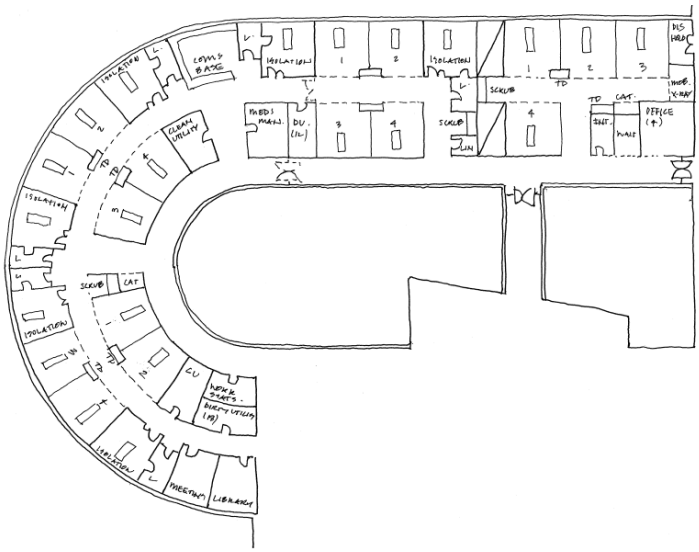
The recorded minutes of the meeting were issued by the NHS. ACTION NOTES – PICU **(A52701518 - PICU Design Acceptance Procedure Form Action Points - 25 February 2010 – Bundle 43, Volume 4, Page 1465).** There were extensive user comments during the meeting which were recorded on the Action Points, Mark-Up 1:200 drawing. 2010-02-25 UGM1 Critical Care PICU 01 Mark Up **(A52701525 - UGM1 Critical Care PICU 01 Mark Up - 25 February 2010 – Bundle 43, Volume 4, Page 1473)**
A revised sketch 1:200 Department Layout 2010-03-08 NCH PICU 01 2nd Iteration **(A52701521 - NCH PICU 01 2nd Iteration - 08 March 2010 – Bundle 43, Volume 4, Page 1470)** was prepared to respond to the PICU users' comments. There were significant changes required, notably 'Item 4. Rooms to be split as 6 isolation rooms and 4 x 4 bed rooms.' This needs to be reviewed from an infection control point of view'; Item 9 'Architect to look at redesigning isolation lobby to put it at the side of the room',




2010-03-08 NCH PICU 01 2nd Iteration **(A52701521 - NCH PICU 01 2nd Iteration - 08 March 2010 – Bundle 43, Volume 4, Page 1470)**

A further revised sketch 1:200 Department Layout 2010-03-12 NCH PICU BEDS 01 2nd Iteration **(A52701514 - NCH PICU Beds 01 - 12 March 2010**

**– Bundle 43, Volume 4, Page 1459)** was prepared to respond to the ZBP requirements for the location of mechanical risers.




2010-03-12 NCH PICU BEDS 01 2nd Iteration **(A52701521 - NCH PICU 01 2nd Iteration - 08 March 2010 – Bundle 43, Volume 4, Page 1459)**

The significant changes addressed comments on the clustering of the rooms, and the locations of the isolation lobbies.

- **UGM 01 Change Status - C (severe / significant change)**

**UGM 02 - Date of Meeting 24th March, 2010**

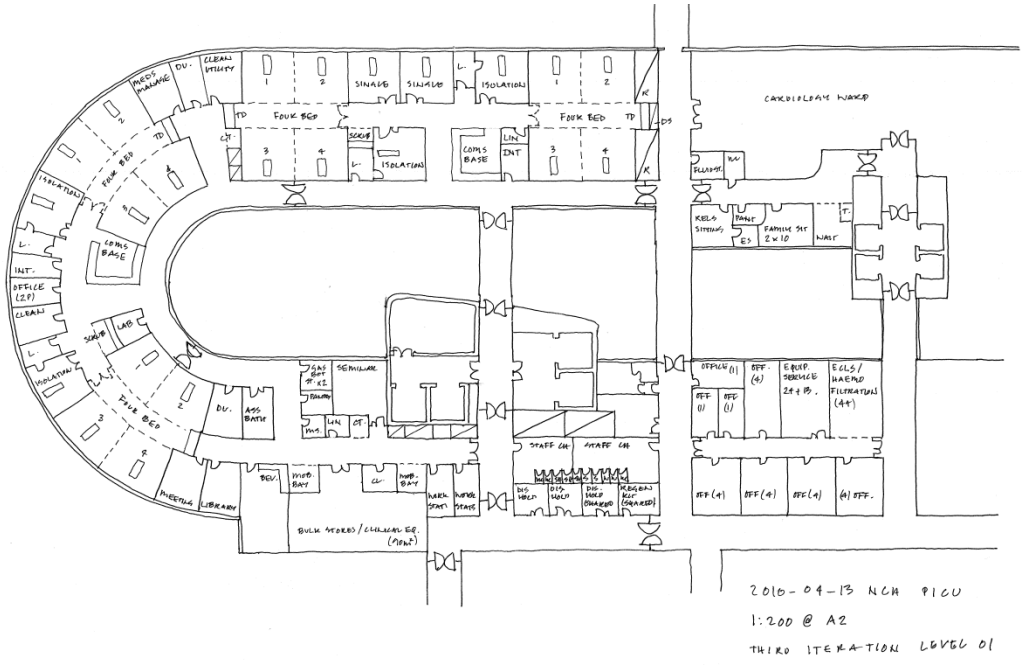
The updated 1:200 department layout was issued prior the UGM 02, which took place on 24th March, 2010. NA-xx-01-PL-252-403_02 **(A52701517 - NSGH - 1:200 First Floor Plan PICU, Cardiology Ward/Support/MDU and Special Feeds - 02 September 2009 – Bundle 43, Volume 4, Page 1462).** The recorded minutes of the meeting were issued by the NHS. ACTION NOTES – PICU **(A52701518 - PICU Design Acceptance Procedure Form Action Points - 25 February 2010 – Bundle 43, Volume 4, Page 1465)** 24 March 2010.

There were still extensive user comments during the meeting which were recorded on the Action Points, Mark-Up 1:200 drawing. 2010-03-24-UGM2 NCH PICU 01 Mark up **(A52701522 - UGM2 NCH PICU 01 Mark up of the 1:200 First Floor Plan PICU, Cardiology Ward/Support/MDU and Special Feeds - 02 September 2009 – Bundle 43, Volume 4, Page 1468)**

Comments of note include;

'Item 5 - Lobbies from 2 Isolation Rooms to be reallocated to the Central Staff Base. This leaves 4 Isolation Rooms with lobbies and 2 Single Bedrooms.'

A revised sketch 1:200 Department Layout 2010-04-13 NCH PICU 01 3rd Iteration Sketch **(A52701519 - NCH PICU 01 3rd Iteration Sketch - 13 April 2010 – Bundle 43, Volume 4, Page 1467)** was prepared to respond to the PICU user comments.




2010-04-13 NCH PICU 01 3rd Iteration Sketch **(A52701521 - NCH PICU 01 2nd Iteration - 08 March 2010 – Bundle 43, Volume 4, Page 1467)**

- **UGM 02 Change Status - C (severe / significant change)**
- ACTION NOTES – PICU **(A52701518 - PICU Design Acceptance Procedure Form Action Points - 25 February 2010 – Bundle 43, Volume 4, page 1465)** 24 March 2010
- 2010-03-24-UGM2 NCH PICU 01 Mark up **(A52701522 - UGM2 NCH PICU 01 Mark up of the 1:200 First Floor Plan PICU, Cardiology Ward/Support/MDU and Special Feeds - 02 September 2009 – Bundle 43, Volume 4, Page 1468)**

**UGM 03 - Date of Meeting 26th May, 2010**

The updated 1:200 department layout was issued prior the UGM 03, which took place on 26th May, 2010. NA-xx-01-PL-252-403_06. The recorded minutes of the meeting were issued by the NHS. ACTION NOTES – PICU

**(A52701515 - PICU Design Acceptance Procedure Form Action Points - 24 March 2010 – Bundle 43, Volume 4, Page 1460)** 24 March 2010, supported with the mark-up 1:200 drawing 2010-05-26 NCH UGM3 PICU 01 Markup **(A52701520 - NCH UGM3 PICU 01 Markup of the 1:200 First Floor Plan PICU, Cardiology Ward/Support/MDU and Special Feeds - 26 May 2010 - Bundle 43, Volume 4, Page 1469).**

The 1:200 department layout was signed-off following the UGM on or around 25th June, 2010. We did not review a copy of the NHS Design Acceptance Sign-Off Form.

- **UGM 03 Change Status – SIGNED-OFF**
- **A52701523 - 1:200 NCH Post UGM3 Critical Care (PICU) 01 Signoff - 25 June 2010 – Bundle 43, Volume 4, Page 1471**

**Isolation rooms**

The isolation room designs were reviewed within the Department User Group they were located within. The 1:200 layouts including the location and size/shape of the isolation rooms were approved by the relevant department user group.

For the Adult Hospital there was an additional Isolation Rooms Briefing Document shared with the Bidders. NSGACL Adult Isolation Rooms_iss1_rev (090604 tender addendum_TAD-00018) **(A52701479 - NSGACL Update on the Isolation Rooms for the New South Glasgow (Adult) Hospital - undated – Bundle 43, Volume 4, Page 1167).**

The Isolation Room locations would have initially followed the SoA briefing document, with amendments reviewed and agreed within the respective Department User Group meeting. The sign-off of the number, location and shape of the Isolation Rooms therefore took place within the Department User Groups meetings.

**Level 00 - Children's Hospital – Observation Ward**

There was no detailed description of the Isolation Room design requirements contained within the Client's Brief - Clinical Output Specifications for the Observation Ward Department. NSGACL EMERGENCY DEPARTMENT

NCH_iss1_rev **(A52701491 - NSGH - Clinical Output Specification for Emergency Department - undated – Bundle 43, Volume 4, Page 1293).**

The SoA provided the requirement for 2 single bedrooms to have air lock lobbies (page 8 NSGACL Schedule of Accommodation NCH_iss1_rev **(Please refer to Bundle 23, Document 92, Page 911)** and Observation Ward 'tab' of the excel NCH SoA ER With ADB Codes) (**A52701410 – Observation Ward Bundle 43, Volume 5, Page 967**).

| | | | | | | |
|---|---|---|---|---|---|---|
| 11 | **Bed Area** | | | | | |
| 12 | Single bedroom: Children/young people, with relatives overnight stay | 18 | 16.5 | 297.0 | B1802 | |
| 13 | Isolation single bedroom: Children/young people, with relatives overnight stay | 2 | 16.5 | 33.0 | B1802 | |
| 14 | Lobby: air lock to bedroom | 2 | 7.0 | 14.0 | G0507 | |
| 15 | Shower, WC & wash: accessible, wheelchair assisted | 20 | 4.5 | 90.0 | V1610 | As per HBN 00-02 |

NCH SoA ER With ADB Codes (**A52701410 – Observation Ward Bundle 43, Volume 5, Page 967**).

These linked to the ITPD ADB Sheets provided in the ERs NSGACL-Generic ADB Room Data Sheets_iss2_rev1 **(A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 5, Page 961**).

| ADB | Room Environmental Data | B1802 |
|---|---|---|

| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | B1802 | Single bedroom: Children/young people, with relatives overnight stay |
| **Room Number:** | | **Revision Date:** 23/04/2009 |

| AIR | Requirements | Notes |
|---|---|---|
| **Winter Temperature (DegC):** | 21 | Winter temperature (degC): up to 24, independent control |
| **Summer Temperature (DegC):** | 23 | |
| **Mechanical Ventilation (Supply ac/hr):** | | Mechanical ventilation (supply): Refer to HBN text. |
| **Mechanical Ventilation (Extract ac/hr):** | | Mechanical ventilation (extract): In-patient barrier nursing. Refer to HBN text. |
| **Pressure Relative to Adjoining Space:** | | |
| **Filtration (%DSE and % Arrestance):** | / | |
| **Humidity (%RH):** | | |
| **General Notes:** | | Pressure relative: WC NEG to bedroom. |

**(A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 5, Page 1524**)

Refer to page 15/16 of my Narrative for a description of the ADB room data sheet for GEN-SGH - Generic Rooms - B1802 - Single bedroom: Children/young people, with relatives overnight stay; and page 18/19 for GEN-SGH - Generic Rooms - G0507 - Lobby: gowning (isolation room) Entrance lobby for barrier nursing. In the case of the Children's Observation Ward reference can also be made to the Exemplar Design - NSGACL-PD-

BMJ-L(00)00-X-OW-001 - Observation Ward Childrens_iss1_rev1 **(A52701477 - NSGH - 1:200 Observation Ward (Children's) - 07 May 2009 – Bundle 43, Volume 4, Page 1130).**

| ADB | Room Data Sheet | G0507 |
|---|---|---|

| | | | | |
|---|---|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital | | |
| **Department:** | GEN-SGH | Generic Rooms | | |
| **Room:** | G0507 | Lobby: gowning (isolation room) Entrance lobby for barrier nursing | | |
| **Room Number:** | | **Revision Date:** | 07/04/2009 | |

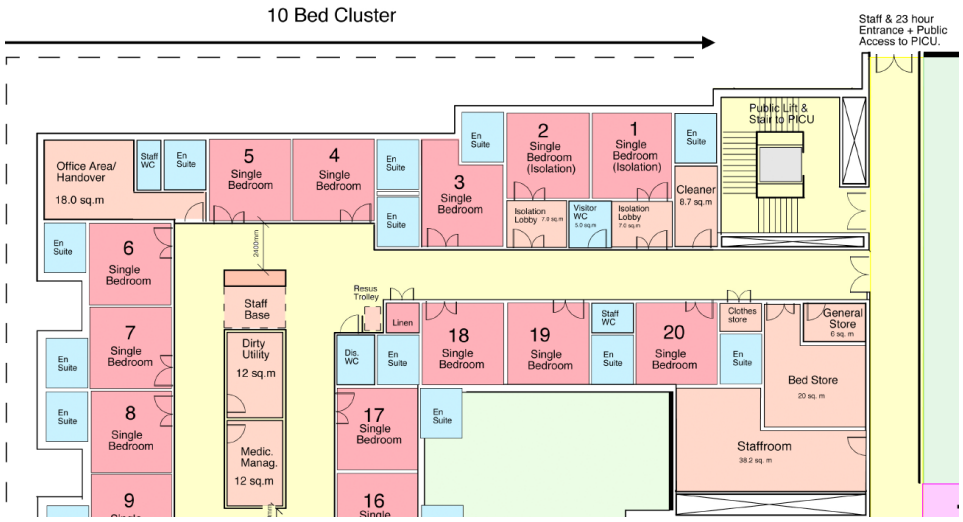
| | | | | |
|---|---|---|---|---|
| **Activities:** | 1) Clinical hand washing.<br>2) Dispensing disposable aprons.<br>3) Dispensing disposable gloves.<br>4) Disposal of clinical waste.<br>5) Disposal of non-clinical items. | | | |
| **Personnel:** | 2 x Persons | | | |
| **Planning Relationships:** | Direct access to single bedroom. | | | |
| **Space Data:** | **Area (m²):** | 6.00 | **Height (mm):** | 2,700 |
| **Notes:** | Source and protective isolation. For ventilated lobby details see HBN Isolation facilities in acute settings. The use of personal protective equipment (PPE) will be determined by local infection control policy. | | | |

| ADB | Room Environmental Data | G0507 |
|---|---|---|

| | | | |
|---|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital | |
| **Department:** | GEN-SGH | Generic Rooms | |
| **Room:** | G0507 | Lobby: gowning (isolation room) Entrance lobby for barrier nursing | |
| **Room Number:** | | **Revision Date:** | 07/04/2009 |

| AIR | Requirements | Notes |
|---|---|---|
| **Winter Temperature (DegC):** | 20 | |
| **Summer Temperature (DegC):** | | |
| **Mechanical Ventilation (Supply ac/hr):** | | |
| **Mechanical Ventilation (Extract ac/hr):** | | |
| **Pressure Relative to Adjoining Space:** | POS | |
| **Filtration (%DSE and % Arrestance):** | / | |
| **Humidity (%RH):** | | |

GEN-SGH - Generic Rooms - G0507 - Lobby: gowning (isolation room) Entrance lobby for barrier nursing **(A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 5, Page 1655-1656**)

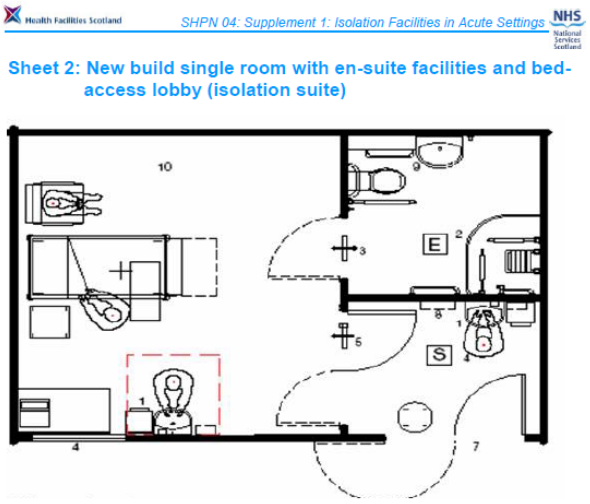



Exemplar Design - NSGACL-PD-BMJ-L(00)00-X-OW-001

Observation Ward Childrens_iss1_rev1 **A52701477 – NSGH – 1:200 Observation Ward (Children's) – 07 May 2009 – Bundle 43, Volume 4, Page 1130**

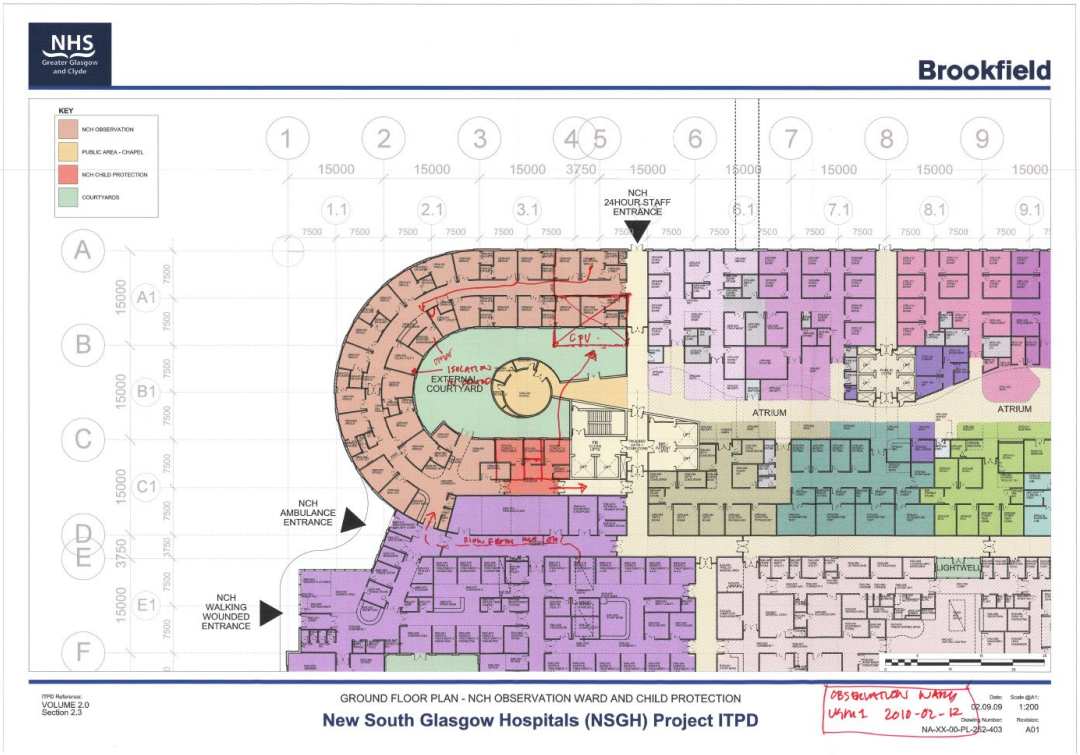
There are 2 positive pressurized single isolation rooms, with access via the gowning lobby. This full 'suite' includes the positive pressure gowning lobby, and negative pressure ensuite.

The proposed design of the 2 isolation rooms has not changed on the 1:200 department plan from the ITPD bid submission through to the user sign-off. Whilst the Exemplar Design pictured above has a central located lobby, the proposed layout aligned more closely with the new build single room diagram on page 24 SHPN 04-Supplement 1.

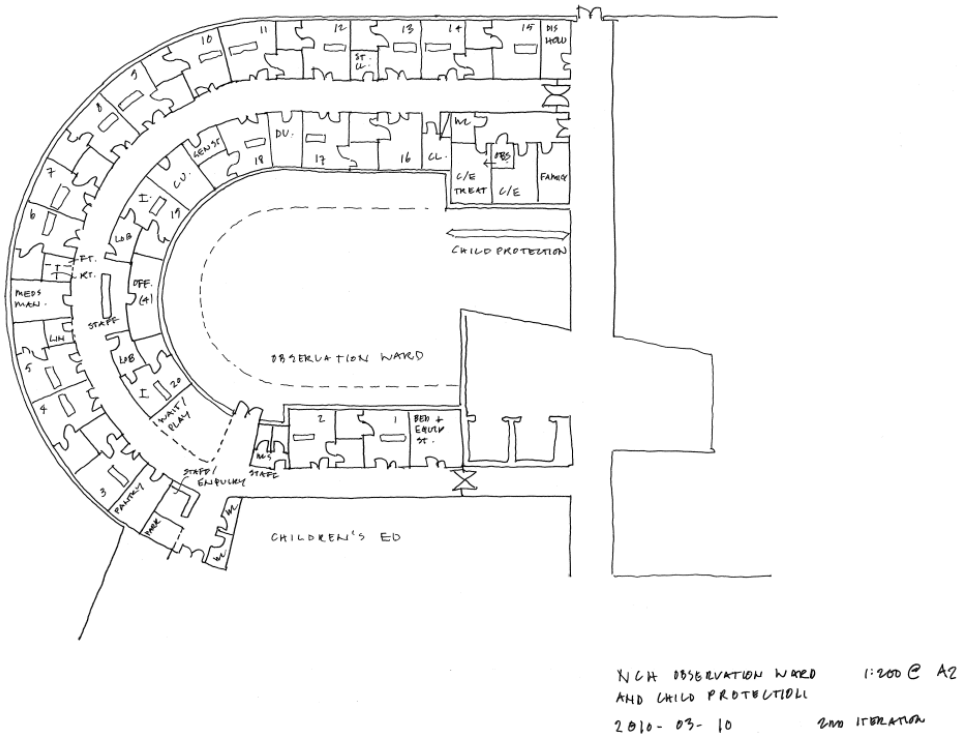



Page 24 SHPN 04-Supplement 1 **(A33064790 – Bundle 43, Volume 6, Page 1129)**

Following UGM1 comments, which were captured on 2010-02-12-UGM 1 Observation Ward 00 Mark Up **(A52701494 - NSGH Ground Floor Plan Observation - NCH Observation Ward and Child Protection - 12 February 2010 – Bundle 43, Volume 4, Page 1316),** the location of the isolation rooms moved centrally to be closer to the staff base, and to allow the Child Protection area to be closer to the 24hr staff entrance. This design development change can be seen on the sketch 2010-02-10 NCH Obs Ward & Child Protection 2nd Iteration **(A52701484 - NCH Observation Ward and Children Protection - 10 March 2010 – Bundle 43, Volume 4, Page 1168).**




2010-02-12-UGM 1 Observation Ward 00 Mark Up **(A52701494 - NSGH Ground Floor Plan Observation - NCH Observation Ward and Child Protection – Bundle 43, Volume 4, Page 1316)**




2010-02-10 NCH Obs Ward & Child Protection 2nd Iteration Iteration **(A52701484 - NCH Observation Ward and Children Protection - 10 March 2010 – Bundle 43, Volume 4, Page 1168)**

**Level 01 – Children's Hospital – Critical Care (PICU)**

There was no detailed description of the Isolation Room design requirements contained within the Client's Brief - Clinical Output Specifications for the Critical Care Department. NSGACL PICU NCH_iss2_rev **(A52701486 - New Children's Hospital, Clinical Output Specification for Paediatric Intensive Care Unit - Undated – Bundle 43, Volume 4, Page 1182).**

However, it is noted on page 1 that the patient group will include bone marrow transplant and oncology.

**The Clinical Services provided include:**

General/ emergency intensive care for infants and children (and young adults who are patients of the hospital)

Resuscitation support to inpatient units and emergency department

Post operative intensive care for specialist and general surgical programs

Intensive care support of national paediatric services:

- Cardiac surgery, invasive cardiology and associated cardiology patients
- Complex airway surgery
- Renal medicine and renal transplant services*
- Bone marrow transplant & oncology
- ECMO program
- Vein of Galen service

Intensive Care Transport Service, including advice and support to other sites managing seriously unwell patients

Provision of 'high level' High Dependency Care for all patient groups

* Provision of dialysis requires regulated pressure water and drainage services at agreed bed spaces. At present 3 bed spaces are equipped in this way.

Page 1 NSGACL PICU NCH_iss2_rev **(A52701486 - New Children's Hospital, Clinical Output Specification for Paediatric Intensive Care Unit - Undated – Bundle 43, Volume 4, Page 1182).**

The Schedule of Accommodation (SoA) brief (page 18 NSGACL Schedule of Accommodation NCH_iss1_) **(Bundle 23, Document 92, Page 908**) was to provide 6 isolation rooms with positive pressurized gowning lobbies. The Stage 2 SoA confirmed the ADB room briefing codes on the Critical Care 'tab' of the excel NCH SoA ER With ADB Codes **(A52701410 – NCH - Stage 2 Schedule of Accommodation Bundle 43, Volume 6, Page 54)**

| | | | | | | |
|---|---|---|---|---|---|---|
| 21 | **Clinical areas** | | | | | |
| 22 | Critical care bed area: single room; Isolation (access via gowning lobby) | 6 | 25.5 | 153.0 | B1602 | |
| 23 | Gowning lobby: single bedroom | 6 | 7.0 | 42.0 | G0507 | |

NCH SoA ER With ADB Codes **(Bundle 23, Document 92, Page 908**)

These linked to the ITPD ADB Sheets provided in the ERs NSGACL-Generic ADB Room Data Sheets_iss2_rev1 **(A52701407 – ADB B0303 Single**

**Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 4, Page 1515**).

| ADB | Room Environmental Data | B1602 |
|---|---|---|

| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | B1602 | Isolation single bedroom: Critical care |
| **Room Number:** | | **Revision Date:** 07/04/2009 |

| AIR | Requirements | Notes |
|---|---|---|
| **Winter Temperature (DegC):** | 27 | Summer and winter (local control) temperature control: 16 to 27 deg.C |
| **Summer Temperature (DegC):** | 16 | |
| **Mechanical Ventilation (Supply ac/hr):** | 6.0 | Mechanical ventilation (supply): To provide source or protective isolation. Mechanical ventilation (extract): To provide source or protective isolation. |
| **Mechanical Ventilation (Extract ac/hr):** | 6.0 | |
| **Pressure Relative to Adjoining Space:** | BAL | Final filtration: EU10/11 to suit clinical requirements. Humidity: 40-60 |
| **Filtration (%DSE and % Arrestance):** | / | |
| **Humidity (%RH):** | 60 | |

**(A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 4, Page 1515**)

Refer to page 14-15 of my Narrative for a description of the ADB room data sheet for GEN-SGH - Generic Rooms - B1602 - Isolation single bedroom: Critical care

| ADB | Room Data Sheet | G0507 |
|---|---|---|

| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | G0507 | Lobby: gowning (isolation room) Entrance lobby for barrier nursing |
| **Room Number:** | | **Revision Date:** 07/04/2009 |

| | | | | |
|---|---|---|---|---|
| **Activities:** | 1) Clinical hand washing.<br>2) Dispensing disposable aprons.<br>3) Dispensing disposable gloves.<br>4) Disposal of clinical waste.<br>5) Disposal of non-clinical items. | | | |
| **Personnel:** | 2 x Persons | | | |
| **Planning Relationships:** | Direct access to single bedroom. | | | |
| **Space Data:** | **Area (m²):** | 6.00 | **Height (mm):** | 2,700 |
| **Notes:** | Source and protective isolation. For ventilated lobby details see HBN Isolation facilities in acute settings. The use of personal protective equipment (PPE) will be determined by local infection control policy. | | | |

| ADB | Room Environmental Data | G0507 |
|---|---|---|

| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | G0507 | Lobby: gowning (isolation room) Entrance lobby for barrier nursing |
| **Room Number:** | | **Revision Date:** 07/04/2009 |

| AIR | Requirements | Notes |
|---|---|---|
| **Winter Temperature (DegC):** | 20 | |
| **Summer Temperature (DegC):** | | |
| **Mechanical Ventilation (Supply ac/hr):** | | |
| **Mechanical Ventilation (Extract ac/hr):** | | |
| **Pressure Relative to Adjoining Space:** | POS | |
| **Filtration (%DSE and % Arrestance):** | / | |
| **Humidity (%RH):** | | |

**(A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 4, Page 1655**)

and page 18/19 for GEN-SGH - Generic Rooms - G0507 - Lobby: gowning (isolation room) Entrance lobby for barrier nursing.

The approved 1:200 department plan (2010-06-25 NCH Post UGM3 Critical Care (PICU) 01 Signoff) **(A52701523 - 1:200 NCH Post UGM3 Critical Care (PICU) 01 Signoff - 25 June 2010 – Bundle 43, Volume 4, Page 1471)** contains a total of 4 isolation rooms within the design, with lobbies to the side of the isolation rooms; this aligned with the new build single room diagram on page 24 SHPN 04-Supplement 1, albeit there were no ensuites required. Note the bed access was also later amended to be through the lobby, and the door from the isolation room to the corridor was omitted. During UGM02 the users requested the omission of 2 Isolation Room lobbies from the design, captured on ACTION NOTES – PICU **(A52701515 - PICU Design Acceptance Procedure Form Action Points - 24 March 2010 – Bundle 43, Volume 4, Page 1460;**

'Item 5 - Lobbies from 2 Isolation Rooms to be reallocated to the Central Staff Base. This leaves 4 Isolation Rooms with lobbies and 2 Single Bedrooms.'
On the UGM tracked Schedule of Accommodation (SoA) managed by Tribal (PICU SoA Markup CUG 2 v2) **(A52701516 - PICU Schedule of Accommodation Markup CUG - April 2009 – Bundle 43, Volume 4, Page 1463)** the 6 number Gowning lobbies: single bedrooms are noted as 'reduce to 4 x lobbies, use the released area of 14m2 for the staff bases'.

## Level 01 – Children's Hospital – Cardiology

There was no detailed description of the Isolation Room design requirements contained within the Client's Brief - Clinical Output Specifications for the Cardiology Department, NSGACL Cardiac Services NCH_iss1_rev **(A52701485 - New Children's Hospital, Clinical Output Specification for Cardiac Services – Undated – Bundle 43, Volume 4, Page 1169).**
The SoA provided the requirement for 2 single bedrooms to have air lock lobbies.

| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | **CARDIOLOGY (14 BEDS)** | | | | | |
| 2 | **Description** | **Qty** | **Unit Area m²** | **Total Area m²** | **ADB Code** | **Comments** |
| 3 | **Bed Area** | | | | | |
| 4 | Single bedroom: Children/young people, with relatives overnight stay | 10 | 16.5 | 165.0 | B1802 | |
| 5 | Lobby: air lock to bedroom | 2 | 7.0 | 14.0 | G0507 | |

NCH SoA ER With ADB Codes

The Schedule of Accommodation (SoA) brief (page 16 NSGACL Schedule of Accommodation NCH_iss1_) **(Please refer to Bundle 23, Document 92, Page 919)** was to provide 2 of the single bedrooms with air lock lobbies. The Stage 2 SoA confirmed the ADB room briefing codes on the Cardiology 'tab' of the excel NCH SoA ER With ADB Codes **(A52701410 – NCH - Stage 2 Schedule of Accommodation Bundle 43, Volume 6, Page 54).**

These linked to the ITPD ADB Sheets provided in the ERs NSGACL-Generic ADB Room Data Sheets_iss2_rev1 **(A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 5, Page 961**).

| ADB | Room Environmental Data | B1802 |
|---|---|---|

| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | B1802 | Single bedroom: Children/young people, with relatives overnight stay |
| **Room Number:** | | **Revision Date:** 23/04/2009 |

| AIR | Requirements | Notes |
|---|---|---|
| **Winter Temperature (DegC):** | 21 | Winter temperature (degC): up to 24, independent control |
| **Summer Temperature (DegC):** | 23 | |
| **Mechanical Ventilation (Supply ac/hr):** | | Mechanical ventilation (supply): Refer to HBN text. |
| **Mechanical Ventilation (Extract ac/hr):** | | Mechanical ventilation (extract): In-patient barrier nursing. Refer to HBN text. |
| **Pressure Relative to Adjoining Space:** | | |
| **Filtration (%DSE and % Arrestance):** | / | |
| **Humidity (%RH):** | | |
| **General Notes:** | | Pressure relative: WC NEG to bedroom. |

Refer to page 15-16 of my Narrative for a description of the ADB room data sheet for GEN-SGH - Generic Rooms - B1802 - Single bedroom: Children/young people, with relatives overnight stay; and page 18/19 for GEN-SGH - Generic Rooms - G0507 - Lobby: gowning (isolation room) Entrance lobby for barrier nursing.

| ADB | Room Data Sheet | G0507 |
|---|---|---|

| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | G0507 | Lobby: gowning (isolation room) Entrance lobby for barrier nursing |
| **Room Number:** | | **Revision Date:** 07/04/2009 |

| | | | | |
|---|---|---|---|---|
| **Activities:** | 1) Clinical hand washing.<br>2) Dispensing disposable aprons.<br>3) Dispensing disposable gloves.<br>4) Disposal of clinical waste.<br>5) Disposal of non-clinical items. | | | |
| **Personnel:** | 2 x Persons | | | |
| **Planning Relationships:** | Direct access to single bedroom. | | | |
| **Space Data:** | **Area (m²):** | 6.00 | **Height (mm):** | 2,700 |
| **Notes:** | Source and protective isolation. For ventilated lobby details see HBN Isolation facilities in acute settings. The use of personal protective equipment (PPE) will be determined by local infection control policy. | | | |

| ADB | Room Environmental Data | G0507 |
|---|---|---|

| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | G0507 | Lobby: gowning (isolation room) Entrance lobby for barrier nursing |
| **Room Number:** | | **Revision Date:** 07/04/2009 |

| AIR | Requirements | Notes |
|---|---|---|
| **Winter Temperature (DegC):** | 20 | |
| **Summer Temperature (DegC):** | | |
| **Mechanical Ventilation (Supply ac/hr):** | | |
| **Mechanical Ventilation (Extract ac/hr):** | | |
| **Pressure Relative to Adjoining Space:** | POS | |
| **Filtration (%DSE and % Arrestance):** | / | |
| **Humidity (%RH):** | | |

GEN-SGH - Generic Rooms - G0507 - Lobby: gowning (isolation room) Entrance lobby for barrier nursing

There are 2 positive pressurized single isolation rooms, with access via the gowning lobby. This full 'suite' includes the positive pressure gowning lobby, and negative pressure ensuite.

The design of the 2 isolation rooms has not changed on the 1:200 department plan from the ITPD bid submission to the user sign-off (2010-05-27 N/NCH UGM3 Cardiology Ward 01 Signoff) **(A52701406 – First Floor Plan, NCH Critical Care (Picu) Cardiology Ward/Support/MDU and Special Feeds Bundle 43, Volume 5, Page 958).** The layout aligns with the new build single room diagram on page 24 SHPN 04-Supplement 1. Note the bed access was also later amended to be through the lobby, and the door from the isolation room to the corridor was omitted.

## Level 01 – Adult's Hospital – Critical Care

The original brief NSGACL Adult Isolation Rooms_iss1_rev **(A52701479 - NSGACL Update on the Isolation Rooms for the New South Glasgow (Adult) Hospital – undated – Bundle 43, Volume 4, Page 1167)** requested 10 negatively pressurized sealed rooms with ante-rooms, 8 with ensuites and 2 further without lobbies.

The SoA brief, page 17/18 NSGACL Schedule of Accommodation NSG_iss1_rev **(A52701492 - NSGACL Schedule of Accommodation - OBC SoA - ER Version updated April 2009 – Bundle 43, Volume 4, Page 1241)** provided the requirement for 10 critical care isolation single beds with gowning lobbies, 8 of which were to have ensuites.

| CRITICAL CARE: ICU/HDU (Medical & Surgical) AREAS | | | | | |
|---|---|---|---|---|---|
| **Clinical areas** | | | | | |
| Critical care bed area: single room; Isolation (access via gowning lobby) | 10 | 26.0 | 260.0 | B1602 | 2 beds in each of 5 "pods" (Including both ICU "pods") |
| Gowning lobby: single bedroom | 10 | 7.0 | 70.0 | G0507 | 2 beds in each of 5 "pods" (Including both ICU "pods") |
| Single Room/Equivalent bed space | 49 | 26.0 | 1274.0 | B1602 | |
| Patients en-suite wc & wash double assist | 8 | 4.5 | 36.0 | V1610 | (as per HBN 00-02) En-suite to the 6 single rooms with isolation lobbys in HDU "pods" and 2 further rooms in the remaining HDU pod with no associated gowning lobby |

The Stage 2 SoA confirmed the ADB room briefing codes on the Critical Care 'tab' of the excel 090430 SoA_NSGH_ER_version – TA

These linked to the ITPD ADB Sheets provided in the ERs NSGACL-Generic ADB Room Data Sheets_iss2_rev1 **(A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 5, Page 961**).

| ADB | Room Environmental Data | B1602 |
|---|---|---|

| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | B1602 | Isolation single bedroom: Critical care |
| **Room Number:** | | **Revision Date:** 07/04/2009 |

| AIR | Requirements | Notes |
|---|---|---|
| **Winter Temperature (DegC):** | 27 | Summer and winter (local control) temperature control: 16 to 27 deg.C |
| **Summer Temperature (DegC):** | 16 | |
| **Mechanical Ventilation (Supply ac/hr):** | 6.0 | Mechanical ventilation (supply): To provide source or protective isolation. Mechanical ventilation (extract): To provide source or protective isolation. |
| **Mechanical Ventilation (Extract ac/hr):** | 6.0 | |
| **Pressure Relative to Adjoining Space:** | BAL | Final filtration: EU10/11 to suit clinical requirements. Humidity: 40-60 |
| **Filtration (%DSE and % Arrestance):** | / | |
| **Humidity (%RH):** | 60 | |

Refer to page 14-15 of my Narrative for a description of the ADB room data sheet for GEN-SGH - Generic Rooms - B1602 - Isolation single bedroom: Critical care.

| ADB | Room Data Sheet | G0507 |
|---|---|---|

| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | G0507 | Lobby: gowning (isolation room) Entrance lobby for barrier nursing |
| **Room Number:** | | **Revision Date:** 07/04/2009 |

| | | | | |
|---|---|---|---|---|
| **Activities:** | 1) Clinical hand washing.<br>2) Dispensing disposable aprons.<br>3) Dispensing disposable gloves.<br>4) Disposal of clinical waste.<br>5) Disposal of non-clinical items. | | | |
| **Personnel:** | 2 x Persons | | | |
| **Planning Relationships:** | Direct access to single bedroom. | | | |
| **Space Data:** | **Area (m²):** | 6.00 | **Height (mm):** | 2,700 |
| **Notes:** | Source and protective isolation. For ventilated lobby details see HBN Isolation facilities in acute settings. The use of personal protective equipment (PPE) will be determined by local infection control policy. | | | |

And page 18/19 for GEN-SGH - Generic Rooms - G0507 - Lobby: gowning (isolation room) Entrance lobby for barrier nursing.

| ADB | Room Environmental Data | G0507 |
|---|---|---|

| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | G0507 | Lobby: gowning (isolation room) Entrance lobby for barrier nursing |
| **Room Number:** | | **Revision Date:** 07/04/2009 |

| AIR | Requirements | Notes |
|---|---|---|
| **Winter Temperature (DegC):** | 20 | |
| **Summer Temperature (DegC):** | | |
| **Mechanical Ventilation (Supply ac/hr):** | | |
| **Mechanical Ventilation (Extract ac/hr):** | | |
| **Pressure Relative to Adjoining Space:** | POS | |
| **Filtration (%DSE and % Arrestance):** | / | |
| **Humidity (%RH):** | | |

GEN-SGH - Generic Rooms - G0507 - Lobby: gowning (isolation room) Entrance lobby for barrier nursing

A further detailed description of the design requirements was contained within the Client's Brief - Clinical Output Specifications for the Critical Care Department, refer to pages 10,11 and 13 NSGACL_Critical_Care_NSG_iss1_rev **(Please refer to Bundle 23, Document 29, Page 325).**

**8. ACCOMMODATION REQUIREMENTS**

**8.1 Intensive Care (Level 3)**

**Critical Care Bed Area: single room: Isolation (access via gowning lobby)**

Single rooms and lobbies are required for isolation and should be rectangular in shape (minimum area without lobby of 26m$^2$) with entrances wide enough to allow bulky equipment to pass easily e.g. mobile imaging machine – at least a door and a half. The door opening should also be sufficient to allow the passage of the bed and equipment. An island bed layout is preferred to enable good staff access around the patient and permit space for procedures to be undertaken from all sides. A clinical hand wash basin (CHWB) with automatic taps should be provided in each room. An overhead hoist is required for lifting patients and the recommended ceiling height is therefore 3m. Windows and natural light are essential in all rooms to aid patient orientation. Outside views are desirable and the windows should be large enough to enable patients to view the outside.

Each bed requires a ceiling or floor mounted medical supply unit to provide sufficient socket outlets and connection to an UPS system for the wide range of equipment in use and to allow unimpeded access to the patient by all staff. In selecting a medical supply unit it is important to ensure that it is ergonomically satisfactory for all staff access. Water proof floor sockets should also be provided.

Equipment may include syringe and volumetric pumps, an electric bed, a ventilator, an air mattress, a dialysis/filter machine, humidifier, suction machine and a television. The medical supply unit supplies medical gases and electrical socket outlets thereby allowing unimpeded access to the patient by all staff. Five rooms should be plumbed for use of a dialysis machine which should be distributed between the ICU and SHDU and HDU components of the department.

Each bed space requires the following equipment located within a medical supply unit adjacent to the bed head:

multiparameter monitoring
ventilation and humidification equipment
infusion and syringe pumps

2 x oxygen outlets
2 x 4 bar air outlets
feeding pump
blood warmer (2 per "pod" of 10 beds)
drugs storage space

Additional equipment required is an electric bed capable of chair position and Trendelenberg position and a pressure relieving mattress, a clinical hand wash basin, a PC, telephone for internal and external calls, a TV socket and nurse call system.

Gowning lobbies require a clinical hand wash basin (CHWB), plastic apron dispenser/gloves and disposal facility. Ceilings and windows should be sealed. Doors should be tight fitting with seals to minimise air transfer.

Other equipment used occasionally at the bedside includes an EEG machine, mobile imaging, ultrasound/echocardiography, endoscopy, defibrillators and haemodialysis/ haemofiltration machines.

Storage space is required for small amounts of medical and surgical supplies for the treatment of each patient.

Variable overhead bed head lighting is also required.

Radiation protection - The facility will need to meet all current Scottish Health Planning / Health Building Note on radiological protection issues and Health Board Radiological Protection Officer advice.

100% visual privacy should be maintained at patient level.

Visibility – uninterrupted views of the patient from the communication base is preferred.

Noise reduction and auditory privacy at each bed space.

Materials that are easy to clean thereby reducing the risk of HAI.

Storage space is required for small amounts of medical and surgical supplies for the treatment of each patient.

### 8.1.2 Medical/Surgical HDU (Level 2)

**Critical Care Bed Area: single room: Isolation (access via gowning lobby)**

These rooms @ 26m$^2$ are the same as that described for Intensive care. Potentially they are flexible in that they may also accommodate Level 3 patients if required.

**Critical Care Bed Area: single room (no gowning lobby)**

These rooms @ 26m$^2$ are the same as that described for Intensive care. Potentially they are flexible in that they may also accommodate Level 3 patients if required. One "pod" of these rooms (10 rooms) will be equipped to level 3 standard to support clinical flexibility and support a "blurring of the edges" between level 1 and level 2 facilities.

**HDU bed area en-suites @ 4.5m$^2$**

En-suites associated with HDU rooms should be configured in the same manner as is described in the generic ward COS, i.e. Utilising the chamfered shower as described in HBN 00-02 and "folding wall" principle that allows space to be "borrowed" from both the bed and en-suite area as required. All en-suites should be equipped with showers, WC's and WHB's and should all be able to support "dual assistance" being delivered.

**Single room/single room bed area**

These rooms and/or bed spaces @ 26m$^2$ are as described for ITU.

The approved 1:200 department plan (NA-xx-01-PL-252-414_06) **A52701405 – First Floor Plan, NSGH Critical Care Rev. 06 Bundle 43, Volume 5, Page 956** reflects a slightly different arrangement, albeit the total of 10 isolation rooms are accounted for within the design.

There are 6 positive pressurized single isolation rooms, with access via the gowning lobby. This full 'suite' includes the positive pressure gowning lobby, and negative pressure ensuite.

There are a further 4 positive pressurized single isolation rooms, with access via the gowning lobby. However, these do not have an associated ensuite. These are located in the central ICU bed cluster, where the patients are the sickest, most heavily sedated and unlikely to be able to leave their beds to use an ensuite.

There are 2 further rooms noted on the plans as 'Single Isolation', which have an ensuite but no lobby. These rooms were to be designed as 'pressure neutral' to the corridor (balanced supply and extract ventilation) as noted on Aconex-NA-GC-003680-Re Isolation Room CCW-64 **(A52701608 – Aconex - Re: Isolation Room CCW-64 - Bundle 43, Volume 5, Page 633).**

## Level 02 – Children's Hospital – Acute Receiving Unit

There was no detailed description of the Isolation Room design requirements contained within the Client's Brief - Clinical Output Specifications for the Renal/Acute Receiving Ward department. (NSGACL Renal NCH_iss2_rev) **(Please refer to Bundle 16, Document 18, Page 1622).**

The Schedule of Accommodation (SoA) brief (page 12 NSGACL Schedule of Accommodation NCH_iss1_) **(A52701442 - NSGACL Schedule of Accommodation - Issue No.4 - April 2009 – Bundle 43, Volume 4, Page 694)** was to provide 2 of the single bedrooms with air lock lobbies.

| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | **ACUTE RECEIVING UNIT (40 BEDS)** | | | | | |
| 2 | **Description** | **Qty** | **Unit Area m²** | **Total Area m²** | **ADB Code** | **Comments** |
| 3 | **Bed Area** | | | | | |
| 4 | Single bedroom: Children/young people, with relatives overnight stay | 32 | 16.5 | 528.0 | B1802 | |
| 5 | Lobby: air lock to bedroom | 2 | 7.0 | 8.0 | G0507 | |
| 6 | Shower, WC & wash: accessible, wheelchair assisted | 32 | 4.5 | 144.0 | V1610 | As per HBN 00-02 |
| 7 | Multi-bed room & day space: Children/young people, 4 beds, with relatives overnight stay | 2 | 68.0 | 136.0 | B2001 | |
| 8 | Shower, WC & wash: accessible, wheelchair assisted | 2 | 7.5 | 15.0 | V1612 | |

**(A52701442 - NSGACL Schedule of Accommodation - Issue No.4 - April 2009 – Bundle 43, Volume 4, Page 694)**

The Stage 2 SoA confirmed the ADB room briefing codes on the ARU 'tab' of the excel NCH SoA ER With ADB Codes **(A52701410 – NCH - Stage 2 Schedule of Accommodation Bundle 43, Volume 6, Page 54).**

These linked to the ITPD ADB Sheets provided in the ERs NSGACL-Generic ADB Room Data Sheets_iss2_rev1 **(A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 5, Page 961**); **(A52700892 - NSGH - Generic ADB Room Data Sheets Bundle 43, Volume 4, Page 1498)**.

| ADB | Room Environmental Data | B1802 |
|---|---|---|

| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | B1802 | Single bedroom: Children/young people, with relatives overnight stay |
| **Room Number:** | | **Revision Date:** 23/04/2009 |

| AIR | Requirements | Notes |
|---|---|---|
| **Winter Temperature (DegC):** | 21 | Winter temperature (degC): up to 24, independent control |
| **Summer Temperature (DegC):** | 23 | |
| **Mechanical Ventilation (Supply ac/hr):** | | Mechanical ventilation (supply): Refer to HBN text. |
| **Mechanical Ventilation (Extract ac/hr):** | | Mechanical ventilation (extract): In-patient barrier nursing. Refer to HBN text. |
| **Pressure Relative to Adjoining Space:** | | |
| **Filtration (%DSE and % Arrestance):** | / | |
| **Humidity (%RH):** | | |
| **General Notes:** | | Pressure relative: WC NEG to bedroom. |

**(A52700892 - NSGH - Generic ADB Room Data Sheets - 07 April 2009 – Bundle 43, Volume 4, Page 1519)**

Refer to page 15/16 of my Narrative for a description of the ADB room data sheet for GEN-SGH - Generic Rooms - B1802 - Single bedroom: Children/young people, with relatives overnight stay; and page 18/19 for GEN-SGH - Generic Rooms - G0507 - Lobby: gowning (isolation room) Entrance lobby for barrier nursing.

| ADB | Room Data Sheet | G0507 |
|---|---|---|

| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | G0507 | Lobby: gowning (isolation room) Entrance lobby for barrier nursing |
| **Room Number:** | | **Revision Date:** 07/04/2009 |

| | | | | |
|---|---|---|---|---|
| **Activities:** | 1) Clinical hand washing.<br>2) Dispensing disposable aprons.<br>3) Dispensing disposable gloves.<br>4) Disposal of clinical waste.<br>5) Disposal of non-clinical items. | | | |
| **Personnel:** | 2 x Persons | | | |
| **Planning Relationships:** | Direct access to single bedroom. | | | |
| **Space Data:** | **Area (m²):** | 6.00 | **Height (mm):** | 2,700 |
| **Notes:** | Source and protective isolation. For ventilated lobby details see HBN Isolation facilities in acute settings. The use of personal protective equipment (PPE) will be determined by local infection control policy. | | | |

| ADB | Room Environmental Data | G0507 |
|---|---|---|

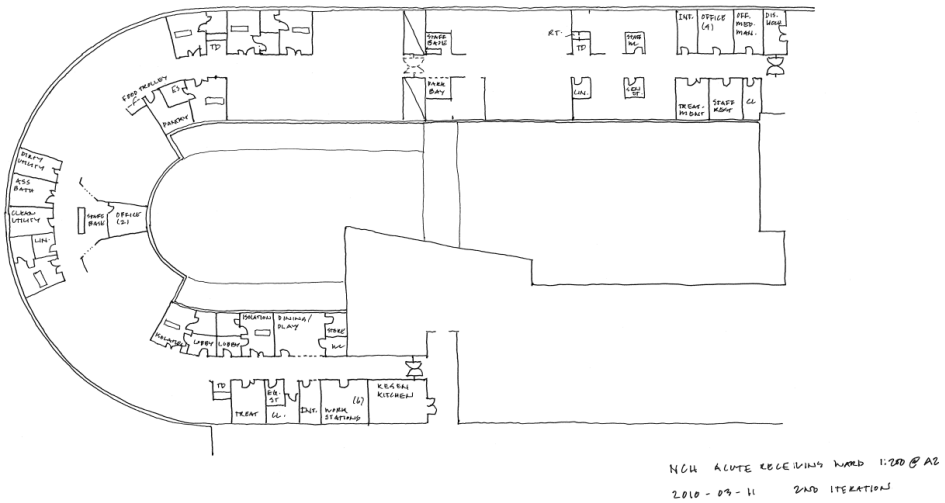
| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | G0507 | Lobby: gowning (isolation room) Entrance lobby for barrier nursing |
| **Room Number:** | | **Revision Date:** 07/04/2009 |

| AIR | Requirements | Notes |
|---|---|---|
| **Winter Temperature (DegC):** | 20 | |
| **Summer Temperature (DegC):** | | |
| **Mechanical Ventilation (Supply ac/hr):** | | |
| **Mechanical Ventilation (Extract ac/hr):** | | |
| **Pressure Relative to Adjoining Space:** | POS | |
| **Filtration (%DSE and % Arrestance):** | / | |
| **Humidity (%RH):** | | |

GEN-SGH - Generic Rooms - G0507 - Lobby: gowning (isolation room) Entrance lobby for barrier nursing **(A52700892 - NSGH - Generic ADB Room Data Sheets - 07 April 2009 – Bundle 43, Volume 4, Page 1655)**

There are 2 positive pressurized single isolation rooms, with access via the gowning lobby. This full 'suite' includes the positive pressure gowning lobby, and negative pressure ensuite.

The design of the 2 isolation rooms has not changed on the 1:200 department plan from the ITPD bid submission to the user sign-off. At UGM 01 the location of the isolation rooms moved one structural bay to the left of the core to enable to relocation of the Play/Dining space, which was capture in an updated sketch, **A52701612 – NCH Acute Receiving Ward 1:200 and A2 2nd Iteration Sketch Bundle 43, Volume 5, Page 637**. The layout aligns with the new build single room diagram within SHPN 04 Supp 1.

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2010-03-11 NCH ARU 02 2nd Iteration (**A52701612 – NCH Acute Receiving Ward 1:200 and A2 2nd Iteration Sketch Bundle 43, Volume 5, Page 637**)

## Level 02 – Children's Hospital – Schiehallion Ward

The ER's provided a general description of the ventilation design requirements within the Client's Brief, page 6 Clinical Output Specifications NSGACL Haemat-Oncology NCH_iss1_rev **(A52427506 – NA-SZ-03-PL-332-508 Bundle 43, Volume 6, Page 53)**

**7. KEY OPERATIONAL POLICIES/ISSUES**

**Accommodation requirements:**

**1) General In-patient Ward**

The ward should be accessed by entry through a double-door barrier system, which allows the entire ward area the benefit of low positive pressure ventilation. Because of the risk of infection to patients, this does mean that no exterior ventilation (opening windows or doors) can be permitted, and therefore, it is an essential requirement to have good quality, adjustable mechanical heating and cooling ventilation. A preference would be to have individual cubicle adjustable thermostats.

**2) Teenage Cancer Trust ward and Day-Care Facilities**

The preference, and clinical sensibility would be for the teenage cancer trust ward unit to sit alongside (in an adjacent wing or corridor) to the main haematology and oncology unit. This would allow a greater flexibility in the utilisation of specially and specifically trained clinical staff.

**3) Day-Care Unit / Short Stay Ward (incorporating the Regional Haemophillia Unit)**

It is not necessary to maintain a low level of positive pressure within this area, however, it is important to maintain excellent levels of heating and cooling, as patients are often unable to regulate their own temperatures.

**4) BMT Waiting Room**

This is a FACT-JACIE accreditation requirement. The room must be physically separated from the standard waiting room, and provide a level of isolation for the patient and their family (up to five people to be accommodated).

The Schedule of Accommodation (SoA) brief (page 14 NSGACL Schedule of Accommodation NCH_iss1_) **(A52701442 - NSGACL Schedule of Accommodation - Issue No.4 - April 2009 – Bundle 43, Volume 4, Page 696)** was to provide 8 of the single bedrooms with air lock lobbies.

| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | **SCHIEHALLION WARD (22 BEDS)** | | | | | |
| 2 | **Description** | **Qty** | **Unit Area m²** | **Total Area m²** | **ADB CODE** | **Comments** |
| 3 | **Bed Area** | | | | | |
| 4 | Single bedroom: Children/young people, with relatives overnight stay | 21 | 16.5 | 346.5 | B1802 | |
| 5 | Lobby: air lock to bedroom | 8 | 7.0 | 56.0 | G0507 | |
| 6 | Shower, WC & wash: accessible, wheelchair assisted | 21 | 4.5 | 94.5 | V1610 | As per HBN 00-02 |
| | Office Area with workstations (x4) | 1 | 18.0 | 18.0 | M0115 | |

The Stage 2 SoA confirmed the ADB room briefing codes on the Schiehallion 'tab' of the excel NCH SoA ER With ADB Codes (**A52701410 – NCH – Stage 2 Schedule of Accommodation Bundle 43, Volume 6, Page 54).**

These linked to the ITPD ADB Sheets provided in the ERs NSGACL-Generic ADB Room Data Sheets_iss2_rev1 **(A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 5, Page 961**);

| ADB | Room Environmental Data | B1802 |
|---|---|---|

| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | B1802 | Single bedroom: Children/young people, with relatives overnight stay |
| **Room Number:** | | **Revision Date:** 23/04/2009 |

| AIR | Requirements | Notes |
|---|---|---|
| **Winter Temperature (DegC):** | 21 | Winter temperature (degC): up to 24, independent control |
| **Summer Temperature (DegC):** | 23 | |
| **Mechanical Ventilation (Supply ac/hr):** | | Mechanical ventilation (supply): Refer to HBN text. |
| **Mechanical Ventilation (Extract ac/hr):** | | Mechanical ventilation (extract): In-patient barrier nursing. Refer to HBN text. |
| **Pressure Relative to Adjoining Space:** | | |
| **Filtration (%DSE and % Arrestance):** | / | |
| **Humidity (%RH):** | | |
| **General Notes:** | | Pressure relative: WC NEG to bedroom. |

**(A52700892 – Bundle 43, Volume 4, Page 1519**).

Refer to page 15/16 of my Narrative for a description of the ADB room data sheet for GEN-SGH - Generic Rooms - B1802 - Single bedroom: Children/young people, with relatives overnight stay; and page 18/19 for GEN-SGH - Generic Rooms - G0507 - Lobby: gowning (isolation room) Entrance lobby for barrier nursing.

| ADB | Room Data Sheet | G0507 |
|---|---|---|

| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | G0507 | Lobby: gowning (isolation room) Entrance lobby for barrier nursing |
| **Room Number:** | | **Revision Date:** 07/04/2009 |

| | | | | |
|---|---|---|---|---|
| **Activities:** | 1) Clinical hand washing.<br>2) Dispensing disposable aprons.<br>3) Dispensing disposable gloves.<br>4) Disposal of clinical waste.<br>5) Disposal of non-clinical items. | | | |
| **Personnel:** | 2 x Persons | | | |
| **Planning Relationships:** | Direct access to single bedroom. | | | |
| **Space Data:** | **Area (m²):** | 6.00 | **Height (mm):** | 2,700 |
| **Notes:** | Source and protective isolation. For ventilated lobby details see HBN Isolation facilities in acute settings. The use of personal protective equipment (PPE) will be determined by local infection control policy. | | | |

| ADB | Room Environmental Data | G0507 |
|---|---|---|

| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | G0507 | Lobby: gowning (isolation room) Entrance lobby for barrier nursing |
| **Room Number:** | | **Revision Date:** 07/04/2009 |

| AIR | Requirements | Notes |
|---|---|---|
| **Winter Temperature (DegC):** | 20 | |
| **Summer Temperature (DegC):** | | |
| **Mechanical Ventilation (Supply ac/hr):** | | |
| **Mechanical Ventilation (Extract ac/hr):** | | |
| **Pressure Relative to Adjoining Space:** | POS | |
| **Filtration (%DSE and % Arrestance):** | / | |
| **Humidity (%RH):** | | |

GEN-SGH - Generic Rooms - G0507 - Lobby: gowning (isolation room) Entrance lobby for barrier nursing **(A52700892 – Bundle 43, Volume 4, Page 1655**).

There are 8 positive pressurized single isolation rooms, with access via the gowning lobby. This full 'suite' includes the positive pressure gowning lobby, and negative pressure ensuite. The layout of 4 of these isolation suites vary from the new build single room diagram on page 24 SHPN 04 Supplement 1, with the lobby in front of the single bed rather than to the side.

Please refer to page 52-54 of the Narrative for further details of the 1:200 Department Design development, including the isolation rooms, which took place during the user meetings.

**Level 03 - Children's Hospital – Inpatient Ward**

The ER's provided a general description of the ventilation design requirements within the Client's Brief, page 4 Clinical Output Specifications for the Generic Ward department (NSGACL_GENERIC_WARD_NCH_iss2_rev) **(A52697808 - New Children's Hospital - Clinical Ouput Specification for inpatient wards - undated – Bundle 43, Volume 4, Page 44)** confirms that,

'2 rooms per ward will be used for isolation purposes and will have an associated gowning lobby.'

The Schedule of Accommodation (SoA) brief **(A35184890 – NCH - Stage 2 Schedule of Accommodation Bundle 43, Volume 6, Page 11)** page 9 was to provide 2 of the single bedrooms with air lock lobbies. The Stage 2 SoA confirmed the ADB room briefing codes on the Wards 'tab' of the excel NCH

SoA ER With ADB Codes (**A52701410 – NCH – Stage 2 Schedule of Accommodation Bundle 43, Volume 6, Page 54).**

These linked to the ITPD ADB Sheets provided in the ERs NSGACL-Generic ADB Room Data Sheets_iss2_rev1 **(A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 5, Page 961**). Refer to page 15-16 of my Narrative for a description of the ADB room data sheet for GEN-SGH - Generic Rooms - B1802 - Single bedroom: Children/young people, with relatives overnight stay; and page 18/19 for GEN-SGH - Generic Rooms - G0507 - Lobby: gowning (isolation room) Entrance lobby for barrier nursing.

There are 2 positive pressurized single isolation rooms, with access via the gowning lobby. This full 'suite' includes the positive pressure gowning lobby, and negative pressure ensuite.

The design of the 2 isolation rooms has not changed on the 1:200 department plan from the ITPD bid submission to the user sign-off (refer to **A52701617 – Third Floor Plan - NCH In-Patient Ward Rev. 03 - Bundle 43, Volume 5, Page 715** and **A52701622 – Third Floor Plan - NCH In-Patient Ward/Ward Support Rev. 04 - Bundle 43, Volume 5, Page 722).**

The layout aligns with the new build single room diagram on page 24 SHPN 04-Supplement 1.

**Adult's Hospital – Haematology Oncology Ward**

The ER's provided a description of the ventilation design requirements within the Client's Brief, Clinical Output Specifications NSGACL Haemato Oncology NSG_iss1_rev.

Page 1 confirms the following;

'Special Room Requirements….

Negatively pressured, ventilated pentamidine room.

Rooms suitable for isolation of immunocompromised patients.

Gowning lobbies are not required.

Ventilation

Please note the haemato-oncology ward area has a very specific function and a considerably higher than average requirement for additional engineering support/infrastructure. There should be no opening windows, no chilled beams. Space sealed and ventilated. Positive pressure to rest of the hospital and all highly filtered air >90%, probably best HEPA with adequate number of positive pressure sealed HEPA filtered side rooms for neutropaenic patients as in the Beatson West of Scotland Cancer Centre.'

And on page 2;

'Ventilation

As described, for the haemato-oncology ward there should be no opening windows, no chilled beams. Space sealed and ventilated. Positive pressure to rest of the hospital and all highly filtered air >90%, probably best HEPA with adequate number of positive pressure sealed HEPA filtered side rooms for neutropaenic patients as in the Beatson West of Scotland Cancer Centre. Require a negatively pressured, ventilated Pentamidine room. Patients will receive inhalations in this room and there must be frequent air changes to remove the contaminated exhaled air.'

NSGACL Adult Isolation Rooms_iss1_rev (090604 tender addendum_TAD-00018) **(A52701479 - NSGACL Update on the Isolation Rooms for the New South Glasgow (Adult) Hospital – undated - Bundle 43, Volume 4, Page 1167)** stated that the Adult Haemato-Oncology Ward should be;
'Sealed ward with hepa filtration positive to the rest of the hospital and all highly filtered air to H13 i.e. 99.95%

(NB - requires a negatively pressurised Treatment Room within the Haemato-Oncology Unit for administration of pentamidine inhalations.)'
The Schedule of Accommodation (SoA) brief (page 9 NSGACL Schedule of Accommodation NSG_iss1_rev) **(A52701492 - NSGACL Schedule of Accommodation -OBC SoA - ER Version updated April 2009 – Bundle 43, Volume 4, Page 1249)** was to provide 14 positive pressure single bedrooms with no air lock lobbies. The Stage 2 SoA confirmed the ADB room briefing codes on the Haemato- Oncology Ward 'tab' of the excel 090430

SoA_NSGH_ER_version – TA **(A52701408 – Excerpt - Haemato-Oncology Ward ADB Room Briefing Codes Bundle 43, Volume 5, Page 964)**.

These linked to the ITPD ADB Sheets provided in the ERs NSGACL-Generic ADB Room Data Sheets_iss2_rev1 **(A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 5, Page 961**). Refer to page 11/12 of my Narrative for a description of the ADB room data sheet for GEN-SGH - Generic Rooms - B0303 - Single bedroom: Adult acute With clinical support. Relative overnight stay.

Following the development of the Stage 2 Template RDS, and prior to the commencement of the 1:50 Room Type production, NA-IBI, Tribal and the NHS worked together to agree the allocation the of Template RDS to the rooms in the CAD model through an exported Codebook SoA 110310 NSGH_09080_SoA. With reference to this excel document I note that the ADB room briefing applied to the bedrooms was B0305 Single-bed room: HBN 04-01, which was the most current ADB code available for a single bedroom.

Please refer to page 46-47 of the Narrative for further details of the 1:200 Department Design development

**Level 04 – Adult's Hospital – Renal Inpatient Ward**

The ER's provided a general description of the isolation design requirements within the Client's Brief (refer to Page 8 Clinical Output Specifications NSGACL_Renal_NSG_iss1_rev[1] **(Please refer to Bundle 16, Document 18, Page 1622).**

Any patient requiring protective isolation or with a highly infectious problem (e.g. Herpes) will be nursed in a room with an associated gowning lobby.

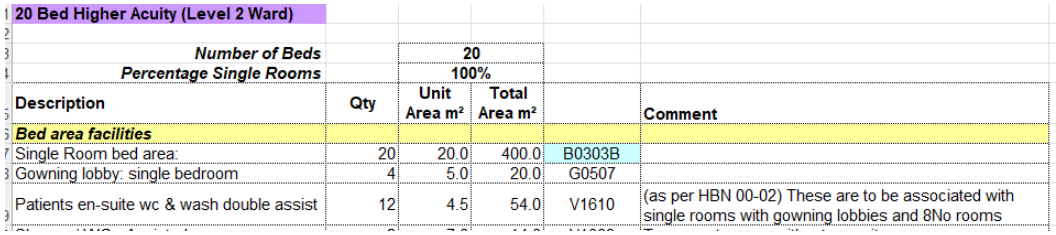
A significant proportion of patients in established renal failure will be eligible for renal transplantation. They will follow an established work-up pathway and following transplant surgery will be nursed in a protective isolation level 2 bed (with gowning lobby). Once well enough, they will be transferred to a general bed with or without protective isolation (depending upon their immunity status). Once fully recovered and with an acceptable immune status, transplant patients will be discharged home. Follow-up will be shared between the acute and primary care providers

Inpatients on other wards who are in established renal failure and require haemodialysis during their episode of care will be dialysed in the 'day unit' associated with the 16 bed ward.

‘Any patient requiring protective isolation or with a highly infectious problem (e.g. Herpes) will be nursed in a room with an associated gowning lobby.

A significant proportion of patients in established renal failure will be eligible for renal transplantation. They will follow an established work-up pathway and following transplant surgery will be nursed in a protective isolation level 2 bed (with gowning lobby). Once well enough, they will be transferred to a general bed with or without protective isolation (depending upon their immunity status).’

The original SoA provided the requirement for 4 single bedrooms to have air lock lobbies. In addition, there were further isolation rooms noted in the 16 Bed Unit and Day Unit, and the 22 bedded wards (refer to page 6-8 090430 SoA_NSGH_ER_version – TA.) **(A52701408 – Excerpt - Haemato-Oncology Ward ADB Room Briefing Codes Bundle 43, Volume 5, Page 966)**



| 20 Bed Higher Acuity (Level 2 Ward) | | | | | |
|---|---|---|---|---|---|
| *Number of Beds* | | 20 | | | |
| *Percentage Single Rooms* | | 100% | | | |
| **Description** | **Qty** | **Unit Area m²** | **Total Area m²** | | **Comment** |
| ***Bed area facilities*** | | | | | |
| Single Room bed area: | 20 | 20.0 | 400.0 | B0303B | |
| Gowning lobby: single bedroom | 4 | 5.0 | 20.0 | G0507 | |
| Patients en-suite wc & wash double assist | 12 | 4.5 | 54.0 | V1610 | (as per HBN 00-02) These are to be associated with single rooms with gowning lobbies and 8No rooms |

090430 SoA_NSGH_ER_version – TA

NSGACL Adult Isolation Rooms_iss1_rev (090604 tender addendum_TAD-00018) (**A52701479 - NSGACL Update on the Isolation Rooms for the New South Glasgow (Adult) Hospital – undated – Bundle 43, Volume 4, Page 1167**) stated that there should be: ‘2 positive pressure sealed rooms with negatively pressurized ante-rooms are located within the 20 bedded higher acuity ward.’

It is my understanding that the Isolation Rooms Update Document ‘NSGACL Adult Isolation Rooms_iss1_rev’ was the Contractual requirement in the Adult Hospital. This was reflected within the Contract SoA (page 23 NSGH – SoA) where only 2 x Gowning Lobbies were noted as required in High Acuity Area, and the other Isolation Rooms were also omitted.

20 Bed Higher Acuity (Level 2 Ward)

| | | | | | |
|---|---|---|---|---|---|
| *Number of Beds* | | 20 | | | |
| *Percentage Single Rooms* | | 100% | | | |
| Description | Qty | Unit Area m² | Total Area m² | Comment | |
| *Bed area facilities* | | | | | |
| Single Room bed area: | 20 | 20.0 | 400.0 | only 19 rooms provided by bidder 9 below brief area | 387.5 |
| Gowning lobby: single bedroom | 2 | 5.0 | 10.0 | 4 provided by bidder | |
| Patients en-suite wc & wash double assist | 12 | 4.5 | 54.0 | 14 provided by bidder -(as per HBN 00-02) These are to be associated with single rooms with gowning lobbies and 8No rooms | |

Extract from the Contract SoA - NSGH - SoA

The Stage 2 SoA confirmed the ADB room briefing codes on the Renal Wards 'tab' of the excel 090430 SoA_NSGH_ER_version – TA **(A52701408 – Excerpt - Haemato- Oncology Ward ADB Room Briefing Codes Bundle 43, Volume 5, Page 966).**

The ITPD ADB Sheets provided in the ERs NSGACL-Generic ADB Room Data Sheets_iss2_rev1 **(A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 5, Page 961**) only included for B0303 and B0303A. I assume the 'B' was intended to reflect the dialysis requirements in the renal bedrooms which would make the water servicing and equipment slightly different.

| ADB | Room Environmental Data | B0303 |
|---|---|---|

| | | | |
|---|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital | |
| **Department:** | GEN-SGH | Generic Rooms | |
| **Room:** | B0303 | Single bedroom: Adult acute With clinical support. Relative overnight stay | |
| **Room Number:** | | **Revision Date:** | 07/04/2009 |

| AIR | Requirements | Notes |
|---|---|---|
| **Winter Temperature (DegC):** | 21 | |
| **Summer Temperature (DegC):** | | |
| **Mechanical Ventilation (Supply ac/hr):** | | |
| **Mechanical Ventilation (Extract ac/hr):** | | |
| **Pressure Relative to Adjoining Space:** | | |
| **Filtration (%DSE and % Arrestance):** | / | |
| **Humidity (%RH):** | | |

Refer to page 12-13 of my Narrative for a description of the ADB room data sheet for GEN-SGH - Generic Rooms - B0303 - Single bedroom: Adult acute With clinical support. Relative overnight stay.

| ADB | Room Environmental Data | B0303A |
|---|---|---|

| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | B0303A | Single bedroom: Critical Care With clinical support. Relative overnight stay |
| **Room Number:** | | **Revision Date:** 07/04/2009 |

| AIR | Requirements | Notes |
|---|---|---|
| **Winter Temperature (DegC):** | 21 | |
| **Summer Temperature (DegC):** | | |
| **Mechanical Ventilation (Supply ac/hr):** | | |
| **Mechanical Ventilation (Extract ac/hr):** | | |
| **Pressure Relative to Adjoining Space:** | | |
| **Filtration (%DSE and % Arrestance):** | / | |
| **Humidity (%RH):** | | |

And to page 13-14 for GEN-SGH - Generic Rooms - B0303A - Single bedroom: Critical Care With clinical support; and page 18/19 for Relative overnight stay and GEN-SGH - Generic Rooms - G0507 - Lobby: gowning (isolation room) Entrance lobby for barrier nursing.

| ADB | Room Data Sheet | G0507 |
|---|---|---|

| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | G0507 | Lobby: gowning (isolation room) Entrance lobby for barrier nursing |
| **Room Number:** | | **Revision Date:** 07/04/2009 |

| | | | | |
|---|---|---|---|---|
| **Activities:** | 1) Clinical hand washing.<br>2) Dispensing disposable aprons.<br>3) Dispensing disposable gloves.<br>4) Disposal of clinical waste.<br>5) Disposal of non-clinical items. | | | |
| **Personnel:** | 2 x Persons | | | |
| **Planning Relationships:** | Direct access to single bedroom. | | | |
| **Space Data:** | **Area (m²):** | 6.00 | **Height (mm):** | 2,700 |
| **Notes:** | Source and protective isolation. For ventilated lobby details see HBN Isolation facilities in acute settings. The use of personal protective equipment (PPE) will be determined by local infection control policy. | | | |

| ADB | Room Environmental Data | G0507 |
|---|---|---|

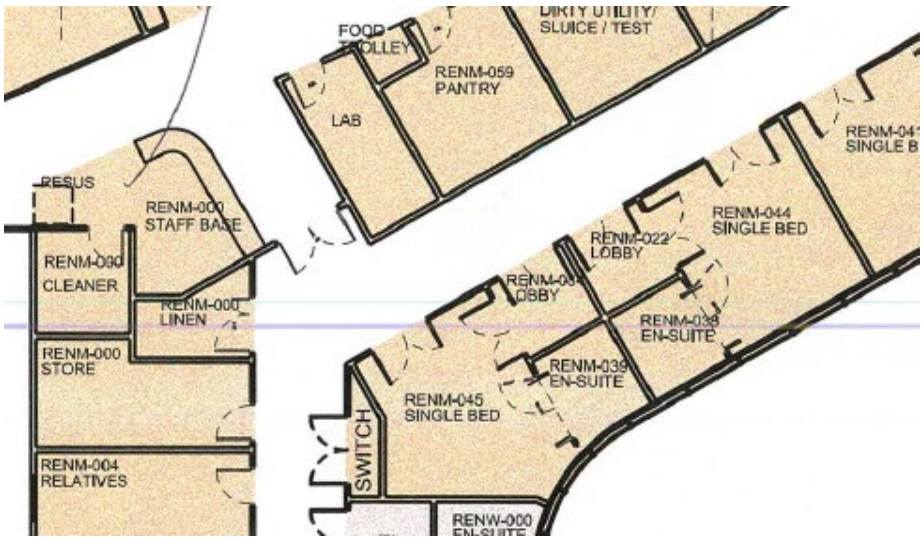
| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | G0507 | Lobby: gowning (isolation room) Entrance lobby for barrier nursing |
| **Room Number:** | | **Revision Date:** 07/04/2009 |

| AIR | Requirements | Notes |
|---|---|---|
| **Winter Temperature (DegC):** | 20 | |
| **Summer Temperature (DegC):** | | |
| **Mechanical Ventilation (Supply ac/hr):** | | |
| **Mechanical Ventilation (Extract ac/hr):** | | |
| **Pressure Relative to Adjoining Space:** | POS | |
| **Filtration (%DSE and % Arrestance):** | / | |
| **Humidity (%RH):** | | |

GEN-SGH - Generic Rooms - G0507 - Lobby: gowning (isolation room) Entrance lobby for barrier nursing

There are 2 positive pressurized single isolation rooms, with access via the gowning lobby. This full ‘suite’ includes the positive pressure gowning lobby,

and negative pressure ensuite. The approved 1:200 department design (2010-04-22 UGM3 Renal Ward 04 Signoff) **(A52701505 - NSGH - 1:200 Fourth Floor Plan - Higher Acuity Renal Ward/Renal Ward - 02 September 2009 – Bundle 43, Volume 4, Page 1433**) reflected the Contract SoA and provided only the 2 isolation rooms within the 20 bedded higher acuity ward.




2010-04-22 NSGH UGM3 Renal Ward 04 1-200 Signoff **(A52701505 - NSGH - 1:200 Fourth Floor Plan - Higher Acuity Renal Ward/Renal Ward - 02 September 2009 – Bundle 43, Volume 4, Page 1433)**

The layout aligns with the new build single room diagram on page 24 SHPN 04-Supplement 1. Note the bed access was also later amended to be through the lobby, and the door from the isolation room to the corridor was omitted.

**Level 04 – Adult's Hospital – Respiratory Ward**

The ER's provided a general description of the ventilation design requirements within the Client's Brief, page 3 Clinical Output Specifications for the Generic Ward department (NSGACL_Generic_Wards_NSG_iss1_rev[1]) (**Please refer to Bundle 16, Document 19, Page 1634**) states that,

'1 room per ward will be used for isolation purposes and will have an associated gowning lobby.'

Within the Isolation Rooms update document 'NSGACL Adult Isolation Rooms_iss1_rev' it was stated that there should be '3 negatively pressurised sealed rooms (without ante rooms) - located together' within the 'Resipiratory Wards (serving the rest of medical).'

At Stage 2 the designated location for the Respiratory Ward had not been decided, only that it would be located within one of the Generic Wards from Level 5-11.

The Respiratory Ward had an identical brief to the Generic Ward.

The isolation rooms were not included within the Generic Wards and were also omitted from the Contract SoA held within the Project Bible (2009) Folder C Volume 1 Schedule of Accommodation (page 5 NSGH – SoA). The Respiratory Ward section on page 11 is noted as 'allow 3 no. rooms negatively pressurised'.

**Adults Hospital – A&E (Emergency Department**

The ER's provided a general description of the isolation design requirements within the Client's Brief - Clinical Output Specification page 4-5 NSGACL_Emergency_Department_NSG_iss1_rev **(A52701487 - NSGH - Clinical Output Specification for Emergency Complex - Emergency Department - undated – Bundle 43, Volume 4, Page 1226).**

**2.2.6 Isolation Facilities**

The ED should have two majors cubicles which can be used to isolate high risk patients once they have been identified (e.g. multi-drug resistant TB, suspected haemorrhagic fever, severe neutropenia, and high risk infections e.g. SARS-like illness). This would act as a temporary holding area until a definitive destination was identified for such a patient.

NSGACL_Emergency_Department_NSG_iss1_rev

NSGACL Adult Isolation Rooms_iss1_rev (090604 tender addendum_TAD-00018) **(A52701479 - NSGACL Update on the Isolation Rooms for the New South Glasgow (Adult) Hospital – undated – Bundle 43, Volume 4, Page 1167** stated that there should be;

'2 negatively pressurised sealed rooms (without ante-rooms) - location as described within the Clinical Output Specification.'

The SoA brief, page 39-40 NSGACL Schedule of Accommodation NSG_iss1_rev **(A52701492 - NSGACL Schedule of Accommodation - OBC SoA - ER Version updated April 2009 – Bundle 43, Volume 4, Page 1241)** confirmed the number of treatment rooms, and the two majors cubicles were the 2 major procedures rooms associated with the patient resuscitation facilities.

| ACCIDENT & EMERGENCY DEPARTMENT<br>Based on 110,000 attendances | | | | | |
|---|---|---|---|---|---|
| **Assessment & Treatment facilities** | | | | | |
| Generic Assess / Treatment room: A&E | 26 | 12.0 | 312.0 | X0242 | Cubicles, not rooms with easy escape e.g. curtain front not door / wall. Size and design to be confirmed. Access should be from patients r.h. side |
| MIU Assess & Treat Room | 4 | 13.5 | 54.0 | X0242A | Dual Access Rooms (i.e. 2 doors) |
| Waiting area: 10 persons including 1 wheelchair user | 2 | 16.5 | 33.0 | J1201 | |
| WC & handwash: specimen; accessible, wheelchair | 2 | 4.5 | 9.0 | V1406 | |
| Treatment room: A&E, head & neck & Opthalmology | 2 | 16.0 | 32.0 | X0244 | With monitoring |
| Treatment room: A&E, gynaecology/genitourinary colposcopy | 1 | 16.0 | 16.0 | X0245 | With monitoring |
| WC & handwash: accessible, wheelchair assisted | 1 | 4.5 | 4.5 | V0904 | |
| Plaster Room (with 3 cubicles) & Store | 1 | 32.0 | 32.0 | X0206 | |
| Staff & communication base: 15 staff | 1 | 35.0 | 35.0 | T0212A | |
| Supplies base | 1 | 20.0 | 20.0 | 2 x T0316 | |
| ***Patient resuscitation facilities*** | | | | | |
| Resuscitation room: 6 places | 1 | 172.0 | 172.0 | X0238 | One bay equipped for babies, children & young people ?? |
| Major Procedures Room | 2 | 29.0 | 58.0 | X0240 | |

Page 1

The Stage 2 SoA confirmed the ADB room briefing code X0242 on the Emergency Department 'tab' of the excel **A52701408 – Excerpt - Haemato-Oncology Ward ADB Room Briefing Codes Bundle 43, Volume 5, Page 964.**

These linked to the ITPD ADB Sheets provided in the ERs NSGACL-Generic ADB Room Data Sheets_iss2_rev1 **(A52701407 – ADB B0303 Single Bedroom: Adult acute with Clinical Support, Relative Overnight stay Bundle 43, Volume 5, Page 961**), with GEN-SGH - Generic Rooms – X0242 – Treatment room: A&E, multi-functional located on pages 304-308.

| ADB | Room Environmental Data | X0242 |
|---|---|---|

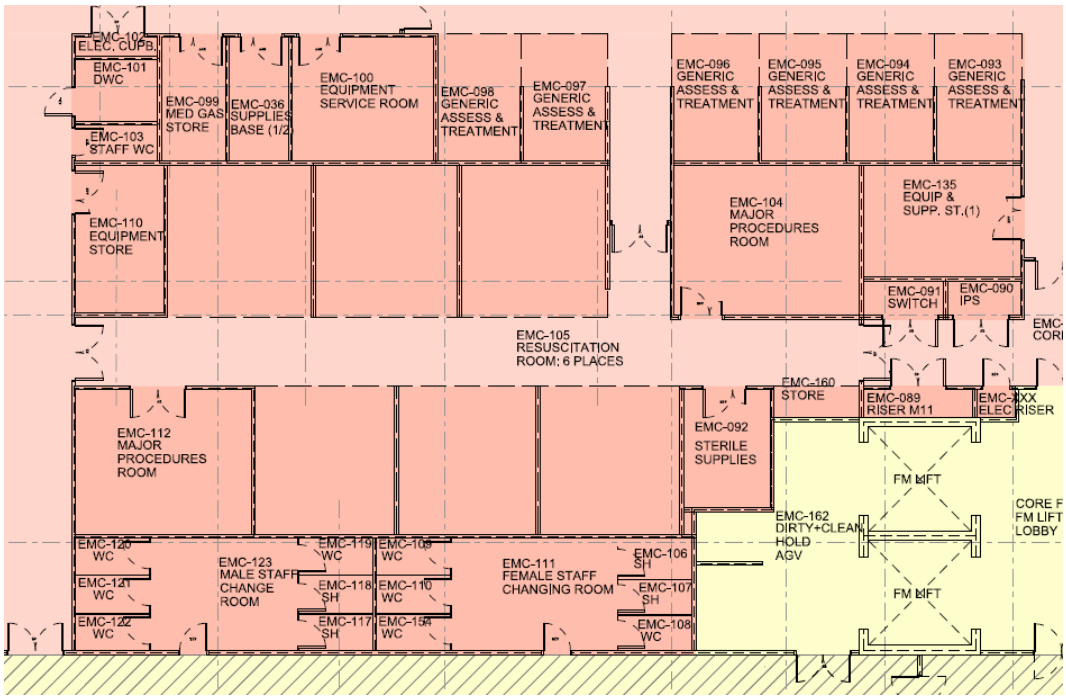
| | | |
|---|---|---|
| **Project:** | 08045 | New South Glasgow Hospital |
| **Department:** | GEN-SGH | Generic Rooms |
| **Room:** | X0242 | Treatment room: A&E, multi-functional |
| **Room Number:** | | **Revision Date:** 08/04/2009 |

| AIR | Requirements | Notes |
|---|---|---|
| **Winter Temperature (DegC):** | 27 | Summer and winter temperature control 16 to 27 degC. |
| **Summer Temperature (DegC):** | 16 | |
| **Mechanical Ventilation (Supply ac/hr):** | | Mechanical Ventilation (supply): To suit heat gain. |
| **Mechanical Ventilation (Extract ac/hr):** | | |
| **Pressure Relative to Adjoining Space:** | POS | Final filtration EU10/11 to suit clinical requirements. Humidity 40 - 60 |
| **Filtration (%DSE and % Arrestance):** | / | |
| **Humidity (%RH):** | 60 | |

GEN-SGH - Generic Rooms – X0242 – Treatment room: A&E, multi-functional

The locations of the Major Procedures Rooms were moved to align with the comments from the users, with the updated 1:200 Department layout **(A52701615 – Ground Floor Plan - NSGH Emergency Department 1:200**

**- Bundle 43, Volume 5, Page 711)** to reflect the sign-off request to relocate resus bay 4 with one of the procedures rooms.




Extract from updated UGM 3 Sign-Off Drawing NA-xx-00-PL-252-405_07

**Other ITPD Brief Isolation Rooms**

There were a number of other Adult Inpatient Isolation Rooms contained within the ITPD Client Brief SoA which were superseded by the Isolation Room Update NSGACL Adult Isolation Rooms_iss1_rev (090604 tender addendum_TAD-00018) **(A52701479 - NSGACL Update on the Isolation Rooms for the New South Glasgow (Adult) Hospital – undated – Bundle 43, Volume 4, Page 1167)**

These remained within the Client Brief SoA shared in Stage 2 (which contained the addition of the Client confirmed ADB room briefing codes) but were latterly omitted from the design during the UGM reviews of the relevant 1:200 department layouts.

They were also omitted from the Contract SoA held within the Project Bible (2009) Folder C Volume 1 Schedule of Accommodation. NSGH - SoA

- Adult's Hospital – Generic Inpatient Ward – 1xGowning lobby: single bedroom to isolation bedroom was omitted to each ward.
- Adult's Hospital – ENT Ward – 1xGowning lobby: single bedroom to isolation bedroom was omitted.
- Adult's Hospital – Rheumatology Ward – 1xGowning lobby: single bedroom to isolation bedroom was omitted.
- Adult's Hospital – Renal Wards & Main Department – 1xGowning lobby: single bedroom to isolation bedroom was omitted to each of the 22 bed wards. And 2xGowning lobby: single bedroom to isolation bedroom were omitted to the 16 bed ward & day unit
- Adult's Hospital Complex Needs Cluster (AAU) – 1 ante room to isolation bedroom was omitted.
- Adult's Hospital – Acute Cluster (AAU) – 1 ante room to isolation bedroom was omitted.
- Adult's Hospital General Receiving Cluster (AAU) – 1 ante room to isolation bedroom was omitted.

### 4.14 Schedule of Accommodation

The Schedule of Accommodation (**SoA**) is a key component of the Client's Brief and is used to inform the development of both the 1:200 department designs and the Room Data Sheets.

The first version of the SoA was provided with the ITPD Tender Documentation in Volume 2 of the Employer's Requirements; V2.1 - Appendix C - Schedules of Accommodation. There was an SoA provided for each of the 2 hospitals, with NSG being the Adult Hospital and NCH the Children's Hospital.

- NSGACL Schedule of Accommodation NSG_iss1_rev **(A52701488 - NCH SoA - Version 4 Design for Stage 2 reflects 240 beds with expansion for 16 beds embedded in wards etc February 2009 - April 2009 – Bundle 43, Volume 4, Page 1186)**
- 
- NSGACL Schedule of Accommodation NCH_iss1_rev **(Please refer to Bundle 23, Document 92, Page 904)**

  As we had provided more than the ITPD minimum requirements; we had a full set of 1:200 draft department designs, we were able to provide an 'As Drawn' SoA as part of our Bid Response.

  During the Bid Tender Clarifications Stage, we received comments on potentially missing or under sized rooms and a response was agreed against each clarification item line by line and the Contract SoA held within the Project Bible (2009) was the agreed position to progress Stage 2. I reviewed the SoA bid clarifications with the respective Hospital Design Leads Graham Harris and Jonathan Henrick, and we supplied commentary which required resolving during the development of the Stage 2 1:200 department designs.

  The Contract Versions of the SoA were located in **Folder C Volume 1 Schedule of Accommodation**

**Volume 1 – Schedule of Accommodation**

The figure of 166,958m$^2$ as determined by the Brookfield proposal, is agreed to represent the overall target area requirement of the design. This is broken down as follows between the Adult and Children's Hospitals:

| | |
|---|---|
| Adult Hospital | 126,509m2 |
| Children's Hospital | 40,448m2 |
| **Gross Total** | **166,958m2** |

It is agreed that the Contractor is to achieve all net room areas included within the attached Schedule of Accommodation, as outlined by the Brookfield narrative (contained in the furthest right hand column), through the design development process and demonstrate this to the Board.

The design risk associated with achievement of the above noted briefed area is included as the Contractor's Risk and identifies that the risk up to a 0.5% overage of the Gross Total (of 166,958m2), as a result of User Group input, rests with the Contractor and included within Contract Target and Maximum Prices.

The breakdown of the Gross Total is as follows:

| Item | Brief (m$^2$) | Brookfield Area (m$^2$) | % to Brief (m$^2$) |
|---|---|---|---|
| Gross Departmental Area (includes circulation, planning and engineering) | 109,785 | 125,893 | 115% |
| Net Departmental Area (excludes circulation, planning and engineering) | 81,884 | 88,909 | 109% |
| Circulation Area | 24,474 | 29,800 | 122% |
| Circulation % (of Net Area) | 30% | 34% | 112% |
| Planning & Engineering Allowance | 3,427 | 7,184 | 210% |
| % Planning & Engineering Allowance | 4% | 8% | 193% |
| Communication & Plant Space Area | 32,386 | 41,065 | 127% |
| % Communication & Plant | 29% | 33% | 111% |
| **Total Gross Floor Area** | **142,944** | **166,958** | **117%** |

- Volume 1 - Schedule of Accommodation A_
- NSGH – SoA
- NCH - SoA

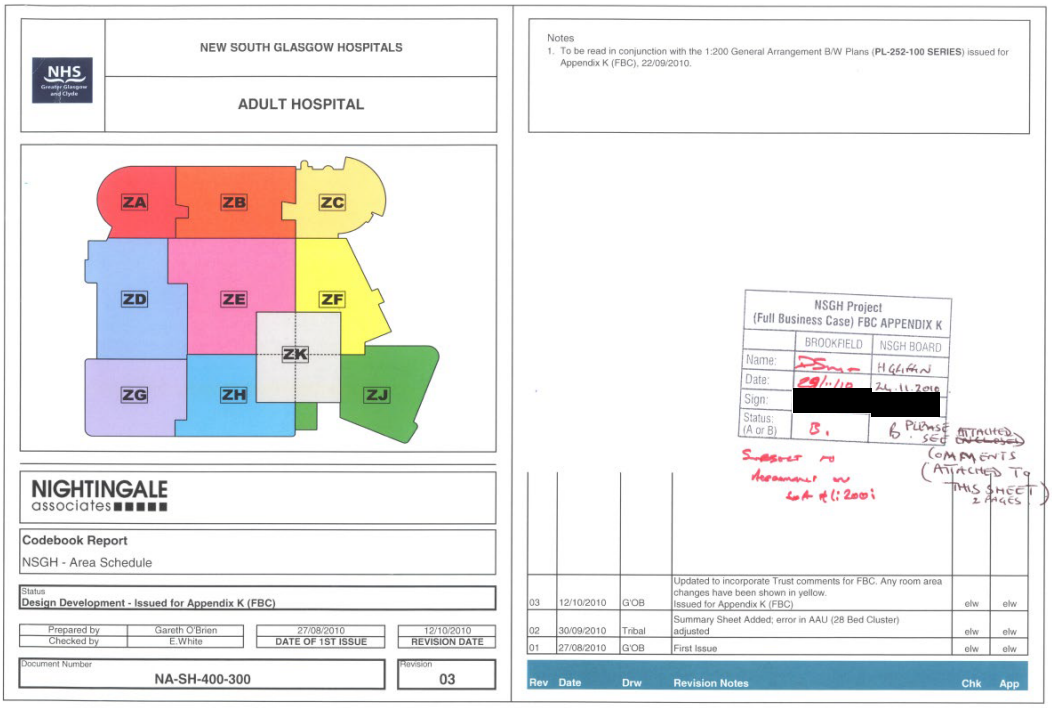
Tribal, in their role as the Multiplex Healthcare Planner, maintained a tracked version of the Contract SoA which captured any changes agreed during the 1:200 user group meetings. This was also monitored by Doig & Smith, the Multiplex QS, and Currie & Brown, the GGH appointed PM, for changes to the Contract position which could impact the cost.

The final versions of the tracked NHS Board SoA were reconciled by Tribal against the 'as drawn' SoA produced by NA-IBI to address any outstanding items.

Tribal produced a document, **A52701616 – NSGH Summary of Board and Codebook - Schedule of Accommodation - Bundle 43, Volume 5, Page 712**; to summarise the review they had undertaken to provide the assurance that all rooms required by the Board's briefed SoA were provided.

As part of the Appendix K/FBC an updated set of 'as drawn' Area Schedules were prepared and issued by NA-IBI **A52701626 – NSGH Area Schedule Rev. 03 Bundle – See Paper Apart** and **A52701613 – Nightingale Associates - Codebook Report: NCH Area Schedule Rev. 03 - Bundle 43, Volume 5, Page 642.** These were approved as Status B noting

outstanding actions which would be resolved in Stage 3 during the 1:50 fully loaded department reviews.



NEW SOUTH GLASGOW HOSPITALS

ADULT HOSPITAL

ZA ZB ZC ZD ZE ZF ZK ZG ZH ZJ

NIGHTINGALE associates

Codebook Report

NSGH - Area Schedule

Status: Design Development - Issued for Appendix K (FBC)

| | | | |
|---|---|---|---|
| Prepared by | Gareth O'Brien | 27/08/2010 | 12/10/2010 |
| Checked by | E.White | DATE OF 1ST ISSUE | REVISION DATE |

Document Number: NA-SH-400-300

Revision: 03

Notes
1. To be read in conjunction with the 1:200 General Arrangement B/W Plans (**PL-252-100 SERIES**) issued for Appendix K (FBC), 22/09/2010.

NSGH Project (Full Business Case) FBC APPENDIX K

| | BROOKFIELD | NSGH BOARD |
|---|---|---|
| Name: | | H Griffin |
| Date: | 29/11/10 | 24.11.2010 |
| Sign: | [redacted] | |
| Status: (A or B) | B. | 6 PLEASE SEE ATTACHED ENCLOSED COMMENTS (ATTACHED TO THIS SHEET 2 PAGES) |

SUBJECT TO Assessment w GA @ 1:200

| Rev | Date | Drw | Revision Notes | Chk | App |
|---|---|---|---|---|---|
| 03 | 12/10/2010 | G'OB | Updated to incorporate Trust comments for FBC. Any room area changes have been shown in yellow. Issued for Appendix K (FBC) | elw | elw |
| 02 | 30/09/2010 | Tribal | Summary Sheet Added; error in AAU (28 Bed Cluster) adjusted | elw | elw |
| 01 | 27/08/2010 | G'OB | First Issue | elw | elw |

Cover Sheet - NA-SH-400-300 (Adult Hospital)

# ADULT SCHEDULE OF ACCOMMODATION
## Review of Schedules 24th November 2010

There are a number of anomalies with the adult schedule of accommodation which are causing concern and will need to be considered at the next stage. The following are examples of the issues:

> Some of the DSR's have been squeezed (5.4$m^2$ in one)

> A number of the waiting areas are listed at far smaller $m^2$ than required e.g. Ground and First Floor Outpatient Waiting Areas have required areas of 96$m^2$ and 90$m^2$, are listed at 58$m^2$ and 24$m^2$. This does not tie in with the 1:200' drawings, please confirm actual size. Other examples are the waiting areas for Critical Care and Theatres AODOS are listed as much smaller than the requested space, require review.

> Some of the outpatient consulting clinic rooms are listed substantially below required area, for example in Orthopaedics, Consulting Room listed at 11.70$m^2$ (required area 16.5$m^2$)

> Some hot desk area is below required area, therefore query may affect functionality e.g. Dermatology 2 Person Hot Desk listed at 6.6$m^2$ (instead of 10$m^2$)

> Number of Disabled Toilets and Ensuites throughout listed as 3.7$m^2$ instead of 4.5$m^2$, need to review functionality once department is loaded

> Some of the Resus Bays are half or less the requested area, may be ok but need to check functionality at next stage

> Some of the Clean and Dirty Utilities are smaller than requested, for example in Rehab and Therapy Outpatients the Dirty Utility is listed as 7.6$m^2$ instead of the requested 12$m^2$ and in outpatients it is 8$m^2$ instead of the requested 12$m^2$, the Clean Utility in Imaging (041) is listed as 7.6$m^2$ instead of 9$m^2$. Again will need to check functionality at the next stage

> Storage within Theatres is less than requested for example the satellite pharmacy store is 21% less than required.

> Theatres – quite a few of the Recovery Spaces are less than requested – need to confirm functionality and that the bed spacing is 3.5 between bed heads as discussed and confirmed by architect in the user group meetings

> Theatres - The large recovery bay at 16.5m2, which will be used for undertaking procedures, blocks etc has been listed as 17.6% below space required – need to review to ensure functionality is not affected .

> Within the Renal Wards, 2 of the Quiet Sitting Spaces are listed as 45% or more below that requested, leaving questionable functionality - will need review at the next stage. In addition, 2 of the Touchdowns are at 0.8$m^2$, 60% reduced from required area

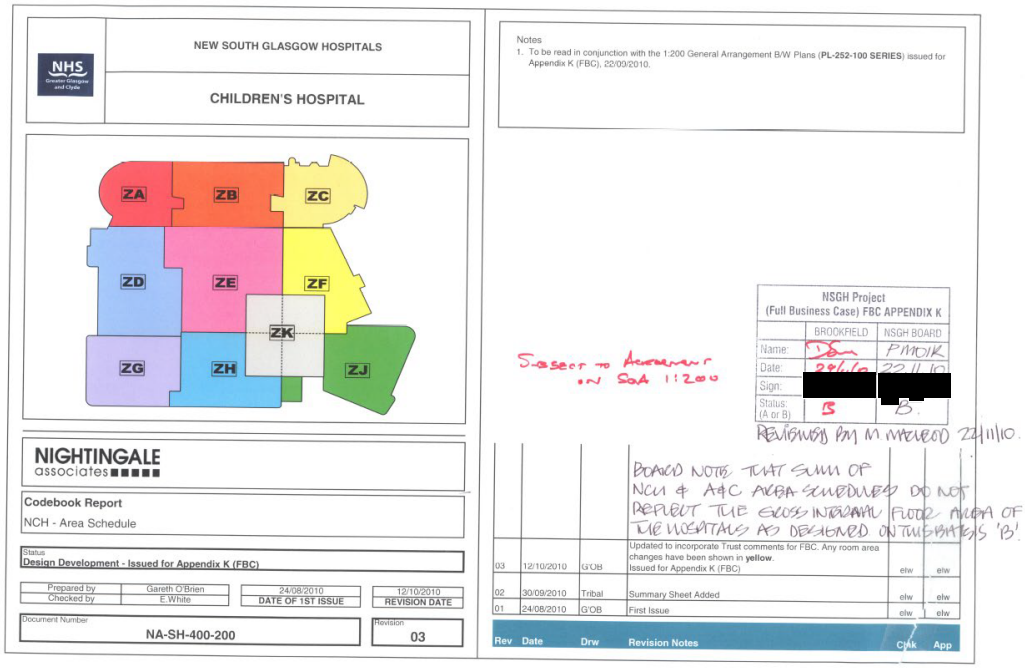
> An Interview Room in AAU is listed as 7.5$m^2$, will need to check functionality at the next stage

> In Imaging QA Room (058), is listed as 18.8m$^2$ instead of the 24m$^2$ required and the MRI Scanner Room (109) is listed at 62.8m$^2$ as opposed to 68.3m$^2$. In both cases the QA and MRI Rooms reviewed at 1:50 did not include the rooms above, therefore will need to review 058 and 109 for functionality at the next stage

> The Wash Up Area on floor 6 is listed at 58% below that requested, again will need to review for functionality

> Renal Dialysis 8 Chair Treatment Area (036) is 8m$^2$ below area requested – this is not one of the rooms which was drawn at 1:50, therefore need to review functionality at the next stage.

> Shared Core Ward Cluster – the schedules issued currently only show Cluster Type A – please note that here are 4 different multi-functional clusters, the floor location of these is yet to be agreed by the Board




Cover Sheet - NA-SH-400-200_rev 03 (Children's Hospital)

### 4.15 Room Data Sheets

Room Data Sheets **(RDS)** are a standardised form of document on which is recorded all of the relevant information for the design of a specific room type, including room space data (m2 areas and height), room activity data, room environmental data such as ventilation and lighting, room design character (including finishes) and the schedule of room components including medical equipment, power and data outlets, and fixtures and fittings.1

1 Refer to **A52701614 – Tribal Document ADB PowerPoint Presentation - Bundle 43, Volume 5, Page 707.**

The RDSs were subject to revision and development during various stages of the project up to the end of the design stage. When finalised the RDS's fixed the design brief for each room type within a department. They informed the content of the 1:50 scale room layout plans, 1:50 room elevation drawings and 1:50 departmental layout drawings.

**Invitation to Participate in Dialogue (ITPD) Stage**

GGHB provided within the invitation to tender documents Volume 2.1 - Appendix E_ADB Room Data Sheets an initial set of template RDSs for various typical room types. These were taken from the NHS Activity Data Base (**ADB**).

**Template Review Stage**

Initial Template RDS Brief

During this period, which ran from January 2010-June 2010, healthcare planners Tribal commenced their scope of work, which was to complete a full review of the Client Template RDS and Schedule of Accommodation and worked with the GGHB project team to agree a standard process for the development of the project specific Template RDS, and agree the attribution of the most current and appropriate ADB code to each of the room types within the Adult and Children's Hospitals. GGHB provided a version of the Client Brief SoA 090430 SoA_NSGH_ER_version – TA (Adult Hospital) and NCH SoA ER With ADB Codes (Children's Hospital) which included their 'brief' ADB codes, which Tribal reviewed to ensure they were the current version of the room type in ADB.

2 Refer to Tribal Document - 120310 RDS Development Process Rev F **(A52697906 - South Glasgow New Hospital – RDS Development Process - Draft - 12 March 2010 – Bundle 43, Volume 4, Page 63)**

Tribal also issued the initial Environmental Data Sheets, through an exported Excel Environmental Data Schedule, to ZBP which allowed them to review and update the environmental data to suit their M&E design. Tribal imported the ZBP commented excel schedule back into the project database, and this was reflected within the Template RDS issued by Tribal. ZBP retained responsibility for the environmental data within the RDS at all stages of the project. 01-06-10 NSGH Tribal ADB RDS_all rooms **(A52697944 - NSGH - Tribal ADB RDS - List of All Rooms - 01 June 2010 – Bundle 43, Volume 4, Page 83)**

The process agreed with the GGHB team was that the Template RDS would be approved only as 'technically ready' to allow the progression of the design up to FBC, and the full RDS approval would take place after FBC.3

3 Refer to summary process in Aconex - NA-GC-000179 - ADB Room Data Sheets - 01-11-2010 **(A52699552 - Mail from Emma White to Manny Ajuwon (Brookfield) and others - ADB Room Data Sheets - 01 June 2010 – Bundle 43, Volume 4, page 81)**

Any technical reviews of the environmental data sat outside the User Group Meetings (**UGM**) in a series of Mechanical and Electrical (**M&E**) Technical Review Meetings, which were not attended by IBI.

Concurrently, the 1:200 department designs were being reviewed with the Client team and their users during 3 rounds of UGMs (UGM1, UGM2 and UGM3) which ran from approximately January 2010-May 2010.

**Template RDS Development to FBC/Appendix K**

Following the completion and revalidation of the Template RDS Brief, we imported the agreed ‘technically ready’ Tribal ADB database into our project Codebook database, which linked the RDS Brief templates to each room in the building, to progress the production of the 1:50 Room Type Layouts. This followed the conclusion of the 1:200 department design stage in approximately May 2010.

In June 2010, 1:50 room type layout plans with a supporting individual RDS room report were produced and reviewed in UGMs 4 and 5 during June and July 2010 and August and September 2010 respectively. The primary purpose of these RDS room reports was to provide the component list to enable the users to understand the descriptions of the ADB equipment codes and quantities which were demonstrated on the room layout plans.
The Template RDS were now linked to the building CAD models and to the approved department layout plans, which allowed the next level of reviews and updates to take place.

We produced further exports of the Environmental Data Schedule (**EDS**) to ZBP, which were again reviewed in M&E Technical Review Meetings.
The agreed set of EDS for the Room Types were included in Folder J Volume 8 – ADB of the Appendix K Project Bible.4
4 Refer to **A52701581 – Batch 1 ZBP Updates - Bundle 43, Volume 5, Page 413**, and EDS ItP Batch 2 - ZBP updates_141210 (UKWOBD0002_00021695 - 11. EDS ItP Batch 1 - ZBP updates_141210.xlsx) **(This document will not be bundled)**.
The above process produced a package of 1:200 department layout plans, 1:50 room type equipment plans, an SoA and template RDSs which was submitted as the Full Business Case / Appendix K deliverables and approved by GGHB in October 2010 and by the Scottish Government in December 2010.

As noted, the RDS were not 'signed off' by GGHB Project Team at this stage, they were agreed as 'technically ready' to be used to produce the 'fully loaded' (all equipment included) 1:50 plans and for inclusion in the Full Business Case/ Appendix K.

### 4.16 1:50 Room Types

General Process

Due to the scale of the building, it was unachievable to develop the design for the fully loaded 1:50 fixtures, fittings and equipment (FF&E) department plans within the timescales required to deliver the Appendix K/FBC programme. Therefore, it was agreed that the focus would be on developing a set of 1:50 Room Type drawings, which covered the vast majority of different room types in both Hospitals. We suggested this should be a % of rooms (approximately 80%) based on an analysis of the room types identified by Tribal as part of the RDS process; and then applied a risk review against the remainder. The strategy was focused on the most frequent 'repeating' rooms, i.e. ensuring we included one of each room type in the generic wards, which represented the largest number of repeatable rooms and would therefore cover the largest area of the building. In addition, we also ensured that complex rooms, such as the Theatre Suite; Critical Care patient rooms, and those containing expensive imaging equipment (e.g. Xray, CT, MRI etc) were also included. The final number and locations of rooms were agreed with the GGC NHS project team and were supported with Room Data Sheets for all ADB Room Types; Standard Fixing Height Drawings; and Codebook Equipment Schedules/Reports for all room types. This supported the production of an updated FBC Equipment List, providing a more accurate equipment budget for FBC.

This process would also effectively validate the 1:200 department design in terms of demonstrating that the room shapes and areas were clinically functional, and that the briefed equipment could be accommodated within the rooms.

The 1:50 Room Types were initially developed as 1:50 FF&E layout plans only; in Stage 3 the agreed rooms would be templated and copied into repeating locations within all departments; the original 1:50 Room Type Layouts were updated to include all the wall elevations and became the 1:50 Room Elevation 'C' Sheets.

Work progressed with the set-up for the 1:50 process through the template RDS Development; the equipment brief for the 1:50 Room Types originated from the schedules of equipment components within 'technically ready' RDS. Refer to Chapter 4.15 Room Data Sheets for a more detailed description of the RDS process.

NA-IBI's 1:50 Codebook/Database Lead, Alex van den Berg, worked closely with Tribal's ADB Database Lead, George Illiopoulos, to link the databases through an exported SoA which was generated from the CAD models.

Concurrently, an analysis of which location should be used to best demonstrate the room type took place. This exercise was a collaborative process involving our 1:50 team, Tribal and the NHS 1:50/RDS lead, Frances Wrath. This resulted in a set of Room Type Location Plans to demonstrate the location of the agreed room types.

Following the conclusion and agreement of the 1:200 Department Design Stage, work commenced on the production of the 1:50 Room Type drawings; the rooms were 'loaded' with equipment components from the agreed 'technically ready' RDS.

There was a total of approximately 500 room type drawings developed for Appendix K, which were reviewed in 2 rounds of user group meetings.

1:50 User Group Meeting Programme

A set of 1:50 RT User Group Meeting Timetables **A52701600 – NSGH & NCH Design User Group Meetings 2 - 1:50 Room Type Stage (Week Four) Rev. 04 - Bundle 43, Volume 5, Page 601** were developed to support the organization of the UGM process. The sequence of meetings was adjusted to align with both the clinical user's availability, and to coordinate the similar department room types on consecutive days.

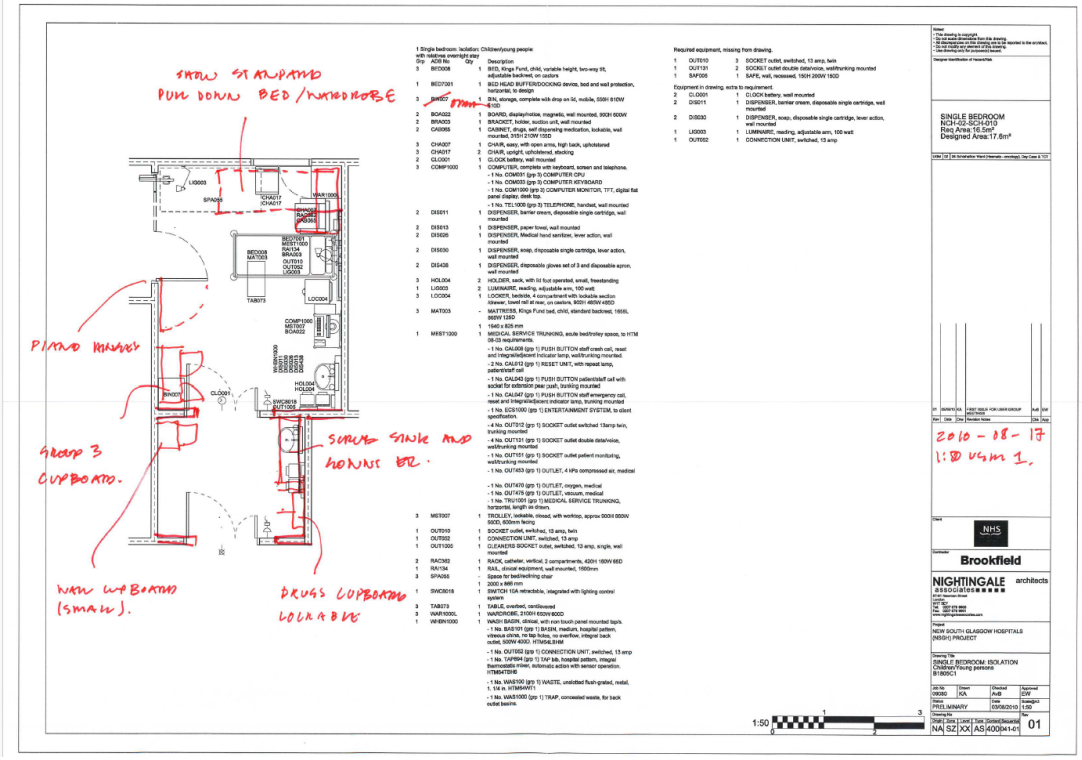
For example, the Adult Inpatient Wards contained the largest number of rooms, with the largest number of repeatable room types, so this was the first meeting. The Children's Inpatient Ward meetings were re-aligned to follow the Adult's meeting, to ensure that similar standard comments were captured across the 'whole' project.

The NA-IBI meeting attendees varied slightly, with senior architects more experienced in the 1:50 equipment process involved.

In general, the focus of the meetings was to review the equipment, ensure this met the user's requirements in terms of functional layout and confirm whether there were any items missing.

NSGH 1-50 Room Type Production Schedule for FBC **A52701602 – NSGH 1:50 Room Type Production Schedule Rev 06 - Bundle 43, Volume 4, Page 612** demonstrated the quantity of drawings produced and reviewed in each round of meetings.

We have copies of all the mark-up drawings, and the Appendix K sign-off versions of all the 1:50 room types. But these were in reality 'work in progress' to support the agreement of the cost plan, and the set-up of the Stage 3 1:50 fully loaded department plans. I was not in attendance at the 1:50 room type UGMs, however I have reviewed a sample of the commented drawings. I do not believe an in-depth review of these would assist the SHI, so I have not provided any specific commentary on the departments of interest.




Example Room Type - NA-SZ-XX-AS-400-041-01 UGM2 Markup 2010-08-17

Room Mock-Ups **(A52806238 Bundle 43, Volume 6, Page 20)**

Physical Mock-Ups were also developed and built using the approved 1:200 department layouts; at Stage 2 these were for the Adult Inpatient Bedroom (including ensuite and touchdown base) – refer to **A52701605 – Room**

**Layout Detail, Single Bedroom, Shower Room: Ensuite - Bundle 43, Volume 5, Page 629**;

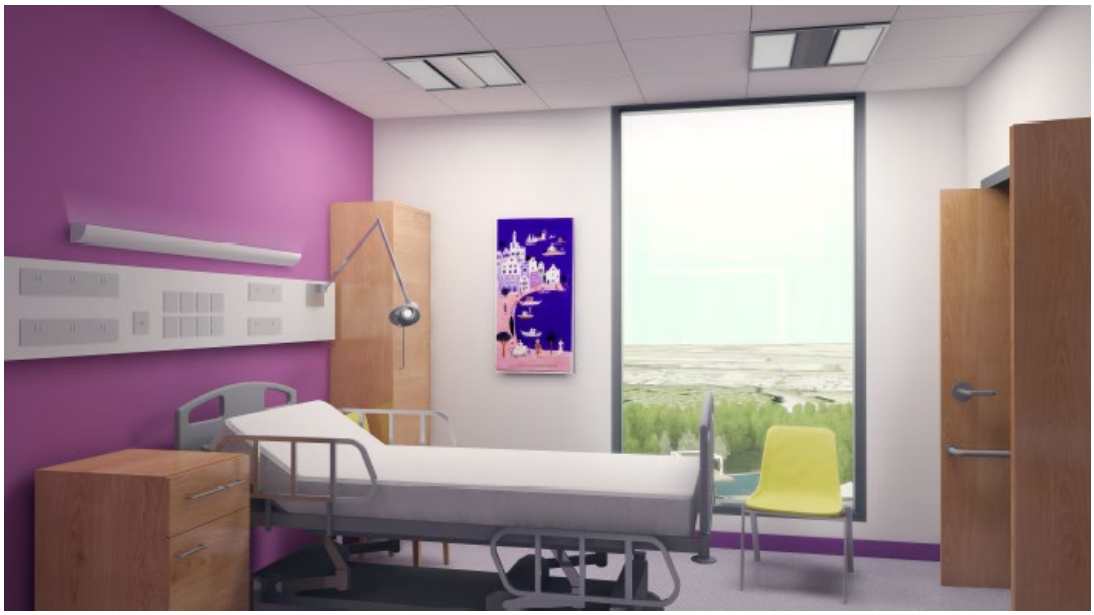


Image from Mock Up - Adults-Rev B **(A52701431 - NSGH Adults Hospital Bedroom Mock Up - undated – Bundle 43, Volume 4, Page 664)**

and the Children's Inpatient Bedroom (including ensuite and touchdown base) – refer to **A52701606 – Room Layout Detail, Single Bedroom: Children/Young people, with relatives overnight stay - Bundle 43, Volume 5, Page 630**.

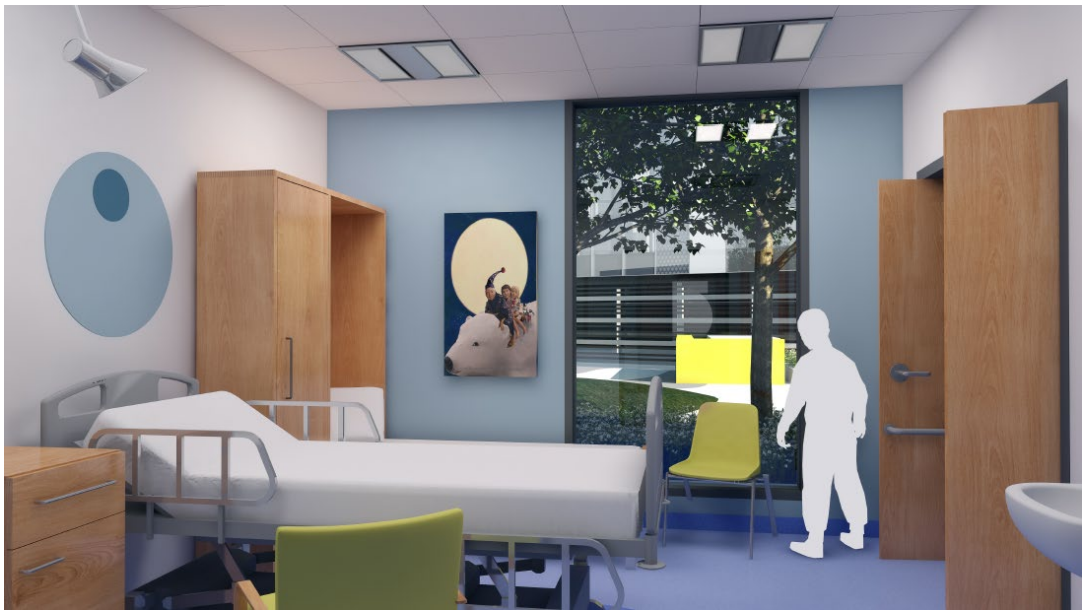


Image from Mock Up – Childrens **A52701607 – Mock Up - Children's Hospital Bedroom - Bundle 43, Volume 5, Page 631**. A standard Adult Critical Care Bed Bay was also mocked-up more as a spatial review, and was not fitted out at this stage.

We prepared mock-up setting-out plans, and 3D visualizations to support the GGC project team's internal campaign to request attendance and feedback on the developing designs.

### 4.17 Procurement Packages/Costing

To support the Appendix K/Full Business Case (FBC), a greater level of cost certainty was required. At the time this would have aligned with RIBA Stage D, and part RIBA Stage E; against the current RIBA Plan of Work this probably aligns with RIBA Stage 3+.

The main subcontractors covering the largest/highest value packages; M&E; Structural Frame; Façade and Internal Partitions were already part of the Project Team as Supply Chain Partners.

Therefore, the focus for procurement was the development of 1:200 design strategy packages supported by full NBS Specifications to allow BM to 'market test' the design further with a more developed design, which would then be fed back into the cost plan to allow the finalization of the Stage 2 'Guaranteed Maximum Price'.

The high-level list of architectural drawing packages prepared to support both costing and the Appendix K/FBC process were as follows;

- 01 SP Specifications
- 02 PL-252-010 Coloured Department Relationship Plans 1-500
- 03 PL-252-400 Coloured GA Departmental Plans 1-200
- 04 PL-252-100 BW Coordinated GA Plans 1-200
- 05 PL-240-000 Roof & Soffit Location Plans 1-500
- 06 PL-240-100 GA Roof Plans 1-200
- 07 EL-251-000 Coloured GA Planning Elevations 1-200
- 08 EL-251-010 Coloured & BW Courtyard Elevations 1-200
- 09 EL-251-100 BW Coordinated GA Elevations 1-200
- 10 SE-251-000 Coloured GA Planning Sections 1-200
- 11 SE-251-100 BW Coordinated GA Sections 1-200

- 12 PL-251-001 Cladding Type Location Plans 1-500
- 13 SE-251-200 Cladding Type Detailed Sections 1-20
- 14 IM-200-000 3D Visuals
- 15 AS-200-100 Component & Assembly Drawings
- 16 PL-572-100 Fire Strategy Plans 1-500 & 1-200
- 17 PL-331-150 Floor Finishes Strategy Plans 1-300
- 18 PL-333-150 Wall Finishes Strategy Plans 1-300
- 19 PL-332-150 Ceiling Finishes Strategy Plans 1-300
- 20 PL-410-150 Wall Protection Strategy Plans 1-300
- 21 PL-322-150&160 Door Type & Door Privacy Strategy Plans 1-300
- 22 PL-322-250 Access Control & Locking Strategy Plans 1-300
- 23 PL-330-200 Radiation Protection Strategy Plans 1-200
- 24 PL-330-150 Acoustic Strategy Plans 1-300
- 25 PL-480-150 Special Equipment Slab Recess & MJ Strategy Plans
- 26 PL-321-150 Glazed Screen Location Strategy 1-300
- 27 DC-100 Access Statement
- 27 DC-330 Interior Design & Wayfinding Strategy
- 27 DC-450 Access & Maintenance Strategy
- 27 PL-470-100 Core Art Strategy Plans 1-300
- 27 SH-400 Schedule of Areas-Accommodation
- 28 AS-400-000 Room Type Layouts 1-50

**4.18 Appendix K/Full Business Case (FBC)**

The Full Business Case is defined at Clause 11.2(41) of the Conditions as 'The Employer's submission to the Scottish Government for permission to proceed with Stage 3 and Stage 3A of the works'.

Within the NHS, a Full Business Case (FBC) is a detailed document used to justify and secure approval for a specific project or initiative within the NHS. It's a comprehensive assessment that outlines the need, options, benefits, and financial implications of a proposed scheme. The FBC is built upon the Five Case Model, which includes strategic, economic, commercial, financial, and management aspects.

The FBC design deliverable requirements were stipulated within the ITPD Documents **A52701573 – NSGH Invitation to participate in Competitive**

**Dialogue Volume 2/1 Appendix K – undated - Bundle 43, Volume 5, Page 222.**

**Planning Approval Process** (Reserved Matters)

A milestone requirement for FBC is Planning Approval. The Stage 2 Programme therefore required a concurrent workstream to progress dialogue with Glasgow City Council Planning Department.

The GGC Planning Consultant, Ironside Farrar, continued their role working alongside our external focussed Architecture and Masterplan team, led by my colleagues Neil Murphy (Project Director) and Jamie Brewster (Design Director). Initial introductory presentations with the Planners took place in January 2010, to present the bid design proposals, gather some feedback and review and agree the planning logistics for the approval of the reserved matters and planning conditions for the New South Glasgow Hospitals.

Refer the Stage 2 draft programmes 091216 Stage 2 Contract Programme BCL-GS2-CN01-0004 **(A52701651 – NSGH - Stage 2 Detailed Design to Full Business Case Programme, Rev. 01 Bundle 43, Volume 5, Page 932);** BCL-GS2-WK-0005 for Appendix K - Architectural deliverables Summary 02 **(Please refer to Bundle 17, Document 61, Page 2333)** for an overview of the activities and deliverables required.

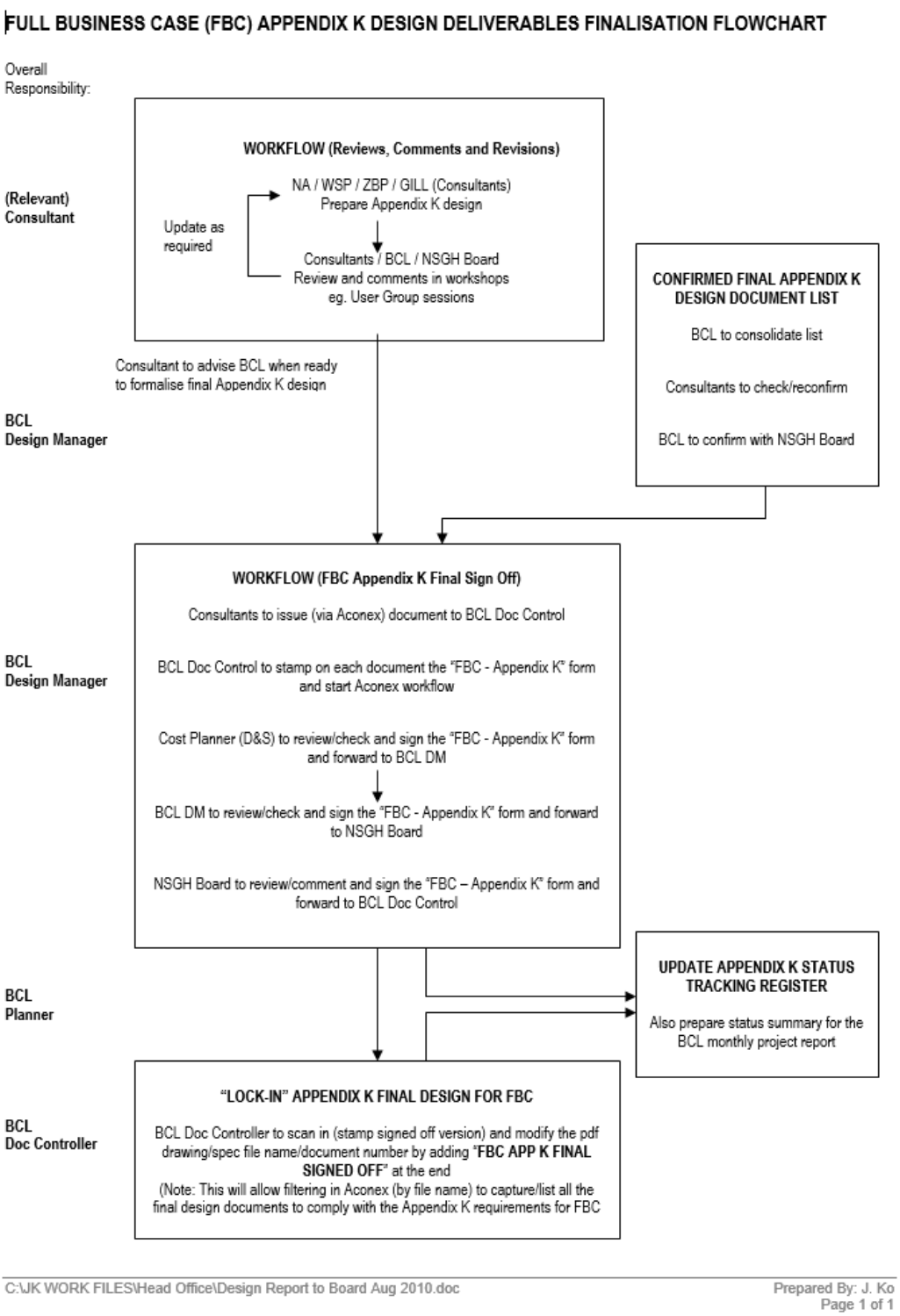
**Appendix K Review and Approval Process**

A series of package review meetings were arranged with the GGC Project Team, to present the initial draft Appendix K package in a workshop environment. These ran from the beginning of August 2010 until the end of September 2010. I have located the records, in the form of mark-up drawings, of the discussions in the following workshop reviews;

- Structural Review - columns, movement joints, shear walls
- External Envelope Design Review - window sizes, cill heights
- Internal Door Review - Access Control & Locking Strategy
- Internal Door Review - Door Types & Privacy Strategy
- Internal Finishes Review - Walls, Floors & Ceilings
- Protection Strategy (Walls & Doors) Review
- Internal Glazed Screen - Strategy Review

In addition, there was a series of M&E review workshops, in which the M&E Appendix K package was reviewed. Although NA-IBI were not present in these workshops, I have located within Folder V - Appendix K (M&E Engineering) records of Wallace Whittle and Capita Symonds comments on the proposals. **WW APP K Comments (A52701653 – Wallace Whittle Comments on Workshop Reviews of M&E Drawings Bundle 43, Volume 5, Page 940)** appears to be a record of the workshops; page 5 contains comments on Ventilation, with **App K brookfield response to WW_cap sym comments 20101108 rev A (A52701650 – NSGH - Brookfield Response to comments on Appendix K M&E Drawing Bundle 43, Volume 5, Page 918)** the response, which for ventilation can be seen on page 5.

Following the initial presentation of the draft Appendix K packages, these were then updated to reflect any comments received in the workshops and issued formally on Aconex to follow the agreed project protocol. **A52701569 – Brookfield - Full Business Case Appendix K Design Deliverables Finalisation Flowchart - Bundle 43, Volume 5, Page 221** represented the agreed drawing process BM implemented.




**A52701569 – Brookfield - Full Business Case Appendix K Design Deliverables Finalisation Flowchart - Bundle 43, Volume 5, Page 221.**

Thereafter, BM and the GGC Project Team continued to review and comment on the packages, which were returned to us towards the end of October 2010 with the NHS stamp and comments. These were latterly countersigned by

BM and this set of agreed signed FBC/Appendix K package drawings formed the basis of the Stage 3 Contract; these were therefore also the basis for the Stage 3 technical design and construction packages.

## 5. PROJECT CONTRACT BIBLE (2010)

**5.1** The Notice to Proceed to Stage 3, was received by Neil Murphy, our NA-IBI Project Director, on or around 25 January 2011; a disk containing the final agreed 'Project Bible' was delivered to our office the following day.

**5.2** This contained the Instruction to Proceed, Employers Requirements (ERs) & Logs and various related schedules and appendices for Stage 3.
Effectively, this was an updated version of the 2009 Project Bible containing the agreed Stage 2 detailed design and updated agreed contractual position on the ER's and various Logs.

The document entitled 'NSGH 2010 Instruction To Proceed Bible – Index' **(A52701443 - NSGH 2010 Instruction to Proceed Bible – Index – Bundle 43, Volume 4, Page 681)** summarises the relationship between the 2009 Project Bible, and which Contract Data takes precedent at Stage 3.
The document entitled 'Appendix 2 & 3 of the 2010 Instruction to Proceed letter' **A52701561 – Appendix 2 & 3 of the 2010 Instruction to Proceed letter Bundle 43, Volume 5, Page 135** is the Contractual Instruction from GGHB; the Building Contract contained within the 2009 Project Bible is still the Contract.

**5.3** The updated 'Project Bible' included the agreed Appendix K drawing packages, which were bound into the updated Project Contract Bible (2010) within the following folders;

- Folder U - Appendix K (Masterplan and Architecture)
- Folder V - Appendix K (M&E Engineering)
- Folder W - Appendix K (Civil and Structural Engineering)

**5.4** Of particular note are the updated **Folder B – Logs**, and **Folder J - Volume 8 ADB.**

**Folder B – Logs**

These contain the update to the Logs, including updated and final versions of the following;

- The BIW Log (2010 ItP) - (FINAL)
- The Clarification Log (2010 ItP) - (FINAL)

Of note on page 7 the 2009 position on the ward air change rates is the same, 'Please confirm mechanical air change rate for the ward tower.

A typical ward in the tower has the following air change rates to either meet the ADB requirements or achieve the environment conditions:

- Bedrooms 2.5 ACH (related to ensuite extract rate and air volume for chilled beam unit loadings)
- Ensuites 10 ACH
- Clean Utility 6ACH
- Disposal Hold 10 ACH
- Pantry 6 ACH
- Dirty Utility 10 ACH
- Equipment store
- Cleaner 5 ACH
- Nurse base Up to 12 ACH to balance extract from utility spaces, etc
- Office/meeting 4 ACH

**2009 Project Bible**

- Refer to the M&E Clarification Log in Contract Data Part 1 for typical single bed ward.

**2010 ItP Project Bible**

- Refer to the M&E Clarification Log (2010 ItP) in Folder B1 of The Instruction to Proceed Project Bible.'

- **A52701586 – M&E Clarification Log 2010 - Bundle 43, Volume 5, Page 431**

Of note, the 2009 position on the ward air change 'derogation' is the same, with reference to page 3-4,

'Ward Air change to be 6AC/HR, currently shown as 2.5AC/HR which is not in compliance with SHTM 03-01. **Agreed**

Brookfield proposal as outlined within the bid submission is to incorporate chilled beams as a low energy solution to control the environment which do not rely on large volumes of treated air or variable natural ventilation. All accommodation is single bedrooms and therefore the need for dilution of airborne microbiological contamination should be reduced (rooms could also be at slightly negative pressure to corridor).
Providing 6 air changes is energy intensive and not necessary. **Agreed**
The proposal is accepted on the basis of 40 litres per second per single room (8 litres per second per second) for one patient and four others.

Joint review to be carried out between the Board and Brookfield of the energy model to determine any impact on the energy target/BREEAM rating.

Brookfield, however, remain responsible for achievement of the energy target/BREEAM, with £250,000 added to the contract sum in this regard.

Negative pressure to be created in the design solution
Energy model based on the agreed 2009 position. **Agreed'**

- The RFI Log (2010 ItP) - (FINAL)
- The Sustainability Log (2010 ItP) - (FINAL)

**Folder J - Volume 8 ADB**

The Contract versions of the Environmental Data Schedules are included within **Folder J.** These schedules represented the agreed environmental data, which at the time of FBC consisted of the approximately 500 odd room types.

- Environmental Matrix Report A52701634 – NSGH Environmental Matrix November 2010 Bundle 43, Volume 5, Page 782
- EDS ItP Batch 1 - ZBP updates_141210 (UKWOBD0002_00021695 - 11. EDS ItP Batch 1 - ZBP updates_141210.xlsx) **(This will not be bundled).**
- **A52701584 – Batch 2 ZBP Updates - Bundle 43, Volume 5, Page 411.**

**EDS ItP Batch 1 - ZBP updates_141210** contains only the environmental data for each room type. With the application of a filter on **Column A – Dept Code**, the data for each room type within a department can be located. The codes for the departments of interest to the SHI are as follows;

- NSGH-HOW - Haematology Oncology Ward - Ward 4B QEUH
- NSGH-RENO/M – Renal Ward - Ward 4C – QEUH
- NSGH-GENW - Generic Inpatient Wards - Level 5 – QEUH
- NSGH-CCW – Critical Care QEUH
- NCH-SCHW - Schiehallion Ward and Day Case Unit - Ward 2A & 2B – RHC
- NCH-CCW – Critical Care - PICU – RHC

**EDS ItP Batch 2 - ZBP updates_141210** contains all the room data, including the room activity data, and the room character/finishes data. With the application of a filter on **Column E - Briefing Room Code**, which is the ADB briefing code from the Template RDS, links can be tracked back to the Template RDS.

For the NSGH Adult single bedrooms, I can see that 3 further variations of the original B0305A code have been identified as different to the generic single bedrooms.

- B0305A - NSGH-GENW - Single-bed room – Generic Ward
- B0305A1 - NSGH-STW - Single-bed room – Stroke Ward
- B0305A2 - NSGH-RENO/M - Single-bed room – Renal Ward
- B0305A3 - NSGH-HOW - Single-bed room – Haematology Oncology Ward

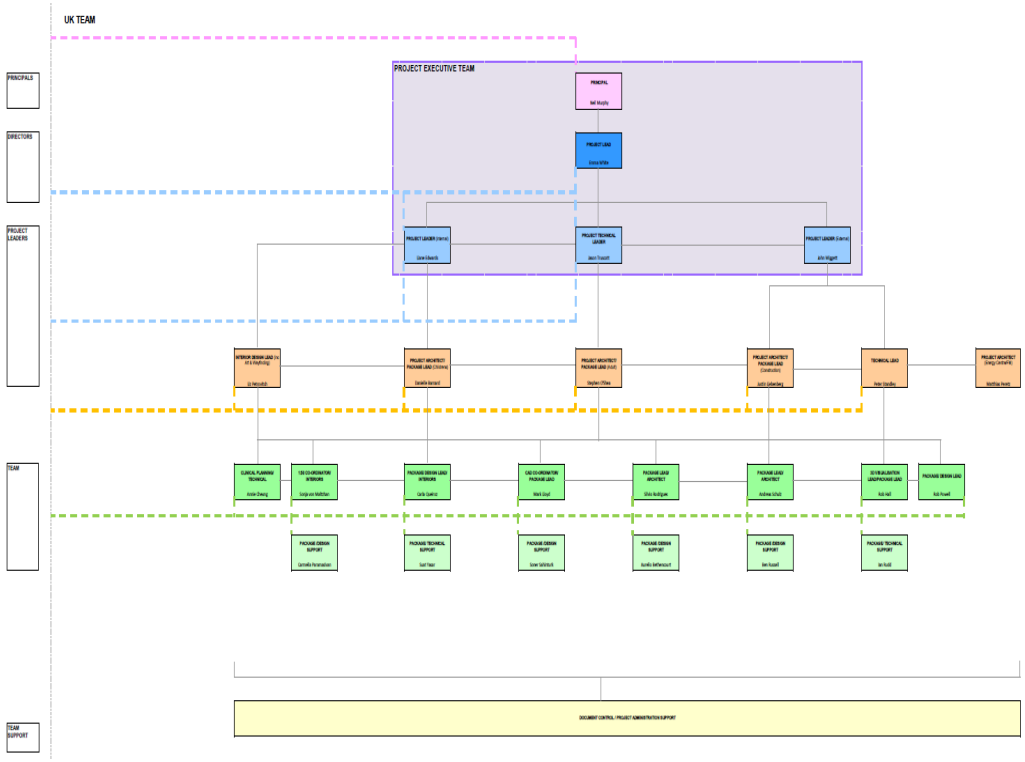
It should be noted that the data agreed and contained in these Environmental Data Schedules formed the basis of the Stage 3 Room Data Sheets.

# 6. STAGE 3 - CONSTRUCTION OF THE ADULT AND CHILDREN'S HOSPITALS

## 6.1 Team Structure

A similar team structure continued to operate in Stage 3. However, as this stage involved more detailed design and production delivery, the team of Project Leaders took on more responsibility for their respective "whole project" ("WPP") packages. The team was accordingly structured beneath the Project Leaders with a group of WPP leads (e.g., External Envelope, Internal Fit-Out, Interior Design, the Energy Centre etc), and then to a team of specific package architects who were each designated internal and external packages according to their respective skills and expertise. Where possible, the stage 2 department leads maintained their UGM lead roles through the second stage of the 1:50 design process.

The structure of the senior IBI team during Stage 3 was as follows.




Stage 3 Organogram showing IBI team structure

## 6.2 Programme Summary

Stage 3 of the project commenced in December 2010 and completed in January 2015. IBI continued to lead on the 1:50 Design Stage, which required "sign off" approval by GGHB. The process of Reviewable Design Data ("RDD") approvals continued through Stage 3 from 2011 to 2014. We assisted BM in establishing an RDD Tracking Schedule to initially agree all

the drawings which were to be submitted through this review process. In addition, key statutory authority approvals were required from Planning and Building Control. NA-IBI and BM were responsible for coordinating over 40 Building Warrant processes. We also participated in multiple package review workshops with BM over the course of Stage 3 to agree the final Tender and Construction packages.

And of course, Stage 3 involved the mammoth task of the production and coordination of all the drawings required for the construction of the Hospitals. As well as the review and coordination of the subcontractor design packages.

### 6.3 1:50 User Groups including Pre-User Group Meetings and Process

The Stage 3 1:50 process for the Adult and Children's Hospital needed to consider further levels of detail, including the sequencing requirements for construction, as well as addressing the potential impacts of moving FF&E items, such as sanitaryware, which could have an impact on the production information which was in progress for the civils and structural design.

The Stage 3 set-up needed to consider these requirements, which necessitated another re-organization to the sequencing of the meetings; these were adjusted to reflect the construction programme. This brought forward the departments located in the basement, Adult podium and Children's departments which sat within the Adult podium structural construction zones.

The Adult inpatient ward tower and majority of the Children's departments were in the later structural construction zones.

The 1:50 process became a vastly more complex entity, and required an increased level of management control to ensure the competing and overlapping requirements could be met within the overall Stage 3 programme.

The only way it could work successfully was for all parties to work collaboratively together.

I developed a strategy of Pre-User Group Meetings (Pre-UGM), which was the forum for all parties to gather and review the first draft of the 1:50 'fully loaded' FF&E plans. Each core participant had an action to review the draft

drawings, and provide their comments, ensuring that they covered the key issues we needed to address.

The Pre-UGM key **Activity Checklists** fell under the following headings;

1. Room Assignment Review (lead NHS/NA)
2. Equipment Review (lead NHS/Currie & Brown)
3. M&E Design Review (lead ZBP/Mercury/NA)
4. Structural Design Review (lead WSP/NA)
5. External Envelope Review (lead NA)

The outputs of the Pre-UGMs was a set of fully marked-up 1:50 FF&E plans which contained the comments of each key party, to enable us to progress with updating the design to the agreed comments prior to issue for the final round of User Group Meetings (UGMs).

The meetings maintained the same structure, which can be seen from the example agenda, **A52701596 – Pre-UGM Review Workshop Agenda - Bundle 43, Volume 5, Page 582.**

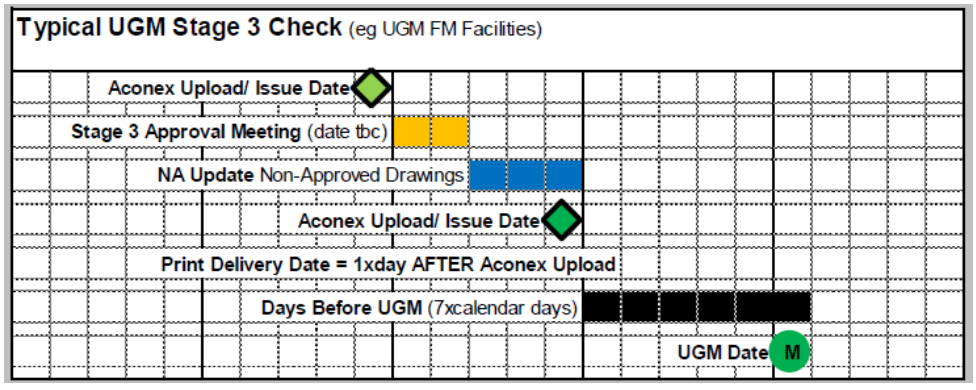
The Pre-UGMs ran over an 8-week time period, from 20/01/2011 – 10/03/2011 (refer to **A52701595 – Fully Loaded Pre-UGM - Bundle 43, Volume 5, Page 580**) for the full department lists). I have located and include as supporting documents the meeting minutes and drawing mark-ups for the departments of interest to the SHI, which took place in the following Pre-UGM weeks.

| Pre UGM Week | Department | Building |
|---|---|---|
| 1 | Critical Care | Adult |
| 4 | Renal Inpatients & Day Unit | Adult |
| 6 | Haemato-Oncology Ward | Adult |
| 6 | Critical Care (PICU) | Children's |
| 8 | Inpatient Wards | Adult |
| 8 | Schiehallion Ward & Day Unit | Children's |
| 8 | Schiehallion Radiotherapy Treatment Suite | Children's |

A summary of the whole process is captured within the 1:50 Protocol Document, which I drafted; this was reviewed and agreed by all parties (**A52701604 – NSGH 1:50 Department Design Protocol Document Rev 02 - Bundle 43, Volume 5, Page 619**). There are multiple Reference Documents and hundreds to thousands of drawings produced during this process, all of which I can locate if necessary, however it should be noted that this is also a time-consuming exercise given the vast quantity of documentation.

My role was to set up the process, and I also sat in a number but not all of the Pre-UGMs. One of the actions I took away from the meetings as they progressed was the concerns of both BM and the NHS team about how we could maintain our Quality Assurance (QA) procedures throughout this process. In response to this I developed a fully detailed 1:50 UGM Drawing Checking and Approval Programme (**A52701603 – Nightingale Associates - 1:50 UGM Drawing Checking & Approval Programme - Rev. 01 - Bundle 43, Volume 5, Page 628)** which took each department through 2 stages of an NA internal review and checking process before the department drawing package was uploaded to Aconex, allowing BM the time to print the drawings and deliver these to the NHS, a minimum of 3 weeks prior to the UGM.

The final Stage 3 checking took place on site, with BM, NA and the NHS team reviewing each department drawing package to validate its acceptance for presentation at the UGM. Any non-approved drawings would need to be updated and re-issued prior to the UGM date.




Extract from NA-SH-012_rev 01

This process was also key to the NHS project team to ensure the huge amount of time required from their clinical users was focused, with a lot of preparatory work taking place outside of the UGMs, minimizing the impact on the clinical users' time.

1:50 User Group Meeting Timetables

The planning of the user meetings was agreed within another User Group Meeting Timetable, **A52701598 – NSGH & NCH User Group Meeting 1:50 Fully Loaded Stage (Week One) Rev. 04 - Bundle 43, Volume 5, Page 583.** The meetings were scheduled to run from 21/03/2011 – 01/07/2011.

Given the level of detail and comments required during the final round of UGMs, NA-IBI's meeting attendees expanded; the senior architects were still involved but supplemented by other members of our team. Whilst there was still a focus on managing the equipment, given the construction programme and impacts on other approval processes, such as building control, other team members joined the department leads to ensure any outstanding associated design issues were highlighted and agreed with the users.

Currie & Brown attended all of the UGMs to support with recording any change control and produced a UGM Tracker to support the process. The final version 1:50 Change Control Tracker - Version 11 **A52701599 – Aconex - 1:50 Change Control Tracker - Version 11 - Bundle 43, Volume 5, Page 599** was received on 08/07/2011.

Reference can be made to this tracker for an easier guide to the level of comments received during the UGMs. The departments of interest to the SHI can be located sequentially on the following tabs, with a summary below of comments of note within these departments;

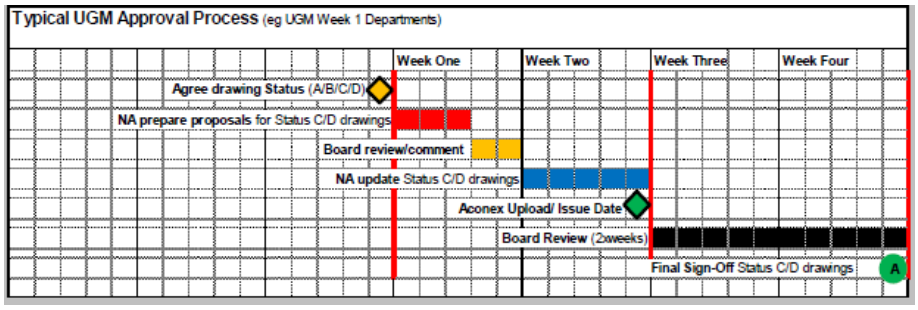
- **Critical Care** – 'omit front wall and double doors' to CCW 018/ CCW 053 - Linen Stores; '(see sketch SK-400-525-01) - Reinstate WC formed from room CCW101'
- **Renal Inpat**.- ' add hoist' to RENW-008 - Single Bed (Higher Acuity)- no en-suite, RENW-021; Consumables store/equipment bay 'REDRAW- swap with RENW-266. Will become single sided consult/exam with space incorporating area of RENW-245'; and a number of additional glazed screens
- **Haemato** – '14 air changes/hr' is noted as a requirement to room HOW-003 - Pentamidine Treatment
- **NCH PICU** – 'Omit nitrous oxide from pendant, and omit transport ventilator' generally to each bedspace (bed bay and single beds)

- **Schiehallion** – a number of changes were requested to omit scrub sink to DCU-007 - Day Stay Ward; change trough sink to whb to room DCU-011 - BMT Day Ward; Enlarge to accommodate use as "hot" toilet - separate drainage stack - DCU-013 - Staff WC; change trough sink to whb generally to all consult exam rooms; Blind required on window, but cannot be interstitial due to leaded glass to the Relatives Bed in the Radiation Shield Bedroom Area; add glazing to SCH-039, which is a corridor in the Teenage Cancer Trust (TCT) area; room SCH-042 - En-suite is required to be 'Hot Toilet'.
- **NSGH Ward** – no changes noted, only minor comments to cupboards

I have located and include as supporting documents the drawing mark-ups for the departments of interest to the SHI. Again, should copies of any other commented drawings be required I have access to all mark-up record drawings within our internal records.

1:50 UGM Sign-Off

The 1:50 UGM reviews generated a set of mark-up drawings, which were stamped as a record by the NHS Project Team 1:50s Lead, Frances Wrath. As per the agreed process, which can be seen at the bottom of the1:50 UGM Drawing Checking and Approval Programme (**A52701603 – Nightingale Associates - 1:50 UGM Drawing Checking & Approval Programme - Rev. 01 - Bundle 43, Volume 5, Page 628**), any drawings receiving a status C/D needed to be reviewed and a proposal to address the comments agreed with the NHS Board prior to the update and re-issue of the drawings. The Board then had a further 10 working days to review the updated drawings prior to the 'final sign-off' at this stage




Extract from NA-SH-012_rev 01

The stamped meeting record set of drawings were then scanned and issued to all parties by BM on Aconex. These all have the signature of Frances

Wrath, and in general contain a second signature from I believe one of the department users.

The updated drawings were re-issued and stamped again, generally as agreed subject to the following;

‘These layouts are agreed subject to the provision and agreement of the outstanding elevations as identified in the 1:50 Room Elevation Schedule Group B and the incorporation of any changes as noted therein to those elevations already reviewed. ‘

It should be noted that the package issued for the 1:50 UGM Sign-Off consisted of the set of 1:50 fully loaded FF&E department plans, and the 1:50 Room Elevations.

The original 1:50 Room Type plans agreed in Stage 2 were updated to co-ordinate with the 1:50 fully loaded plans, and to include the elevations of each wall in the room; these became the set of 1:50 Room Elevations.

Additional 1:50 Room Elevations were identified and produced after the completion of the 1:50 UGMs. These were issued and reviewed under the RDD process.

## 6.4 Room Data Sheets

Concurrently to co-ordinate with the 1:50 fully loaded department process, the Room Data Sheets (RDS) began the next stage of their production.

The 1:50 Room Types agreed at Appendix K/FBC were templated in terms of both their layout, and the data within the room; the drawing models were linked to the project database, which had migrated to Codebook, from ADB Manager, at the start of the 1:50 Room Types production.

Codebook retained the Template RDS data; the agreed environment data, contained within EDS ItP Batch 1 - ZBP updates_141210 and EDS ItP Batch 2 - ZBP updates_141210 was reimported back into the database. **(These will not be bundled).**

As noted within the NSGH 1-50 Department Design Stage_Protocol Document_rev 02, the **Assigned Room Types Schedule** (**A52701601 – Nightingale Associates - Codebook Report - Assigned Room Type Schedule Rev. 02 - Bundle 43, Volume 5, Page 627**) was reviewed and agreed with the NHS. This linked the 1:50 room types to the multiple occurrences of each room in the building, and formed the starting point of the 1:50 fully loaded department and the full department RDS.

Essentially the data was copied to each room, and then the same process of exporting the environmental data to allow ZBP to check, review and return commenced.

The full department RDS production followed the process described below, which has been extracted from the supplementary RDS Paper I produced for the SHI.

### Full Department RDS Stage - December 2010 to March 2015 – Post Appendix K RDD Stage

Revision 01 was submitted as a draft for information only as part of the Pre-UGM 1:50 Fully Loaded Department Meetings. At this stage the room character/finishes page had been omitted, as the Appendix K Finishes Strategy Plans represented the agreed project finishes, and the environmental data was under review by ZBP so was not included. This was the first issue of the full Department RDS, i.e. there was an RDS for each room, including lobbies and corridors, and the RDS packages were linked to each Department.

Revision 02 of the RDS included the updated ZBP/TUV-SUD environmental data. We produced updated RDSs and issued these along with the sets of 1:50 Fully Loaded Department plans for each department. The package of documents was then presented to clinical users in the final series of UGMs (UGM 6)

Revision 02 was updated with the Brookfield/Multiplex comments, and any comments received in the UGMs and re-issued as Revision 03, which was formally issued to GGHB as part of the RDD review of the RDS. Revision 03, or the final numbered revision of the RDS, was the version returned to us which was stamped, approved and signed with comments from the GGHB Project Team.

Revision A was issued in or around September 2012 for T3/construction. This revision contained updated M&E environmental matrices which incorporated further comments from the NHS/BM/MEP M&E Technical Review workshops. In addition to align with the construction co-ordinated design.

I understand that the M&E comments related to construction coordination issues and included some technical updates. We were not required to attend the M&E workshops, however we were required to update the co-ordinated RDS following these workshops. Any updates required were issued to us on Aconex; we exported the EDS, issued these to ZBP to update with their comments, and then produced a new version of the RDS which was issued to incorporate the updated EDS supplied by ZBP.

Revision B was issued in or around June 2013. This revision contained updates required to co-ordinate with the construction design/review comments.

Revision Z1 was issued in or around March 2015 as the "as built" issue (i.e. it represents the final issue of the RDS and the version which was constructed).

The final issue of Revision Z1 included BM's review comments and was uploaded to Zutec to be included in the Handover records/O+M Manuals.

**Provenance and Access to Revisions**

All revisions of the full department RDS were submitted to the NHS and Design Team on Aconex.

Revision 01 was submitted as a draft for information only as part of the Pre-UGM 1:50 Fully Loaded Department Meetings.

Revision 02, 03 and Revisions A, B and Z1 were submitted to the NHS by BM under the RDD process on Aconex for NHS review and approval. (The exact revision varies across the departments, in general the repeating Generic Wards in the Adult Ward Tower had less revisions as the standards were agreed within Level 05).

While we have access to all of the submitted versions, we did not receive any further NHS approved and signed versions beyond the reviewed RDD documents with NHS comments we received in or around May 2012 from the BM Document Controller. I understand that this set represented the RDD NHS approval of the RDS, and any further revisions were primarily to co-ordinate the RDS with comments made in other technical review meetings, or to incorporate the construction co-ordination of the design. I do not believe these materially impacted the design principles captured within the set of NHS signed and agreed RDS we retained copies of and have shared with the Inquiry. However, it should be noted that BM ultimately retained ownership of the management of the Documents on Aconex, and the submission under RDD Workflows to the NHS, and have access to all signed versions, and copies of the relevant Aconex transmittals.

The ‘signed’ RDS were stamped by the NHS Board signifying its approval and signed by Frances Wrath. Ms Wrath was the NHS Lead in the RDS process and was responsible for liaising and consulting with the wider GGHB team, including their relevant internal stakeholders. Other Technical Advisors, which I understand were led by and included Currie & Brown, supported the NHS Board with the review and approval of the environmental data within the RDS.

Between four to seven revisions of RDS were produced for each department (each revision is around 400 pages long) and, while we have access to all revisions of RDS we produced for each unit, we only have access to the following signed copies of the departments of interest to the SHI:

- Revision 03 of the RDS for the Schiehallion Unit (note that there is no NHS stamp)
- Revision 03 of the RDS for the Haematology-Oncology Ward
- Revision 02 of the RDS for Ward 6A
- Revision 04 of the RDS for PICU
- Revision 04 of the RDS for CCU
- Revisions 04 of the RDS for the Critical Care Ward
- Revision 03 of the RDS for the Day Case Unit, Ward 2B
- Revision 03 of the RDS for the Fifth Floor Generic Wards A – C and the Support and Communication Wards
- Revision 01 of the RDS for the Sixth Floor Generic Wards 1 – 3
- Revision 04 of the RDS for the Acute Receiving Unit (Isolation Room)
- Revision 05 of the RDS for the Cardiology Ward (Isolation Room)
- Revision 04 of the RDS for the Observation Ward (Isolation Room)
- Revision 03 of the RDS for the Inpatient Wards (Isolation Room)

**6.5 Reviewable Design Data**

We were obliged to provide further detail of the items listed under Contract Data as the agreed set of Reviewable Design Data (RDD).

This included the detailed design of the packages held within the Appendix K/FBC submission, as well as other items such as samples and Subcontractor proposals.

The RDD approvals continued throughout Stage 3 from 2011 to 2014 and were managed by Multiplex on Aconex. The scanned/NHS signed drawings were generally uploaded by Multiplex as a record copy and distributed to the Design Team.

We assisted Multiplex with the set-up of the RDD Tracking Schedule to initially agree all the drawings which were to be submitted through this review process. Thereafter, Multiplex expanded and managed this schedule to log the history of all the RDD drawing approvals. This can be used to track the relevant Aconex Transmittal as required.

RDD Strategy

I set-up the initial RDD Strategy for the architectural packages, which followed on from the approval of the 1:50 fully loaded department plans in

August 2011. This strategy was linked to the BM Procurement programme and was initially structured to present the updated architectural strategy packages to the GGC project team, building on the Appendix K package reviews (refer to **A52701594 – Nightingale Associates - Design Strategy Review Program - Bundle 43, Volume 5, Page 551).**

RDD Workshops

Following on from the successful 1:50 Pre-UGM process, we then agreed to progress with a series of 'Pre-RDD' workshops, to present the RDD packages to the GGC Project Team. I developed a proposal for the timetable of RDD Workshops, which we programmed out for the whole of 2012 **A52701597 – RDD Workshop Timetable for 2012 - Rev 06 - Bundle 43, Volume 5, Page 554.** These were structured around the Project Design Group Meetings, and covered the following subjects;

**RDD Workshops – Architectural** (2012 Summary)

- Acoustic Strategy
- Desk Strategy (1:50 functional review)
- Fixing Heights & Bedhead Strategy (follow-up)
- Courtyards (inc DCFP Roof Garden)
- Entrances (inc external thresholds) & Helipad
- Link Bridges (Neo-Natal & Neurology)
- Interstitial Blinds
- Interior Design Group (1) - Strategy Overview
- Interior Design Group (2) - Adult Strategy
- Interior Design Group (3) - NCH Strategy
- Interior Design Group (4) - Adult Detail
- Interior Design Group (4) - Adult Atrium Overview
- Interior Design Group (5) - NCH Detail
- Interior Design Group (5) - NCH Atrium Overview
- Interior Design Group (6a) – Components
- Interior Design Group (6b) - Sign-Off
- RDD Workshop - Interior Design Group (7) - Sanctuaries, Adult Atrium Core & Bridge Link Cladding
- Interior Design Group (9) - Wayfinding Signage Strategy Overview

- Interior Design Group (10) - Wayfinding Signage Strategy Adult
- Interior Design Group (11) - Wayfinding Signage Strategy NCH
- 1:50 Internal Finishes (PG1) - NSGH Critical Care, CCU, AAU, ED
- 1:50 Internal Finishes (PG2) - NSGH Radiology, Stroke, MDU, OPD Pre
- 1:50 Internal Finishes (PG2) - NSGH Theatres, Nuclear Medicine
- 1:50 Internal Finishes (PG3) - NSGH Renal Inpatients, Haem-Onc
- 1:50 Co-ordinated Ceilings (PG1) - NSGH Critical Care, CCU, AAU, ED
- 1:50 Co-ordinated Ceilings (PG2) - NSGH Theatres, Radiology, Nuc Med, Stroke, MDU, OPD Pre
- 1:50 Co-ordinated Ceilings (PG3) - NSGH Renal Inpatients, Haem-Onc
- 1:50 Co-ordinated Ceilings (PG4) - NSGH Typical Ward, NCH Radiology, Theatres

*NOTE the remaining production zones/departments not listed above would have been reviewed and agreed in 2013.

**RDD Workshops - M&E** (2012 Summary)

- M&E Zone E (Levels 0, 1, 2)
- M&E Zone C - Risers M12, M40, M14, M13, M115b
- M&E Zone B (Levels 0, 1, 2,3)
- M&E Zone C - Risers M12, M40, M14, M13, M115b
- M&E Zones B – Risers
- M&E Zone F - Risers M27, M30, M38a
- M&E Zone F & Zones E, F, H, J (Level 4)
- M&E Zones E, F, H, J Typical Ward & Cores (Levels 4-11)
- M&E Zones E, H - Level 3 Plantroom 31
- M&E Typical Ward - Risers T3, T5, T11, T13, T14
- M&E Zone F - Level 2 Plantroom 22
- M&E Zone J Risers (Levels 0-3)
- M&E Zone J, Zone K Cores (Levels 4-11)
- M&E Basement Plant
- M&E Zone K - Levels 4-11 Risers T2, T4, T6, T12, M25
- M&E Zone F - Level 3 Plantroom 32
- M&E Zone J - Level 3 Plantroom 33
- M&E Zone C - Risers M33, M22, M36

- M&E Zones A, B - Level 4 Plantroom 41
- M&E Zone C - Level 5 Plantroom 41A
- M&E Zones H, E, J, F - Level 12 Plantrooms 121-124
- M&E Plantroom 21

*NOTE the remaining production zones/plantrooms not listed above would have been reviewed and agreed in 2013.

**RDD Workshops - Combined Strategy** (2012 Summary)

- Access & Maintenance Strategy (7 in total)
- Landscape - 2nd Courtyards meeting and DCFP
- Landscape - Arrival Space/Central Park
- Landscape - Childrens Park/A&E
- Landscape - External wayfinding and signage

**RDD Workshop – Equipment** (2012 Summary)

- Equipment – Pendants
- Equipment – Canopies
- Equipment - Surgeon Panels
- Equipment - Theatre Lighting

Thereafter the workshops continued until the completion and acceptance of the full set of RDD documents. The submissions followed the agreed project process and were planned and monitored on the A52701571 - NSGH Adults and Children's Hospital RDD Master Schedule **Bundle 43, Volume 5 – See Paper Apart.**

The BM Design Managers managed this schedule with the support of their Document Controllers. All RDD document submissions would be issued to the GGC Project Team on Aconex through workflows. The final RDD Schedule I have access to on Aconex is dated 01/05/2014 and had previously been shared with the SHI (RDD SCHEDULE AS AT 01.05.14) **(A52701430 - NSGH Adults and Childrens Hospital - RDD Master Schedule Reviewable Design Data - Issued for Approval - 02 May 2014 – Bundle 43, Volume 4, [Paper Apart])**

This document can be used to track the history of the RDD document issues, and using the Aconex Transmittal References RDD Packages can be easily located and downloaded.

### 6.6 1:50 Reflected Ceiling Plans

Background - Bid Stage

The process for the development of the Ceiling Plans commenced during the Bid Stage with the proposals for 1:200 Ceiling Strategy Plans for a number of typical departments which were part of the ITPD tender submission. At Bid Stage they were supported by an Outline Specification; this formed the starting point for Stage 2. The Outline Specification stated the following for Ceilings;

**'3.2. Ceilings**

The various types will incorporate the following design criteria;

- Acoustic performance
- Minimum periods of fire resistance
- Requiring security protection, (where required in HTM's/Volume 2/1: Employer's Requirements [Hospitals])
- Requiring radiation protection,
- Requiring moisture resistance to areas of high humidity

Radiation Protection and the requirements for lead-lining and Radiofrequency shielding will be provided to meet the Board's Radiation Protection Adviser's requirements.

The framework is to accommodate and support all of the ceiling mounted fixtures specified in the ADB Room Data Sheets and shown on the 1:50 layouts.

Ceilings heights generally to be 2700mm. In addition, certain rooms will be 3000mm as required in 7.3.3. of the Employer's Requirements, and to comply with Volume 2.1 Appendix E: ADB Room Data Sheets

**GENRALLY:**

The Ceiling Type Strategy has been developed in response to Volume 2/1: Employer's Requirements (Hospitals) - Section 7.3 Ceilings, Volume 2.1 Appendix E: ADB Room Data Sheets and to ensure compliance with SHTM 60 Ceilings. These are performance related ceiling types and include options for Art Opportunities. A List of the proposed Ceiling Types is listed below;

**A: Plasterboard Ceiling**

Smooth, imperforate and jointless membrane with concealed grid system, normal humidity and Class 1 surface spread of flame (**SHTM 60 CATEGORY 1**)

**B: 600x600mm Moisture-resistant Ceiling Tiles**

Imperforate and jointed membrane with concealed grid system, normal humidity and Class 1 surface spread of flame (**SHTM 60 Category 2**)

**C: 600x600mm Mineral Fibre Tiles**

Imperforate and jointed membrane with concealed grid system, normal humidity and Class 1 surface spread of flame (**SHTM 60 Category 3 & 5**)

**D: 600x600mm Mineral Fibre Tiles**

Imperforate and jointed membrane with exposed grid system, normal humidity and Class 0 surface spread of flame (**SHTM 60 Category 4**)

**E: 600x600mm Mineral Fibre Tiles**

Jointed membrane with exposed grid system, normal humidity and Class 1 surface spread of flame (**SHTM 60 Category 4 & 6**)

**F: 600x1200mm Suspended Mineral Tile Plank System with perimeter plasterboard margin detail**

Imperforate and jointed membrane with exposed grid system, normal humidity and Class 0 surface spread of flame (**SHTM 60 Category 4**)

**G: 300x1200mm Suspended Mineral Tile Plank System with perimeter plasterboard margin detail**

Imperforate and jointed membrane with exposed grid system, normal humidity and Class 0 surface spread of flame (**SHTM 60 Category 4**)

**H: Suspended Fabric Stretch Ceiling System with Backlights (Art Opportunity)**

Class 0 surface spread of flame.'

Stage 2 Design

During Stage 2 the agreement of the 1:200 department plans with the users allowed a 'design freeze' to commence the production of the Appendix K design strategy submissions. For the strategy plans, including ceilings, these took the form of a set of 'whole building' strategy plans, which were at a scale of 1:300 to fit on the largest paper size, an A0 sheet (841 x 1189 mm). The Ceiling Strategy Plans, from Basement to Level 6, supported with an updated Outline Specification NA-SP-001_01 NSGH Outline Specification (**A52609968 Bundle 43, Volume 6, Page 23**) and the more detailed NBS specifications NA-SP-K40 **(A52701644 – NBS Specification - Demountable Suspended Ceilings Bundle 43, Volume 5, Page 835)** (for demountable suspended ceilings) and NA-SP-K10 **(A52701641 – NBS Specification - Plasterboard Dry Lining - Partitions and Ceilings Bundle 43, Volume 5, Page 811)** (for plasterboard ceilings), were reviewed with the NHS initially during the Appendix K Workshops, and then agreed as part of the Appendix K Architectural Drawing submission.

Stage 3 Design

For Stage 3, we initially expanded the Ceiling Strategy Plans to cover the whole building, completing the missing adult ward tower levels, which required the replication of the agreed Level 6 generic ward design principles on the remaining levels. We also adjusted the scale to the more standard 1:200 scale, which co-ordinated with the 1:200 department A1 sheets, and

then developed the full set of 1:200 Ceiling Finishes Strategy Plans; this was supported with an updated NBS specification.

This package was reviewed again with the NHS project team in Pre-RDD Workshops, and submitted for RDD approval during the early part of 2012. The approval from the NHS was processed a number of months later and received on Aconex on or around 3rd July, 2012, refer to **A52701592 – Aconex - Fwd: Final (WF-001588) RDD - FIRST SUBMISSION - Bundle 43, Volume 5, Page 514** and the associated drawing attachments.

From the middle of 2011 we also started to plan for the production of the remaining suite of 1:50 scale construction internal fit-out packages (setting-out including internal partitions; ceilings; finishes), which in our design process typically follow the user approval of the 1:50 fully loaded FF&E plans. The process set-up followed an initial sequence of key activities;

1. 1:50 fully loaded user sign off – this fixed the partition locations and the room layouts.
2. 1:50 internal setting-out – we commenced with the checking and setting-out of the sanitaryware, which fed into the buildersworks coordination process (refer to Slab Penetration Programme) **(A52701402 – Nightingale Associates - 2011+ Slab Co-ordination Combined Slab Programme Bundle 43, Volume 5, Page 953)**
3. 1:50 internal setting-out – we progressed with the initial drawing production, including adding partition types and setting-out dimensions.
4. 1:50 ceiling setting-out - thereafter we were able to commence the ceiling grid setting-out.

Due to the scale of the building, and the construction zone sequence dates, the key activities invariably overlapped. We were able to accommodate this by structuring our team with different package leads/teams.

1:50 Ceiling Process

As noted above, following the initial fixing of the partitions and the equipment layouts from the 1:50 UGM process, the 1:50 Ceiling production commenced with an initial grid setting-out issued by our ceiling team.

Thereafter, the M&E designers, in our case, a combination of ZBP and Mercury, developed their detailed M&E design. ZBP, in their role as the M&E

Engineer, produced the initial M&E designs, which consisted of the services systems design and performance specification requirements. Thereafter, the construction production and co-ordination was progressed by the M&E Subcontractor, Mercury.

The process of finalizing a co-ordinated reflected ceiling plan can be long due to the various responsibilities of each party involved in the process. As the Lead Consultant, our role was to 'lead' the process; to review and check the co-ordination of the ceiling layouts. This would entail receiving the CAD models from the M&E subcontractor, bringing them into our CAD model to check the M&E fixtures firstly aligned with the grid, and secondly did not clash with other mostly M&E items fitted to the ceiling. And then sending our coordinated comments back to be updated by the M&E team.

The M&E design process for the 1:50 reflected ceiling plans would usually start with lighting setting-out; lighting level calculations produced by the lighting engineer validated the lighting levels, ensured compliance and located the light fittings within the grid and in line with the agreed room layouts. Thereafter, the mechanical engineer would locate their fixtures; ventilation grilles, chilled beams etc. Other specialist M&E packages, such as sprinklers, nurse call and security, would normally follow later.

We developed a series of Package Co-ordination Schedules to manage the coordination process. RCP Programme_rev08 270213 **(A52701638 – Reflected Ceiling Plans Programme Rev. 08 – 27 Bundle 43, Volume 5, Page 803)** is the 1:50 Ceiling Co-ordination Schedule. The linear coordination process followed the sequence below;

- NA ISSUE REVISED GRIDS
- MER ISSUE 1ST DRAFT SERVICES FOR REVIEW
- NA ISSUE COMMENTS
- MER ISSUE 2ND DRAFT SERVICES FOR REVIEW
- NA ISSUE COMMENTS
- MER ISSUE FINAL RCP
- NA DIMENSION AND REVISE SHEETS, QA CHECK
- NA T3 ISSUE DATE

| 3WKS | 3WKS | 2WKS | 2WKS | 2WKS | 2WKS | 1WK | 1WK |
|---|---|---|---|---|---|---|---|
| NA ISSUE REVISED GRIDS | MER ISSUE 1ST DRAFT SERVICES FOR REVIEW | NA ISSUE COMMENTS | MER ISSUE 2ND DRAFT SERVICES FOR REVIEW | NA ISSUE COMMENTS | MER ISSUE FINAL RCP | NA DIMENSION AND REVISE SHEETS, QA CHECK | NA T3 ISSUE DATE |

Extract from RCP Programme_rev08 270213 **(A52701638 – Reflected Ceiling Plans Programme Rev. 08 – 27 Bundle 43, Volume 5, Page 803)**

If the M&E design team noted issues, for instance that they needed to adjust the grid due to the light or vent position requirements as a result of their calculations or technical design, we would update the ceiling grid to accommodate.

It should be noted that whilst the M&E items are shown on the NA-IBI 1:50 coordinated ceiling plans, we retained no design responsibility or liability for the M&E items.

The M&E detailed package drawings, including ventilation, lighting, small power, sprinklers, nurse call, medical gases, security, access control etc were all submitted to the client team, reviewed and approved under the RDD process. In addition, they were submitted to Building Control for Building Warrant approval.

The ZBP ventilation layout drawings contain the detailed design of the ventilation system; this includes the designed ventilation rate, which are noted in litres/second; the location of Hepa filters; the ventilation ductwork routing etc (refer to example drawings ZBP-ZE-04-PL-524-045_H **(A52701435 - NSGH Haemato-oncology Ward - 1:100 Mechanical Services Ventilation Layout Fourth Floor - January 2011 – Bundle 43, Volume 4, Page 671)** and ZBP-ZC-02-PL-524-023_D **(A52701403 – Mechanical Services, Ventilation Layout, Second Floor, NCH Schiehallion Ward Bundle 43, Volume 5, Page 957).** This level of detail would not normally be indicated on the coordinated 1:50 reflected ceiling plans, which are produced to demonstrate the spatial co-ordination of the fixtures and fittings installed on the ceiling.

The architectural part of the package, i.e. the suspended ceiling itself, was procured by BM; Armstrong (now Zentia) was chosen, as specified, to be the agreed ceiling manufacturer for the majority of the building including clinical

areas. Whilst the ceiling strategy was set-up to demonstrate compliance with the multiple SHTM-60 ceiling types, BM followed a simpler strategy on site where one ceiling tile product can cover the majority of performance requirements and the Biobloc Acoustic tile **A52701645 – Zentia Biobloc Acoustic Datasheet – Bundle 43, Volume 5, Page 849** was used in the majority of rooms where a 600x600mm grid was agreed; with its high acoustic, cleanability and hygienic performance which makes it suitable for Zone 4, very high-risk healthcare areas.

https://www.zentia.com/en-gb/project-gallery/queen-elizabeth-university-hospital/

Where plasterboard ceilings were required, these were specified to co-ordinate with the partition dry-lining system, which was supplied by Knauf; Knauf wallboard (standard), moisture board (high humidity/moisture areas), or sound shield (high acoustic areas) were installed, taped and jointed to provide a seamless finish, and painted with the same paint product specified on the walls of each respective room.

### 6.7 Sanitaryware and Taps

In healthcare design the initial brief for the types and quantity of sanitaryware and taps comes from the ADB room data sheets (RDS) and is contained within the **Schedule of Components by Room**.

These are directly linked to the HTM/HBN guidance documents; for sanitaryware and taps reference would have been made directly to **SHTM 64 Sanitary Assemblies (Please refer to Bundle 15, Page 100)**.

Typical Process – Clinical Wash Hand Basin

I will describe the typical process using the Clinical Wash Hand Basin (WHB) within the generic adult inpatient single bedroom.

Using the ADB Room Code **B0303** from NSGACL-Generic ADB Room Data Sheets_iss2_rev1 **(A52700892 - NSGH - Generic ADB Room Data Sheets - 07 April 2009 – Bundle 43, Volume 4, Page 1498)** the **Schedule of Components by Room** provides the brief requirement for the WHB and tap;

‘**BAS101** - BASIN, medium, hospital pattern, vitreous china, no 1 tap holes, no overflow, integral back outlet, 500W 400D. HTM64LBHM

**WAS107**- TRAP, bottle, 1.1/4 in, plastic resealing. HTM64TRR1/P’

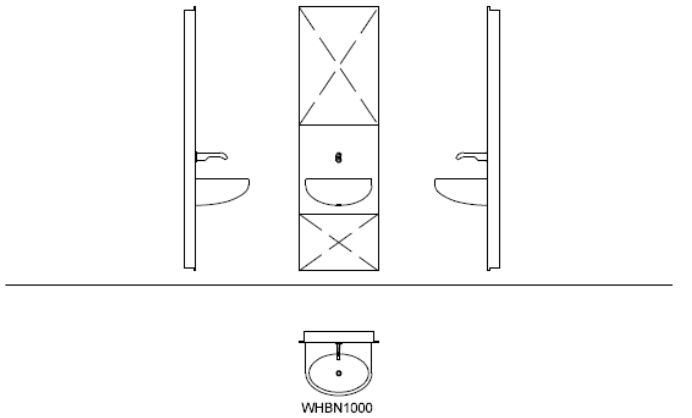
**TAP892** - TAP bib, 2x8mm thermostatic mixer, automatic 1action, sensor operated non-touch. HTM64TBH6'

These align with the basin assembly described in **A52701636 – Excerpt – SHTM 64 – Sanitary Assemblies Bundle 43, Volume 5, Page 805** (page 44-46 **Sheet 7: Basin assemblies for use in connection with clinical procedures).**

As part of our equipment standardisation proposals at the beginning of Stage 2 we proposed the creation of a basin assembly 'union' of associated equipment components, which was implemented by Tribal within the Exemplar RDS. With reference to ADB Room Code **B0305A** from 01-06-10 NSGH Tribal ADB RDS_all rooms **(A52697944 - Excerpt - Room Data Sheets for B0305A, B0308A, B0607A, B0607A1, B0616A, B1602B, B1802C, B1805C, B1811C, B2011C – pages 88-148 – Bundle 43, Volume 4, Page 102)**; the **Schedule of Components by Room** confirms the proposed 'whole' basin assembly as follows;

'**WHBN1000 - WASH BASIN**, clinical, with non-touch panel 1mounted tap/s, assembly:1 x **BAS101**, BASIN, medium, hospital pattern,vitreous china, no tap holes, no overflow, integral back outlet, 500W 400D. HTM64LBHM 1 x **TAP894**, TAP bib, hospital pattern, integral thermostatic mixer, automatic action with sensor operation. HTM64TBH6 1 x **WAS100,** WASTE, unslotted flush-grated, metal, 1.1/4 in. HTM64WT1 1 x **WAS1000**, TRAP, concealed waste, for back outlet basins.'

As the 1:50 design progressed, we also captured our proposed equipment unions in a series of drawings; **'WHBN1000 - WASH BASIN, clinical, with non-touch panel mounted tap'** is captured on Schedule of Equipment Unions – Basins 1 - **A52701635 – Schedule of Equipment Unions - Basins 1 Rev. 08 Bundle 43, Volume 5, Page 802.**



WHBN1000

1 No. BAS101 (grp 1) BASIN, medium, hospital pattern, vitreous china, no tap holes, no overflow, integral back outlet, 500W 400D. HTM64LBHM
1 No. OUT052 (grp 1) CONNECTION UNIT, switched, 13 amp
1 No. TAP894 (grp 1) TAP blb, hospital pattern, integral thermostatic mixer, automatic action with sensor operation. HTM64TBH6
1 No. WAS1000 (grp 1) TRAP, concealed waste, for back outlet basins.
1 No. WAS100 (grp 1) WASTE, unslotted flush-grated, metal, 1.1/4 in. HTM64WT1

| | |
|---|---|
| CODE | WHBN1000 |
| DESCRIPTION | WASH BASIN, clinical, with non touch panel mounted tap/s. |

Extract from NA-XX-XX-AS-400-109_08

## Sheet 7: Basin assemblies for use in connection with clinical procedures

The typical assembly requirements are:

1. Hospital pattern basin, integral back outlet, large or medium.
2. Washing hands and forearms under running water (therefore no plug).
3. Hospital pattern (lever-action) tap or automatically by sensor to avoid contamination.
4. Single horizontal spout, open nozzle and flow straightener.
5. Thermostatic mixer in hot supply (TMV3 D08-approved).
6. Connecting to concealed services.

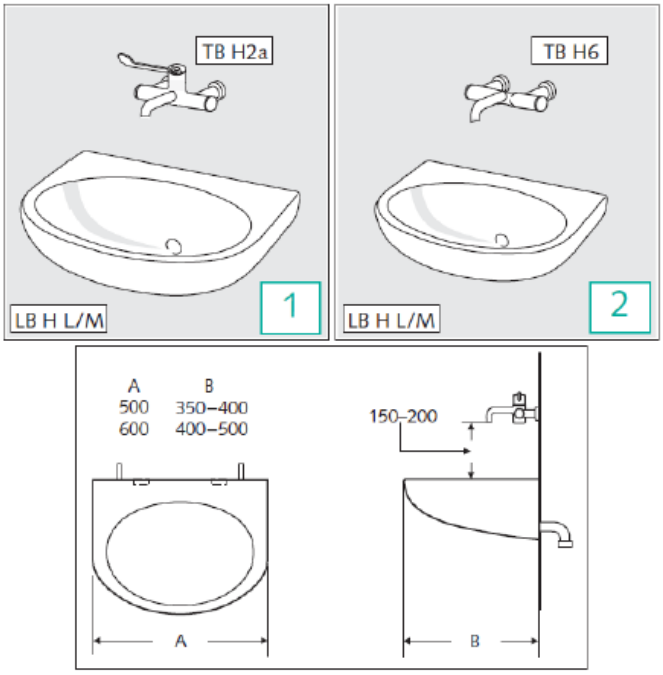



Figure 8: Basin assemblies for use in connection with clinical procedures

**Note:** See also HBN 00-02; 'Sanitary spaces', which provides guidance on the ergonomic requirements for individual sanitary assemblies and room layouts in healthcare facilities.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Page 44 SHTM64 Sanitary Assemblies **A52701636 – Excerpt – SHTM 64 – Sanitary Assemblies Bundle 43, Volume 5, Page 805**

As part of the Appendix K deliverables an NBS Specification 'NA-SP-N13 **(A52701652 – Excerpt - NBS Specification - Sanitary Appliance and Fittings Bundle 43, Volume 5, Page 938)** - Sanitary appliances & fittings'

was submitted and approved, including clause 340 describing the clinical WHB.

340 WASH BASINS - WALL HUNG

- Manufacturer: Armitage Shanks or equal approved.
  - Product reference: S2295 (LB-H/M) Contour washbasin.
- Size: 500 x 400 mm.
- Material: vitreous china.
- Tap/ Chainstay/ Overflow holes: no tapholes, no overflow, no chainstay hole. .
- Water supply fittings: S8210 (TBH2) Markwik ½" wall mounted mixer with 125 mm projection single flow swivel nozzle, anti splash outlet, 150 mm levers, concealed inlets.
  - Water supply temperature (maximum): 43°C.
  - Flow rate (maximum): 6 L/ min. at 3 bar.
  - Manufacturer: Armitage Shanks or equal approved.
    Product reference: S8210 (TBH2) Markwik ½" or equal approved.
  - Operation: Proximity sensor.
- Wastes: Plastic waste grating, chain, plug and screw stay.
  - Standards: To BS EN 274-1, -2 and -3.
  - Manufacturer: Armitage Shanks or equal approved.
    Product reference: S8745 Plastic waste grating,.
  - Size: DN 40.
  - Material: Plastics, self colour.
  - Tail: Slotted.
- Traps: Bottle.
  - Standards: To BS EN 274-1, -2 and -3.
  - Manufacturer: Armitage Shanks or equal approved.
    Product reference: S8910 1¼" Bottle trap, self colour plastics, multi-purpose outlet.
  - Size: 75 mm seal.
  - Material: self colour plastics.
  - Depth of seal (minimum): 75 mm.
- Accessories: Concealed support frame.

page 20 - NA-SP-N13 **(A52701652 – Excerpt - NBS Specification - Sanitary Appliance and Fittings Bundle 43, Volume 5, Page 938)**

Thereafter, in Stage 3 the N13 specification was reviewed and updated to BM comments as part of the tender/package procurement process.

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.
  - Operation: Proximity sensor mixer.
- 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.

page 29 NA-SP-N13 – revision 05 **A52701640 – Excerpt - NBS Specification - Sanitary Appliance and Fittings Rev. 05 Bundle 43, Volume 5, Page 809** – BM approved tender issue

Following the instruction to proceed with the change to the Horne Tap, the N13 specification was updated, and BM provided the product datasheets for the sanitary assemblies; document **A52701570 – Taps Product Data Sheet - Bundle 43, Volume 5, Page 216** was the datasheet for the clinical WHB WHB1000, and excerpts from our N13 specification was marked-up by the BM Package Lead. This was submitted to the NHS and approved on or around 08/11/2012.

The ADB codes and descriptions for WHBN1000 in our database were not updated to reflect this instruction; I believe the cost of updating the entire 1:50 FF&E package would have been prohibitive, and we only addressed the key documents.

Refer to my response to **H Water and taps**; question 60 a) to e) for further details on the history of the change to Horne Taps.

## 6.8 Procurement Packages/Costing

Tender Event Schedule

During Stage 3 we prepared design intent packages for procurement which were based on the BM Tender Event Schedule (TES) requirements; the packages, process and programme dates can be seen on the example TES Stage 3 Adults & Childrens Hospitals Tender Event Schedule Week 176 **(A52701555 – Stage 3 Adults & Children's Hospitals Tender Event Schedule Bundle 43, Volume 5, Page 99)**.

The drawings/documents which formed each package had to go through an agreed process to ensure that the design aligned with the Cost Plan; that the scope of the package aligned with how BM wanted to 'procure' the package; and that our tender package documents had been reviewed by the BM design/package managers prior to issue for Tender.

The drawing package sequence was as follows;

- **T1** – Issue for Cost Check/Tender Documents. This generally consisted of the Stage 2 Design and included a Package Launch meeting.
- **T2** – Issue for Tender Documents. The design was further developed to produce a set of Package Tender Documents. For packages which sat within the contract obligations for Reviewable Design Data, this included presentations of the design development to the GGHB project team (refer to Chapter 6.5 Reviewable Design Data for a summary of RDD presentations).
- **T3** – Issue for Final Design Intent/Tender Documents. Once the final design intent was agreed with GGHB and BM, we prepared a final set of Package Documents. These were then incorporated into the tender documentation by BM prior to the appointment of their subcontractors.
- From T3, the successful subcontractor tenderer was contractually responsible for completing the design in accordance with the tender documentation. Product samples were required to be submitted for review under the RDD process. Thereafter, the Subcontractors would develop their design proposals, and produce detailed fabrication and construction drawing packages as required by their contract with BM.

The document and information control necessary to ensure the co-ordination of the design information throughout all these phases of development was

managed by BM using their Aconex procedures. We would attend package review meetings when requested by BM, and review the subcontractor's proposals, principally to ensure these were co-ordinated, including the integration of interfaces with other packages.

Package Co-ordination Schedule

As part of my role, I developed a Package Co-ordination Schedule, which was regularly updated to report our progress during the monthly design team meetings. This was also used to explain to BM who was responsible for each package from our team, i.e. our Package Lead; in addition, which members of the wider Design Team were part of the overall Design Work Group and should be consulted and copied into correspondences in relation to that package. I have included an example version of the Package Co-ordination Schedule from August 2012 **A52701558 - NSGH Design Work Group & Package Co-ordination Schedule - Bundle 43, Volume 5, Page 124** to demonstrate how we managed the process.

## 6.9 Construction Packages

Assigning Status to Drawings

As noted in earlier chapters, BM used a system called Aconex to manage the documents and for information control of the Project. BM produced an "Aconex User Manual" **(A52700949 - NSGH - ACONEX User Manual - Documents and Information Control Procedures - undated – Bundle 43, Volume 4, Page 297)** which provided the protocols for reviewing and commenting on sub-contractor's proposals at T3. BM was the Lead Contractor, responsible for co-ordinating all other contractors and consultants and managing the overall Aconex system.

Aconex required a status to be allocated against each document, namely:

Status A = No Comment

Status B = Proceed Subject to Comments

Status C = Resubmit with Amendments

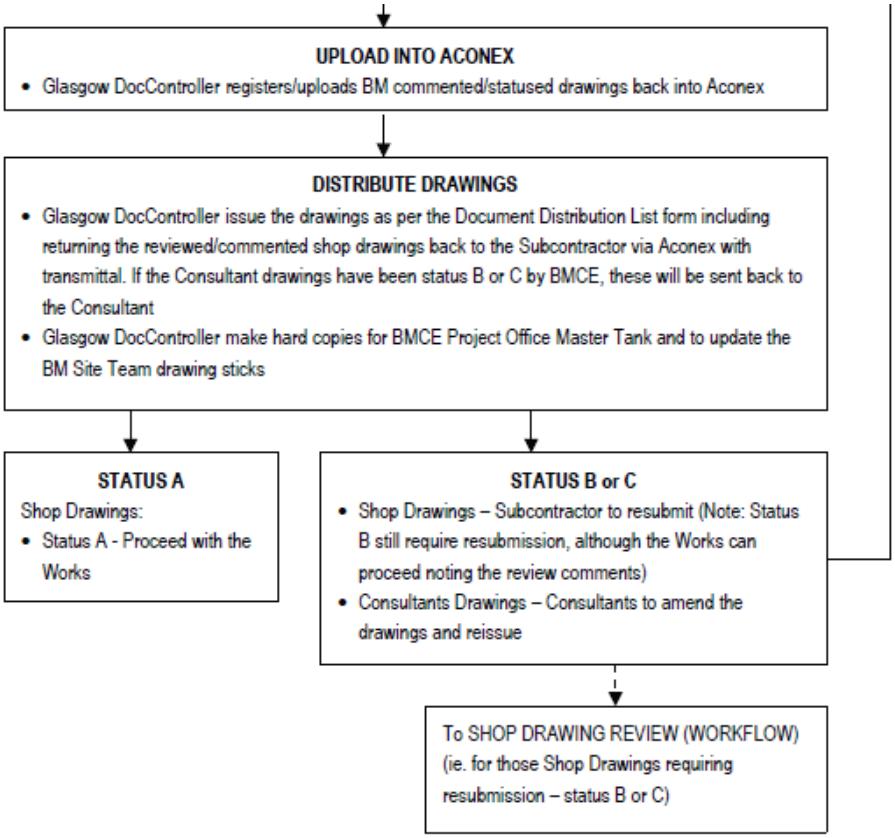
Status D = Rejected (NHS use only)

All drawings prepared for construction had to be processed through Aconex. BM had to decide which consultant was to comment on the drawing it

received from the sub-contractor and then the drawing would be allocated to the relevant consultant on an Aconex Workflow to add its own comment before being returned to BM.

The Package Co-ordination Schedule assisted BM to understand who from our team should be allocated the drawings for review, and who should be part of the distribution for information only.

The process for assigning a status to drawings is as set out on page 64 of the Aconex User Manual **(A52700949 - NSGH - ACONEX User Manual - Documents and Information Control Procedures - undated – Bundle 43, Volume 4, Page 316)**




Construction Co-ordination Summary

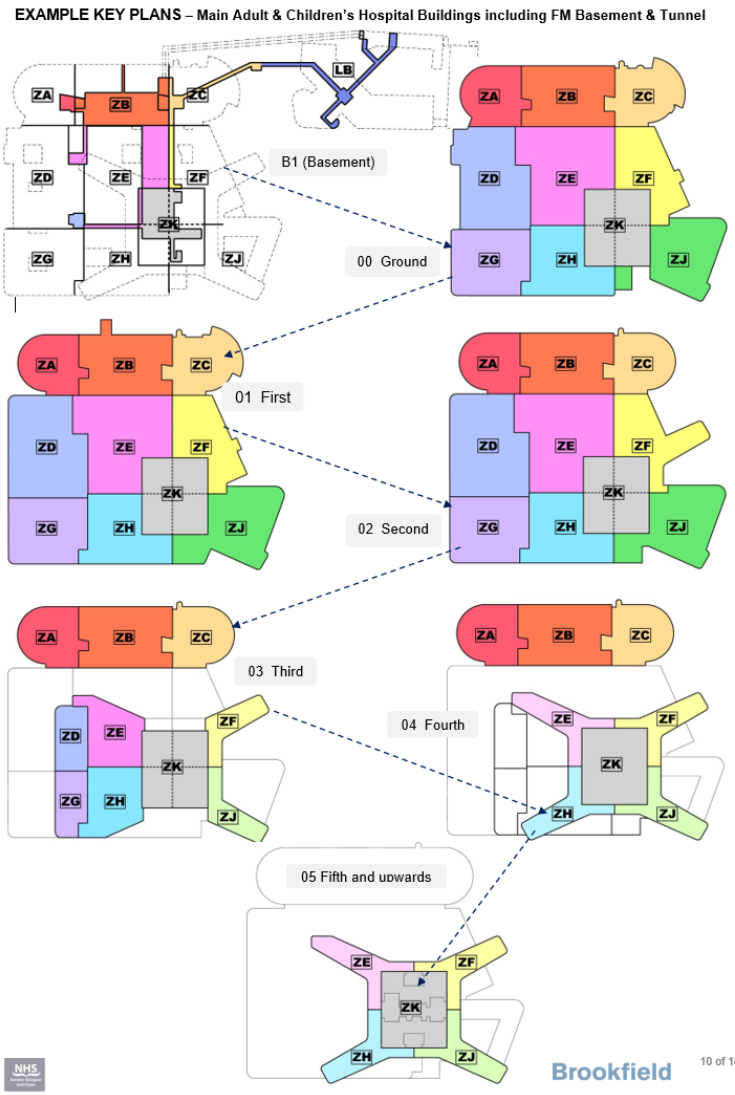
As demonstrated within my abbreviated summary in **Chapter 6.6 - 1:50 Reflected Ceiling Plans** the scale and complexity of the project, combined with a challenging construction programme, resulted in many overlapping design, tender and construction processes.

Fortnightly intensive structural co-ordination workshops commenced at the beginning of 2011, where the principles for the buildersworks through the structural slabs were agreed. This process was managed by our site lead architect, Liane Edwards, who set up the co-ordination process, which also

demonstrates the impact of change after a certain date (refer to **A52701623 – Combined Slab Programme - Bundle 43, Volume 5, Page 723).**

Our internal fit out 1:50 packages were set up to align with both the departmental boundary zones and the structural construction zones. The sequence of production issue dates was reviewed and agreed with BM,

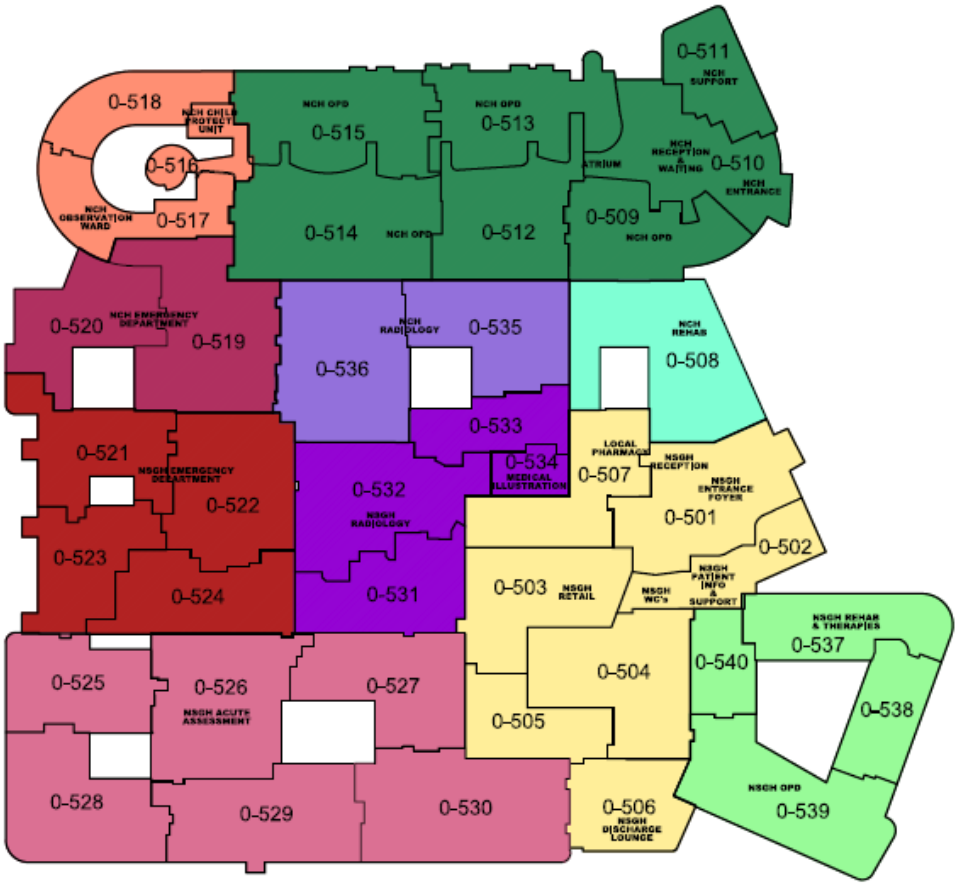
The key construction activities and sequence within each zone/department of the building can be seen in the BM Construction Fit Out Schedules, which were exported from the overall Construction Programme (Stage 3 Adult & Childrens Fitting Out Schedule of dates Podium Levels -1 to 4 BM-GS3-OT01-0231 (**A52701619 – Stage 3 Adults & Children's Hospitals Program - Fitting out, Schedule of dates and Podium Levels - Bundle 43, Volume 5, Page 716)** and **A52701625 – Stage 3 Adults & Children's Hospitals Programme - Schedule of Dates - Tower Level 4 - Bundle 43, Volume 5, Page 727**.



Structural Zone Diagrams from **A52701627 – NSGH Drawing and Document Numbering System by Nightingale Rev. 04 - Bundle 43, Volume 5, Page 729**.

By reference to these schedules, it can be seen that for the first areas, which were initially located on the ground floor Adult Hospital Emergency Department/Acute Assessment (**sheet 0-528**) that the fit-out was planned to commence on week 129; 05/06/2012 with the partition head track installation, and this area was planned to complete on 19/07/2013 with 'final independent inspections and sign-off'.

And that the latest areas, within the adult ward tower (**sheet 11-502/503**) were not planned to commence until 14/11/2013 (after the completion of the first area) and were planned to complete on 30/09/2014.




1:50 Sheet Key Plan – Ground Floor (**A52701624 – 1:50 Sheet Key Plan - Ground Floor Rev. 01 - Bundle 43, Volume 5, Page 726**).

Construction Co-ordination Updates

Co-ordination continued, with a further series of M&E and Structural Co-ordination Workshops which ran from 06/03/2012 – 22/08/2012.

I have provided example mark-up drawings from the Scheihallion Ward, which was part of the Production Group 10 coordination meetings, held on or around 10/07/2012, to demonstrate the workshop review process. There are two 1:50 sheets marked-up with our co-ordination review comments **A52701632 – Second Floor Plan, NCH Schiehallion Ward (Haemato-oncology), Day Case & TCT Fixtures and Fittings Rev. A - Sum/OT - Bundle 43, Volume 5, Page 749** and **A52701630 – Second Floor Plan, NCH Schiehallion Ward (Haemato-oncology), Day Case & TCT Fixtures and Fittings Rev. A - NA Comment - Bundle 43, Volume 5, Page 748** and the same sheets marked-up with the M&E co-ordination review comments from ZBP/Mercury **A52701633 – Second Floor Plan, NCH Schiehallion Ward (Haemato-oncology), Day Case & TCT Fixtures and Fittings Rev. A - Bundle 43, Volume 5, Page 781** and **A52701629 – Second Floor Plan, NCH Schiehallion Ward (Haemato-oncology), Day Case & TCT Fixtures and Fittings Rev. A ZBP Comments - Bundle 43, Volume 5, Page 747**.

Final Construction Co-ordination Process

Following the NHS RDD 1:50 sign-offs in 2012 coordination of the technical design continued, addressing the developing detailed construction packages, adding additional layers of information onto the drawings, and addressing interfaces with other packages. A final 'Sweep-Up' process was developed, producing a final updated construction issue, which was then re-submitted to the NHS for re-approval. Refer to **A52701621 – Sweep Up Program Rev. D - Bundle 43, Volume 5, Page 721.**

Each 1:50 FF&E plan went through a series of final checking, with a full set of mark-ups produced following a further round of coordination workshops which ran from 18/10/2012 – 11/04/2013. Each drawing went through a **400 series final checklist** which included the following;

- Building Control
- Fire
- Doors
- Glazed Screens
- Art
- Desks
- Movement Joints

- Setting-Out
- Sanitaryware
- CDS (Catering Equipment)
- Windows
- Atrium
- Equipment
- Wall Protection
- Recess (Slab)

This also included a final review of any outstanding NHS comments, instructions and construction comments raised by the BM site team. I have provided an example marked-up drawing **(A52701628 – Ground Floor Plan, NSGH Acute Assessment Unit (AAU), Fixtures and Fittings Rev. A - Bundle 43, Volume 5, Page 746**) from the first sweep up meeting held on 18/10/2012 to demonstrate the workshop review process and overall time period. The re-issue of the example drawing as 'revision B' took place on 14/12/2012, and this was approved as status A by GGC NHS on or around 03/01/2013. This was the final construction issue of the drawing, prior to the preparation of the as built/record drawing.

Exemplar Rooms

A number of 'Exemplar Rooms' were built in advance of the full department fit-outs. These included the following rooms;

Theatre Suite; Renal Dialysis station and renal media panel; Single bedroom with ensuite; Treatment Room; Consult/Exam Room; Staff Base and Reception

We produced a set of specific drawings to assist with the accelerated construction of these rooms, and BM used these rooms to present and agree the construction quality with the GGC NHS team.

**6.10 Handover and Site Inspections**

I was not involved in setting-up this process, therefore I am relying on what I have managed to locate in correspondences on Aconex and our own project records. Early Warning Notices (EWNs) were raised by NA-IBI on 11/12/2012 and 28/03/2013 with respect to the agreement of the 'As Built Process'; it was discussed at the monthly design team meetings, with the BM construction

programme indicating this would start at the beginning of 2013 without an agreement on the process.

Thereafter, meetings to review the scope of our work in relation to site inspections and the process of updated 'As Built' internal fit-out packages appear to have commenced on or around 05th June, 2013.

Following this meeting, BM shared their draft Inspection Process, which was rationalized into a template As-Built Programme for the first inspection area.

**IBI Nightingale**

Status to Date : 10 June 2013

| Production Goup | SHEET FILE | No. of Rooms | | TRANSMITTAL | Date Received | BM issue markups and IDMS 400 / 332 series | NA inspect (week ending) | NA issue markups BM + capita | CAPITA inspect / return to BM - NA | MER ISSUE AS BUILT RCP CAD FILE TO NA | NA issue as- built information |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **NSGH Critical Care L1** | | | | | | | | | | |
| 1 | ZG Critical Care 1-527 | 27 | 53 | BMCE-GC-035929 | 14.05.13 | 03/05/13 | 31/05/2013 | 07/06/2013 | 28/06/2013 | 05/07/2013 | 19/07/2013 |
| 1 | ZG Critical Care 1-525 | 26 | | BMCE-GC-036330 | 24.05.13 | 18/04/13 | 31/05/2013 | 07/06/2013 | 28/06/2013 | 05/07/2013 | 19/07/2013 |
| 1 | ZG Critical Care 1-528 | 45 | 77 | BMCE-GC-036460 | 30.05.13 | 24/04/13 | 14/06/2013 | 21/06/2013 | 12/07/2013 | 11/07/2013 | 02/03/2013 |
| 1 | ZG Critical Care 1-526 | 32 | | BMCE-GC-036513 | 31.05.13 | 26/04/13 | 14/06/2013 | 21/06/2013 | 12/07/2013 | 11/07/2013 | 02/03/2013 |
| 1 | ZD Critical Care 1-523 | 40 | 100 | | | 13/05/13 | | | | | |
| 1 | ZD Critical Care 1-524 | 60 | | | | 20/05/13 | | | | | |
| | **NSGH Coronary Care Unit (CCU) L1** | | | | | | | | | | |
| 1 | ZD CCU 1-522 | 26 | 130 | | | 20/05/13 | | | | | |
| 1 | ZD CCU 1-521 | 44 | | | | 23/05/13 | | | | | |
| | **NSGH Theatres L2** | | | | | | | | | | |
| 2 | ZG Theatres 2-526 | 31 | | | | 30/05/13 | | | | | |
| 2 | ZG Theatres 2-524 | 30 | | | | 04/06/13 | | | | | |

As-Built Programming_10 06 13 le **(A52701648 – As Built Programming Bundle 43, Volume 5, Page 875**)

Essentially, BM's site managers were to prepare and issue a draft package of our current drawings for each department sheet area, highlighting and marking up any changes they made on site. Our respective package leads would then attend site to inspect the area, complete our mark-ups on the drawings and issue the set of site inspection mark-ups back to BM. It appears that the original intention was for our site visit to take place prior to Capita's formal 'NEC Project Supervisor' inspection process; with their inspection packs, and the Mercury M&E 'as built' CAD files being returned to us to enable the completion of the updates to our agreed 'as built' drawing package.

A later meeting took place on 16th October, 2013 which appears to be a follow-up review of the programme for the initial early areas, and the process was refined and simplified, I believe due to areas not being ready for the

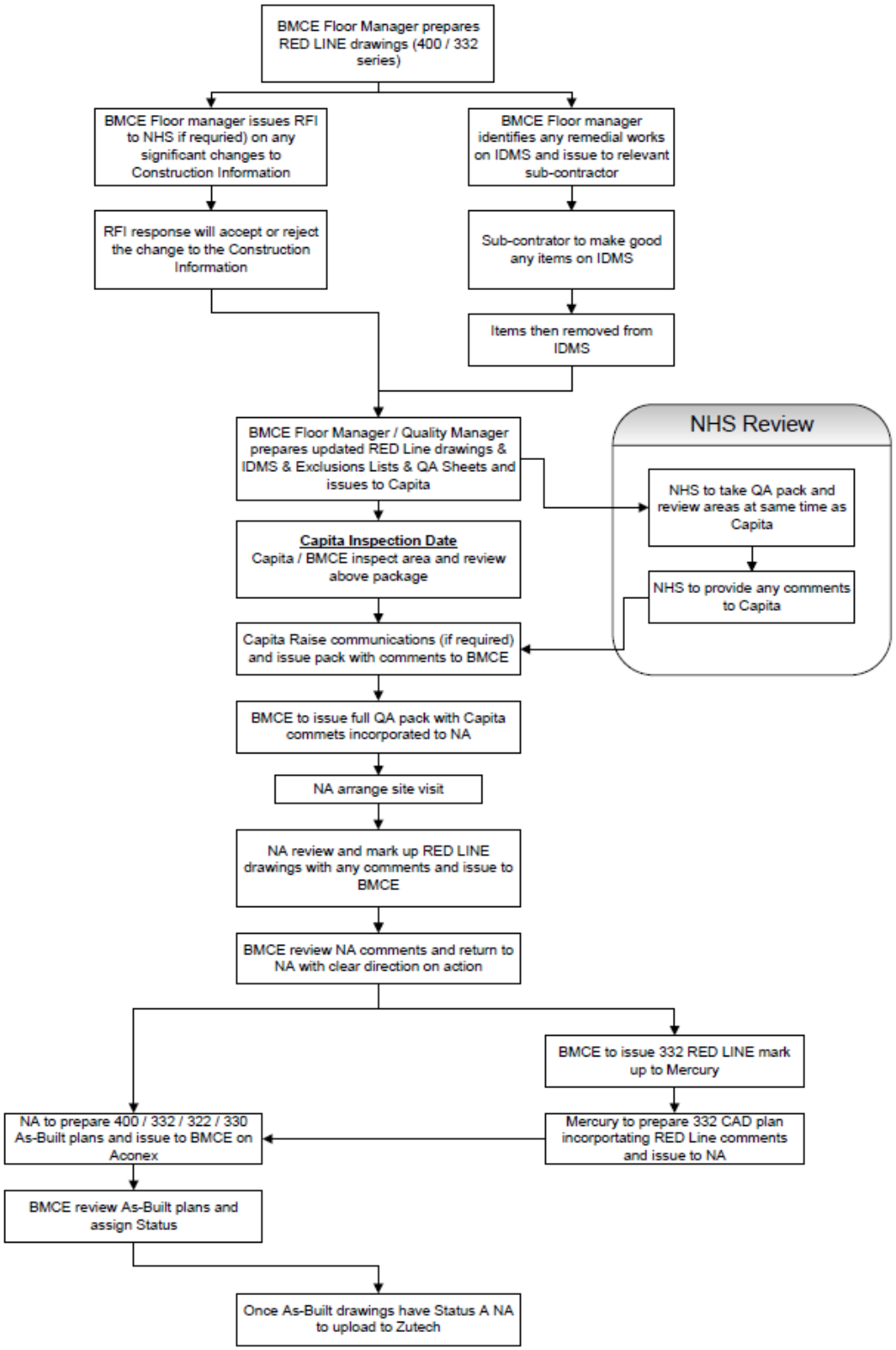
inspection dates requested by BM. At this point we were asked to attend site after the Capita inspection date.

A later programme issued on Aconex under NA-GC-013049 As-Built Drawing Production Programme **(A52701643 – Aconox - As Built Drawing Production Programme Bundle 43, Volume 5, Page 866)** demonstrated the progress and status of completion as of 1st September. 2014.

We appear to have visited the first department areas around 14/05/2013; however, the full drawing production process occurred much later, with the first revision ‘Z1’ drawing package being issued on 28/05/2014.

The as built drawing package would be issued with a ‘Z1’ revision on Aconex, initially for BM to review and approve. The drawings were then stamped and returned following BM review, and were then uploaded onto Zutec, which was the online/cloud-based building management platform BM proposed to house the final O&M manuals, drawings, documents and CAD files required as part of Handover.

Thereafter, the production of the as built drawing packages continued with the later zones until 2015. The 1:50 drawing packages were completed around February 2015, with the RDS and Room Elevations completing around May 2015, which was also the same time as the issue of a final set of CAD files.




As-Built Flow Chart 17 10 13 **(A52701647 – As Built Flow Chart Bundle 43, Volume 5, Page 874)**

In terms of the commissioning, we had no involvement in this process, therefore I can only locate limited information. I can see that we were provided with regular updated programmes for commissioning.

**Commissioning Programme Update - Week 257** was issued through Aconex on mail number BMCE-GC-048457 **A52701576 – Aconex Commissioning Programme Update - Week 257 - Bundle 43, Volume 5, Page 351** on 12th December, 2014. This was presumably the last update as the project was handed over in January 2015. The 4 programmes demonstrate the commissioning which was completed by BM prior to handover.

- **A52701582 – Stage 3 Adult & Children's Hospitals - Global Commissioning Program - Bundle 43, Volume 5, Page 408.**
- **A52701401 – Stage 3 Adult & Children's Hospital - Plantroom 41 Commissioning Programme Bundle 43, Volume 5, Page 948**
- **A52701580 – Plantrooms 32 and 33 Towers Commissioning Program - Bundle 43, Volume 5, Page 393**
- **A52701405 – First Floor Plan, NSGH Critical Care Rev. 06 Bundle 43, Volume 5, Page 956**

I was also able to locate a Construction Progress Report, which included an example of the Capita Symonds NEC3 Project Supervisors Report.

- Example Construction Progress Report (BM)
- **A52701642 – Construction Progress Report Stage 3 Bundle 43, Volume 5, Page 851**
- Example NEC3 Project Supervisors Report (Capita Symonds)
- **A52701649 – Capita Symonds - NEC 3 Supervisors Report No. 23 Bundle 43, Volume 5, Page 876**
- Example Hospital Construction Progress Meeting Minutes
- **A52701646 – Hospital Construction Progress Action Notes No. 22. Draft Bundle 43, Volume 5, Page 868**

**Answers to Questionnaire**

I now turn to address the remaining questions contained in the Inquiry's Questionnaire which was sent to me by the Inquiry on 3rd February 2025.

For ease of reference I am following the format and sequence of the questions in relation to the works information.

**Review of the 'Works Information'**

6. What information was provided to IBI to assist with the planning and costing of the project to enable Multiplex to prepare the Contractor's Proposals?

**A.** ITPD Documents, including a limited number of exemplar 1:200 departments, clinical output specifications, Schedule of Accommodation (SoA) and a full set of Employers Requirements. Please also refer to A.2 Project Bid Stage of my statement for a more detailed summary.

7. The Inquiry understands that NHS GGC provided a list of guidance documents (e.g. SHTM/SHPN) that the design had to comply with, please confirm which elements of the design contained in the Contractor's Proposals, did not comply with guidance, and why and how any non-compliances were highlighted during the tender process and ITPD process?

**A.** Any elements of the design that were contained within the Contractor's proposals that were a variance to guidance ought to have been captured within the Logs.

Clarifications and RFIs were raised during the ITPD/Competitive Dialogue process. The responses and agreements to these were included in the Contract Bible within Folder B Logs, which included the BIW Log, RFI Log, and various Clarifications logs. In addition, Folder I Volume 7 SHTM; Folder J Volume 8 ADB contained the Contractual agreement on compliance and non-compliance of the Guidance Documents. It is my understanding that the design response prepared within the Contractor's Proposals was to comply with the list of Guidance Documents, and the Logs were addressing

predominantly contradictory requirements, discrepancies and queries over how the design was achieving or intending to achieve compliance. It should be noted at this stage it was far from a complete design

8. What consideration was given to the impact of any non-compliances on patient safety/infection prevent? At what point, if any, was advice sought from Infection Prevention and Control Staff? If advice was sought, from whom was it sought and what was the advice given?

**A.** The NHS had an IPC representative, Jackie Stewart, as part of their Core Project Team. She was in attendance at all the UGMs and would liaise internally with the wider GGC team. She was seconded to the project from the outset, so I had no cause for concern from a design perspective, as we received her advice throughout the design process. Neither I nor anyone from the IBI team had involvement with the internal GGC IPC meetings, however I understood if any issues occurred, that the NHS GGC Project Team would review advice provided from their wider IPC team. During the design and construction stage I have located examples where advice was requested on infection control construction detail issues, or design conflicts and direction was requested from the NHS and their Technical Advisers (Currie & Brown). Examples provided: 2010-03-22 - Macleod, Mairi - Jonathan Hendrick, Scott McCallum, McCluskey, Fiona, Emma White - Day Medical Unit; **A52701399 – Email from Mairi Macleod to Emma White and Ors. - Day Medical Unit - Bundle 43, Volume 5, Page 503; A52701587 – Aconex - Re: Art Strategy update - Bundle 43, Volume 5, Page 504; A52701589 – Aconex - NSGH: IPS panels - Bundle 43, Volume 5, Page 512; A52701583 – Aconex - NSGH Sensor Taps - Bundle 43, Volume 5, Page 443.**

9. Did IBI propose any changes to the exemplar/reference design? If so, please provide details of changes and why?

**A.** NA-IBI and the Multiplex Design Team completed a full review of the exemplar design and discussed clinical issues and improvements which could be made during the Design Dialogue Meetings (DDM). The 'changes' proposed were identified opportunities which were presented through our structured approach to the Competitive Dialogue process. The second DDM presentation (DDM_02_NA_Presentation_200509) **(A52701456 - Bidder B New South Glasgow Hospitals Design Dialogue Meeting 2 - undated – Bundle 43, Volume 4, Page 774)** captures the essence of the opportunities identified, which were developed in the design options presented and captured within the final design proposal within the Contractor's proposals. The final Post Submission Presentation was a demonstration of the intent to comply with the Client Brief, albeit with an alternative approach to the exemplar design. The full set of Design presentations have been included. Please also refer to A.2 Project Bid Stage of my statement for a more detailed summary of the design evolution from the exemplar design to the proposed design

10. The Inquiry is aware of the agreed ventilation derogation recorded in the M&E Clarification Log. **(Please refer to Bundle 16, Document No. 23, Page 1662)**

a) Describe IBI's role in respect of the proposals leading to the ventilation derogation.

**A.** I do not recollect NA-IBI having any specific role in preparing the proposal for the ventilation clarification/derogation recorded. At the time NA-IBI were proceeding on the basis of the façade design within the bid which still contained the provision of openable windows as part of the hybrid ventilation strategy.

I do remember members of the design team being requested to review the various clarifications and logs against their respective disciplines, and I reviewed architectural clarifications and RFIs.

I was aware of some ventilation design challenges with achieving all the Client Brief requirements, and that ZBP had built a thermal model to test the ward tower design during the bid stage. I believe that this ultimately resulted in the agreement of the ventilation clarification/derogation recorded in the M&E Clarification Log.

b) What was the reason for the ventilation derogation?

**A.** My understanding from re-reading the clarifications and associated documents was the thermal modelling completed by ZBP during the bid design stage demonstrated that the ward tower would overheat with natural ventilation. ZBP then modelled the mechanical ventilation options with 6 air changes per hour (ac/h) and this improved the thermal performance, but the summertime 26degC upper temperature requirement could not be achieved. The GGC Client requirement exceeded the SHTM standard, and I remember this being a critical issue for GGC, as a result of some of their existing healthcare estate having major overheating issues. ZBP's thermal modelling did demonstrate that the SHTM standard of 50 hours exceedance above 28degC could have been achieved, with 6 ac/h. ZBP were asked to develop further options, as GGC were keen to maintain the lower summertime of 26degC. ZBP's modelling outputs to increase the mechanical ventilation were found to create an unsatisfactory internal environment for the patients. The final solution ZBP proposed was to lower the ac/h to 2.5 but maintain the supply air volumes to ensure sufficient fresh air combined with the incorporation of active chilled beams, and to provide negative pressure. The justification being a natural ventilation option was reliant on the window being opened, and subject to external conditions, that 6ac/h would have rarely been achieved. I believe GGC's Technical Advisory team were comfortable with the logic of the proposal because it was supported with thermal calculations. Whilst this is my understanding of the reason for the clarification/derogation I do not have the technical engineering expertise to provide a fully informed opinion of ZBP's strategy.

c) Who drafted the M&E Clarification Log and who was responsible for updating the log? Following updates to the log, please provide details of who the log would have been distributed to.

**A.** My understanding was that the M&E Clarification Log was managed by the Client and BM. BM requested reviews of all the Clarification Logs from the Design Team prior to the agreement at each Contract Stage. Updates to the Logs were distributed to the Project Director for each respective discipline by Multiplex. Neil Murphy received the two Contract versions of the M&E Clarification Logs within the Project Bibles. These were copied onto our project server, and we shared the links to the Project Bible logs within our internal project team for their reference purposes, and to check against as the design was developed in Stage 2 and Stage 3. Refer to letter 20100326murphy from Brookfield Ross Ballingall **(A52700961 – Letter from Tom Steele to Ross Ballingal - Queen Elizabeth University Hospital - Post Contract Review - 29 March 2019 – Bundle 43, Volume 4, Page 359); A52701561 – Appendix 2 & 3 of the 2010 Instruction to Proceed letter Bundle 43, Volume 5, Page 135; A52701443 – NSGH 2010 Instruction To Proceed Bible – Index Bundle 43, Volume 5, Page 49.**

d) What was the scope of the agreed ventilation derogation recorded in the M&E Clarification Log? In particular, was it restricted to general wards only? If so, (a) how is this interpretation evidenced within the documentation; and (b) where is the specification located for areas that required specialist ventilation and isolation rooms?

**A.** My understanding was that at the time of the original agreed derogation in 2009 this design approach was to the inpatient wards, and not to areas requiring specialist ventilation and isolation rooms. The thermal modelling had been focused on the wards and key departments required for the tender submission. There was no environmental matrix at this stage. The updated FBC M&E Clarification Log in 2010 [The M&E Clarification Log (2010 ItP) - (FINAL) **A52701586 – M&E Clarification Log 2010 - Bundle 43, Volume 5, Page 431** maintains the same derogation, however the design was further developed and submitted by ZBP and Mercury as part of their M&E design deliverables. The environmental matrix EDS ItP Batch 1 - ZBP updates_141210 **(A52701413 – This will not be Bundled)**; **(A52700734 – Bundle 43, Volume 6, Page 1131)** and EDS ItP Batch 2 - ZBP updates_141210 **(A52701414 – This will not be Bundled)** within the FBC Project Bible indicates the design specification of Isolation Rooms within the

Mechanical Ventilation Notes as ‘See Table 1 of HBN 04-01 Supplement 1 for guide to air volumes and pressure differentials.’ This document also contains various other inpatient room types, some of which have different ventilation data. Beyond that the detailed specifications would be contained within the M&E design package produced by ZBP and Mercury.

e) At the time, what concerns, if any, did you have regarding the derogation?

**A.** I am not an engineer and had not considered this to be a concern at the time, as ZBP our mechanical engineers were experienced healthcare engineers, they had the relevant expertise, and the proposal was reviewed and agreed with the GGC client and their Technical Advisory team, who also had the expertise to assess the derogation.

f) Did you raise any concerns, if so with whom?

**A.** I had no concerns, as noted above.

11. Refer to the ZBP Ventilation Strategy Paper dated on or around 15 December 2009? **(Please refer to Bundle 16, Document No. 21, Page 1657)**

a) What was your involvement in this document being instructed?

**A.** I had no direct involvement with this document. IBI provided the CAD files/building models to ZBP to allow them to prepare their thermal modelling which informed the proposed Ventilation Strategy. The Contract instructions and discussions were held between GGC and BM and did not include NA-IBI.

b) What was the intended purpose of this document?

**A.** I was not involved in the development of this document; I believe the purpose of the document was to be a high-level technical summary of the proposed Ward Ventilation Design Strategy, to support the ventilation derogation contained in the BIW Contract log.

c) When did you first have sight of this document?

**A.** I do have a recollection of seeing this document, but I cannot locate a copy of this document in the 2009 Contract Bible we have on records, or within our internal correspondence records.

d) Who was the document shared with?

**A.** It was not a document created by NA-IBI therefore I do not know who this was shared with.

e) What concerns if any did you have on reading this document? If so, did you escalate these concerns and to whom?

**A.** I had no concerns with the overall Ventilation Design Strategy; it is not unusual to have fully sealed healthcare buildings. There were noted safety issues with openable windows under the helipad, and all openable windows in hospitals require 100mm restrictors for patient safety reasons. Given the outputs from the thermal model indicating the ward tower would overheat ZBP proposed this ventilation strategy, including active chilled beams. I had no reason nor the technical engineering expertise to question ZBP's strategy.

12. Are you aware of any risk assessments, whether in compliance with the standards in HAI Scribe or otherwise, that NHS GGC carried out in respect of the change in the ventilation strategy that appears to follow the ZBP Ventilation Strategy Paper dated 15 December 2009? **(Please refer to Bundle 16, Document No. 21, Page 1657)**

**A.** I am not aware if any further risk assessments were completed.

13. Describe the advice sought, if any, or involvement, if any, of the GGC Infection Prevention and Control staff in respect of the change in the ventilation strategy that appears to follow the ZBP Ventilation Strategy Paper dated 15 December 2009.

**A.** I am not aware if any advice was sought, or if there was any involvement of the GGC IPC staff on this Ventilation Strategy at the time it was agreed.

14. Who from the GGC Project Team and the NHS GGC Board were aware of the ventilation derogation?

**A.** At the time the ventilation clarification/derogation was reviewed, I would have expected Alan Seabourne (NSGH Project Director) and Peter Moir (NSGH Project Manager) from the GGC NHS Project Team to be aware. They would have been reliant on their technical advisory team to assess the ventilation proposal from a technical perspective. Within the ITPD Volume Three Bid Deliverables and Evaluation Document **(A52701415 - NSGH - Invitation to Participate in Competitive Dialogue - Volume 3 - Bid Deliverables and Evaluation - undated – Bundle 43, Volume 4, Page 361)** [NSGACL_-_ITPD_Vol3_-_Contractor_Issue_Rev_1_iss1_rev1[1]] on page 32 TABLE 1 - BOARD EVALUATION GROUPS **(A52701415 - NSGH - Invitation to Participate in Competitive Dialogue - Volume 3 - Bid Deliverables and Evaluation - undated – Bundle 43, Volume 4, Page 392)** there is a list of names of who was part of the Technical Evaluation Group.

**TABLE 1 - BOARD EVALUATION GROUPS**
**a) Technical Evaluation Groups**

| GROUP | DESIGN | LOGISTICS | LABS | COMMERCIAL |
|---|---|---|---|---|
| BOARD | Alan Seabourne<br>Alex McIntyre<br>Annette Rankin<br>Fiona McCluskey<br>Frances Wrath<br>Heather Griffin<br>Hugh McDerment<br>Mairi Macleod<br>Mark McAllister<br>Mary Ann Kane<br>Morgan Jamieson<br>Peter Moir<br>Stephen Gallacher | Alan Seabourne<br>Alex McIntyre<br>Frances Wrath<br>John Green<br>Peter Moir | Alan McCubbin<br>Alan Seabourne<br>Alex McIntyre<br>Annette Rankin<br>Frances Wrath<br>Hugh McDerment<br>Jim Crombie (Lead)<br>Isabel Ferguson<br>Mary Ann Kane<br>Peter Moir<br>Dr Margaret Burgoyne<br>Dr Rachel Green | Alan McCubbin<br>Alan Seabourne<br>Alex McIntyre<br>Peter Gallagher<br>Peter Moir |
| TA ADVISORS | David Hall (Lead)<br>Graham Annandale<br>Harry Smith<br>Iain Buchan<br>John Bushfield<br>Mark Baird<br>Robert Menzies<br>Susan Logan | David Hall (Lead)<br>Mark Baird | Douglas Ross<br>Graham Annandale<br>Neil Robson<br>Raj Deb<br>Stewart McKechnie | Douglas Ross (Lead)<br>Jim Hackett<br>Juliet Haldane<br>Michael McVeigh<br>Simon Fraser |

I cannot comment on how the communication was processed within the wider GGC Project Team, or the NHS GGC Board.

15. How was the ventilation derogation communicated to the wider Project Team?

**A.** I was aware of the agreed ventilation derogation recorded in the M&E Clarification Log as I had read the final contract documentation early in 2010. Within the NA-IBI team a number of our leads were aware from being asked to read the Contract Bible by Neil Murphy, our Project Director. I cannot comment on how the communication was processed within other organisations, or the wider GGC Project Team.

16. What impact did the requirement for a BREEAM excellent rating have on IBI's proposed design in particular in respect of ventilation?

**A.** I was not directly involved with the submittal of our proposed design to WSP, who were the appointed BREEAM and Sustainability Consultant for the Multiplex team. From reviewing the documentation in our records, I have provided the following summary. The project was categorized within BREEAM Healthcare 2008 as a Specialist Acute Hospital, In-patient - High concentration of energy intensive engineering services &specialist equipment. It is a standard requirement to achieve BREEAM Excellent in Healthcare projects. During the design stage each consultant reviewed their design with the BREEAM Assessor to agree which credits should be targeted. Under Health & Wellbeing, the following architectural credits were identified as not being targeted;

- Hea 1 – Daylighting – due to non-compliance on some areas of the design this credit was not targeted.
- Hea 2 – View Out - due to non-compliance on some areas of the design this credit was not targeted.
- Hea 7 – Potential for Natural Ventilation – due to the agreed Ventilation Strategy this credit could not be achieved, therefore was not targeted.
- Hea 8 – Indoor Air Quality – the targeted credit was not achieved due to the fresh air rates in the offices designed to be 10 l/s rather than 12 l/s.
- Hea 10 – Thermal comfort – credit achieved. The Energy Strategy (ref. 1) confirms that IES Virtual Environment dynamic thermal simulation model has been undertaken. The modelling results indicate that internal summer temperatures will not exceed 28degrees C dry bulb for more than 50 hours

per year (in accordance with HTM 03-01 and CIBSE Guide A). This is achieved in all areas and therefore compliance has been met.

- Hea 11 – Thermal Zoning. Ene 1 - Reduction of C02 Emissions - Up to fifteen credits where evidence provided demonstrates an improvement in the energy efficiency of the building's fabric and services and therefore achieves lower building operational related CO2 emissions. The Energy Strategy confirms that IES Virtual Environment dynamic thermal simulation model has been undertaken. ZBP have confirmed that they are accredited Energy Assessors. A design stage EPC rating has been provided for the building, confirming an EPC score of 40, equating to 6 credits. The accredited assessor is Tom Davis of ZBP, accreditation number LCEA100413.6 credits achieved. In summary, the BREEAM credit for Natural Ventilation was not targeted, a relatively modest 6 out of 15 possible credits were achieved for the reduction of C02 emissions which was directly linked to the ZBP Thermal Model.
- In summary, the main impact on IBI's design was the increased thermal performance requirements for the façade, which would have influenced the decision on the type of insulation. The decision to seal the building was also influenced by the thermal model and ventilation strategy, which was led by ZBP; the impact was again on our façade design package. (Refer to **A52701585 – Design Stage Certification Report BREEAM Healthcare 2008 v4.0 - Bundle 43, Volume 5, Page 445** for full details).

17. What impact did the energy usage target of no more than 80kg of CO2 per square metre have on IBI's proposed design?

**A.** My understanding was the main impact on our proposed design was on the Façade Design; the increased thermal performance requirements led to higher performing insulation products being specified to achieve improved U-Values. This included reviewing the type of glass, shading, the amount of opaque glazed panels. Also, as an action from the Low Carbon meetings, NA-IBI continued to review the layouts to see if there were any non-clinical areas which would benefit from passive ventilation, particularly the atria. The greater impacts were on the M&E proposed design. I believe that this drove some key design decisions, including ensuring carbon filtration was only fitted where required. I believe that it was the Low Carbon Design criteria which impacted the building design more that BREEAM, influencing some of the

key engineering design strategies and decisions in relation to ventilation and the adoption of Chilled Beam Units.

18. The Inquiry is aware that Chilled Beam Units were proposed by Multiplex and accepted for use through the QEUH / RHC. What was the basis for Multiplex proposing to use Chilled Beam Units? Is the use of Chilled Beam Units appropriate throughout hospitals? At the time, what concerns, if any, did you have regarding the use of Chilled Beam Units?

**A.** I am not an engineer, however I was familiar with the use of chilled beams in hospitals. I remember chilled beams were discussed and adopted by ZBP in the heating and cooling strategy at Peterborough City Hospital, albeit this was a mixed mode ventilation strategy and less reliant on chilled beams. I also researched the use of chilled beams in hospitals further and located a Frenger Systems brochure Active Chilled Beams For Healthcare and Patient Rooms which describes its EcoHealthcare product. In addition, it provided a list of Chilled Beam Projects on page 7, including a number of UK Healthcare Projects; such as Great Ormond Street Hospital, London; Royal London and St Bart's Hospitals, London; Gartnavel General Hospital, Glasgow; Beaston Oncology, Glasgow; New Victoria Hospital, Glasgow. It should be noted that Frenger Systems were not the suppliers of the installed chilled beams.
My understanding was chilled beams were a more sustainable way of cooling rooms, which required less energy than using mechanical ventilation to cool the air. Chilled beams were permitted in HTM 03-01 and noted as increasingly common. There was limited design guidance and restrictions, as noted within the HTM at the time, therefore I had no concerns on the proposal from ZBP to use chilled beam units.

In addition, I located a number of correspondences on Aconex between Mercury, the M&E Subcontractor, and ZBP regarding the selection of chilled beam products. **A52701563 - Mercury RFI - ZBP Response - Bundle 43, Volume 5, Page 164; A52701562 - Aconex ZBP NSGH Chilled Beam Selection Report (2900 Stage /L) - Bundle 43, Volume 5, Page 157; A52701564 – NSGH - Chilled Beam Test Lab Results - Bundle 43, Volume 5, Page 165.**

19. Would it have been possible to achieve the sustainability requirements (BREEAM excellent rating and 80kg of CO2 per square meter) if Chilled Beams were not selected for use in the QEUH/RHC?

**A.** My understanding is the BREEAM excellent rating could have been achieved without chilled beams, as other credits could have been targeted. However, the Low Carbon target of 80kg of C02, and targeted limitations on the use of mechanical ventilation to cool the building would suggest at the time it would have been extremely challenging to meet 80kg of CO2 without the adoption of chilled beams. I have spoken to a Mechanical Engineer I am currently working with how these targets could have been met in 2009/2010 and he suggested if chilled beams were not selected it would have required a considerable increase in mechanical cooling, which would have increased the size of the plant and ventilation ductwork and therefore not complied with the project's Low Carbon Strategy, which were set out by the wider Scottish Government/NHS energy targets. I also asked him how the sustainability targets are being met now, in relation to the New Hospitals Programmme (NHP) where major healthcare projects have an increased sustainability target of Net Zero Carbon. He confirmed that with the stricter guidance on the use of Chilled Beams in clinical areas within the current HTM 03-01 Guidance the NHP hospitals are being designed with 'all air' systems, combined with air-source heat pumps to cool the air. The impacts are much larger ductwork and plant requirements, increasing the size of the buildings and increasing the floor-to-floor heights to accommodate the ductwork within the ceiling voids.

**Full Business Case**

20. Under ‘Services Systems’ confirmation was required “that the design fully complies with the requirements of the Employers Requirements, M&E appendices 1 to 6, all HTM’s, HBN’s, SHTM’s and current legislation”. The Inquiry is aware of several departures from SHTM 03-01 Guidance in relation to air change rates, pressure differentials and filtration requirements. There was also a variation to the primary extract arrangement for PPVL isolation rooms from that set out in SHPN 04 Supplement 01. Was IBI aware at the time of these non-compliances? If so, please confirm how IBI communicated these non-compliances to the NHS GGC Project Team.

**A.** IBI were not the designers of the ventilation system, my understanding is this was designed by ZBP, the M&E consultant, and Mercury Engineering, the M&E subcontractor. I was aware of some design clarifications raised associated with the ventilation design for the isolation rooms, however my understanding from reviewing the environmental data schedule inputs supplied by ZBP was that the design of the isolation rooms was to be in compliance with SHPN 04 Supplement 1. I could not comment on any variations to the primary extract arrangements as that is outside my expertise as an architect.

21. Was the ventilation derogation noted in the M&E Clarification Log, recorded in the Full Business Case? Who was responsible for doing this? If you were aware that it had not been recorded in the Full Business Case please explain what action, if any, you took.

**A.** I was aware of the M&E Clarification Log as this was bound into the original Contract/Project Bible prior to the commencement of Stage 2 of the Contract. IBI had no responsibility for the M&E Clarification Log. The NHS GGC Team were responsible for submitting the relevant documentation for their FBC submission. I was interviewed as part of the NHS Gateway 3 Panel Review and have located the **Information Sheet for Gateway 3** and emails from Mairi Macleod, the NHS Project Manager for the New Children's Hospital. The information shared is listed as follows under item 14. ‘Information Supplied to the Gateway Review Team; Employers Requirements Volume 1; Employers Requirements Volume 3; New South Glasgow Hospital’s Project

Monthly Report; Contract Risk Registers; Project Risk Register; Acute Services Strategy Board Meeting Minutes; Acute Services Strategy Executive Sub-Group Meeting Minutes.' The focus of my interview was the user engagement process, primarily the 1:200 department designs; I was able to demonstrate the design process within the department tracking schedule I developed NA-SH-001_NSGH 1-200 UGM TrackingSchedule&Programme_FBC version_30-09-2010 **A52701547 – New South Glasgow Hospitals 1:200 User Group Meeting Tracking Schedule and Programme Rev 16 (FBC submission) Bundle 43, Volume 5, Page 45.** This interview took the form of a telephone conference call at 1430 on Tuesday 5 October 2010.

**Design Role in the QEUH/RHC Project**

22. Looking at Volume 10 of the Tender Submission (**A35780880 – Brookfield – Project Execution Plan Bundle 43, Volume 3, page 493)** and in particular the 'Project Management Structure' on Page 5 and explained on Page 7, to what extent is it reasonable to assume from the tender documents that the proposal was that the work of the whole design team (including work on the ventilation system) was to be co-ordinated by and reported to Nightingale Associates as 'Architect and Lead Consultant' and that the intention was that Nightingale would work 'closely with the NSGH team without unnecessary interference from Brookfield'?

**A.** NA-IBI were contracted to Brookfield/Multiplex (BM), not the NSGH team. No meetings were permitted with the NSGH team without prior agreement with BM, and I cannot recall meetings with the NSGH team without BM attendance, or approval. The only meetings I can recall where BM may not have always been in attendance were the user group meetings, but they gave their prior approval to proceed in their absence. Our role as Architect and Lead Consultant, as it related to ventilation, involved coordination of the M&E design, including ventilation-related components within each room to avoid clashes between MEP components and other equipment in the room. We did work closely and collaboratively with both the NSGH team and Brookfield/Multiplex. The NSGH team had their own Technical Advisor team

providing support. I understand that Currie and Brown performed the Lead Consultant role for the NSGH team.

23. The Inquiry understands that drawings for ward layouts and Room Data Sheets (RDS) were approved through the Reviewable Design Data (RDD) process. Describe your role, if any, in the RDD process and User Groups.

**A.** My role as Project Lead was to support BM with developing the design programme and design processes for the User Group Meetings (UGMs) and Reviewable Design Data (RDD) process. I acted as the design 'coordinator' during the UGMs and developed the various design protocols. The department leads would report progress and any issues/concerns from the User Group Meetings (UGMs) they attended back to me, and I would report back to BM and the NSGH Project Team. We would review and agree the design status (using a Red/Amber/Green RAG assessment) at the end of each round of UGMs, and I would update the Design Co-ordination/Tracking Schedule [NA-SH-001_NSGH 1-200 UGM TrackingSchedule&Programme **A52701547 – New South Glasgow Hospitals 1:200 User Group Meeting Tracking Schedule and Programme Rev 16 (FBC submission) Bundle 43, Volume 5, Page 45.** The 1:200 department layouts, including the wards, were developed in collaboration with the NSGH team and their user representatives and were reviewed and agreed during 3 rounds of UGMs. 1:50 room type layouts and supporting RDS were then developed to validate the 1:200 design and equipment list/costs. These were reviewed in 2 rounds of UGMs. The design requirements for RDD were agreed within the Appendix K/FBC approved documentation. Thereafter, during Stage 3 the 1:50 fully loaded department layouts were developed using the agreed 1:50 room type layouts and reviewed in a series of 'Pre' UGMs with the NSGH team and BM design team to ensure the designs were co-ordinated and ready for presentation to the users. And a final round of UGMs took place to review the 1:50 fully loaded department layouts. Refer to the 1:200 and 1:50 protocols, coordination schedules and programmes for more details of the process. The final approval of the department layouts, including the wards, took place in Stage 3 under the agreed RDD process. The 1:200 department layout plans were updated to reflect any Appendix K comments, and to co-ordinate with the 1:50 department designs and UGM comments, and were approved on or

around November 2011. The 1:50 room type drawings were updated to include elevations of each wall and re-issued and approved concurrently. The 1:50 fully loaded department layouts were updated to reflect the agreed UGM sign-off comments, including comments on the RDS, primarily in relation to the checking of the equipment schedules. The approval of the RDS took place at a later date, on or around May 2012. Further reviews of the environmental data took place in MEP Technical Workshops which were not attended by NA-IBI. These comments were returned from May 2012 onwards and further exports of the environmental data were supplied by NA-IBI for ZBP to incorporate the environmental review comments. This process continued until around October 2012, the output from NA-IBI was a full set of department RDS to incorporate the updated environmental data supplied by ZBP. The action for both ZBP and Mercury was to update their ventilation drawings to the agreed comments and resubmit their drawings under RDD. These drawings were also reviewed under the RDD process, however NA-IBI did not always receive the final approved versions of other Consultant's drawings.

24. Please confirm how the RDD process worked and the various stages that drawings and RDS went through before proceeding to construction.

**A.** The BM team were obliged to provide further detail of the items listed under Contract Data as the agreed set of Reviewable Design Data (RDD) Refer to **A52701573 – NSGH Invitation to participate in Competitive Dialogue Volume 2/1 Appendix K – undated - Bundle 43, Volume 5, Page 222.** This included the detailed design development of the packages held within the Appendix K/FBC submission, as well as other items such as samples and Subcontractor proposals. Following the successful collaborative process of 'Pre-UGM' meetings instigated in Stage 2, we agreed a strategy with the GGC Project Team which included a series of collaborative RDD Workshops. I prepared an RDD Workshop Timetable, which was arranged to enable each respective Consultant to present their design to the GGC Project Team, obtain comments, then update and issue for formal review under an RDD Aconex Workflow. [Refer to **A52701597 – RDD Workshop Timetable for 2012 Bundle 43, Volume 5, Page 554;** and **A52701594 – Nightingale Associates - Design Strategy Review Program - Bundle 43, Volume 5,**

**Page 551)** for the architectural design strategy programme]. The RDD drawing reviews and approvals continued throughout Stage 3 from 2011 to 2014 and were managed by Multiplex on Aconex. The scanned/NHS signed drawings were generally uploaded by Multiplex as a record copy and distributed to the Design Team and GGC, with any comments noted to be addressed before proceeding to construction. I also assisted Multiplex with the set-up of the RDD Tracking Schedule to initially agree all the drawings which were to be submitted through this review process. Thereafter, Multiplex took ownership and used the RDD Schedule to log the history of the drawing approvals. This can be used to track the review and approval history of each drawing and the relevant Aconex Transmittal as required. [Refer to RDD SCHEDULE AS AT 01.05.14 **(A52701430 - NSGH Adults and Children's Hospital - RDD Master Schedule Reviewable Design Data - Issued for Approval - 02 May 2014 – Bundle 43, Volume 4, [Paper Apart]).**
This is the last version I have located on Aconex]. Please refer to the detailed supporting paper I prepared for a full description of the RDS process.

25. How were members selected to be part of a user group?

**A.** From an NA-IBI perspective, our project delivery strategy, which I developed as part of my Project Lead role, was to provide a department design lead from our UK team who had the most relevant experience for each department. Our lead architects had extensive experience designing healthcare facilities and came from our specialist healthcare teams based in our London, Cardiff, Harwell and Rochdale offices. We provided a lead architect and at least 1 supporting team member for each User Group Meeting. The GGC Project Team produced a User Group Remit document which clarified the Terms of Reference for the User Group, confirming the name of each Group Lead, their responsibilities and the overall process. The aim of the User Groups was clarified as follows;' To provide a forum for agreement/sign off of the 1:200 and 1:50 architectural drawings for the Department. Please note that the architectural drawings will be based on the previously signed off Schedules of Accommodation which are now fixed. Sign-off of the drawings will follow a formal procedure and will be recorded on the "Design Acceptance Procedure" Form. This form will record the

outcome of each meeting and be signed by the User Group Lead on behalf of the Directorates at the end of each meeting.' It should be noted that the Multiplex team, including NA-IBI as their Architect, were not involved in the development and approval of the Client Brief Schedule of Accommodation. '3. Membership - The membership of the group has been approved by the Acute Services Director(s). The Group will have an identified Lead. Members will be responsible for (i) discussing the design with colleagues and in the user meetings (ii) for communicating the priorities and associated work plans agreed by the Group to their colleagues following each meeting'. '4. Group Lead. The Group Lead will be responsible for ensuring that Directorate priorities are reflected in the design. The Group Lead will be responsible for keeping their Director appraised of the status of the design process. Where differing options regarding the design arise the Project Team will take their instruction from the Group Lead'. It should be noted that the Multiplex team, including NA-IBI as their Architect, were not involved in the decision of who was an NHS group member or lead. All dialogue was through the GGC Project Team. [Refer to Example User Group - Terms of Reference Ward User Group 130110] **(A52701524 - NSGH Users Group Terms of Reference - 13 January 2010 – Bundle 43, Volume 4, Page 1472).**

26. Please confirm who attended the user groups meetings from IBI, Multiplex, the GGC Project Team, IPC, Estates and Clinical teams for the following areas:
Ward 4B – QEUH;
Ward 4C – QEUH;
Level 5 – QEUH;
Critical Care – QEUH;
Ward 2A & 2B – RHC;
PICU RHC – RHC;
All Isolation rooms

NA-IBI department leads were Terry Sullivan - Adult Hospital Wards Design Lead which included Level 5 – QEUH; Graham Harris - Adult Hospital (QEUH) Critical Care and A&E Design Lead; Mark Drane – Adult Hospital Haematology-Oncology and Renal Design Lead which included Ward 4B and

Ward 4C - QEUH; and Jonathan Hendrick - Children's Hospital Design Lead, who attended all meetings on Ward 2A & 2B – RHC and PICU – RHC. Isolation rooms were reviewed in the department they were located, not separately. GGC Project Team – for QEUH departments Heather Griffin – Project Manager for the Adult Hospital; for RHC departments Mairi Macleod – Project Manager for the new Children's Hospital; for QEUH and RHC there was consistent attendance from the GGC Project Team - Fiona McCluskey – Senior Nurse Advisor; Frances Wrath - Project Manager – Enabling; Karen Connelly – FM & Estates representative; Jackie Stewart – IPC representative. The Clinical Teams would include the designated department Group Lead and the agreed users. Heather Griffin, or Carol Craig on behalf of Heather; and Mairi Macleod, or Allyson Hirst on behalf of Mairi, distributed the UGM meeting packages to the clinical teams. The distribution usually included David Bower and Darren Smith from Multiplex, although they were not always in attendance in the meetings. Bill McGaugie from Doig and Smith (Multiplex's appointed QS), and Paul Britton or Scott McCallum from Tribal (Multiplex's Health Care Planners) were also in attendance representing Multiplex. Refer to the UGM Department Tracking Schedule, Meeting Schedule **(A52701446 - NSGH - 1:200 User Group Meeting Tracking Schedule & Programme Rev 7 - 08 March 2010 – Bundle 43, Volume 4, Page 749)** and relevant meeting attendance sheets.

27. How often were user group meetings scheduled to review design proposals and agree the design with the user groups?

**A.** There were 3 rounds of UGMs to review and agree the 1:200 department layouts. 2 rounds of UGMs to review and agree the 1:50 room type layout plans. Pre-UGM reviews with the GGC project team to agree the 1:50 fully loaded department layouts prior to 1 final round of UGMs. In total there were 6 rounds of user group meetings with the user groups to review the design proposals. Thereafter further 'sweep-up' meetings took place to close out any outstanding design issues. These were only held with the GGC Project Team, and not the full user groups. The respective GGC Project Managers for the Adult Hospital (Heather Griffin) and Children's Hospital (Mairi Macleod) would consult with their users if they considered there were any issues.

28. How were drawings approved to proceed to construction?

**A.** Multiplex used a system called Aconex to manage the documents and for information control of the Project. Multiplex produced an "Aconex User Manual" [Refer to Aconex User Manual] **(AA52700949 - NSGH - ACONEX User Manual - Documents and Information Control Procedures - undated – Bundle 43, Volume 4, Page 297)** which also included the protocols for reviewing and commenting on sub-contractor's proposals. All drawings prepared for construction had to be processed through Aconex, with a drawing requiring a status/approval from Multiplex prior to proceeding to construction. In the case of the design drawings, samples and other documentation, which was agreed as requiring client review, the Reviewable Design Data (RDD) process was followed. Any documentation which required client review and approval needed to be approved by the client prior to construction. Not all project documentation required client approval, the agreed list of drawings was captured on the RDD Schedule. Volume 2/1 Appendix K Design Development captured the Client requirements Part 1 – minimum information required to be agreed with the Board in advance of FBC; and Part B – minimum design information requirements required for client approval. This essentially formed the basis of the Reviewable Design Data. Refer to **A52701573 – NSGH Invitation to participate in Competitive Dialogue Volume 2/1 Appendix K – undated - Bundle 43, Volume 5, Page 222.**

29. The Inquiry understands that ADB codes were assigned to individual rooms - (**A34099838 – South Glasgow New Hospital RDS Development Process Bundle 43, Volume 1, Page 73)** was provided to the Inquiry by IBI. Appendix one, lists Draft RDS Batches, can you please confirm what the following codes mean for each room

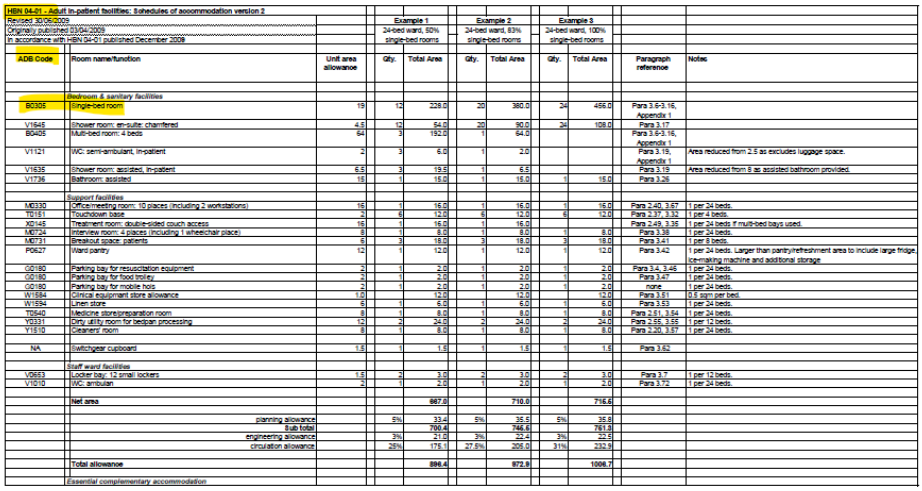
**A.** These are the NHS Activity Database (ADB) room codes – known as the ADB code. Each Room Type available in the Activity Database has an identified code. They used to all be linked back to the HBN for each department with a Schedule of Accommodation (SoA) included usually at the back of the HBN. With the different dates of HBN updates this was not always consistent. For instance, the Critical Care HBN at the time of the design did not include the SoA, but the current HBN version of the HBN does include the SoA with the list of ADB room codes. HBN 23 - Hospital accommodation for children and young people **(A52701575 – HBN 23 Hospital Accommodation for Children and Young People - Bundle 43, Volume 5, Page 251)** has not been updated since 03/01/2005. The coding system was originally initiated by NHS Estates. In January 2017 Talon Solutions took on the responsibility for sales and distribution of ADB, with a continuous development program to reflect guidance and an ongoing updated Revit Library. https://www.talonsolutions.co.uk/about-us.

In order to respond to each code query, I consulted our current UK Database Manager and asked him to prepare the Room Lists pages from all the versions of ADB Manager we currently have available on our systems. This allowed me to make an informed assessment of the different types of codes against the room types in question.

Batch 1 rooms – Adult's Inpatient and support (pg.5)
B0305A - Single-bed room: HBN 04-01

B0305A is the ADB code for a standard Adult Single-bed room, as described in HBN 04-01 - Adult in-patient facilities. 'B0' being the code used by ADB Manager for Single-bed Room Types. Refer to page 49 HBN 04-01 - Adult in-patient facilities which includes the template Schedules of Accommodation

linking the ADB codes for each room type within a standard HBN 04-01 inpatient ward.



| HBN 04-01 - Adult in-patient facilities: Schedules of accommodation version 2 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Revised 30/06/2009 | | | Example 1 | | Example 2 | | Example 3 | | | |
| Originally published 03/04/2009 | | | 24-bed ward, 50% | | 24-bed ward, 83% | | 24-bed ward, 100% | | | |
| In accordance with HBN 04-01 published December 2009 | | | single-bed rooms | | single-bed rooms | | single-bed rooms | | | |
| **ADB Code** | **Room name/function** | **Unit area allowance** | **Qty.** | **Total Area** | **Qty.** | **Total Area** | **Qty.** | **Total Area** | **Paragraph reference** | **Notes** |
| | *Bedroom & sanitary facilities* | | | | | | | | | |
| B0305 | Single-bed room | 19 | 12 | 228.0 | 20 | 380.0 | 24 | 456.0 | Para 3.6-3.16, Appendix 1 | |
| V1646 | Shower room: en-suite: chamfered | 4.5 | 12 | 54.0 | 20 | 90.0 | 24 | 108.0 | Para 3.17 | |
| B0405 | Multi-bed room: 4 beds | 64 | 3 | 192.0 | 1 | 64.0 | | | Para 3.6-3.16, Appendix 1 | |
| V1121 | WC: semi-ambulant, in-patient | 2 | 3 | 6.0 | 1 | 2.0 | | | Para 3.19, Appendix 1 | Area reduced from 2.5 as excludes luggage space. |
| V1635 | Shower room: assisted, in-patient | 6.5 | 3 | 19.5 | 1 | 6.5 | | | Para 3.19 | Area reduced from 8 as assisted bathroom provided. |
| V1736 | Bathroom: assisted | 16 | 1 | 16.0 | 1 | 16.0 | 1 | 16.0 | Para 3.26 | |
| | *Support facilities* | | | | | | | | | |
| M0330 | Office/meeting room: 10 places (including 2 workstations) | 16 | 1 | 16.0 | 1 | 16.0 | 1 | 16.0 | Para 2.40, 3.67 | 1 per 24 beds. |
| T0181 | Touchdown base | 2 | 6 | 12.0 | 6 | 12.0 | 6 | 12.0 | Para 2.37, 3.32 | 1 per 4 beds. |
| X0145 | Treatment room: double-sided couch access | 16 | 1 | 16.0 | 1 | 16.0 | | | Para 2.49, 3.35 | 1 per 24 beds if multi-bed bays used. |
| M0724 | Interview room: 4 places (including 1 wheelchair place) | 8 | 1 | 8.0 | 1 | 8.0 | 1 | 8.0 | Para 3.38 | 1 per 24 beds. |
| M0731 | Breakout space: patients | 6 | 3 | 18.0 | 3 | 18.0 | 3 | 18.0 | Para 3.41 | 1 per 8 beds. |
| P0627 | Ward pantry | 12 | 1 | 12.0 | 1 | 12.0 | 1 | 12.0 | Para 3.42 | 1 per 24 beds. Larger than pantry/refreshment area to include large fridge, ice-making machine and additional storage. |
| G0180 | Parking bay for resuscitation equipment | 2 | 1 | 2.0 | 1 | 2.0 | 1 | 2.0 | Para 3.4, 3.46 | 1 per 24 beds. |
| G0180 | Parking bay for food trolley | 2 | 1 | 2.0 | 1 | 2.0 | 1 | 2.0 | Para 3.47 | 1 per 24 beds. |
| G0180 | Parking bay for mobile hois | 2 | 1 | 2.0 | 1 | 2.0 | 1 | 2.0 | none | 1 per 24 beds. |
| W1884 | Clinical equipment store allowance | 1.0 | | 12.0 | | 12.0 | | 12.0 | Para 3.61 | 0.5 sqm per bed. |
| W1884 | Linen store | 6 | 1 | 6.0 | 1 | 6.0 | 1 | 6.0 | Para 3.63 | 1 per 24 beds. |
| T0540 | Medicine store/preparation room | 8 | 1 | 8.0 | 1 | 8.0 | 1 | 8.0 | Para 2.61, 3.64 | 1 per 24 beds. |
| Y0331 | Dirty utility room for bedpan processing | 12 | 2 | 24.0 | 2 | 24.0 | 2 | 24.0 | Para 2.55, 3.55 | 1 per 12 beds. |
| Y1910 | Cleaners' room | 8 | 1 | 8.0 | 1 | 8.0 | 1 | 8.0 | Para 2.20, 3.87 | 1 per 24 beds. |
| NA | Switchgear cupboard | 1.8 | 1 | 1.8 | 1 | 1.8 | 1 | 1.8 | Para 3.62 | |
| | *Staff ward facilities* | | | | | | | | | |
| V0663 | Locker bay: 12 small lockers | 1.8 | 2 | 3.6 | 2 | 3.6 | 2 | 3.6 | Para 3.7 | 1 per 12 beds. |
| V1010 | WC: ambulant | 2 | 1 | 2.0 | 1 | 2.0 | 1 | 2.0 | Para 3.72 | 1 per 24 beds. |
| | **Net area** | | | **867.8** | | **710.0** | | **716.6** | | |
| | planning allowance | | 5% | 33.4 | 5% | 35.5 | 5% | 35.8 | | |
| | Sub total | | | 790.4 | | 746.6 | | 751.8 | | |
| | engineering allowance | | 3% | 21.0 | 3% | 22.4 | 3% | 22.5 | | |
| | circulation allowance | | 28% | 175.1 | 27.6% | 205.0 | 31% | 232.9 | | |
| | **Total allowance** | | | **886.4** | | **872.8** | | **1006.7** | | |
| | *Essential complementary accommodation* | | | | | | | | | |

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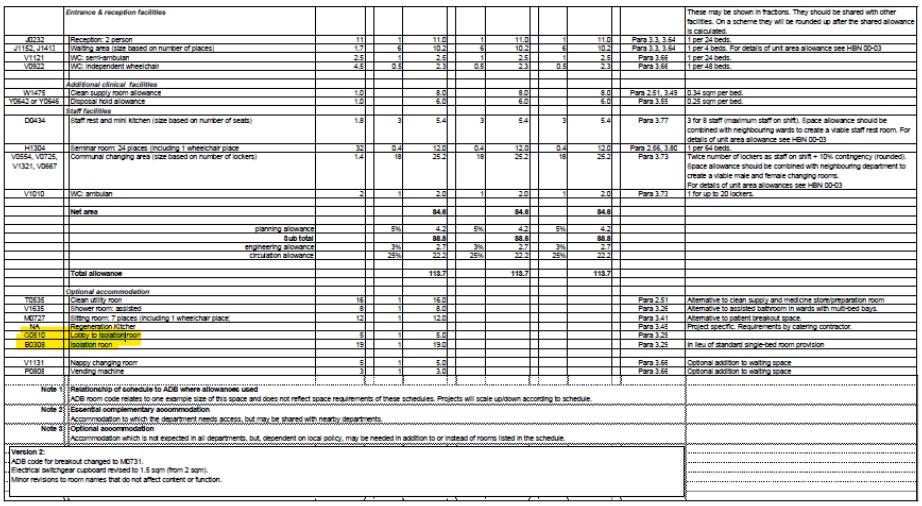
Extract from HBN 04-01 - Adult in-patient facilities **(A52701567 - HBN 04-01 Supplement 1 - Isolation facilities for infectious patients in acute settings Bundle 43, Volume 5, Page 168).**

B0308A is the ADB code for an Isolation Adult Single-bed room, as described in HBN 04-01 - Adult in-patient facilities. Isolation suites. 'B0' being the code used by ADB Manager for Single-bed Room Types.
Refer to page 50 HBN 04-01 - Adult in-patient facilities which links the ADB codes for the additional optional accommodation of Isolation Room and Lobby to Isolation Room. In addition, HBN 04-01 notes that,

'Single-bed rooms provide effective isolation for many patients. In some cases, however, a greater degree of isolation may be required.'



| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | *Entrance & reception facilities* | | | | | | | | | These may be shown in fractions. They should be shared with other facilities. On a scheme they will be rounded up after the shared allowance is calculated. |
| J0232 | Reception: 2 person | 11 | 1 | 11.0 | 1 | 11.0 | 1 | 11.0 | Para 3.3, 3.64 | 1 per 24 beds. |
| J1152, J1413 | Waiting area (size based on number of places) | 1.7 | 6 | 10.3 | 6 | 10.3 | 6 | 10.3 | Para 3.3, 3.64 | 1 per 4 beds. For details of unit area allowance see HBN 00-03 |
| V1121 | WC: semi-ambulan | 2.5 | 1 | 2.5 | 1 | 2.5 | 1 | 2.5 | Para 3.66 | 1 per 24 beds. |
| V0922 | WC: independent wheelchair | 4.8 | 0.5 | 2.3 | 0.5 | 2.3 | 0.5 | 2.3 | Para 3.66 | 1 per 48 beds. |
| | *Additional clinical facilities* | | | | | | | | | |
| W1475 | Clean supply room allowance | 1.0 | | 8.0 | | 8.0 | | 8.0 | Para 2.61, 3.49 | 0.34 sqm per bed. |
| V0642 or V0646 | Disposal hold allowance | 1.0 | | 6.0 | | 6.0 | | 6.0 | Para 3.65 | 0.25 sqm per bed. |
| | *Staff facilities* | | | | | | | | | |
| D0434 | Staff rest and mini kitchen (size based on number of seats) | 1.8 | 3 | 5.4 | 3 | 5.4 | 3 | 5.4 | Para 3.77 | 3 for 9 staff (maximum staff on shift). Space allowance should be combined with neighbouring wards to create a viable staff rest room. For details of unit area allowance see HBN 00-03 |
| H1304 | Seminar room: 24 places (including 1 wheelchair place | 32 | 0.4 | 12.0 | 0.4 | 12.0 | 0.4 | 12.0 | Para 2.66, 3.80 | 1 per 64 beds. |
| V0554, V0725, V1321, V0667 | Communal changing area (size based on number of lockers) | 1.4 | 18 | 25.2 | 18 | 25.2 | 18 | 25.2 | Para 3.73 | Twice number of lockers as staff on shift + 10% contingency (rounded). Space allowance should be combined with neighbouring department to create a viable male and female changing rooms. For details of unit area allowances see HBN 00-03 |
| V1010 | WC: ambulan | 2 | 1 | 2.0 | 1 | 2.0 | 1 | 2.0 | Para 3.73 | 1 for up to 20 lockers. |
| | | | | | | | | | | |
| | **Net area** | | | **84.8** | | **84.8** | | **84.8** | | |
| | planning allowance | | 5% | 4.2 | 5% | 4.2 | 5% | 4.2 | | |
| | **Sub total** | | | **88.8** | | **88.8** | | **88.8** | | |
| | engineering allowance | | 3% | 2.7 | 3% | 2.7 | 3% | 2.7 | | |
| | circulation allowance | | 25% | 22.2 | 25% | 22.2 | 25% | 22.2 | | |
| | | | | | | | | | | |
| | **Total allowance** | | | **113.7** | | **113.7** | | **113.7** | | |
| | | | | | | | | | | |
| | *Optional accommodation* | | | | | | | | | |
| T0535 | Clean utility room | 16 | 1 | 16.0 | | | | | Para 2.61 | Alternative to clean supply and medicine store/preparation room |
| V1535 | Shower room: assisted | 8 | 1 | 8.0 | | | | | Para 3.26 | Alternative to assisted bathroom in wards with multi-bed bays. |
| M0727 | Sitting room: 7 places (including 1 wheelchair place) | 12 | 1 | 12.0 | | | | | Para 3.41 | Alternative to patient breakout space. |
| NA | Regeneration Kitchen | | | | | | | | Para 3.46 | Project specific. Requirements by catering contractor. |
| G0510 | Lobby to isolation room | 6 | 1 | 6.0 | | | | | Para 3.25 | |
| B0308 | Isolation room | 19 | 1 | 19.0 | | | | | Para 3.25 | In lieu of standard single-bed room provision |
| | | | | | | | | | | |
| V1131 | Nappy changing room | 6 | 1 | 6.0 | | | | | Para 3.66 | Optional addition to waiting space |
| P0808 | Vending machine | 3 | 1 | 3.0 | | | | | Para 3.66 | Optional addition to waiting space |

| | |
|---|---|
| Note 1 | **Relationship of schedule to ADB where allowances used**<br>ADB room code relates to one example size of this space and does not reflect space requirements of these schedules. Projects will scale up/down according to schedule. |
| Note 2 | **Essential complementary accommodation**<br>Accommodation to which the department needs access, but may be shared with nearby departments. |
| Note 3 | **Optional accommodation**<br>Accommodation which is not expected in all departments, but, dependent on local policy, may be needed in addition to or instead of rooms listed in the schedule. |

**Version 2:**
ADB code for breakout changed to M0731.
Electrical switchgear cupboard revised to 1.6 sqm (from 2 sqm).
Minor revisions to room names that do not affect content or function.

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Extract from HBN 04-01 - Adult in-patient facilities

B1602B - Single bedroom, isolation: Critical care **(A52701439 - NSGH drawing of second floor, theatres, AODOS & Recovery, Ceiling and Soffit Plan - 02 March 2012 – Bundle 43, Volume 4, Page 678)**

B1602B is the ADB code for an Isolation Adult Single-bed room in the Critical Care Department. ‘B16’ being the code used by ADB Manager for Critical Care.

G0507A - Lobby: ventilated (isolation suite) (**A52701439 - NSGH drawing of second floor, theatres, AODOS & Recovery, Ceiling and Soffit Plan - 02 March 2012 – Bundle 43, Volume 4, Page 678)**

G0507A is the ADB code for an Entrance lobby for barrier nursing to a ventilated (isolation suite) and was matched by Tribal as the appropriate isolation lobby for the Critical Care Isolation bedrooms. ‘G05’ being the code used by ADB Manager for lobbies.

G0510A - Lobby to isolation room - HBN 04-01 **(A52701439 - NSGH drawing of second floor, theatres, AODOS & Recovery, Ceiling and Soffit Plan - 02 March 2012 – Bundle 43, Volume 4, Page 678)**

G0510A is the ADB code for a Lobby to an Inpatient Isolation Suite as described in HBN 04-01 - Adult in-patient facilities. Isolation suites. ‘G05’ being the code used by ADB Manager for lobbies.

X0252A - Isolation treatment room: dialysis, 1 patient (pg.6) **(A52701439 - NSGH drawing of second floor, theatres, AODOS & Recovery, Ceiling and Soffit Plan - 02 March 2012 – Bundle 43, Volume 4, Page 678)**
X0252A is the ADB code for an isolation treatment room for renal dialysis. ‘X0’ being the code used by ADB Manager for all Treatment Room Types.

Batch 2 Rooms – Children’s inpatient and support (pg.7)
B1802C - Single bedroom: Children/young people, with relatives overnight stay **(A52701439 - NSGH drawing of second floor, theatres, AODOS & Recovery, Ceiling and Soffit Plan - 02 March 2012 – Bundle 43, Volume 4, Page 678).**
B1802C is the ADB code for a standard Children/young person’s single-bed room, which includes additional space and equipment for a relative’s overnight stay, usually in the form of a pull-down bed. ‘B18’ being the code used by ADB Manager for Children specific single bedrooms.

B1805C - Single bedroom, isolation: Children/young people, with relatives overnight stay **(A52701439 - NSGH drawing of second floor, theatres, AODOS & Recovery, Ceiling and Soffit Plan - 02 March 2012 – Bundle 43, Volume 4, Page 678).**
B1805C is the ADB code for an Isolation Children/young person’s single-bed room, which includes additional space and equipment for a relative’s overnight stay, usually in the form of a pull-down bed. ‘B18’ being the code used by ADB Manager for Children specific single bedrooms.

G0510B - Lobby to isolation room - HBN 04-01 **(A52701439 - NSGH drawing of second floor, theatres, AODOS & Recovery, Ceiling and Soffit Plan - 02 March 2012 – Bundle 43, Volume 4, Page 678)**
G0510B is the ADB code for an Entrance lobby for barrier nursing to a ventilated (isolation suite). ‘G05’ being the code used by ADB Manager for lobbies. This ADB code was used for all lobbies to isolation rooms which

comply with HBN 04 Supplement 1/SHPN4 Supplement 1, both in the Adult's and Children's Hospitals

30. How were rooms that accommodated immunocompromised patients identified in the draft RDS batches? In particular, how were the rooms allocated for heamato-oncology identified in the draft RDS batches?

**A.** I have checked the information provided by our UK Database Manager and include the full contents of ADB Manager Room Lists from 2013, 2017 and 2022, which are the ADB libraries we have access to on our system. There are no specific Single Rooms in ADB which identify immunocompromised patient bedrooms (e.g. Haematology-Oncology-BMT). I believe the assumption in ADB is that the patients most at risk will be accommodated within Isolation Rooms. The list of patient rooms available in the database can be seen in the ADB Room Lists provided **A52701557 - ADB List of Rooms 2013 - Bundle 43, Volume 5, Page 103; A52701553 - ADB List of Rooms 2017 - Bundle 43, Volume 5, Page 57; A52701554 - ADB List of Rooms 2022 - Bundle 43, Volume 5, Page 78.** The draft RDS batches were developed by Tribal with the GGC NHS project team and using the SoA version provided by the NHS which allocated their suggested ADB briefing code. From reviewing the Template RDS package, the Adult Haematology-Oncology Patient Room was allocated the ADB briefing code B0303, the same as the Generic Patient Room. Refer to **A34099829 – NSGH - Schedule of Accommodation Bundle 43, Volume 6, Page 8.** The difference between the 2 rooms at the time of the Template RDS was the additional note that all bedrooms will require positive pressure, and 3 Beds are to be plumbed for haemodialysis. The ADB code for the Adult Haematology-Oncology Patient Rooms was eventually agreed as B0303A3, which I have reviewed within the later RDS and environmental schedules contained in our project records. This differentiated it from the Generic Patient Room which remained as B0303A. I believe this change to the code took place during the RDD review process. I cannot confirm if this was as a result of different equipment briefing requirements, or because the ward accommodated immunocompromised patients. The Adult Renal patient room ADB code was eventually agreed as B0303A2, which I believe was due to additional specialist equipment for dialysis, including reverse osmosis (RO) water. And the Acute Assessment Ward and Stroke Ward patient room was eventually agreed as B0303A1, which I believe was a variant as a result of the different room layout design which had an outboard ensuite; these

bedrooms did not have an interstitial back-to-back ensuite as the generic inpatients. The Children's Haematology-Oncology Patient Room was allocated the ADB briefing code B1802, the same as the Generic Children's Patient Room. Refer to **A52701410 – NCH - Stage 2 Schedule of Accommodation Bundle 43, Volume 6, Page 54.** The draft RDS batches updated this code to B1802C.

31. How were different types of isolation rooms (e.g. Bone Marrow Transplant, those for infectious disease patients) identified in the draft RDS batches?

**A.** The draft RDS batches were developed with the GGC NHS project team and using the SoA version provided by the NHS which allocated their suggested isolation room ADB briefing code. Again, I have checked the information provided by our UK Database Manager and the NHS ADB database does not identify isolation rooms as Bone Marrow Transplant (BMT). The list of isolation rooms available in the database can be seen in the ADB Room Lists provided **A52701557 - ADB List of Rooms 2013 - Bundle 43, Volume 5, Page 103**; **A52701553 - ADB List of Rooms 2017 - Bundle 43, Volume 5, Page 57; A52701554 - ADB List of Rooms 2022 - Bundle 43, Volume 5, Page 78.** The draft RDS batches contained B0308A inpatient isolation rooms; B1602B critical care isolation rooms and B1805C children's inpatient isolation rooms. In addition, X0252A Renal Dialysis Isolation Treatment Rooms.

32. How did the information contained in the document above progress to become the final RDS?

**A.** Please refer to the detailed supporting paper I prepared for a full description of the RDS process.

33. How were RDS approved to proceed to construction?

**A.** Please refer to the detailed supporting paper I prepared for a full description of the RDS process.

34. Who was responsible for populating information/data into the RDS?

**A.** There is a shared responsibility for reviewing the information/data on the RDS. The NHS initially assigned ADB brief/room codes to each room via their SoA, confirming their required brief. Tribal (the healthcare planner) then reviewed and ensured the latest version of ADB was used, and prepared the draft Template RDS. The Clinical Brief/Activity Data was exported into excel and issued to the NHS to review and validate/check the clinical briefing information/data was correct. The environmental data was exported and issued to ZBP (M&E) for reviewing, checking and populating as required. NA-IBI would have reviewed the finishes page, however as the information is generic, finishes strategy drawings were agreed to be used to replace this data after the Template RDS Stage. NA-IBI also reviewed the equipment data, with input from ZBP for the mechanical and electrical components. NA-IBI also implemented the agreed equipment standardization, including the creation of assemblies for items such as wash hand basins, bedheads and medical pendants.

35. Who was responsible for populating environmental information/ data into the RDS?

**A.** The Mechanical & Electrical Engineers ZBP.

36. Who was responsible for coordinating the RDS with the other consultants and the GGC Project Team and user groups?

**A.** At the RDS Template Stage it was Tribal, thereafter it was NA-IBI.

37. Who presented the environmental data at the user group meetings?

**A.** The RDS were primarily used in the UGMs to review the equipment list. The environmental data was reviewed separately in M&E design workshops which NA-IBI were not present. We received the comments and processed the updated RDS to include the updated environmental data. I do not recall the environmental data being presented at the UGMs; my understanding was it was presented by BM/ZBP within MEP Workshops. NHS-GGC may have presented the full RDS to all or some of their user groups separately to receive comments.

38. Who was responsible for reviewing the information in the RDS from the GGC Project Team and who approved signed off on the environmental data from the GGC Project Team for the following areas:
Ward 4B – QEUH;
Ward 4C – QEUH;
Level 5 – QEUH;
Critical Care – QEUH;
Ward 2A & 2B – RHC;
PICU RHC – RHC;
All Isolation rooms

The 'signed' RDS were stamped by the NHS Board signifying its approval and signed by Frances Wrath. Ms Wrath was the NHS Lead in the RDS process and was responsible for liaising and consulting with the wider GGHB team, including their relevant internal stakeholders. Other Technical Advisors, which IBI understands were led by and included Currie & Brown, supported the NHS Board with the review and approval of the environmental data within the RDS.

39. How was the ventilation derogation communicated to users during the RDD process?

**A.** I am not aware how this was communicated with the users. The ventilation derogation had already been agreed prior to the commencement of the user meetings.

40. Please describe how the technical requirements (air change rates, pressure differentials and filter requirements) for each ward were managed and approved during the user group meetings and the RDD process, including your role and involvement.

**A.** As noted, the RDS were primarily used in the UGMs to review the equipment list. The environmental data was reviewed separately in M&E design workshops which NA-IBI were not present. We received the comments and processed the updated RDS to include the updated environmental data. I do not recall the environmental data being presented at the UGMs, my understanding was it was presented by BM/ZBP within M&E Workshops. The GGC Project Team may have presented the full RDS to all or some of their user groups separately to receive comments. My role was to develop the initial design process, via user group meeting timetables, programmes and tracking schedules, and to monitor and report progress to both the Multiplex Design Team and NSGH Project Design Meeting. I had a similar co-ordinator role for the RDD process, albeit I started to have less day-to-day involvement towards the end of 2012. I have located records of all the environmental schedules issued and returned by ZBP, as well as the RDD comments we received which impacted the environmental design. Julie Miller from Multiplex was leading the coordination and close out of the environmental comments on the RDS and checking these against the ZBP M&E design.

[I include the NA-IBI records of the returned RDD comments on the Environmental Data review workshops which I understand represented the final comments from the NHS and Multiplex.]

Please also refer to the detailed supporting paper I prepared for a full description of the RDS process.

41. Were any requests made by the User Groups during the RDD process that were refused? If so, please provide details.

**A.** I was not in attendance at the user group meetings but any requests which were deemed as changes needed to go through the change control process. Refer to NHS document - 1-200 Design Process Explained – Final **A52701411 – 1:200 & 1:50 Design Process Explained Bundle 43, Volume 5, Page 987**, which was shared with the User Groups by the GGC Project Team. It was not IBI's role to assess changes, or to refuse requests.

42. Please confirm how long the RDD process lasted for and when designs for all wards was completed?

**A.** The RDD approvals continued throughout Stage 3 from 2011 to 2014 and were managed by Multiplex on Aconex. The scanned/NHS signed drawings were generally uploaded by Multiplex as a record copy and distributed to the relevant Consultant. [Refer to RDD SCHEDULE AS AT 01.05.14. This is the last version I have located on Aconex] **(A52701430 - "NSGH Adults and Childrens Hospital - RDD Master Schedule Reviewable Design Data - Issued for Approval - 02 May 2014 – Bundle 43, Volume 4, [Paper Apart]).** The whole process for each department, including the wards, was structured around the Construction Programme. The departments were allocated 'Production Groups', which depended on which construction zone they were located. In addition, different drawing packages were required at differing dates, again dictated by the Construction Programme. The reflected ceiling plans for the children's wards, a later package due to the co-ordination process with M&E, appear to the last wards in the sequence; these were approved on or around 21 November 2013. From our internal records this appears to be last set of RDD design approvals for IBI drawings in relation to the wards.

43. Describe your involvement and understanding, if any, of the decision to remove carbon filters? What was the rationale behind this decision, who was involved and what advice, if any, was sought in reaching this decision?

**A.** I was not involved in the decision to remove carbon filters, and as architects IBI would have limited expertise in assessing the rationale. However, I have spent some time reviewing our records to assist in providing a response. There were regular Low Carbon Meetings which were chaired by Ecoteric, who were the NHS GGC's BREEAM and Energy Consultant. The IBI Low Carbon meeting representative was our Façade Lead, John Wiggett. He attended the meetings and supplied Ecoteric with the architectural information required, which was predominantly related to the Façade Design. I can see the Low Carbon Trackers were shared regularly on Aconex by Susan Logan, who was the Ecoteric Lead. The distribution was generally, BM – Darren Pike and Ken Hall; NHS GGC – Alan Seabourne and Peter Moir; Currie & Brown – David Hall; ZBP – Steve Pardy and John Wiggett – IBI. Carbon filters were associated with the air handling plant which was designed by ZBP. I have located records of the Ecoteric Low Carbon Meeting Tracker where discussions on the carbon filter strategy were recorded. There appears to have been a paper developed to review options to lower the specification/requirements. Refer to **Low Carbon Tracker seventh contract issue 07/06/11 (A52701404 – Excerpt - NSGH Low Carbon Tracker - Ecoteric 2011 Bundle 43, Volume 5, Page 959)**. 'Tracker item dated 30/4/11 - Can carbon filters be omitted or by passed? Note that F7 required to protect not G4 as currently scheduled….. WLC for no filtration, full filtration, part filtration to be prepared for Board. Must include labour and cost of prefiltration and carbon filtration changes and future price risk…… Savings paper still awaited – agreed that partial option should include theatres/ITU/CCU/isolation rooms/aseptic csuite/kitchen Revised vent report does not include this'. I cannot locate a copy of the savings paper on Aconex and assume this was issued offline and not shared with IBI.

44. Were any specialist design workshops required? If so, please provide details.

**A.** Specialist design workshops were required for the Imaging department; Renal Ward and Dialysis; Decontamination; Equipment, including Specialist Medical Equipment. There were Technical Design Meetings, Technical Design Group Workshops – there were 3 initial design workshops with the NHS Radiation Protection Advisor/Medical Physics team to agree the Radiation Protection Strategy. The Medical Planning and Technical Design Groups amalgamated for efficiency purposes in mid-2010 (as they contained the same attendees and had cross over agendas).

The Medical/Technical meetings were 'retired' at the end of Stage 2 and replaced with the Adult & Children's Hospital Design Group at the beginning of 2011. NA-IBI chaired these meetings, and they were intended to cover an overview of the design process including specialist design issues.

There were separate M&E Technical Design Workshops which NA-IBI were not in attendance, actions and issues were reported back by ZBP at the Adult & Children's Hospital Design Group, and Design Team Meetings.

There was a separate specialist IT Group, again not attended by NA-IBI. There were also Design Team Meetings & Design Co-ordination Meetings and Workshops held throughout the project, which were held as required to cover the detailed co-ordination issues between the Design Team consultants and supply chain, including: MEP Co-ordination Workshops (with MEP design consultants and subcontractors); Structural Co-ordination Workshops; Fire Strategy Co-ordination Workshops; Landscape Co-ordination Workshops; Laboratory Co-ordination Workshops (interfaces with basement tunnel and external works); Tender Package Meetings; Construction Package Meetings; and Subcontractor Package Review Workshops.

45. Were Value Engineering meetings/workshops held during the design phase?

**A.** Value engineering (VE) reviews were embedded into the Design Team Meetings (DTM) and Design Co-ordination Workshops and are part and parcel of Design and Build Contracts. During the Bid Design Stage there were numerous discussions as the proposed design was developed. During Stage 2 as drawing packages were developed for cost checks (T1 issue), the design was subject to review to ensure it was affordable and in line with the Cost Plan. This was managed by Multiplex's Procurement team, with support from Doig and Smith, their appointed QS. This process continued in Stage 3 with the Multiplex team and their subcontractors, where the majority of the tendering of the internal architectural packages took place. The subcontractors would often submit alternative proposals to the IBI tendered design. Any material changes to the NHS approved design in Stage 3 were subject to the RDD process and review and approval before they could be implemented in the design. An example [Stage 3 Adults & Childrens Hospitals Tender Event Schedule Week 176] **(A52701555 – Stage 3 Adults & Children's Hospitals Tender Event Schedule Bundle 43, Volume 5, Page 99)** is provided to demonstrate the Package Procurement process; a record of IBI's Package Co-ordination Schedule [NSGH Design Work Group&Package Co-ordination Schedule_DT no33_20-08-12] **(A52701423 - NSGH - Design Work Groups & Package Co-ordination Schedule - 17 July 2012 to 20 August 2012 – Bundle 43, Volume 4, Page 409)** is provided to demonstrate the design package management and co-ordination for the architectural packages; and an example record for specific VE meetings IBI attended on the architectural packages (**A52701550 – BMCE Value Engineering Proposals with meeting comments - Bundle 43, Volume 5, Page 52).** Any M&E VE reviews would have been discussed in separate meetings, which IBI would generally not be in attendance, unless there was an architectural impact.

**Ward 4B and 4C**

46. The Inquiry understands that Ward 4B in the QEUH was originally intended to provide accommodation for Renal and Haemato-oncology patients. The 2009 NHS Clinical Output Specification for the Haemato-oncology ward stated:

**A.** "Please note the haemato-oncology ward area has a very specific function and a considerably higher than average requirement for additional engineering support/infrastructure. There should be no opening windows, no chilled beams. Space sealed and ventilated. Positive pressure to rest of the hospital and all highly filtered air >90%, probably best HEPA with adequate number of positive pressure sealed HEPA filtered side rooms for neutropenic patients as in the Beatson West of Scotland Cancer Centre." **(Bundle 16, Document No.15, Page 1595)**

However, following a Change Order Request in July 2013 by Jonathan Best **(Bundle 16, Document No. 29, Page 1699)** it was confirmed that the Bone Marrow Transplant (BMT) service would transfer to Ward 4B in the QEUH and the haematology patients that were originally planned to accommodate Ward 4B would move to Ward 4C.

a) Please confirm how this change was communicated to Multiplex and IBI and how this change was captured in the revised design and specification documentation, following the Change Order Request.

**A.** I was not involved directly with the change, however from reviewing our records it appears the first notification of the change came from Multiplex via Aconex BMCE-EWN-000382 **(A52701436 - IBI Nightingale - Amendment to Level 04 ward wing and 2no isolation rooms to upgrade to Haemato-oncology standard, and amend ward entrance to typical ward layout - 22 May 2013 – Bundle 43, Volume 4, page 670)** - Change for costing only - Changes to south west ward wing adjacent to core G 4th floor and two isolation rooms in the renal ward' which was issued to the Design Team by Multiplex on 13th May 2013. This included attached documents 'Board Plan Mark Up' and 'Comments and Board Costing Notes.' The description of Change appears to be similar to the aforementioned Change Order Request. I have located a design fee quote which was created on or around 22nd May

2013 [internal ref:09080/120_09080_120 Amendment to Level 4 ward wing] **(A52701436 - IBI Nightingale - Amendment to Level 04 ward wing and 2no isolation rooms to upgrade to Haemato-oncology standard, and amend ward entrance to typical ward layout - 22 May 2013 – Bundle 43, Volume 4, page 670).** PMI 228 - Change to NSGH Level 4 - hepa filtration **A52701566 - NSGH Project Management Instruction Report - Bundle 43, Volume 5, Page 166** was issued by Multiplex to IBI and the Design Team on 17/07/2013 through a further Aconex Early Warning Notice BMCE-EWN-000480 **(A52701433 - Mail from James Bailey to Gavin Burnett and others - PMI 228 - Change to NSGH Level 4 - Hepa Filtration - 17 July 2013 – Bundle 43, Volume 4, Page 666).**

The architectural design packages were updated and re-issued under the RDD process on or around October 2013. In addition. ZBP and Mercury updated the M&E design packages around the same time. All drawings were issued, reviewed and approved by GGC NHS under the RDD process.

b) Please confirm if IBI highlighted any risks with the proposal to move the adult BMT Unit to Ward 4B, QEUH.

**A.** The decision to move the adult BMT unit to Ward 4B was communicated to IBI as an instruction from GGC NHS. IBI would have proceeded on the basis that GGC NHS had carried out a risk assessment and our role was to implement the change in accordance with the GGC NHS instructions.

c) Please confirm if IBI highlighted any risks with the proposal to move the adult haemato-oncology ward from Ward 4B to Ward 4C?

**A.** As above.

d) Did IBI have any involvement in advising the GGC Project Team that the requirements set out in SHTM 03-01 relating to air change rates, pressure differentials and filtration requirements would not be achievable in Ward 4B at the QEUH?

**A.** I was not involved directly with the change, however from reviewing our records it appears the instruction and briefing notes suggested which rooms now required hepa-filtration; this in turn was captured in the sketch

drawing/mark-up [Haemato-oncology - Board response 250713 **(A52701421 - PMI228 Proposal - 22 July 2013 – Bundle 43, Volume 4, Page 407)**]. I believe IBI attended meetings to discuss and agree this sketch design with the NHS, which was the IBI response to PMI228 dated on or around 22nd July 2013. The Board Plan Mark Up drawings requests 'hepa-filtration to same standard as current Haematology-Oncology Ward'. I can see evidence in the **A52701579 – Proposed Design Programme PMI 228 - Bundle 43, Volume 5, Page 392. (A52701434 - PMI 228 - Proposed Design Programme - undated – Bundle 43, Volume 4, Page 669)** that activity Item 1 'BMCE / Design Team meet with NHS and agree Layout / Ventilation Schematic / Plant Room Schematic' that the ventilation strategy was to be discussed and agreed. I was not present at these meetings; the change was led by my colleague Liane Edwards who was the NA-IBI Construction Lead Architect and was based on site. I was aware of the design change, but not the associated details.

e) Who approved the lower specification from the GGC Project Team and the Board for the adult BMT service?

**A.** I do not know who approved this.

f) Why were suspended ceilings proposed and installed in Ward 4B given that the original Clinical Output Specification (COS) referred to 'space sealed'?

**A.** The ceiling strategy was prepared and agreed as part of the Appendix K/FBC documentation. At the time of approval, on or around 18th October 2010, Ward 4B was specified with the same ceiling as a generic inpatient bedroom, which was mineral fibre tiles in an exposed suspended ceiling grid. The architectural design was based upon the ADB code for Room Type B0305A, which had been selected by the healthcare planner, Tribal, based on the ADB brief advised by GGC as the template for the Ward 4B rooms. The "room design character" information for Room Type B0305A outlined the applicable NHS standards for the ceilings, stating: "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". A Type 5 ceiling is usually an exposed grid ceiling. Within HTM60 only a Type 1 ceiling is noted as

'jointless' as an essential requirement, therefore it does not mandate the incorporation of plasterboard ceilings.

Suspended ceilings are compliant; a suspended ceiling is required to conceal the services installed within the ceiling void. The additional COS requirement for space sealed appears to have been missed. This could have been achieved with a suspended concealed grid ceiling system, or a suspended jointless plasterboard ceiling, both sealed at the perimeter with mastic.

g) Please confirm who approved the reflected ceiling plans for this area from the GGC Project Team?

**A.** Frances Wrath and Peter Moir approved the Fourth Floor Ceiling Finishes Strategy Plan **A52701560 – Fourth Floor Plan - Ceiling Finishes - Strategy Plan - Bundle 43, Volume 5, Page 156** on or around 18th October 2010 for Appendix K/FBC. NA-xx-04-PL-332-103 revision 02 - Fourth Floor Plan; Haemato-Oncology Ward **(A52701441 - NSGH Fourth Floor Plan, Haemato-oncology Ward, Ceiling finishes - Strategy plan - 16 June 2011 – Bundle 43, Volume 4, Page 680);** Ceiling Finishes – 1:200 Strategy Plan was approved by Frances Wrath on or around 11th June 2012 following review and update to reflect the RDD comments. The ceiling plans were updated and re-issued under RDD as part of the PMI228 package. These were commented and stamped on behalf on GGC NHS by David Hall, Currie & Brown on or around 18th November, 2013. There were no comments on the ceiling plans to suggest the ceiling type was incorrect.

h) As construction progressed on site, please confirm if suspended ceilings were highlighted as non-compliant with the COS (works information).

**A.** Suspended ceilings are compliant; a suspended ceiling is required to conceal the services installed within the ceiling void. I acknowledge that the requirement for 'space sealed' requested within the Clinical Output Specification (COS) should have highlighted the requirement for a different ceiling specification to that required in a generic inpatient bedroom. This could have been achieved with a suspended concealed grid ceiling system, or a suspended jointless plasterboard ceiling, both sealed at the perimeter with mastic. RDD comments were made on the ceiling plans as work progressed

on site, but there were no comments on the Ward 4B patient rooms. The ceilings were replaced post-handover and prior to patient occupation.

i) Why was no back up Air Handling Unit (AHU) provided for Ward 4B? Who approved this decision? What strategy was agreed for PPM or equipment failure?

**A.** I do not know the details of the agreed AHU strategy, or the back-up plans.

j) In respect of Ward 4C, what was the specification of this ward at the point of the Change Order? Did you understand that Ward 4C was to be used to house immunocompromised patients? If so, what was the justification from departing from SHTM guidance in respect of ventilation, pressure and filtration requirements and who signed this off?

**A.** My understanding is that Ward 4C was designed as a Renal Ward, following COS NSGACL_Renal_NSG_iss1_rev[1] **(A52697852 - NSGH - Clinical Output Specification for Generic Adult Wards - undated – Bundle 43, Volume 4, Page 46).** 'Generally, environmental and services requirements should correspond to the standards described in the relevant HBN 53 Volumes 1, 2 & 3, HTM's and other technical guidance and the technical output specification for this project.' Following UGM1 on or around 3rd November 2010 we received an email from Heather Griffin to confirm the following' Further to our conversation yesterday I can confirm that haemato-oncology which is currently planned at 14 inpatient beds and 4 day beds will change to 10 beds and no day space. We do however want to keep the 4 inpatient beds released as they will be used by another specialty, the 4 released beds however will not require the specialist hepa-filter ventilation.' The 4 released beds reverted to standard generic inpatient bedrooms at this point. NA-IBI are not engineers and did not design the ventilation, pressure and filtration systems.

k) Why were suspended ceilings proposed and installed in Ward 4C given that the original Clinical Output Specification (COS) referred to 'space sealed'?

**A.** My understanding is that only the Haematology-Oncology COS referred to 'space sealed', the original COS for Ward 4C was NSGACL_Renal_NSG_iss1_rev[1] **(A52697747 - NSGH - Clinical Output Specification for Renal Department - undated – Bundle 43, Volume 4, Page 29).**

l) Please confirm who approved the reflected ceiling plans for the adult haemato-oncology section, in ward 4C from the GGC Project Team?

**A.** Frances Wrath and Peter Moir approved the Fourth Floor Ceiling Finishes Strategy Plan NA-XX-04-PL-332-150 revision 02 on or around 18th October 2010 for Appendix K/FBC **(A52701422 - NSGH - Fourth Floor Plan - Cieling Finishes - Strategy Plan - 15 July 2010 – Bundle 43, Volume 4, Page 408)**. NA-xx-04-PL-332-103 revision 02 - Fourth Floor Plan; Haemato-Oncology Ward; Ceiling Finishes – 1:200 Strategy Plan **( A52701441 - NSGH Fourth Floor Plan, Haemato-oncology Ward, Ceiling finishes - Strategy plan - 16 June 2011 – Bundle 43, Volume 4, Page 680)** was approved by Frances Wrath on or around 11th June 2012 following review and update to reflect the RDD comments. The ceiling plans were updated and re-issued under RDD as part of the PMI228 package. These were commented and stamped on behalf on GGC NHS by David Hall, Currie & Brown on or around 18th November, 2013. There were no comments on the ceiling plans to suggest the ceiling type was incorrect.

m) As construction progressed on site, please confirm if suspended ceilings were highlighted as non-compliant with the COS (works information) for the adult haemato-oncology section, in ward 4C.

**A.** Suspended ceilings are compliant; a suspended ceiling is required to conceal the services installed within the ceiling void. I acknowledge that the requirement for 'space sealed' requested within the Clinical Output Specification (COS) for Haematology-Oncology should have highlighted the requirement for a higher ceiling specification than required in a generic inpatient bedroom. This could have been achieved with a suspended concealed grid ceiling system, or a suspended jointless plasterboard ceiling

both sealed at the perimeter with mastic. The ceiling plans were updated and re-issued under RDD as part of the PMI228 package. These were commented and stamped on behalf on GGC NHS by David Hall, Currie & Brown. On or around 18th November, 2013. There were no comments on the ceiling plans to suggest the ceiling type was incorrect.

n) The COS for the adult haemato-oncology ward stated “no chilled beams” why were chilled beams installed?

**A.** I am not an engineer, and IBI were not the designers of the ventilation system. This was designed by ZBP the M&E consultant, and Mercury Engineering, the M&E subcontractor.

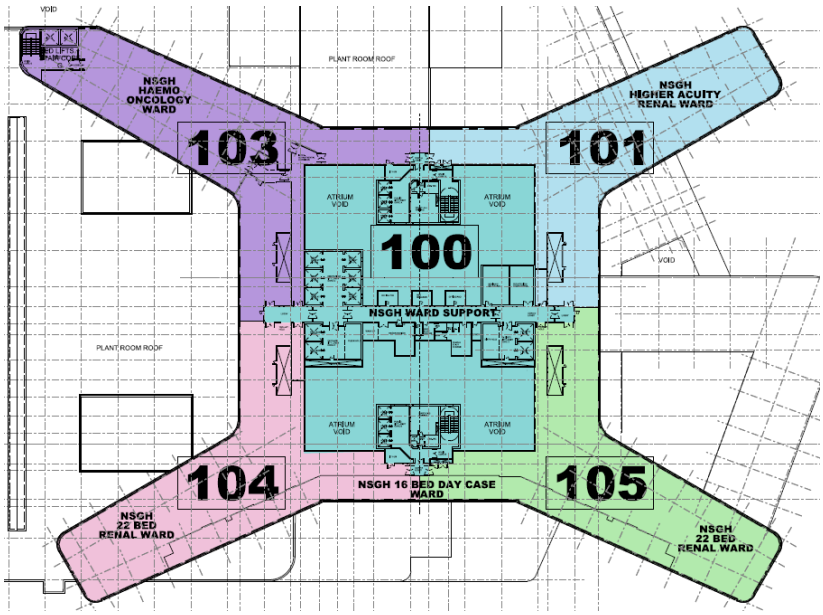
I have reviewed the 1:50 reflected ceiling plans and these indicate ceiling mounted supply grilles to the bedrooms; and ceiling mounted radiant heating panels and ceiling mounted extract grilles to the ensuites. I cannot locate any symbols indicating chilled beams. Earlier revisions had chilled beams to the bedrooms which were instructed to be omitted from the haemato-oncology ward during the user group process. The drawings were updated to PMI228 and the chilled beams which were in the area which had been redesignated generic bedrooms were changed to ceiling mounted grilles, with hepa filters as per the instruction.

ZBP-ZE-04-PL-524-045 revision H (ZBP-ZE-04-PL-524-045 revision H) **(A52701435 - NSGH Haemato-oncology Ward - 1:100 Mechanical Services Ventilation Layout Fourth Floor - January 2011 – Bundle 43, Volume 4, Page 671)** is the final revision and this indicates the update to add hepa filters, and the chilled beams to the bedrooms were changed to a ceiling mounted grille, suggesting mechanical air cooling. The chilled beams were omitted in revisions D/E.

NA-ZE-04-PL-332-513 revision A **(A52701441 - NSGH Fourth Floor Plan, Haemato-oncology Ward, Ceiling finishes - Strategy plan - 16 June 2011 - Bundle 43, Volume 4, Page 680)** indicates the chilled beams; which was subsequently updated to PMI 228 and the chilled beam symbol was changed to a ceiling mounted grille.

I am unsure where the boundaries are between the respective wards on Level 4 since completion and handover. The areas I understood were defined as Renal Wards (as indicated on the plan below) were based upon the ADB code for Room Type B0305A, which had been selected by the healthcare planner, Tribal, based on the ADB brief advised by GGC as the template for the Renal rooms. This is why the M&E design progressed with chilled beams to the Renal Wards, with the exception of the 2 isolation bedrooms within the Higher Acuity Ward

My understanding was the area designed as the haemato-oncology ward had no chilled beams. The area designed for Haematology-Oncology patients was within the numbered 1:200 zone 103 which can be seen on **A52701565 - Fourth Floor Department Layouts - Keyplan (1:200 Set) Bundle 43, Volume 5, Page 167.** Zones 101, 104 and 105 were not designed for haemato-oncology patients, they were designed as Renal Wards and were not included in the scope for PMI 228.




Extract from **A52701565 – Fourth Floor Department Layouts - Keyplan (1:200 Set) - Bundle 43, Volume 5, Page 167.**

o) What was your understanding of the requisite air change rate required in accordance with SHTM guidance in respect of Ward 4B and 4C, and was this

the air change rate achieved? If not, why not and who signed this off? What risk assessments were considered in respect of this decision?

**A.** I am not an engineer, and IBI were not the designers of the ventilation system. This was designed by ZBP the MEP consultant, and Mercury Engineering, the MEP subcontractor. As far as I was aware, the ventilation/air-change requirements stipulated under the RDSs and Employer's Requirements were being followed by the M&E design team. I do not know what air change rates were achieved, or if there were any risk assessments.

**Ward 2A RHC**

47. The Inquiry understands that Ward 2A is the paediatric-oncology Unit and includes the Teenage Cancer Trust and the paediatric Bone Marrow Transplant (BMT) Unit - the department is known as the Schiehallion Unit.

a) Confirm your understanding regarding the intended use and purpose of the Ward 2A, what guidance was considered in the design of these wards, what processes did IBI put in place to ensure guidance compliance?

**A.** Whilst I was not directly involved in the design of the Schiehallion Unit, I understood this unit to be a paediatric-oncology unit, with a description of the services contained within the Clinical Output Specification **(A52701490 – New Children's Hospital - Clinical Output Specification - Haematoma & Oncology Bundle 43, Volume 6, Page 62)**. It included a specialist Radiation Suite, which I had an interface with as I had an overseeing role on the development of the radiation protection strategy during Stage 2 and attended technical review meetings with the GGC medical physicists.

Our Department Design Lead, Jonathan Hendrick, developed the design of this unit. Refer to **Chapter 4.13 – 1:200 Department Plans** page 36 Department #37 UGM – Children's Schiehallion, Day Case & TCT [Ward 2A & 2B – RHC] for a detailed description of the 1:200 user meetings, and summary of the design development.

Reference would have been made to **HBN 23 – Hospital accommodation for children and young people**, which also refers to **HBN 4 Supplement 1**

**for Isolation Facilities**. Richard Mazuch, NA-IBI's Director of Research at the time, was a co-author of HBN 23 and listed as an architectural advisor; he was involved in the bid design for the Children's Hospital and attended some early meetings with Jonathan. In addition, **SHPN 54 2007 Cancer Care Centres**, would have been considered.

The design had been through a robust design review process and developed in consultation with a clinical user team who represented the Schiehallion Unit. The design had been presented, reviewed, checked and approved through 6xrounds of user group meetings. Thereafter, the detailed technical design followed a series of submissions through the RDD process to validate that it met the agreed project requirements.

b) What changes, if any, were made to the design during construction? Please describe any such changes, describe the impact, if any, on guidance compliance, and describe the sign off process for any such changes and your involvement. Was external advice ever sought in respect of design changes?

**A.** I am not aware of any changes to the design during the construction of Ward 2A.

c) Describe the IPC involvement in the design of Wards 2A and 2B, who was involved and who signed off the final design and when?

**A.** The NHS had an IPC representative, Jackie Stewart, as part of their Core Project Team. She was in attendance at all the UGMs and would liaise internally with the wider GGC team. Refer to response to **Question 8** for further details, and **Chapter 4.13 – 1:200 Department Plans** page 36 Department #37 UGM – Children's Schiehallion, Day Case & TCT [Ward 2A & 2B – RHC] for a detailed description of the 1:200 user meetings.

d) What concerns, if any, did you have regarding the final design specification of Wards 2A, and what action, if any, did you take in respect of these concerns?

**A.** I was satisfied at the time that all the departments, including Ward 2A, had been through a robust design review process, including extensive user engagement, and that as a result that the design was suitable for the patient cohort. The design had been presented, reviewed, checked and approved

through 6xrounds of user group meetings. Thereafter, the detailed technical design followed a series of submissions through the RDD process to validate that it met the agreed project requirements.

48. Why were suspended ceilings installed in Ward 2A?

**A.** Ceiling Type A, which is a suspended plasterboard ceiling supported on a concealed ceiling grid system (SHTM Category 1) was specified and installed in all the isolation room suites (bedroom, lobby and ensuite) within Ward 2A. Ceiling Type E, which was mineral-fibre tiles supported on an exposed grid system was specified in the remaining patient rooms within Ward 2A; Ceiling Type B, which was a moisture resistant mineral-fibre tile, was specified in the ensuites within Ward 2A. This aligned with the briefing of the room type as a standard patient room and was compliant with **SHTM 60 Ceilings**. There were no comments on the ceiling plans to suggest the ceiling type was incorrect. Suspended ceilings are compliant; a suspended ceiling is required to conceal the services installed within the ceiling void, which is a requirement to comply with healthcare IPC requirements.

In addition, I have also located an email correspondence between myself and Mairi Macleod whilst we were preparing the 1:50 Room Type Programme, 2010-04-29 - Macleod, Mairi - NSGH - 1-50 Room Type Programme which suggested 'most rooms in Haemato-onc will have the same layout as the general wards with the addition of the Hepa filter' **A52701398 - Email chain from Mairi Macleod to Emma White - NSGH - 1:50 Room Type Programme - Bundle 43, Volume 5, Page 160.**

RE: NSGH - 1:50 Room Type Programme

MM Macleod, Mairi [redacted]
To Emma White
Cc Wrath, Frances; Griffin, Heather; Moir, Peter; Mark Baird; david.bower[redacted]

Reply | Reply All | Forward | ...
Thu 29/04/2010 12:11

Hi Emma

Thanks for this. In response to your questions:

- we will include the general wards but not Haemato-oncology (most rooms in Haemat onc will have the same layout as the general wards with the addition of the Hepa filter)
- For children's will look at cardiology, acute receiving and general wards (Haemato-onc same as adults) and yes keep observation ward with ED
- We are comfortable with picking up main entrance areas in 2nd /3rd round meetings
- Again we are comfortable with picking these areas up in 2nd /3rd round meetings – if there is time during the first round of meetings we might look at some of the bigger areas eg gym
- Dermatology OPD will be picked up with main OPD
- Missing dept from children's we are comfortable with picking up in 2nd /3rd round meetings
- Again we are comfortable with picking these up in 2nd /3rd round meetings

Given that you think this plan is a "goer" we will look at re-doing the second round of meetings picking up the missing depts first

Kind regards

Mairi

49. Why were Chilled Beam Units installed in Ward 2A?

**A.** My understanding was that the mechanical performance requirements for the rooms in Ward 2A were initially led by the ADB briefing codes attributed to the department through the RDS process.

The client briefing SoA suggested the code B1802 - Single bedroom: Children/young people, with relatives overnight stay should be applied to all the bedrooms in the Schiehallion unit, including the Isolation Bedrooms; with code - G0507 - Lobby: gowning (isolation room) Entrance lobby for barrier nursing to be used for the Gowning Lobbies.

During the Template RDS stage, Tribal reviewed the SoA and ADB codes with the GGC team and attributed the code B1802C for the children's bedrooms and changed the bedrooms to the children's isolation suites to B1805C.

The ZBP M&E design progressed with the Template RDS revised brief, understanding that the bedrooms within the isolation suites should not have chilled beams. However, the M&E design for the non-isolation bedrooms progressed with an agreed RDS brief that the remainder are generic Children's Single Bedrooms. The generic bedrooms included within the M&E ventilation design the provision of chilled beams for cooling.

The M&E design was reviewed in M&E workshops, and the inclusion of the chilled beams was approved through the RDD process, therefore installed as a result.

50. Please confirm who approved the reflected ceiling plans for Ward 2A from the GGC Project team?

**A.** The 1:200 ceiling strategy plans confirming the proposed ceiling types were presented in Appendix K Technical review workshops to the GGC Project Team including their Technical Advisors Currie & Brown. The Appendix K Package was returned as approved on **A52701591 – BMCE - Transmit - 004047: Nightingale Drawings for Appendix K Returned with NHS/Brookfield Comments and Review Status - Bundle 43, Volume 5, Page 523**, with Ward 2A located on drawing NA-XX-02-PL-332-150 **(A52701440 - NSGH Second Floor Plan, Ceiling Finishes, Strategy Plan - 15 July 2010 – Bundle 43, Volume 4, Page 679)**. This was approved as

Status B with some comments; there were no comments on the Ward 2A proposed ceiling finishes/types. This was approved by Frances Wrath and Peter Moir from the GGC Project Team on or around 18th October 2010. Thereafter, during Stage 3 the detailed design for the 1:50 reflected ceiling plans was developed. The drawings were submitted under RDD and returned on Aconex-BMCE-TRANSMIT-016760 **(A52701438 - Mail from Glasgow DocControl - Brookfield Multiplex Construction Europe to Harinder Kaur and others - Final (WF-003737) RDD - First Submission - 332 series 1:50s RCPs PG10 Issued for Review - Reviewed- 11 July 2013 – Bundle 43, Volume 4, Page 672)** as approved as Status B on or around 8th July 2013 by David Hall, from Currie & Brown, who reviewed the M&E technical detailed design on behalf of GGC. The 1:200 ceiling strategy plans were also updated and re-issued under RDD to co-ordinate with the construction design. The Ward 2A drawings **A52701588 – Second Floor Plan, NCH Schiehallion Ward, Day case Unit, Anaesthetic Offices and Hospital at Night Ceiling Finishes - Strategy Plan - Bundle 43, Volume 5, Page 511** were returned on Aconex-BMCE-TRANSMIT-009650 **(A52701438 - Mail from Glasgow DocControl - Brookfield Multiplex Construction Europe to Harinder Kaur and others - Final (WF-003737) RDD - First Submission - 332 series 1:50s RCPs PG10 Issued for Review - Reviewed- 11 July 2013 – Bundle 43, Volume 4, Page 672)** as approved as Status B on or around 18th June 2012 by Frances Wrath from the GGC Project team. The comment was to change the ceiling type to the Chemo room to Type C, a concealed grid system, and review the ceiling detail to the play room.

51. As construction progressed on site, please confirm if any members of the GGC Project Team or Capita highlighted suspended ceilings as not suitable for use in a ward to accommodate immunocompromised patients?

**A.** I was not aware if any concerns were raised on the suitability of the ceilings specified by members of the GGC Project Team or Capita.

52. What was your understanding of the requisite air change rate required in accordance with SHTM guidance in respect of Ward 2A and 2B, and was this the air change rate achieved? If not, why not and who signed this off? What risk assessments were considered in respect of this decision?

**A.** I am not an engineer, and IBI were not the designers of the ventilation system. This was designed by ZBP the MEP consultant, and Mercury Engineering, the MEP subcontractor. As far as I was aware, the ventilation/air-change requirements stipulated under the RDSs and Employer's Requirements were being followed by the M&E design team. I do not know what air change rates were achieved, or if there were any risk assessments.

**Isolation Rooms**

53. Describe how the number and location of the isolation rooms was agreed? Who approved the final number and locations in the QEUH and RHC?

**A.** The isolation room designs were reviewed within the Department User Group they were located within. The 1:200 layouts including the location and size/shape of the isolation rooms were approved by the relevant department user group. For the Adult Hospital there was an additional Isolation Rooms Briefing Document shared with the Bidders. (NSGACL Adult Isolation Rooms_iss1_rev (090604 tender addendum_TAD-00018) **(A52701479 - NSGACL Update on the Isolation Rooms for the New South Glasgow (Adult) Hospital - undated – Bundle 43, Volume 4, Page 1167).** The Isolation Room locations would have initially followed the SoA briefing document, with amendments reviewed and agreed within the respective Department User Group meeting. The sign-off of the number, location and shape of the Isolation Rooms therefore took place within the Department User Groups meetings. Further detail on the design development of the isolation rooms in contained in my earlier narrative section **A.4** 1:200 Department Layout Plans - Isolation Rooms.

54. Who was responsible for producing the drawings and specification for isolation rooms; who approved these from the NHS GGC Project Team?

**A.** The Multiplex design team including subcontractors held a joint responsibility in line with their respective design disciplines. Tribal were responsible for the initial Template RDS, NA-IBI were responsible for developing the 1:200 designs and agreeing the department layouts with the users, and developing the 1:50 equipment layouts, including agreeing the 1:50 equipment layouts with the users. NA-IBI were also responsible for designing and specifying the

architectural part of the isolation rooms; the partitions, internal finishes including ceilings, and architectural fixtures and fittings. We were also responsible for coordinating the M&E design. ZBP and Mercury were responsible for the design and specification of all M&E engineering requirements of the isolation rooms, including the ventilation design.

55. What concerns, if any, did you have regarding isolation rooms and compliance with SHTM/SHPN? What action, if any, did you take in respect of any such concerns?

**A.** I was not aware of any non-compliances regarding the isolation rooms.

56. The Inquiry has reviewed RDS in excel format and note there is an entry under 'Design Notes' relating to Ward 2A isolation rooms, the entry states:

"WARNING NOTICE: This room is based on a theoretical design model; which has not been validated (see paragraph 1.8 of **A52701567 – HBN 04-01 Supplement 1 - Isolation facilities for infectious patients in acute settings 2013 - Bundle 43, Volume 5, Page 168.** Specialist advice should be sought on its design. The lamp repeat call from the bedroom is situated over the door outside the room."

a) Was this note entered on the RDS? If so, why and by whom?

**A.** This note was not added, it came directly from the standard ADB RDS. Paragraph 1.8 of HBN 4 Supplement 1 confirms as follows……. 1.8 The guidance on isolation suites in this supplement is based on a theoretical design model. The model will be validated in the near future, and the results published in a separate document. The aim of this supplement is to provide practical guidance on how to provide isolation facilities that are simple to use and meet the needs of the majority of patients on acute general wards.' The later version **HBN 04-01 S1 - Isolation rooms supplement** was published in 02/04/2013 after the design was approved. Paragraph 1.5 states as follows; 'The guidance on PPVL and negative pressure isolation suites in this document is based on a model that was validated by the Building Services Research and Information Association (BSRIA) and the University of Leeds.

The complete validation process and results obtained will be available from BSRIA (see link in References section).' I believe this is the validated model.

b) What specialist advice was sought relating to the design of these rooms?

**A.** There was no specialist consultant. ZBP were experienced healthcare specialist M&E designers and provided the ventilation design for these rooms.

c) What was the final agreed design for isolation rooms and who approved this?

**A.** The isolation room designs were reviewed initially within the Department User Group they were located within. The 1:200 layouts including the location and size/shape of the isolation rooms were approved by the relevant department user group. At the 1:50 stage, the equipment layouts were agreed, and the associated RDS were approved. The M&E design of the isolation rooms including the ventilation would have reviewed in the M&E Design Workshops, which NA-IBI did not attend.

57. Why was the main extract placed in the patient's bedroom and not the ensuite as outlined in SHPN 04 Supplement 01? Why was this change requested, who requested this change and who approved this from the NHS GGC Project Team?

**A.** I was not aware of this design deviation, and do not know who approved this change. IBI would have been provided the ceiling mounted equipment model file from the M&E team (ZBP and Mercury), and we would have indicated the co-ordinated location on the 1:50 Reflected Ceiling Plan (RCP). The M&E detailed design, and co-ordinated RCP were issued to the NHS project team for review and comment/approval under the agreed RDD contractual process.

58. Was IBI aware of the exclusion in HBN 4 Supplement 1. that states:

**A.** **"EXCLUSIONS**

This supplement does not describe the specialist facilities required in infectious disease units or on wards where severely immuno-compromised patients are nursed. Guidance for these facilities will follow in a further supplement to HBN 4.

IBI were aware of the full set of HBN guidance documents current at the time of the design. I have found no record of the further supplement referenced in our Guidance and Reference Documents Folder within our project records. Whilst this is referenced in the HBN 4 Supplement, the 'further' supplement is not listed in the Employer's Requirements, Clinical Output Specification, or in the list of current documents at the time of design. I am aware of the 2024 published guidance document Health Building Note 04-01 Supplement 1: Special ventilated isolation facilities for patients in acute settings **(Please refer to Bundle 02, Document 11, Page 859**). This now provides design guidance for immunocompromised patients, listed as one of the Main changes since the previous edition (refer to page iv).

59. Why were PPVL rooms proposed and built for Ward 2A BMT patients?

**A.** The Schedule of Accommodation (SoA) brief (**A52701488 – NCH SoA Version 4 Design for Stage 2 Bundle 43, Volume 4, Page 1186**) was to provide 8 of the single bedrooms with air lock lobbies. The Stage 2 SoA confirmed the ADB room briefing codes on the Schiehallion 'tab' of the excel NCH SoA ER With ADB Codes.

| | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 1 | **SCHIEHALLION WARD (22 BEDS)** | | | | | |
| 2 | **Description** | **Qty** | **Unit Area m²** | **Total Area m²** | **ADB CODE** | **Comments** |
| 3 | **Bed Area** | | | | | |
| 4 | Single bedroom: Children/young people, with relatives overnight stay | 21 | 16.5 | 346.5 | B1802 | |
| 5 | Lobby: air lock to bedroom | 8 | 7.0 | 56.0 | G0507 | |
| 6 | Shower, WC & wash: accessible, wheelchair assisted | 21 | 4.5 | 94.5 | V1610 | As per HBN 00-02 |
| | Office Area with workstations (x4) | 1 | 18.0 | 18.0 | M0115 | |

From my research on the history of the user group comments, the PPVL isolation rooms were moved to the BMT area of the ward following comments in UGM1. The bid design had the 8 PPVL isolation rooms spread across the whole ward.

Please refer to Chapter A.4 Stage 2 Design describing the 1:200 Department Layout Plans which summarises the design development within the Schiehallion User Meeting and the associated Isolation Rooms.

Thereafter, the briefing of the Isolation Rooms progressed through the RDS process, including the development of the 1:50 Room Types and the environmental data schedule reviews.

**Water and taps**

60. Describe IBI involvement, if any, in respect of the decision to use Horne taps.

**A.** This change originated with the NHS-PMI 173 - A&C Hospitals - Sensor Taps_26-06-2012 **(A52701432 - NSGH - Project Management Instruction Report 173 - A&C Hospitals - Sensor Taps - 22 June 2012 – Bundle 43, Volume 4, Page 665).** '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.' NA-IBI raised an EWN NA-EWN-000165 on 12 July 2012 and noted a series of non-compliances for this proposal – various SHTM/HBN guidance requires sensor taps in a number of clinical locations. I was familiar with this tap from its use on Peterborough City Hospital.

a) What concerns, if any, did you have regarding the use of Horne taps?

**A.** Horne taps had been used at our preceding major hospital project at Peterborough. I was not aware of any issues with the taps at Peterborough. However, our colleagues in Wales had encountered some issues with the tap and we notified BM on or around 24 September 2012 about our concerns in an RFI (NA-RFI-000365) to BM who in turn raised this with the NHS-GGC. '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.'

b) What risk assessments were carried out in respect of the use of Horne taps?

**A.** I am unaware if any risk assessments were carried out.

c) Who was involved in, and who signed off the use of Horne taps?

**A.** The non-sensor tap alternatives were reviewed in detail between BM, NHS GGC and Currie & Brown. NA-IBI were advised of the decision to proceed with the Horne tap on or around 3 August 2012 via **A52701568 – Aconex Contractor's Advice - Fwd: Clinical WHB's and Taps - Bundle 43, Volume 5, Page 168.** Thereafter, NA-IBI updated the N13 specification to reflect the requested change to Horne taps. BM provided the datasheets, and the combined documentation was submitted to the NHS under the RDD process for review and approval. Frances Wrath approved the datasheets on behalf of the NHS. However, the sign-off of the use of Horne taps had already taken place at the stage.

d) Did you attend the meeting regarding the use of Horne taps in 2014? If so, why was the decision made to proceed with Horne taps?

**A.** No, I am unaware of the meeting. My understanding from reviewing the history was the change from sensor taps was requested by the NHS GGC. As noted above, IBI notified BM on or around 24 September 2012 on potential issues with the Horne tap. BM reconfirmed the decision to proceed with Horne taps on or around 3 August 2012 via **A52701568 – Aconex Contractor's Advice - Fwd: Clinical WHB's and Taps - Bundle 43, Volume 5, Page 168.**

e) Did the use of Horne Taps depend on thermal disinfection? If so why, if not, why not? What action, if any, was taken regarding this, and your involvement, if any.

**A.** I have located and make reference to the latest Horne Tap installation and maintenance manual **A52701572 – Horne OPTITHERM Thermostatic Bib Tap Type TBT-03 Instructions - Bundle 43, Volume 5, Page 198.** '5.2.1 Horne recommends periodic thermal disinfection in conjunction with high velocity flushing, using the Water Quality Compliance Kit (part no.6006), or the Inline Thermal Disinfection Unit (ILTDU). See paragraphs 2.3 and 2.4 for instructions on flushing. The periodicity of this maintenance should be determined in conjunction with the current best practice.' I was not involved, and do not know what procedures were in place at the time of the Horne Tap installation, but would expect any maintenance requirements, including thermal disinfection to be part of the 'As Built' documentation provided by the subcontractors for inclusion in the O&M manuals.

**Commissioning and Validation**

61. In respect of commissioning and validation, please confirm the following:

a) Describe your role in the lead up to commissioning. What action, if any, did you take to ensure that the wards within RHC and the QEUH met the guidance requirements of SHTM.

**A.** I was not involved on the project on day-to-day basis during the commissioning. IBI had no involvement with the commissioning process between BM and the NHS. We had responsibilities to visit site and update our drawings to represent final design/construction 'as built' documentation for inclusion in the O&M manuals. We were issued Site Inspection Packs from BM, including their Quality Management Sign Off Sheets. With respect to the wards within RHC and the QEUH, our actions were the same as it was for all the departments. We attended site inspection visits to review and check the build and installation on site was aligned with the approved design. This was limited to the architectural packages and scope.

b) Describe what commissioning of the water and ventilation system took place prior to handover, and your involvement, if any.

**A.** IBI had no involvement in the commissioning of the water and ventilation system. Multiplex provided the Design Team with updates of the agreed Commissioning Programme. Refer to Aconex dated 12 December 2014, **A52701576 – Aconex Commissioning Programme Update - Week 257 - Bundle 43, Volume 5, Page 351.**

c) Who was responsible for ensuring that commissioning of the water and ventilation system was carried out, and who signed off that it had been carried out?

**A.** The Main Contractor Brookfield/Multiplex were responsible for the agreed commissioning associated the building handover. NHS GGC were responsible for fulfilling their own commissioning requirements. There was a project 'Joint Commissioning Group' which was formed of NHS GGC and Multiplex. IBI were not party to the details of the final arrangements, however we were aware of additional specialist validations such as Pharmacy, CSSD/Decontamination and MRI.

62. The Inquiry understands that NHS GGC decided to forgo the requirement to have an independent commissioning engineer. Who made this decision? What was the rationale was behind this decision? What was the impact, if any, of this decision? In hindsight, do you think that it was the correct decision?

**A.** IBI had no involvement in this decision. I have managed to locate limited copies of the Project Steering Group meeting minutes notes. IBI, through Neil Murphy (Project Director) attended a limited number of these meetings. **DRAFT 27072010 - Action Note – PSG**. Item 2 Project Supervisor **A52701574 – Project Steering Group - Action Note - Bundle 43, Volume 5, Page 245** 'AS advised that Capita Symonds, the Board's Project Supervisor, have provided their first report noting that the site is working well. In future a summary from this report will be added to the Monthly Progress Report and for discussion at this meeting. PS confirmed that an introductory meeting between BCL and Capita Symonds has taken place and enquired as to whether Capita would be fulfilling an 'Independent Certifier' role. RB

noted that the Capita role would be extended beyond the traditional Independent Certifier role. PM agreed to send PS the Capita appointment documents which will outline their brief.' AS being Alan Seabourne; PM being Peter Moir; PS Paul Serkis and RB Ross Ballingall. Considering the issues with water and ventilation post-handover, an independent commissioning engineer could have identified some of issues during the commissioning period and certainly provided an independent opinion on the construction quality and commissioning process.

63. Was the energy centre commissioned prior to NHS GGC taking occupation of QEUH? If so, describe what you know about the commissioning of the energy centre. Provide details of the intricacies in relation to its completion.

**A**. Yes, the Energy Centre was required to be completed to allow the Labs Building to be handed over as per the client requirements. It was designed to be in 2 phases. Side A of the Energy Centre was to be handed over in 2013.

**Handover**

64. Describe your role in the lead up to NHS GGC accepting handover.

**A.** I was not involved on the project on day-to-day basis during the time in the lead up to the NHS GGC accepting handover. IBI had no direct involvement with the commissioning and handover process between BM and the NHS. We had responsibilities to visit site and update our drawings to represent final design/construction 'as built' documentation for inclusion in the O&M manuals. I have located through our records that IBI commenced discussions with Multiplex on or around May 2013 on the 'As Built' process, and a proposed drawing list for agreement was shared with BM **A52701559 – NSGH As Built Drawing Schedule - Bundle 43, Volume 5, Page 140.** Further discussions took place to agree a process involving Multiplex, their Subcontractors, Quality Managers, Capita, NHS, Mercury and IBI.

Please refer to Chapter 6.10 Handover and Site Inspections for further information.

a) At the point of handover, how satisfied were you that all areas of QEUH/RHC accepted by NHS GGC, were designed to the intended specification and suitable for the intended patient cohort, meeting all the relevant guidance requirements?

**A.** Whilst I was not heavily involved in the project at the point of handover, I was satisfied that at this point the design had been through a robust design review process, including extensive user engagement, and that as a result that the design was suitable for the patient cohort. The design had been presented, reviewed, checked and approved through 6xrounds of user group meetings. Thereafter, the detailed technical design followed a series of submissions through the RDD process to validate that it met the agreed project requirements.

b) How were you assured that the wards met the requirements of the specific patient cohorts?

**A.** I was assured through the robust design review process, including extensive user engagement. The technical design was also presented to the client and submitted for review and approval following the agreed RDD contractual arrangements.

c) Were any wards not handed over, or only partially handed over, please confirm. If so, why they were they held back?

**A.** During the NHS commissioning period in July 2015 (prior to patient occupation), GGHB raised the issue that patient rooms in Ward 4B were not achieving the required 5-10 pascals differential pressure. This issue affected the 24 bedrooms within the haemato-oncology ward on Level 4. This ward has held back until remediation work was agreed between BM and GGC NHS, completed, recommissioned and handed over

65. The Inquiry understands that no validation was carried out in respect of the ventilation system of QEUH/RHC prior to handover. When did IBI become aware of this? How did handover come to be accepted without the ventilation system being validated? Who was responsible for this and who signed off on this?

**A.** IBI had no direct involvement with the agreed commissioning and validation process for the ventilation system. We had responsibilities to visit site and update our drawings to represent final design/construction 'as built' documentation for inclusion in the O&M manuals. I have only been made aware of this issue through the claim and public inquiry and thus am unaware who was responsible for this decision.

**STATEMENT OF TRUTH**

I declare that to the best of my knowledge and belief, the matters stated in this witness statement are true.

Signed:

Date:

The witness was provided the following Scottish Hospital Inquiry documents for reference when they completed their questionnaire statement.

**Appendix A**

**A47851278** - Scottish Hospitals Inquiry - Hearing Commencing 19 August 2024 - Bundle 16 - Ventilation PPP (External Version)

**A35780880** - 10.0 PEP

**A34099838** - 06. 120310 RDS Development Process Rev F

**Appendix B**

**Appendix C**

**CV of Emma White**

ARCADIS

# Emma White

## Architect - Principal

BA (HONS) ARCH, BARCH, RIBA PART III, ARB

## Key Information

### Arcadis Position

Architect - Principal

### Education/Qualifications

- RIBA Part 3, South Bank University, London, UK, 2000
- BArch, University of Liverpool, Liverpool, UK, 1998
- BA (Hons) Arch, University of Liverpool, Liverpool, UK, 1995

### Memberships

- Royal Institute of British Architects (RIBA)
- Architects Registration Board, UK, (ARB), Registered Architect

### Experience

30 years

A qualified architect, Emma is a specialist in healthcare design having attained her in-depth knowledge by working on some of the largest health schemes in the UK and Canada and has been responsible for the successful delivery of projects totalling over £1billion. Her experience at the successful set-up and delivery of these large scale projects has led to her responsiblities broadening within Arcadis to include a UK practice wide role overseeing QA and Process Improvement (associated with Project Delivery and Resource Management).

She has an in-depth knowledge and experience at managing large teams in the design and construction of healthcare facilities, and a considerable expertise in the development and implementation of design processes, schedules and protocols to assist in the management, programming and co-ordination of projects.

Emma is a confident leader, successfully managing complex supply chain and stakeholder groups. She proved this when, as Project Director she led the design team to deliver the Peterborough City Hospital project three months early, achieving an excellent relationship with the client and contractor.

Her ability to project manage the design and delivery of multifaceted, large scale schemes, has seen Emma's involvement in the high profile [redacted] Queen Elizabeth University Hospital and Royal Hospital for Children Glasgow project. Her incremental learning curve through healthcare architecture has provided her with a breadth and depth of experience that is applied to all projects she is involved with. Focused on programme, budget and design excellence, she will always strive to deliver cutting-edge healthcare facilities.

## Relevant Experience

### HEALTHCARE

**Oriel, London, 2020-2027.** *Project Director/Lead*
Bouygues UK / Moorfields Eye Hospital NHS Foundation Trust - [redacted]

Contractor's delivery architect for a brand new integrated eye, education and research centre for a joint initiative between Moorfields Eye Hospital NHS Foundation Trust, the UCL Institute of Ophthalmology and Moorfields Eye Charity (NHP/NEC4)

**North Middlesex University Hospital; Mixed-Use Masterplan, 2019-2023.**
*Project Manager*
North Middlesex University Hospital NHS Trust - [redacted]

A joint masterplan for NMUH & the Greater London Authority setting out a vision to transform the hospital to an integrated wellness community with 250+ housing units, pedestrian links and public realm design. The design integrates the Urban Land Institute's Healthy Places Principles.

## Key Skills

- Project management of highly complex design deliverables
- Consultant/Contractor liaison
- Client/ end user interface
- Risk Management
- Performance Management
- Programming
- Production information coordination
- Outsource Management

## Training

- 'ProCure22' e-training, 2019
- CSCS Construction Skills, Professionally Qualified Person, 2017
- IOSH Working Safely, 2012
- Construction (Design & Management) Regulations, Systems for Safety, 2011
- WRAP Training, 2010
- Performance Management, 2010
- MicroStation Master Class, 2008

*St Paul's Hospital, Vancouver, BC, Canada*

**University College London Hospital; Dental Education Centre Relocation, 2018-2019.** Project Manager

University College London Hospitals NHS Foundation Trust - [redacted]

Due to building redevelopment, UCLH's Dental Education Centre was to relocate into an existing office building. This refurbishment project challenged the designers to fit necessary accommodation, such as dental clinical teaching rooms and dental skills training rooms, into reduced 343m2 footprint. (UCLH Framework).

**Guy's and St Thomas' Hospital; Orthopaedic Centre of Excellence Concept, 2018-2022.** Project Manager Guys and St. Thomas NHS Foundation Trust - [redacted]

Working alongside both the Trust and a private provider to develop and build 8 new

state-of-the-art orthopaedic theatres and associated support facilities, including a ground floor outpatients department. Designed to Stage 3.

**Royal Bournemouth Hospital; Women, Children & Emergency Centre, 2018-2024.** Project Manager

IHP / University Hospitals Dorset NHS Foundation Trust - [redacted]

Subsequent to producing the Trust's masterplan, Arcadis was appointed to design a 27,200m2 new build women, children and emergency centre, including urgent and ambulatory care, planned to improve the patient experience (P22/ NEC).

**St Paul's Hospital Major Acute & Research Development, Vancouver, Canada, 2014-Ongoing.** Project Manager

Providence Health Care - [redacted]

As the flagship facility of Providence Health Care, the new St. Paul's Hospital will enable a transformational shift from a traditional acute care-centred model to a primary and community care model, across the health continuum. Arcadis has produced an indicative design for the new 130,000m$^2$ Acute hospital, which will support the Business Plan submission to the Ministry.

**BMC Khartoum (Al Bushara Hospital),**

**Sudan, 2016.** Project Manager

Tekno Consultancy Co Ltd - [redacted]

Originally designed as a Military Hospital, with a completely built existing concrete frame, Arcadis has re-zoned the building to include a Teaching Hospital, a Medical/Nursing School; a 100-bed Hotel and Retail Facilities.

**Chase Farm Hospital, London; Major Redevelopment, 2015-2018.** Director

Royal Free London NHS Foundation Trust - [redacted]

Masterplan through to delivery in less than four years of a major hospital redevelopment on existing site part funded by land sale. Includes innovative four table 'Barn' operating theatre and is designed to be one of the most digitally advanced hospitals in the UK (P21+/NEC). Director

in charge of internal 1:50 detailed design.

**Birmingham Women's Hospital; VITA Concept; 2015.** Project Director Kier Construction Scotland / Birmingham Women's and Children's NHS Foundation Trust - [redacted]

A whole service transformation to redevelop the existing site to create a national centre of excellence. The design adopts a LEAN approach to provide the most supportive, patient-focused physical environment possible. Feasibility consultancy work leading on to OBC (P21+).

**Chaguanas Health Centre, Trinidad and Tobago, Caribbean, 2015-2017.** Project Manager National Insurance Property Development Company - [redacted]

New acute health centre offering local residents an improved fit-for-purpose health service. Working within the limitations imposed by a hot climate, the design aims be clinically efficient and environmentally sustainable.

**Ayrshire Central Hospital, Irvine; Woodland View, 2013-2016.** Project Director NHS Ayrshire and Arran - [redacted]

A new 206-bed mental health and community services building, providing support to adult acute and elderly patients who need a certain level of care and rehabilitation. The flexible

## Career

- 2022-Present, Arcadis
- 2010-2022, IBI Group (UK) Ltd
- 2000-2010, Nightingale Associates
- 2000, Littman Goddard Hogarth
- 1998–2000, Devereux Architects
- 1997, Porte Rush Limited
- 1995–1996, Cochrane McGregor Group Limited

Oriel, London

design supports patient recovery, confidence and choice leading up to the transition home, including therapy & exercise gardens, dementia courtyards and external wander-loops (NPD). Project Director (Site Delivery Stage).

**Peterborough City Hospital; Radiotherapy Day Treatment Unit, 2015.** Project Director

Brookfield Multiplex / North West Anglia NHS Foundation Trust - [redacted]

A feasibility and design solution to meet increasing patient demand in radiotherapy services, including two new Linear accelerator bunkers, consultation rooms, larger waiting area, independent entrance for weekend services, doubling the capacity.

**Glasgow Institute of Neurological Science (INS); Entrance Redesign, 2015-2016.** Project Director

Brookfield Multiplex / NHS Greater Glasgow & Clyde - [redacted]

The modernisation of the entrance to a historic neuroscience building, including a welcoming double height reception, waiting area and café on the ground floor. The café provides an oasis from the hustle and bustle of the active hospital.

**Queen Elizabeth University Hospital, Glasgow, 2009-2015.** Project Manager Multiplex / NHS Greater Glasgow & Clyde - [redacted]

Masterplan and delivery of a 170,000m$^2$ 'super hospital', one of the most advanced medical campuses in Europe. Combining four health boards into a combined acute and children's facility. Delivered five weeks ahead of schedule and achieved BREEAM Excellent (NEC).

**St James' Children's Hospital Dublin; Design Competition Concept, Ireland, 2014.** Project Manager

Brookfield Multiplex - £350m

Concept for a world-class facility providing secondary and specialist paediatric services. Wards are a dynamic environment for healing, catering for the seven ages of children, they use technology to ensure each patient's space is age appropriate. The design is supported by a landscaped oasis for escape, contemplation and play. Application of LEAN principles.

**Mullingar Hospital (HSE), Ireland; Theatre Upgrade, 2014-2015.** Project Manager

Health Service Executive (HSE) - [redacted]

Design of a new extension, refurbish and upgrade theatres to optimise new clinical flows while improving the existing flows in clinical, public, private and FRM terms.

**North Tees & Hartlepool New Hospital; PFI (bid only), 2012-2013.** Project Director

Brookfield Multiplex / North Tees and Hartlepool NHS Foundation Trust - £300m

A major new build 80,000m$^2$ PFI acute hospital on a greenfield site, comprising 650-single beds with additional maternity hospital. Designed to minimize travel distances and maximize views and daylight into bedrooms. The scheme will rationalise the acute services at the two hospitals. Project Director responsible for managing the design team and bid deliverables, co-ordinating our bid approach and ensuring a full response to the client's brief was achieved.

**BC Children's and Women's Health Centre, Vancouver, Canada; P3 Redevelopment Bid, 2013–2014.** Project Manager

Partnership British Columbia - £220m

Concept design of a hospital to be built within the overall health campus to accommodate the increasing volume of critically ill women and children and enhance the clinical education and research environment. Featuring spacious private rooms for patients and family members. A very tight site together with a very strict brief in terms of adjacencies and

travel distances ensured a very compact plan form evolved out of the dialogue sessions.

**Peterborough City Hospital; PFI Development, 2004-2010.** Project Director

Brookfield Multiplex / North West Anglia NHS Foundation Trust - £250m

Masterplanning and delivery of a 612-bed adult acute hospital, a 250-bed women and children's hospital and a 98-bed mental health unit on one site, and a 40-bed integrated care centre in the City centre. Completed 3 months

ahead of schedule, this award winning development achieved a BREEAM Excellent rating.

**West Middlesex University Hospital;**

**PFI Development, 1998-2004.**

Team Leader/ Project Architect

West Middlesex University Hospital

NHS Trust - £53m

A 4-storey acute hospital comprising new build and refurbished clinical and diagnostic services. Includes A&E, a critical care, operating theatre, outpatients and 180-bed inpatient wards. Phasing and decant reduced risk and helped deliver the hospital ahead of programme. Team Leader/Project Architect responsible for the site delivery of the project.

**West Middlesex University Hospital; T-Block Mental Health Unit, 20012003.**

Team Leader

Bouygues UK / West Middlesex University Hospital NHS Trust - £3.7m

Refurbishment and new build extension of an existing Victorian building, including bridge link to create new adult and elderly mental health wards. Project Designer responsible for production information and client/ contractor interface. Team Leader position when she took over the main new building.

**Victoria Hospital; Leigh House, 2000.**

Architectural Assistant

Victoria Hospital - £3m

New children's and adolescent mental health unit on a sensitive rural site, East of Winchester. Won Building Better Healthcare award for Excellence in the Design of Mental Health Accommodation.

Architectural Assistant responsible for production packages.

**Hillingdon Riverside Centre; Mental Health Unit, 2000.**

Architectural Assistant

Central and North West London NHS Foundation Trust - £5m

New build Mental Health Unit. Traditional Contract. Architectural Assistant responsible for production packages.

**Queen Mary's Hospital Sidcup; E-Block, 2000.**

Architectural Assistant

Oxleas NHS Foundation Trust - £4m

Refurbishment scheme, converting an existing block into a new mental health facility. Design and Build Contract. Architectural Assistant responsible for production packages.

## SCIENCE

**National Satellite Testing Facility (NSTF) Harwell, 2017-2023.** Project Manager

MACE Limited / Science and Technology Facilities Council - [redacted]

A world-class cleanroom type test facility, comprising six large chambers to replicate the extreme conditions a satellite will encounter in deep space, from launch to landing. Includes the precision design of two complex buildings, which form an extension the existing 'RAL Space R100' structure (NEC3)

**Rosalind Franklin Institute Harwell, 2017-2021.** Project Manager

Mace / Science and Technology Facilities Council - [redacted]

A JV for ten top Universities, this biomedical centre of excellence embraces new techniques and disruptive technologies to accelerate the discovery of treatments for chronic conditions. The design fosters collaboration and social interaction, whilst intelligently enabling the functionality of this unique experimental laboratory (NEC3).

## COMMERCIAL

**Warehouse/Office Development.** Architectural Assistant [redacted]

Refurbishment of a Victorian warehouse in East London to create new offices for an internet-based company. Architectural Assistant responsible for production packages.

## LEISURE

**Leisure Development.** Architectural Assistant

Porte Rush - [redacted]

Entrance Canopy and glazed entrance modules for "The Mast" Leisure Development, Surrey Quays. Concept Designer for Porte Rush (Subcontractor).

Acute and elderly mental health unit.

## RESIDENTIAL

**Housing Schemes.** Architect [redacted]

Small scale residential extensions, including a basement conversion in the conservation area of Oxford, and loft conversion/kitchen extension in Clapham, London. Project Architect responsible for design, and liaison with the client and local authority to obtain planning permission.

**Scottish Hospitals Inquiry**
**Witness Statement of Frances Wrath**

This statement was produced by the process of sending the witness a questionnaire with an introduction followed by a series of questions and spaces for answers. The introduction, questions and answers are produced within the statement.

**Personal Details and Professional Background**

**1.** Name, qualifications, chronological professional history, specialism etc – please provide an up-to-date CV to assist with answering this question. Please include professional background and role within NHS GGC, including dates occupied, responsibilities and persons worked with/ reporting lines.

A See Appendix C - CV for experience prior to joining Project Team in April 2007 and subsequent roles within team.

**Site Selection**

**2.** Describe your involvement in the site selection process in respect of QEUH/RHC.

A I was not involved in site selection. In my previous post as part of SGH estates I had provided copies of all groundwork surveys, drainage surveys etc we had in respect of SGH site.

**3.** Describe the risk assessments, if any, that were carried out? What was the outcome? What consideration, if any, was there in respect of proximity to Shieldhall Sewage Treatment Works? What consideration, if any, was there in respect of the Shieldhall Recycling Centre? What concerns, if any, did you have regarding site selection? What action, if any, did you take in respect of such concerns and what was the outcome?

A I was not involved in this exercise it would have been led by Alan Seabourne and Peter Moir I assume as part of planning process.

**Procurement**

**4.** Describe the funding PFI changes, your involvement, why the changes were made, who signed off on the changes and what the escalation process was in respect of the Board authorising these changes.

A I was not involved in the PFI project and its procurement process. I think my first involvement with the project team was helping with the equipment schedule and generally helping source information on existing site surveys.

a) Please describe how you helped with the equipment schedule and explain how you sourced information on existing site surveys?

A The initial equipment schedule – for tender documents – was generated from ADB codes on standard room layouts, I think. It's almost 20years ago and it was just one of the jobs I had at the time, however, I think I checked equipment schedule, and the costs accounted, for all rooms in the anticipated room schedule. It's really a case of checking each room included on the schedule of accommodation has Group 1-5 equipment accounted and prices included for all equipment to be supplied, and specialist equipment supplied and fitted by Board. This figure formed part of tendering documents.

As I had been based at Southern General for a number of years prior to secondment to new hospitals team, I initially had the role of clearing the footprint for the new hospital site. Part of this required a search through Estates department archives for old drawings, surveys and video footage of the main services to the Southern General site; particularly those located adjacent to new hospitals site. These included mine workings, asbestos, wildlife habitats, ground conditions, ground contaminations, water, gas, high voltage, low voltage, medical gases, sewers, burns and water courses. All updated where appropriate to reflect works undertaken to clear site footprint.

**5.** Were the risks and the resource implications of changing the procurement model from PFI to traditional (design and build) adequately assessed, in particular:

a) the impact on commissioning.
b) the impact on independent validation; and

c) ensuring sufficient resources to manage and maintain the hospital post-handover?

A I was not involved in procurement process changes. That was Alan Seabourne, Peter Moir, Heather Griffin (PM Adult), Mairi McLeod (PM Children) and technical advisors. When change from PFI to traditional (Design & Build) for hospital development was made I was PM Laboratory Building.

**Employer's Requirements**

**6.** Describe your involvement, if any, in the preparation of the Employer's Requirements (ERs).

A I was not involved in preparation of hospital ER's I was part of team – with specialist laboratory staff and technical advisors -who compiled Lab ERs.

a) Please describe the process of compiling Lab ER`s?

A The Lab ERs were generally compiled by Laboratory directorate team with input from those compiling new hospital ER'S. I provided schedule of accommodation, equipment schedule and liaised with design team to provide model floor plans and room layouts.

b) What, if any, guidance was required to be complied with in respect of the Labs. How was it intended that guidance compliance would be ensured?

A In addition to standard SHTM's and Building notes which cover various aspects of laboratory accommodation. The Boards laboratory team were experts in their fields and knew exactly what space, service connections and environmental conditions were required for each of their labs.

I had been involved previously with team on other laboratory refurbishments within Southern General and Victoria Infirmary and knew their strengths and how to work collaboratively with them.

c) Who was responsible for providing the requirements for the Clinical Output Specifications and who approved the COS for inclusion in the ERs?

A As far as I am aware PM's Adult and Children were responsible for coordinating clinical groups who compiles COS's.

d) Who was responsible for confirming what the relevant NHS Guidance was for the project

A Technical advisors, Peter Moir, Alan Seabourne, Clinical Physics, IPC and HFS all provided input on relevant guidance. Ultimately it would rest with project Director and Ass project Director I assume; I was not involved.

e) How did sustainability and energy targets impact on the design

A Again, I assume Alan Seabourne and Peter Moir took advice from number of sources primarily technical advisors and HFS.

f) Question for Witness; Are you aware from experience how sustainability and energy targets impact on the design.

A No, apart from a very broad overview of ensuring where possible design is sustainable and meets ongoing energy targets. Increasing building insulation, using energy efficient fittings, where possible avoiding oil and gas and use of solar panels and green energy. I have very limited practical experience of sustainability in MEP design.

g) Questions for Witness: Was weight was attached to achieving a BREEAM excellence rating in respect of the build?

A I'm not sure I can answer that. I was only aware that all new builds had been set the target by the Scottish Government that they should achieve, when possible, a BREEAM excellence rating.

h) Describe your involvement and understanding, if any, in the removal of the maximum temperature variant? **(please refer to Bundle 17, Document No.26, Page 1063)** Why was the decision taken and by whom? What risk assessments, if any, were taken prior to making this decision? What was the impact, if any, in removing the maximum temperature variant?

A No involvement - didn't know such a decision had been made.

i) Describe your involvement and understanding, if any, in the decision to use chilled beams. Why was the decision taken and by whom? What risk assessments, if any, were taken prior to making this decision? What was the impact, if any, in using chilled beams?

A As previous answer.

j) Who provided the specification for environmental data relating to air change rates, pressure differentials and filter requirements

A This I think was undertaken before I became an integral part of new hospitals team i.e. I was still project managing site clearance and not an integrated part of team, I was not involved in assessing or providing data. I only ever saw completed ERs which had tables detailing out this information for tenders.

k) Who was responsible for HAI-SCRIBE assessment regarding the proposed site development, design and planning and new construction?

A As before I was not part of any HAI-SCRIBE assessment and therefore can only provide a guess as to who was responsible.

**Tender and appointment of Main Contractor**

**7.** Describe your involvement, if any, in respect of the selection process whereby Multiplex were selected as the preferred bidder.

A As part of the project team I checked sections of all three bidders' documents. We were never provided with any costed section of the tenders – they were reviewed by Alan Seabourne, Peter Moir, Board finance, David Hall & Douglas Ross of Currie and Brown. I generally reviewed SOA's equipment lists and general design requirements against tender documents, ER's and any clarifications requested during tendering period. Much as I would as a QS (but without checking financial value) I checked if there were any amendments or anything requiring clarification within the bidders' documents these were passed onto Project Directors Group including Currie & Brown. We met on a daily basis

and reported on progress. Currie and Brown as project QS's then approached each bidder for clarification etc in line with tendering requirements.

a) Why were Multiplex awarded the contract following the competitive dialogue process? What distinguished Multiplex from the other bidders to make them the preferred bidder?

A See above. I had no involvement in awarding contract to Brookfield it was a long process involving Project Director/Ass Director, Project QS, GGC Board and Scottish Government departments including Legal office.

b) Are you aware from your involvement in the project why Brookfield were awarded the contract?

A No as previously stated I was involved in assessing if the tenders received met the criteria of the contract ER's etc and if any qualifications or deviations to the ER's had been included instead. I can only assume that following the long and complex evaluation process the contract was awarded to the tender which best met the weighted criteria (based on cost, design, legals etc)

**Ventilation Derogation**

**8.** Explain your understanding of the ventilation design strategy contained in the Contractor's Tender Return Submission (11 September 2009) **Please refer to Bundle 18 Volume 1, Document 8, Page 205**. Was the ventilation system to be a mixed mode ventilation system (dependent on a non-sealed building) or a mechanical ventilation system (dependent on a sealed building)?

A Sorry very limited knowledge of ventilation, therefore, I hesitate to even try and guess an answer. It was not an area I was involved in.

**9.** Was the design and/or specification of the ventilation system as recorded in the Building Contract, in particular in the M&E Clarification Log **(please refer to Bundle 16, Document No. 23, Page 166**) compliant with NHS Guidance? **A.** No involvement in designing or specifying ventilation requirements.

a) If not, please explain:
   (i) Why this design was proposed; and
   (ii) Why this design as accepted.

A As previous response.

b) If you are of the view that it was compliant, please explain why, with particular reference to SHTM 03-01 2009 (Ventilation Design) **Please refer to Bundle, 16 Document No. 5, Page 342.**

A As previous response.

**10.** The Inquiry is aware of the agreed ventilation derogation recorded in the M&E Clarification Log. **Please refer to Bundle 16, Document No. 23, Page 166.**

a) What was the scope of the agreed ventilation derogation recorded in the M&E Clarification Log?

A No knowledge of this at all. Not an area I was involved in – nor would I expect to be.

b) When did you first become aware of it and how?

A No knowledge of this at all. Not an area I was involved in – nor would I expect to be.

c) Was the agreed ventilation derogation restricted to general wards only?

A As previous.

d) If so, how is this interpretation evidenced within the documentation (such as the M&E Clarification Log) and where is the specification located for areas that required specialist ventilation and isolation rooms?

A As previous.

e) Who else from the GGC project Team and Board were aware of the Ventilation derogation?

A This area would be the responsibility of Peter Moir and Alan Seabourne/David Loudon with specialist input from technical advisors and other specialists.

f) What action, if any, did you take to escalate your knowledge the derogation to the Board? If you did not take any action, why not?

A I was not aware of this derogation and therefore cannot action something I am unaware of.

g) How was the agreed ventilation derogation signed off by the Board?

A No knowledge of this at all – I would assume that all derogation would have to be presented to overall project Board and agreed therein.

**11.** When did you first become aware of the ZBP Ventilation Strategy Paper dated on or around 15 December 2009? **Please refer to Bundle 16, Document No.21, Page 1657**

A Sorry not aware of strategy at all – not my area of involvement.

a) What action, if any, did you take when you became aware of this document and why? If you did not take any action, please explain why not.

A See above.

b) What concerns if any did you have on reading this document?

A See above

**12.** What risk assessments (if any), whether in compliance with the standards in HAI Scribe or otherwise, did GGC carry out or have carried out in respect of the change in the ventilation strategy that appears to follow the ZBP Ventilation Strategy Paper dated 15 December 2009? **Please refer to Bundle 16, Document No.21, Page 1657.**

A Sorry no involvement in ventilation strategy. I thought HAI Scribes did not come into operation until 2011/12. It was not an area I was involved in. I dealt with Laboratories at this time.

**13.** Was the Ventilation Derogation recorded in the Full Business Case? Who was responsible for doing this? If not, why not? If you were aware that it had not been recorded in the Full Business Case please explain what action, if any, you took.

A My involvement in FBC was very, very limited I checked schedule of accommodation, equipment register and business case for laboratory building.

**Design and Construction and Role in the QEUH/RHC Project**

**14.** When did you first become involved in the design of QEUH/RHC. Please describe your role and responsibilities.

A I was seconded to Project Team from April 2007 following a re-organisation of the Boards Capital Planning teams. My job title was Acute Services Review Programme - Capital Planning Manager and reported to both Peter Moir as Head of Major Projects and Ass Project Director and Alan Seabourne as Project Director. Initially I was not part of the QEUH/RHC design, and my role was as to Project Manage site clearance of proposed new hospitals site.

**15.** The Inquiry understands that you were the Technical Lead from around 2007. Describe in detail this role.

A I was seconded to Project Team from April 2007 following a re-organisation of the Boards Capital Planning teams. My job title was ASR Programme - Capital Planning Manager and reported to Peter Moir as Head of Major Projects and Ass Project Director. He was the in-house Technical Lead for the Board with David Hall Currie and Brown providing technical advice/backup. Initially I was brought in to project manage the clearance of the existing SGH site ready for the new hospital. However, after a year/18months I swapped jobs with Hugh McDerment who had initially been appointed to be the PM directly involved in new hospitals projects. I assumed that this was because I had been involved in hospital project management for over 15 years and had previous working relationships with most of the adult services transferring from SGH and Victoria Inf. I had previously undertaken a similar role for the Carillion PFI design –

providing advice and support to clinical teams on room layouts, and equipment location and specification. I became part of user group teams for both adult and children's hospitals. I was sometimes introduced or referred to in these meetings as "technical lead" in the same way Karen Connelly was facilities lead and Fiona was nursing lead. My role was to provide advice and assistance to clinical teams when laying out department designs, room layouts and equipment requirements. Sometimes this meant interpretating a layout drawing by marking out on floor proposed layouts or space dimensions. Other times it was to prompt service, based on my experience – an example being how do you use this equipment, how is it serviced, how much space is needed around it? or at present you use machine A do you intend to continue using and if so, where? Simply sometimes is to interpret drawings for someone who is not comfortable with taking a 2D layout and interpretating into a 3D visual. This role continued and included my involvement in equipment procurement. During the currency of the hospital project when I was not required for this role I was also project Manager for Laboratory (design to on-site stage) and specialist group 5 equipment installations e.g. imaging equipment, aseptic and decontamination suite.

**16.** Explain how the Clinical Output Specification (COS) for the design of the Wards was confirmed and signed off. In doing so describe the purpose of the clinical output specification, and your involvement.

A Clinical Output Specifications were already in place by the time I became involved in New Hospitals Project. PM for Adult and PM for Children's were responsible for these.

a) From your experience, do you know how the Clinical Output Specification for the design of the wards was confirmed and signed off?

A No, I think it was 2008/09 before I became involved in the New Hospitals project. Prior to that I was involved in clearing the site for the new hospital and Acute Strategy work at other sites in Glasgow. This was when tender was being compiled I think and COS's were already in place.

**17.** Explain the purpose of the guidance relied upon by the design team and why this was important.

A Not quite sure what question is here. By the time I became involved there was COS's, Employers Requirements, national guidance and statutory regulations all in place. This is standard for all projects and has subsequently been further developed by Scottish Government.

a) Do you know the purpose of the guidance relied on by the design team?

A I assume to ensure new build complied with latest clinical, statutory and best practice guidance.

b) Were you concerned at any stage regarding the non-compliance with SHTM. If so, please describe the actions you undertook in relation to the non-compliance with regulations.

A As far as I can remember – going back almost 20years now – I had no concerns as I was unaware of any SHTM non-compliances.

**18.** The Inquiry understands that designs and Room Data Sheets (RDS) were approved through the Reviewable Design Data (RDD) process. Describe your role, if any, in the RDD process and User Groups.

a) How were members selected to be part of a user group?

A Heather Griffin and Mairi MacLeod could answer this better. As far as I am aware each clinical service lead was approached to submit details of an appropriate team, reflective of the whole service to take forward design. Team leads were asked as far as possible to ensure continuity of representation throughout the process. It was also understood that each service would be responsible for cascading information within their own teams. Further specialists such as pharmacy, clinical physics etc were also approached for representation as appropriate. Standard membership for each group from project team was relevant PM, me, Jackie Barmanroy (Infection control), Karen Connelly (facilities), Fiona McCluskey (nursing) early design meetings also included adult or children's medical directors.

b) Were you responsible for a user group? if so, which?

A No, I was not responsible for any User group; I was part of the team.

c) How can you sign off on RDS unless you know the ventilation requirements to which the room must comply? How could you do that if you did not know about the derogation?

A On the RDS there is recorded ventilation rate, Lux levels etc in addition to the main body of the RDS which is the equipment to be supplied and fitted by contractor; supplied by client, fitted by contractor; and supplied and fitted by client or specialist contractor. This was the section I had to check in detail ;cross referencing with costed Equipment list and room layouts. The service requirements on the RDS's – ventilation and lux levels etc were checked by David Hall and technical team – I was told; and also provided with contract ER's sections which had tables detailing different requirements for each room type. I am/was unaware that there was any derogation which changed these requirements.

d) Who was checking what before your sign off and how did you satisfy yourself all was in order?

A All amendments to room layouts were signed off by service leads at users group meetings. These drawings and sketches were scanned and uploaded for architects to amend layouts and then re-issue. I held a hard copy of signed drawings and when amended re-issued I checked that this met agreed layout and signed off myself. If re-issue not as requested or more information required, we met again with user group to agree a layout which met user requirements. This process was repeated and repeated over a number of tears and drawing iterations. Sometimes changes requiring user sign off came as a result of a window or column position slight change when constructed which then impacted on equipment layouts in room. My role was to continually check that the layouts delivered met user requirements. It was a very stressful, taxing detailed job with I think about 40/45 different user groups and drawing iterations all at different

stages. The 1:50 schedule was very detailed and involved with very tight timescales.

e) Confirm who attended the user groups meetings from IPC, Estates, Clinical and the GGC Project Team for the following areas: Ward 4B – QEUH; Ward 4C – QEUH; Level 5 – QEUH; Critical Care – QEUH; Ward 2A & 2B – RHC; PICU RHC – RHC; All Isolation rooms

A Attendances were as previous answer. I do not have specifics of who was involved for each user group. Mairi McLeod and Heather Griffin arranged and would have details.

f) What steps, if any, were taken to ensure that an appropriately qualified source of IPC advice was an integral part of the Project Team?

A As far as I am aware IPC had nominated Annette Rankin and Pamela Joannidis (senior ICN nurses for South Glasgow and Children's hospitals respectively) as infection control link to rest of IPC team. They were involved in the initial meetings I attended. I think following contract award Jackie Stewart/Barmanroy was imbedded in project team again for advice and as a link to rest of IPC team.

g) How often were user group meetings scheduled to review design proposals and agree the design with the user groups

A Sorry meetings were arranged as required to discuss RDD proposals there was a schedule, and meetings were arranged well in advance by PM's. I do not have details of timetable.

h) How were designs and the RDS approved to proceed to construction.

A Room layouts were discussed with user groups and any amendments. were to be drawn up by architect. Once a layout had been agreed and signed off by group then it was my responsibility to ensure that final drawings reflected agreed amendments before continuing to construction. That's why my signature is on final 1:50 drawings as approved. They all reflected physical signed off drawings and amendments from service. RDS sheets were slightly different I checked

equipment listed as this was an output from ADB system – this provided equipment costs. Peter Moir employed a chartered engineer for around 12-18 months to help provide M&E input to Peter Moir, Alan Seabourne/David Loudon and David Hall. He checked M&E details on RDS's. I cannot remember any significant changes to service requirements – most of service requirements were as detailed in specialist ER's agreed prior to tendering.

i) The inquiry understands that you signed off on the RDS. Please explain how this came to be your responsibility and why.

A I cannot really remember why I was given this responsibility. It started with my checking schedule of accommodation, ADB equipment list etc for tendering ER's and once Laboratory started on site and design of new hospital RDD process started: given my previous experience I was probably the best person to oversee room layouts and RDS process.

j) Please explain how you assured yourself that each RDS met the requirements for the intended patient cohort.

A As previously answered - my focus was the ADB equipment and functions listed on RDS's and ensuring room layouts, RDS sheets and Equipment list (contractor and also Boards required procurement) all aligned and met user requirements. Tables in ER's services sections provided details of e.g. ventilation or Lux requirements for different room types. As far as I am aware these were as agreed with users in COS's and reflected SHTM requirements etc.

k) Please explain the checks and procedures you carried out prior to sign off. Were IPC involved in this process? If not, why not?

A I have previously answered that all user group meetings were attended by group (Heather Griffin or Mairi McLeod as Project Manager, Karen Connelly facilities, Fiona McCluskey nursing, Jackie Barmanroy IPC, David Hall and myself.) Heather and Mairi arranged, managed and minuted these meetings and send out all drawing or document packages for discussion or agreement. Although I managed the overall room layout process and kept on top of all drawings being

issued, amended, due for “sign-off” etc. Discussions with users was very much a team effort with Karen, Fiona, myself and Jackie providing advice and help as required. There were no meetings or discussions with users in respect of room layouts or equipment installations or procurement (from theatre lights to gel dispensers) when Jackie and on occasion other IPC staff were not involved.

l) Were any other technical advisors or contractors involved? If so, please explain their role.

A I’m not really sure what this question is asking. Generally, the 1:50 process would have David Hall taking notes for technical MEP purposes. From Brookfield it was the architects who attended. During RDD process when specialist equipment such as theatre lights or tables was being chosen by services for procurement by contractor technical advisors and MEP contractor representation was involved. Room layouts and RDS technical advisor input was led through David Hall. It’s such a long time ago that I cannot recall who

was present at what meeting – especially given that the RDD process with the user groups covered everything from room layouts, art installation, floor wall and ceiling finishes, specialist equipment installations, bedhead services, examination lights, alarm systems and IT installations. The attendance of technical advisors and contractor/sub-contractors would reflect the topic under discussion. All RDD meetings with user groups were arranged through Heather Griffin or Mairi Macleod.

m) How was the sign off process recorded? Who authorised/ instructed you to sign of the RDS?

A As previously answered the process was recorded in a number of ways. Meetings with users were recorded by minute/actions in addition to drawings physically signed -off by user group or drawing amendments and sketches issued to architect for re-drawing and re-issue. My checking of the RDS’s was to ensure that ADB equipment detailed matched that generated by room layouts and equipment detail and grouping matched overall costed equipment list. I think Alan

Seabourne asked me to sign-off RDS's as it was an integral part of 1:50 process and also overall Equipping list.

n) Who was the chartered engineer that you refer to? What input did they have in respect of M&E?

A Alastair Smith (I think was his name) was the engineer within the team who checked all M&E details on RDS's. He checked details provided on RDS sheets again those detailed in ER's. its such a long time ago but I think he ticked if ok; if further action or information required, he would not on sheet and discuss with David Hall and/or Peter Moir. I checked rest of RDS sheet

o) Describe your involvement in the design and RDD process for the Schiehallion unit, PPVL and BMT rooms and PICU in the RHC

A Involvement was as detailed in (a) above - My role was to provide advice and assistance to clinical teams when laying out department designs, room layouts and equipment requirements. Sometimes this meant interpretating a layout drawing by marking out on floor proposed layouts or space dimensions. Other times it was to prompt service, based on my experience – an example being how do you use this equipment, how is it serviced, how much space is needed around it? or at present you use machine A do you intend to continue using and if so, where? Simply sometimes is to interpret drawings for someone who is not comfortable with taking a 2D layout and interpretating into a 3D visual.

p) Describe your involvement in the design and RDD process for the spaces to house immunocompromised patients, Ward 4C, BMT Unit, Infectious Diseases and the Critical Care Unit in the QUEH.

A See previous answer (f).

q) Describe your involvement in the design and RDD process for Isolation rooms.

A See previous answer (f).

**19.** Please describe how the technical requirements (air change rates, pressure differentials and filter requirements) for the rooms were managed and approved, including your role and involvement.

A Sorry no involvement in setting these requirements. I became involved post setting when they were already incorporated into ER's – specialist services sections and Clinical Output Specs.

a) What was your understanding at the time of how the technical requirements from the rooms were managed? How were these determined and what, if an, guidance was relieved upon?

A I understood that the overall technical requirement – environmental requirements – had been discussed at an early stage of the design with clinical users and board specialists (IPC, Clinical Physics etc) and formed part of the project ER's. detailed COS documents for each service and technically in specific ER appendices for ventilation, water installations, electrical systems, PMGS etc. I cannot recall relevant Appendix numbers for each. I also understood that design was to be in accordance with relevant technical guidance available. I think we also included, provided by HFS, a couple of proposed SHTM's, based on English HTM's which were out for discussion, but which were due to be issued before the new hospitals would be completed. I think one of these was for PMGS.

b) Were you not required to have an awareness and understanding of the guidance in order to sign off the RDD? Please explain your answer.

A As I was responsible for ensuring that the room layouts/ADB equipment and Boards purchasing equipment lists all tallied. I understood that the technical/environmental details were as guidance and as detailed in ER's technical appendices. I did not require to know detailed discussions behind technical requirements. However, I and the rest of the team undertaking room layouts and RDS's should have been made aware of any derogations to guidance and changes to ER's specification.

**20.** What guidance was considered in the design of wards to accommodate immunosuppressed patients, what processes were in place to ensure guidance compliance? Were there any changes to the design during the design and build, if so, please describe any such changes, describe the impact, if any, on guidance compliance, and described the sign off process for any such changes, your involvement and how any changes were communicated to the Board. Was external advice ever sought in respect of design changes?

A See previous answer

**21.** Who was responsible for confirming filtration and HEPA requirements and who approved this from the GGC Project Team?

A Sorry I do not know. This would have been dealt with by David Loudon, Alan Seabourne and Peter Moir with David Hall and other advisors.

**22.** In respect of any derogations/ departures from guidance which senior IPC individual was responsible for signing this off?

A As above I can only assume the same team were involved.

**23.** Describe your involvement and understanding, if any, of the decision to remove carbon filters? What was the rationale behind this decision, who was involved and what advice, if any, was sought in reaching this decision? **A.** No involvement.

a) Please refer to Bundle 43 Volume 2 Document 16

Please describe your understanding of the importance of the removal of carbon filters in respect of limiting energy use? Was this a relevant consideration in the decision to remove carbon filters?

A There was nothing attached other than an email I sent to Shiona Frew with some M&E notes from meeting with LOR during tendering process. It looks like Shiona wanted a copy to upload to system and asked me if I had a set. As its 2009 I can only assume it was part of the meetings with the 3 tenderers. I sat in on M&E group I think as I had pulled together existing site information and was to be on hand of tenderers required any clarification. I'm sorry I cannot recall any

discussion to remove carbon filters, it's something I have limited knowledge of and would not venture an opinion on.

**QEUH – Bone Marrow Transplant Unit**

**24.** The Inquiry understands that the BMT service was to transfer from the Beatson following a change order request, issued by Jonathan Best in July 2013.

a) Following the Change order request **(please refer to Bundle 16, Document No.29, Page 1699)**, what actions, if any, did the GGC Project Team take to confirm the technical and environment requirements (in particular air change rates, pressure regimes and HEPA and air permeability requirements) for the BMT Unit?

A By 2013 I was almost completely involved in equipment matters – specialist group 5 installations and also confirming 1:50 layouts which user groups had signed off were delivered on site.

b) Question for witness; Did you have any involvement with the BMT unit in any respects?

A No as far as I can remember the decision to move the Beatson BMT unit was a late one and I was almost entirely focused on specialist group 5 equipment .

c) Question for witness: At the time, what actions did you understand the GGC Project Team take to confirm the technical and environment requirements (in particular air change rates, pressure regimes and HEPA and air permeability requirements) for the BMT Unit?

A Sorry I can't really answer. The rest of the team – project Director, deputy project director, project Manager, Nursing and infection control - in addition to technical advisors were still involved in the process at this stage.

d) What design review meetings were held to confirm with the user groups to confirm the requirements for the BMT Unit.

A No involvement in additional changed to ward proposed.

e) Was the design for the BMT Unit subject to the RDD process

A No involvement in changes – RDD process had checked initial 1:50 layouts.

f) If so, who was involved in the RDD process for the BMT Unit

A As above.

g) Who produced and approved the RDS for the BMT Unit

A Sorry no involvement.

h) What feedback regarding Air Change Rates and pressure differentials was received from Multiplex regarding the Change Order?

A No involvement.

i) Describe the IPC involvement in the design of Ward 4B, BMT who was involved and who signed off the final design and when.

A Cannot answer.

j) What ceiling types were specified and approved for use in Ward 4B? Who from the GGC Project Team approved this? Describe your involvement, if any? What was the impact, if any, of the choice of ceiling tiles? What concerns, if any did you have regarding the choice of ceiling tiles?

A No involvement in ward changes.

k) What concerns, if any, did you have regarding the final design specification of Ward 4B, and what action, if any, did you take in respect of these concerns?

A No involvement

l) Who took on your role for signing off of the RDS in respect of Ward 4B post change order?

A Sorry I don't know. I left team and had no further involvement. I left all files and hard copy signed off drawings and paperwork behind with them and moved onto new role.

**Ward 4C**

**25.** The Inquiry understands that Ward 4B in the QEUH was originally intended to provide accommodation for Renal and Haemato-oncology. The 2009 NHS Clinical Output Specification for the Haemato-oncology ward confirmed "Please note the haemato-oncology ward area has a very specific function and a considerably higher than average requirement for additional engineering support/infrastructure. There should be no opening windows, no chilled beams. Space sealed and ventilated. Positive pressure to rest of the hospital and all highly filtered air >90%, probably best HEPA with adequate number of positive pressure sealed HEPA filtered side rooms for neutropenic patients as in the Beatson West of Scotland Cancer Centre." **Refer to Bundle 16, Document No.15 , Page 1595.** However minutes from the Quality and Performance Committee dated 2 July 2013 (**Bundle 34 Document 62 page 542) and** the Change Order Request in July 2013 by Jonathan Best **(Bundle 16, Document No.29, Page 1699)** confirm that the Bone Marrow Transplant (BMT) service would transfer to Ward 4B in the QEUH and the haematology patients that were originally planned to accommodate Ward 4B would move to Ward 4C.

a) Please confirm how this change was communicated to the project team and Multiplex and how this change was captured in the design and specification documentation.

A Sorry I think I heard about proposed change at a Friday team meeting, however, I was not involved in taking it further.

**26.** The Inquiry understands that 10 rooms were provided for Haemato-oncology patients (Rooms 66 to 75) in Ward 4C, these rooms had no HEPA filtration, 2.5 – 3 ACH per hour, included chilled beams; rooms were at a balanced or slightly positive pressure to the corridor and had suspended ceilings fitted in patient bedrooms and ensuites.

a) Who approved and signed off on this specification for the Haemato-oncology patients to be accommodated in Ward 4C?

A Generally, design was already completed before I became involved – included in COS and ER's I was concerned with providing help with 1:50 layouts and equipment requirements. There was always IPC, Medical Physics and Senior clinical staff involved in any meetings for review of these.

b) Question for witness; Do you know who signed off on the above specification.

A The project manager would have details of exactly who signed off COS ER's etc I'm sorry after almost 20 years I cannot really recall names.

c) Describe the IPC involvement in the design of Ward 4C, who was involved and who signed off the final design and when.

A Answer as previous.

**Ward 2A/2B RHC**

**27.** The Inquiry understands that Ward 2A/2B is the paediatric-oncology Unit and includes the Teenage Cancer Trust and the paediatric Bone Marrow Transplant (BMT) Unit - the department is known as the Schiehallion Unit.

a) Confirm your understanding regarding the intended use and purpose of the Ward 2A/ 2B, what guidance was considered in the design of these wards, what processes were in place to ensure guidance compliance?

A Yes, I understood this area (Schiehallion) was children's cancer area. COS was already developed before I became directly involved in design. Department clinicians and particularly Medical Physics Head for Children's Hospital were very vocal on requirements for the unit. My main involvement in design was the development of the specialist Radiotherapy area; which was a new development; with Professor Michael Bradnum, Head of Medical Physics.

b) What changes, if any, were made to the design during the design and build? Please describe any such changes, describe the impact, if any, on guidance

compliance, and described the sign off process for any such changes, your involvement and how any changes were communicated to the Board. Was external advice ever sought in respect of design changes?

A From memory there were no major changes to the design during the design and build – with the exception of concluding specialist design of Radiotherapy area other design changes were generally change in position of a socket or similar.

c) Describe the IPC involvement in the design of Wards 2A and 2B, who was involved and who signed off the final design and when.

A IPC to my knowledge were involved throughout process, as part of COS completion through1:500 specialty adjacencies, 1:200 department layouts and 1:50 room layouts and also where applicable equipment selection. As far as I am aware senior infection control doctors also consulted on various service installations such as water and ventilation.

d) Who from IPC was involved? In particular who was the senior infection control doctors that you refer to?

A As we are going back almost 20years I am afraid I cannot recall names – only that the doctors involved were the senior infection control doctors (head of service) for Victoria Infirmary, Southern general Hospital and Yorkhill Hospital.

e) What guidance was considered, referred to, and complied with in respect of Ward 2A/2B?

A I'm sorry it's been so long since this project compounded by the fact that I have not been involved in design/construction work since 2015 I am afraid I cannot even detail specific guidance SHTM number etc which would have been used for this ward.

f) What concerns, if any, did you have regarding the final design specification of Wards 2A and 2B, and what action, if any, did you take in respect of these concerns?

A No concerns.

g) Question for witness: Why did you have no concerns? What assurances were you given and by whom to allow you to have no concerns?

A I was not involved in the detailed MEP designs for these wards, and no-one had highlighted and derogations/changes from a standard design expected for this type of ward. Therefore, why would I be concerned?

h) Question for Witness: What steps did you take to ensure the demanding spec for 2A had been fulfilled before signing off on RDS?

A As previously stated in previous answers signing off on RDS sheets did not require detailed knowledge of specialised environmental specifications. I as tasked with ensuring ADB equipment detailed on RDS matched that detailed on room layouts which in turn matched overall equipping schedule. The ventilation and lux details on RDS were checked by engineer based on detailed design specification in ER's.

**Isolation Rooms**

**28.** How was the number and location of isolation rooms agreed? Who approved the final number and locations in the QEUH and RHC?

A I was not involved in deciding on number and locations of isolation rooms. That would have been a clinical decision agreed between Board, senior medical and nursing staff and IPC, Heather Griffin and Mairi McLoed would have been involved.

**29.** Who was responsible for producing the drawings and the specification for isolation Rooms; who approved these from the GGC Project Team?

A Not sure – but I think there may have been a sample isolation room included in tender documentation. This would have been agreed early doors with Clinical teams, IPC, medical planners, specialist advisors and Project director and adult/children PM's. I was involved in the 1;50 room layouts – which are setting the rooms out with power sockets, bedheads, equipment etc. these would have been based on tender ADB sheets. Layouts were discussed and agreed with

each clinical team and project team which included IPC, Facilities, medical physics, Adult/children PM as appropriate, technical advisors and myself. Once clinical team were happy with layouts, they signed drawings, and my job thereafter was to ensure that any future iterations of drawings maintained this layout. If changes were necessary e.g. because of actual construction issues then any alterations were presented, discussed and agreed with clinical teams.

**30.** What concerns, if any, did you have regarding isolation rooms and compliance with SHTM/HTM? What action, if any, did you take in respect of any such concerns?

A I was not aware of any concerns regarding isolation rooms.

a) The Inquiry has reviewed the RDS in excel format and note there is an entry under 'Design Notes' relating to Ward 2A isolation rooms, the entry states: 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). Specialist advice should be sought on its design. The lamp repeat call from the bedroom is situated over the door outside the room.

(i) Was this note entered on the RDS? If so, why and by whom?

A Sorry I don't recall this message at all. I have no idea what it refers to. As my main focus in isolation rooms as in all other rooms was ensuring that equipment layouts, power sockets etc were laid out as "signed off" by clinical teams and that finishes etc complied with that detailed in contract ER's.

(ii) What specialist advice was sought relating to the design of these rooms?

A I was not involved in original design requirements for isolation rooms. However, I am aware that specialist infection control advice was sought and adhered to throughout project. Although I cannot provide proof/details I am aware that a senior infection control doctor who specialised in ventilation attended meetings for both adult and children's specialist wards – Schiehallion, haemato-oncology, transplant, renal etc.

(iii) From whom was specialist infection control advice sought? Who was the senior infection control doctor you refer to?

A Sorry after 15-20 years I cannot remember names. After all this time it tends to be the unusual or out of the ordinary you remember rather than what is after all a standard design/review process of meetings.

(iv) Question for Witness: What was the advice did they give in respect of compliance with SHTM guidance? How, if at all, was it ensure that this advice was complied with?

A Sorry I cannot answer. After all this time I cannot provide specifics.

(v) What was the final agreed design for isolation rooms and who approved this?

A See previous answer.

b) What ceiling types were specified and approved for use in isolation rooms? Who from the GGC Project Team approved this? Describe your involvement, if any? What was the impact, if any, of the choice of ceiling tiles? What concerns, if any did you have regarding the choice of ceiling tiles?

A Ceiling types for different areas were detailed in contract ER's and that was what I was to adhere to and agreed with service. I think these were based on HBN details and COS's and agreed with individual services before I became involved.

**Horne Taps**

**31.** Describe your involvement, if any, in respect of the decision to use Horne taps.

A I had no involvement in selection of Horne taps. I think from memory this involved, Project Director& Ass; external specialist advisors, IPC/ICT, Estates and facilities in addition to HFS and clinical input.

a) What concerns, if any, did you have regarding the use of Horne taps?

A See above.

b) What risk assessments were carried out in respect of the use of Horne taps?

A See above.

c) Who was involved in, and who signed off the use of Horne taps?

A See above.

d) Did you attend the meeting regarding the use of Horne taps in 2014? If so, why was the decision made to proceed with Horne taps?

A See above.

**Handover, Commissioning and Validation**

**32.** In respect of commissioning and validation please confirm the following:

a) Describe your role in the lead up to commissioning. What action, if any, did you take to ensure that the wards within RHC and the QEUH met the guidance requirements of SHTM.

A I had no role in commissioning and validation it was not part of my role within the project team.

b) Describe what commissioning of the water and ventilation system took place prior to handover, and your involvement, if any.

A Sorry cannot provide an answer as no knowledge of commissioning and handover processes at all.

c) Who was responsible for ensuring that commissioning of the water and ventilation system was carried out, and who signed off that it had been carried out? What concerns, if any, did you have regarding commissioning and validation being carried out prior to handover?

A As previous answer – I have no knowledge of process.

d) The Inquiry understands that NHS GCC decided to forgo the requirement to have an independent commissioning engineer. Who made this decision? What was the impact, if any, of this decision? In hindsight, do you think that it was the correct decision?

A As previous answer – I have no knowledge of process.

e) The Inquiry understand that no validation was carried out in respect of the ventilation system. When did you become aware of this? How did handover come to be accepted without the ventilation system being validated? Who was responsible for this and who signed off on this?

A As previous answer – I have no knowledge of process.

**33.** Describe your role in the lead up to accepting handover:

a) What action, if any, did you take to ensure that the wards within RHC and the QEUH met the guidance requirements of SHTM.

A I was not directly involved in the handover process for QEUH and RCH. For group 5 equipment areas i.e. Radiology, Aseptic etc; together with specialists such as Clinical physics and pharmacy we ensured areas met all clinical requirements and could be accepted and put into use. My only involvement in other areas was as part of the team who checked each room was completed as layout requested and picking up any minor snagging – such as damage to ceiling tiles, flooring or decoration. We were all pressed into service for this given the number of rooms involved. Appointed Site Inspectors were responsible for checking service installations etc.

b) How were you assured that the wards met the requirements of the specific patient cohorts?

A As far as I am aware user groups for each service, in addition to IPC, Estates/Facilities, Clinical Physics, and other specialists were involved from day 1. Each service contributed and “signed off” its COS; with input from all specialists such as clinical physics, Bacteriology/Infection Control doctors and nurses they required. The COS’s together with model RDD’s, equipment lists,

and I assume the various sections of the ER's formed the basis of the design. These documents formed the basis of Brookfield/Nightingales 1:200's, 1@50's and RDS's. These were then presented to the user groups until they agreed and "signed off" documents. Again, all appropriate specialists I believe were invited. Heather Griffin managed meeting arrangements and attendances for Adult and Mairi McLeod for Children's.

My role in this was to ensure that room layouts reflected what we as a group had agreed at user group meetings. My assurances came from the fact that, as far as I could see, all relevant parties involved in a department/area had been consulted and they're views acted on.

c) Did the room layouts reflect what was agreed at user group meetings?

A Yes. That was the whole point of the rather long, laborious process - of 2 or 3 iterations of drawings and associated meetings. To ensure that the room layouts delivered met the clinical and service requirements.

**34.** At handover, had a preoccupation L8 risk assessment been carried out? Who was responsible for ensuring that this was in place prior to patient migration? were you aware of a preoccupation L8 assessment having been carried out? Who instructed it? When did you become aware? Why did you not raise it as a concern that you had no seen this prior to patient migration, was this not within the remit of your role?

A I was not involved in handover process or patient migration. Ian Powrie, Peter Moir, David Louden and David Hall's team were the main parties to this. As I was not involved with Estates and Maintenance nor Project Manging the patient migration, I was not concerned I had no involvement. Once handover for Boards fitting out was underway (from memory I think that may have been January 2015) I was too busy with bringing, installing and commissioning specialist group 5 equipment.

**35.** Who oversaw contractual compliance? Who was responsible for ensuring that the paperwork was produced to confirm contractual compliance? What action, if any, did you take to ensure that paperwork was in place to ensure contractual compliance? Was validation of the ventilation system a contractual requirement? If so, who signed off on contractual compliance given the lack of validation?

A As previous answer Ian Powrie, Peter Moir, David Loudon and David Hall's team oversaw all aspects of compliance and handover. I have no idea who signed off contractual compliance; I would guess it was a combined agreement between Board directors, David Loudon, Peter Moir and Ian Powrie.

**36.** Refer to **Bundle 12, page 936 and 937**. In this you emailed Jackie Barmanroy to advise that 'All areas have been commissioned in line with contact ER's and all legislative requirements. The Board's estates Team have access to all commissioning data…'

a) What documentation did you have sight of in order to enable you to make this statement?

A As I do not have access to emails or files from that time period I can only assume that Jackie had emailed me to ask if commissioning was underway – I was at that time solely involved in the installation of group 5 specialist equipment, particularly Radiology equipment. As I was not involved in the overall hospital commissioning, I would have asked David Hall of Currie & Brown, Peter Moir and Ian Powrie who were in overall charge/co-ordinating the commissioning etc. The phrase used in the email sounds like a phrase from communications from one of those 3. As Jackie knew I was not involved in hospitals commissioning but however on site with specialist equipment it looks like a general "what do you know" enquiry.

b) The statement in the email implies that the commissioning had been carried out, not that it was underway. Please confirm how you were able to advise that 'All areas have been commissioned in line with contact ER's and all legislative requirements'

A You are asking me to comment on an extracted email – with no contextual backup – after over 10 years have passed; from my knowledge of relationship with Jackie Barmanroy it looks like I am providing some general information to a colleague Both Jackie and I were fully aware that I had NO involvement in the commissioning process.

c) Question for witness: With the benefit of hindsight were you correct at the time to advise Jackie Barmanroy that all areas had been commissioned in line with contract ER`s and all legislative requirements? Please explain your position.

A I was not involved at all in the commission of the building, Jackie Barmanroy knew I wasn't involved. As I have only seen this email response, I have no idea what Jackie asked me – my response looks like a general one with no details which I would have given if someone asked what commissioning was undertaken? – "all commissioning in line with ER's and legislative requirements. After almost 10 years – and no involvement in New Hospitals – I still don't know if this is an accurate or inaccurate statement. I have only heard of the "problems" of "failures" of the building from the media.

d) How were you satisfied that all areas had been commissioned in line with contact ER's?

A As stated, before I was not involved with commissioning of building service/infrastructure. David Hall, Peter Moir, Ian Powrie his estates team and contractors commissioning team were involved.

e) Please explain how 'all areas had been commissioned in line with the contract ER's and legislative requirements' given the agreed ventilation derogation which provided for achieving air changes below the required level as provided for in SHTM 03-01 guidance at the time?

A As stated, before without access to original email/discussion with Jackie Barmanroy I can only assume that she asked if I knew if commissioning were underway. I was not involved in commissioning and testing that was David Hall, Peter Moir and Ian Powrie.

f) With the benefit of hindsight do you consider that 'all areas had been commissioned in line with the contract ER's and legislative requirements'? If so, why, and if not, why not?

A As stated, before I was not involved with commissioning and testing and could therefore not comment any further. Phrase used is a generic phrase which can be used when asked a general "is commissioning underway" or "what commissioning is underway" question. As Jackie was part of the project team like myself I assume she was asking a "what do you know" question rather than for an official response – as she was aware I was not part of commissioning team but was at that time only involved in specialist equipment installations.

g) Question for Witness: With the benefit of hindsight, do you consider that your email might have been interpreted as reading that commissioning had been carried out in line with the ER's and all legislative requirements? Please explain your position.

A No as my previous answer above. Jackie Barmanroy was well aware that I was not involved in the commissioning of the building. To me it looks like a "what do you know?" between colleagues. She was well aware that for an official or accurate view of the commissioning process she would have had to speak to Peter Moir, David Hall or Ian Powrie all of whom were located within the same office as both of us.

**37.** Describe your understanding of the planned preventative maintenance (PPM) which was in place following contractual handover on 26 January 2015. Describe what PPM was in place, if any. Who was responsible for ensuring that PPM was in place. What concerns, if any, you had regarding PPM. Any action you took in respect of PPM not being in place.

A I had no involvement in PPM programme – Ian Powrie was brought in to lead on this as senior Estates Manager for new site.

**38.** The Inquiry understands that you were involved in M&E Technical Review meetings. Describe your role, involvement and the purpose of these meetings?

A I was involved in a number of M&E meetings primarily in respect of equipment detailed on room layouts and ADB equipment list i.e. details of specialist equipment contractor to supply and instal and also group 5 equipment installations Board were providing. David Hall was the person who as technical advisor checked all MEP drawings and installation details for accuracy. Purpose of the meetings I attended were generally to discuss/review topics such as equipment connection (power, water and drainage connections) location of user panels (nurse call, PMG, security), pneumatic tube installations, large specialist equipment such as theatre lights, tables and surgeons' panels, and connections for specialist services (aseptic suite, decontamination unit). M&E meetings also attended with Clinal Physics colleagues to review renal water installations, shielding protection for imaging equipment and other specialist installations. I was not involved in general MEP installations that was managed by David Hall and Peter Moir with others on the team. When Ian Powrie joined team, once construction underway, he also joined David and Peter in managing MEP installations. The only involvement I had with ventilation was discussing Laminar flow units for theatres with surgeons. In respect of water, I attended meetings with contractor, technical advisors and Clinical physics colleagues for them to review their renal panel installations.

**39.** Describe Currie and Brown's role in these meetings.

A Currie and Broen led by David Hall, who was located within Board teams offices was the Lead Technical Advisor and I think represented the project Team on a number of these meetings. As part of the team conducting User group RDD meetings he was our link to technical advisors.

**40.** Please refer to **Bundle 43 Volume 2 Document 16** - This document is an email and an attachment in respect of the post-bid feedback given and sought from Laing O'Rouke. Under the heading 'Item 29 – Ventilation & Air Treatment Design Strategy' it states:

"Reliance on all air system to avoid wards overheating"

Reasons for avoiding natural ventilation are documented in our bid submission and natural vent was not well rec'd by the Board's Advisors during the Dialogue period. All-Air would be the only option when the new enhanced SHTM air change rates have to be adopted. A chilled beam system cannot be easily integrated with the enhanced air change rates stated in the new draft documents (this is from direct experience of having designed multiple hospitals across the UK using chilled beams). The "non-cooled" all-air option was also considered the low carbon first option, but flexible enough to deal with future increases in external climate (with the retrofitting of trimmer batteries from a free cooling chiller system if required).

A Sorry only email of minutes uploaded no attachment. I'm sorry I cannot really comment on this as I have very limited knowledge of what is being discussed. As its over 15 years ago I really have no recollection of the meeting itself. It was one of a number of meetings on different topics with 3 lowest tenderers.

**41.** Given the comment from Laing O'Rouke that all-air would be the only option when the enhanced SHTM air change rates had to be adopted, why was all-air not pursued?

A Sorry unable to answer – it is well out with my scope of knowledge.

**42.** Standing Laing O'Rouke's comments regarding chilled beams, how did these come to be used?

A Cannot answer this as previous answer it is not something I am qualified to provide an opinion on.

**43.** At the time was it accepted that the use of chilled beams would adversely impacted SHTM compliance? If not, why not given the comments by Laing O'Rouke.

A As previous answers I cannot even venture a guess.

**44.** Who from NHS GGC was responsible for ensuring that pre-handover commissioning and validation had been carried out in respect of the following:

Ventilation system

Electricals

Heating system

Air conditioning

Water system

What was your role, if any, in observing this and ensuring that it had been carried out? If you were not involved who was responsible and involved?

A I had no involvement with any of the MEP commissioning or validation. As far as I can remember Peter Moir, David Hall and Ian Powrie were responsible, in addition to technical advisors.

**45.** Please refer to page 12 of the 2006 'Policy on Design Quality for NHS Scotland' (**Bundle 3 Volume 1 Document 4**) there is a reference to an expectation that SG had that health boards would subscribed to the English ADB system. It says:

"In 2005, the Scottish Executive Health Department, in association with the NHS Scotland Property and Environment Forum (now Health Facilities Scotland) launched an initiative to support NHS Boards in the implementation of ADB throughout NHS Scotland by way of a national agreement in which SEHD would fund the first year's licence subscription to ADB and Health Facilities Scotland would provide ongoing training and user-network support. This is now in place and NHS Boards, having recognised the merits and cost effectiveness of the system, are expected to continue to subscribe annually on their own behalf."

Did you have access to this resource? If so, what consideration, if any, was given to this?

A No, I did not, nor would I have expected to have access to ADB system itself. As far as I can remember the architects require access to system to generate appropriate codes for equipment designed - from a standard library – and our Procurement team would use the system - codes and descriptions to purchase equipment. I became involved with service users and procurement to alter/adapt

codes and/or descriptions if the generic code did not adequately reflect equipment requirements. This was generally required for more specialist pieces of equipment.

**Declaration**

I believe that the facts stated in this witness statement are true. I understand that proceedings for contempt of court may be brought against anyone who makes, or causes to be made, a false statement in a document verified by a statement of truth without an honest belief in its truth.

The witness was provided the following Scottish Hospital Inquiry documents for reference when they completed their questionnaire statement.

**Appendix A**

**A34872080-** Scottish Hospitals Inquiry- Hearing Commencing 9 May 2022 **–** Bundle 3 Volume 1 Document 4

**A47069198** – Scottish Hospitals Inquiry- Hearing Commencing 19 August 2024- Bundle 12 - Estates Communications

**A47851278** - Scottish Hospitals Inquiry - Hearing Commencing 19 August 2024 - Bundle 16 - Ventilation PPP

**A49342285** - Scottish Hospitals Inquiry - Hearing Commencing 19 August 2024 - Bundle 17 - Procurement History and Building Contract PPP

**A34872989-** Scottish Hospitals Inquiry- Hearing Commencing 13 May 2025- Bundle 34 Document 62

**A48235836** - Scottish Hospitals Inquiry - Hearing Commencing 19 August 2024 - Bundle 18 - Documents referred to in the expert report of Dr J.T. Walker - Volume 1

**A37215538-**Scottish Hospitals Inquiry**-** Hearing Commencing 9 May 2022 - Bundle 3, Volume 1, Document 4

**A51652504** – Scottish Hospitals Inquiry- Hearing Commencing 13 May 2025- Bundle 43 Volume 2 Document 16

The witness provided the following documents to the Scottish Hospital Inquiry for reference when they completed their questionnaire statement.

**Appendix B**

N/A

**Appendix C**

**Frances Wrath – CV Document (update of last CV completed 2001)**

**Education Tertiary Education**

Caledonian University (Glasgow College of Technology)/ Glasgow College of Building and Printing) 1983-1987

**Qualifications**

Bachelor of Science Degree –Quantity Surveying (CNAA)

2, six months placements as part of degree award:

1985 – Millar & Co, Chartered Surveyors, Greenock - trainee QS

1886 – Glasgow District Council – dept of Architecture and related services – trainee QS

**Employment History**

GGC New Hospitals Project Team - Apr 2007-May 2015

ASR Programme – Capital Planning Manager (secondment)

Initially April 2007 – 2009

Reporting to Peter Moir and Alan Seabourne

Role was to project manage clearance of proposed site at SGH for new hospital including demolitions and service diversions. Providing details of existing infrastructure and new diversions to NSGH Project Technical team.

No real involvement in new hospitals design – just really attached to team

Role developed – 2008-2009

As role was a project manager for Acute Services Review became part of team looking at condition and occupation of various properties throughout GGC - Southern General, Victoria Infirmary, Gartnavel General and GRI.

Reporting to Alan Seabourne – occupation surveys undertaken of current Southern General, Victoria Infirmary and Western infirmary sites. Thereafter managed and directed external professional advisors to undertake conditional appraisal surveys of remaining SGH buildings, Gartnavel General and GRI sites

Role continued to develop when decision to traditional tendering process undertaken. Reporting to Peter Moir and Alan Seabourne and latterly David Loudon.

Initially primarily involved as Project Manager for new Laboratory development Also became more integrated with new hospital team primarily on schedules of accommodation and (ADB) equipment lists.

Subsequently became part of the team undertaking RDD process – primarily on finishes (floor coverings and decorations) and equipment issues/procurement.

As part of team, I tracked all changes on room layouts - as agreed with each service and signed off by them. I also maintained ADB equipment register and costs.

When Laboratory was completed, I moved onto managing installation of specialist group 5 equipment in Imaging, theatres, aseptic, pharmacy dispensary and Decontamination departments.

This work concluded early May 2025 and my secondment ended. I was transferred to capital Planning department.

**Southern General Hospital – 1995 - Mar 2007 Assistant Estates Manager (Operations & Capital Planning)**

Responsible for the management of the estate management function within the Estates department including the setting of budget levels, monitoring, reporting and advising on corrective action. To implement the appropriate corrective action in respect of delegated areas of responsibility.

Ensure that the Trust's assets are correctly identified and managed within the Estates remit and to provide reports on the status of assets including replacement costs.

Manage the Trust's asset management system.

Develop and implement policies and procedures for the Estates department in respect of departmental procedures.

Ensure the Trust's compliance with legislative issues is met and report to the Trust Board/ Management Executive on current position.
Provide professional advice to the Trust in respect of rateable values, capital charges, asset management, Vat reclamation, construction law, and other property management issues.
Provide and analyse management reports in respect of Estates/Property issues to the Trust.
Ensure that the requirements of internal and external Audits are implemented and advice Trust of any known impending breaches.
Development and management of design proposals for all capital works.
Manage and execute Trust's capital programme within available allocations, resources and programme.
Develop the departments computerised information systems to provide analysis of all aspects of the Estates function.
Monitor and report on the response analysis for breakdowns and planned maintenance, including the Helpdesk function.
Manage and develop the Estates helpdesk.

**Southern General Hospital - 1993-95 Estates Officer – Estate Management**
Responsible to estates Manager for the setting and monitoring of the Estates revenue Budget and all Capital expenditure.
Development and implementation of estates management policies.
Development of Estates maintenance procedures in conjunction with Estates manager and Maintenance Manager.
Development of reporting procedures for Estates.
Part of Trust Major Capital Projects Team.
Provided the Trust with Quantity Surveyor duties on all aspects of Estates Works.

**Southern General Hospital - 1991-93 Estates Officer – Capital**
Responsible to the Estate Manager for the execution, planning and costing of the Unit/Trust's capital programme.

Part of client Liaison team for Major capital Works prior to function being devolved to Trust level. Subsequent to devolved function part of Project team delivering Trust's major capital works.

Part of Trust team preparing competitive tendering documentation for the Estates function.

Provided the Trust with Quantity Surveyor duties on all aspects of Estates Works.

**Harvey, Scott, Gynn and Duff - 1989-91**

Senior Quantity Surveyor responsible for major developments, work comprised all aspects of construction costing and projects control from inception through to final account stage.

**Fyfe Gerrard and Paton - 1987-89**

*1988-89 Glasgow office (2 years)*

Sole Quantity Surveyor responsible to partners for all types of construction developments, work comprised all aspects of construction costing and projects control from inception through to final account stage.

*1987-88 Greenock office (6 months)*

Graduate Quantity Surveyor responsible to partners for all types of construction developments, work comprised all aspects of construction costing and projects control from inception through to final account stage.

**Scottish Hospitals Inquiry**
**Witness Statement of**
**Mairi Macleod**

This statement was produced by the process of sending the witness a questionnaire with an introduction followed by a series of questions and spaces for answers. The introduction, questions and answers are produced within the statement.

**Personal Details and Professional Background**

1. Name, qualifications, chronological professional history, specialism etc – please provide an up-to-date CV to assist with answering this question. Please include professional background and role within NHS GGC, including dates occupied, responsibilities and persons worked with/ reporting lines.

**A.** I have attached a copy of my CV which is correct for the time I was employed with the NHS Glasgow, prior to my retirement in June 2022.

**Site Selection**

2. Describe your involvement in the site selection process in respect of QEUH/RHC.

**A.** I was not involved in this process.

a) Describe the risk assessments, if any, that were carried out? What was the outcome?

**A.** I was not involved in this part of the process. Not applicable.

b) What consideration, if any, was there in respect of the waste and recycling centre proximity to Sheildhill Waste Recycling Centre?

**A.** I was not involved in this part of the process. Not applicable.

c) What concerns, if any, did you have regarding site selection? What action, if any, did you take in respect of such concerns and what was the outcome?

A. I was not involved in this part of the process. Not applicable

**Funding and Bidder Selection**

3. Describe the funding PFI changes, your involvement, why the changes were made, who signed off on the changes and what the escalation process was in respect of the Board authorising these changes.

**A.** I was not involved in the financial decision making for the project.

4. Describe your involvement, if any, in respect of the selection process whereby Multiplex were selected as the preferred bidder.

**A.** I had no direct involvement in the final decision to appoint Multiplex as the preferred bidder. My role was to look at the clinical spatial design of the Children's hospital to ensure that the design was meeting the clinical adjacencies and flow for the young people and their parents/carers. These observations were then submitted to the Management Team overseeing all the aspects of procurement i.e. finances, FM, Capital, estates, and legals.

a) Why were Multiplex awarded the contract following the competitive dialogue process? What distinguished Multiplex from the other bidders to make them the preferred bidder?

**A**. As explained above I had no other involvement with the procurement exercise

**Design and Specifications**

5. When did you first become involved in the design of QEUH/RHC. Please describe your role and responsibilities.

**A.** I first became involved in the design of the RHC in 2006. I was the Project Manager overseeing the clinical input and the views of the young people and their carers'.

6. The Inquiry understands that you were the Project Manager for RHC from around 2006. Describe in detail this role. Including your role, if any, in the User Groups.

**A.** My role was to manage the stakeholder input to the design of the Children's hospital, this involved ensuring that expectations were managed and that the programme targets were met and costs contained.

I was the Project Team Lead for the User Groups for the RHC and attended all meetings. At handover of the completed building I was involved in the familiarisation and orientation of staff who would be working in the new building.

a) Confirm who attended the user groups meetings from IPC, Estates, Clinical and the GGC Project Team for the following areas: Ward 4B – QEUH; Ward 4C – QEUH; Level 5 – QEUH; Critical Care – QEUH; Ward 2A & 2B – RHC; PICU RHC – RHC; All Isolation rooms

**A.** I am only aware of who attended the RHC User Group meetings for areas: wards 2a & 2b; PICU; and the BMT Isolation rooms. I cannot recall all attendees but generally from the Project Team: myself; Fiona McCluskey the Nurse advisor; Frances Wrath from Capital; Karen Connelly the FM lead; the Jackie Balmanroy, the Infection control nurse on the Team; and Daviid Hall, the Curry & Brown Project Manager. From the RHC, management had appointed clinical teams to participate in the design process and each group covered different areas of the hospital.

b) How often were user group meetings scheduled to review design proposals and agree the design with the user groups

**A.** There were scheduled to review design proposals as and when designs became available from Multiplex and when any amendments were made. Each group met 2- 3 times on average with more complex areas e.g. theatres meeting numerous times. They generally met until there was clinical sign off of the department design.

c) Describe your involvement in the design of the Schiehallion unit, PPVL and BMT rooms.

**A.** I was involved in the management of clinical and other stakeholders' input to the 1:200 designs ie the department layout - where rooms were situated and the 1:50 room layouts. For clarity, my involvement was to agree the correct layouts for the use of the space and to manage expectations.

d) How were designs approved for construction and who signed off on the agreed design?

**A.** The spatial designs were signed off by my myself as Project Manager, the Clinical Lead of the User Group and Infection Control nurse, Jackie Balmanroy, Jackie agreed that the room adjacencies were appropriate in terms of Infection Control compliance. The MEP (mechanical, electrical and plumbing) design for each department and room layout were then developed by the MEP Group (I was not a member of this Group).

7. Explain the purpose of the guidance relied upon by the design team and why this was important.

**A.** The Team used the Health Building Notes (HBNs) or the Scottish Health Building notes if they existed. This was important as it gave the room requirements and specifications for Health Buildings in the UK/Scotland.

8. Explain how the output for the design of the Wards was confirmed and signed off. In doing so describe the purpose of the clinical output specification, and your involvement.

**A.** The Clinical Output specifications were completed by the Clinical Teams and then reviewed by myself and the Medical Planners appointed by the Board, Buchan Associates. These were then passed to the RHC General Manager Jamie Redfern for final sign-off. The Output specs informed the design of the hospital by Nightingales the Multiplex architects,

9. Describe the intended use and purpose of the following wards in RHC: Ward 2A/ 2B, what guidance was considered in the design of these wards, what processes were in place to ensure guidance compliance? Were there any changes to the design during the design and build, if so, please describe any such changes, describe the impact, if any, on guidance compliance, and described the sign off process for any such changes, your involvement and how any changes were communicated to the Board. Was external advance ever sought in respect of design changes?

**A**. I am unable to recall the name for the HBN used for the design of wards 2a & 2b. The process for the sign of the 1:200s and 1:50 layouts was sign off by myself, the Infection Control nurse on the Team and the Clinical Lead from the RHC. To the best of my recollection there was no deviation from the HBN in terms of the layouts. I was not responsible nor involved in the development of the design for the MEP (mechanical, electrical and plumbing) systems, therefore I am unable to comment on these aspects.

10. Describe your involvement and understanding, if any, in the removal of the maximum temperature variant? Why was the decision taken and by whom? What risk assessments, if any, were taken prior to making this decision? What was the impact, if any, in removing the maximum temperature variant?

**A.** I am unable to comment as I was not involved in these aspects of the Project

11. What role, if any, BREEAM played in the acceptance of this design.

**A.** I was not involved in BREEAM meetings.

12. Please describe and name the people who were involved, the sign off process involving RDD, and your knowledge and understanding of the purpose of the scale drawings and designs, how the technical requirements for the rooms were managed, including your role and involvement.

**A.** I am unable to comment as I was not involved in the technical requirements for the rooms.

13. Describe the IPC involvement in the design of Wards 2A and 2B, who was involved and who signed off the final design and when.

**A.** The Project Team Infection Control Nurse – Jackie Balmanroy; from the RHC Craig Williams and Pamela Joannidis. There was at least one meeting but my recollection is that Jackie discussed the design with Infection Control colleagues and these views were brought to User Group meetings. I can't recall the date of the final design sign off.

14. What concerns, if any, did you have regarding the final design specification of Wards 2A and 2B, and what action, if any, did you take in respect of these concerns?

**A.** I became aware of an issue during the Commissioning Phase of the RHC in the spring of 2015 as Jennifer Armstrong the Board Medial Director phoned me to say that clinicians from the RHSC had contacted her to inform that the Bone Marrow Rooms were not properly completed – I think it was that the individual air control units were not in situ. I drew that matter to the attention the Chief Operating Officer (COO), Grant Archibald who convened a meeting with Mary Ann Kane the deputy Facilities Manager and Alister Fernie from Multiplex. Multiplex agreed to obtain and install these Units ahead of the move from Yorkhill to the new RHC. My recollection is that these were sourced and installed.

15. Describe the purpose of the ABD sheets and the relevance of ADB in respect of the intended patient cohorts. Who was responsible for sign-off of the ABD sheets? From the point of signing off the ADB sheets when did it become apparent that the ventilation specification of Wards 2A and 2B did not meet the requirements of SHTM/ HTM? What action, if any, did you take in respect of this?

**A**. I am unable to comment as I was not involved in these processes

16. What concerns, if any, did you have regarding isolation rooms and compliance with SHTM/HTM? What action, if any, did you take in respect of any such concerns?

**A.** I do not have the technical knowledge to comment on this.

a) The Inquiry has reviewed the RDS in excel format and note there is an entry under 'Design Notes' relating to Ward 2A isolation rooms; the entry states:

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). Specialist advice should be sought on its design. The lamp repeat call from the bedroom is situated over the door outside the room.

(i) Was this note entered on the RDS? If so, why and by whom?

**A.** I don't recall this.

(ii) What specialist advice was sought relating to the design of these rooms?

**A.** I was not responsible or involved in the detail or discussions relating to MEP systems.

(iii) What was the final agreed design for isolation rooms and who approved this?

**A.** I was not responsible or involved in the detail or discussions relating to the MEP systems.

b) The Inquiry has reviewed the RDS in excel format and note there is an entry under 'Design Notes' in the RDS which refers to HBN 4 Supplement 1, paragraph 1.10, and states:

"EXCLUSIONS

This supplement does not describe the specialist facilities required in infectious disease units or on wards where severely immuno-compromised patients are nursed. Guidance for these facilities will follow in a further supplement to HBN 4."

(i) Were you aware of the exclusion in para 1.10? If so, what action was taken? What was the impact, if any, of the exclusion?

**A.** I was not responsible or involved in the detail or discussions relating to the MEP systems.

c) What ceiling types were specified and approved for use in isolation rooms? Who from the GGC Project Team approved this? Describe your involvement, if any? What was the impact, if any, of the choice of ceiling tiles? What concerns, if any did you have regarding the choice of ceiling tiles?

**A.** I am unable to comment as I was not involved in these discussions.

17. The Inquiry is aware that in respect of a derogation being agreed in respect of the ventilation system and the requirement to achieve ACH in compliance with SHTM. Where you aware of this at the project phase?

**A.** No, I was not aware nor involved in any discussion's relation to this matter.

a) If not, when did you become aware? In hindsight, should you not have been aware of this at the time?

**A.** I only heard when I had left the Project. I do not have the expertise to comment on these aspects. Such a decision was out with my role and responsibility.

b) What concerns, if any, at the project phase did you have in respect of the ventilation system?

**A.** I am unable to comment on this as it was out with my role and responsibility. I have no technical knowledge or competency in MEP systems.

18. Describe your involvement, if any, in respect of the decision to use Horne taps.

**A.** I was not responsible nor involved in the decision to use Horne taps.

a) What concerns, if any, did you have regarding the use of Horne taps?

**A.** I was not involved in the decision to use Horne taps.

b) What risk assessments were carried out in respect of the use of Horne taps?

**A.** I was not involved in the decision to use Horne taps.

c) Who was involved in, and who signed off the use of Horne taps?

**A.** I was not involved in the decision to use Horne taps and do not know made the decision or signed off on their use.

d) Did you attend the meeting regarding the use of Horne taps in 2014? If so, why was the decision made to proceed with Horne taps?

**A.** I was not involved in the decision-making process relation to Horne taps.

**Handover**

19. Commissioning and validation:

a) Describe what commissioning of the water and ventilation system took place prior to handover, and your involvement, if any.

**A.** I was not responsible nor involved.

b) Who was responsible for ensuring that commissioning of the water and ventilation system was carried out, and who signed off that it had been carried out? What concerns, if any, did you have regarding commissioning and validation being carried out prior to handover?

**A.** I do not know who was responsible or who carried out the commissioning of the MEP systems.

c) The Inquiry understands that NHS GCC decided to forgo the requirement to have an independent commissioning engineer. Who made this decision? What was the impact, if any, of this decision? In hindsight, do you think that it was the correct decision?

**A.** I was not involved nor aware of these discussions.

d) The Inquiry understand that no validation was carried out in respect of the ventilation system. When did you become aware of this? How did handover come to be accepted without the ventilation system being validated? Who was responsible for this and who signed off on this?

**A.** I first became aware of this during my interviews with the Police in 2022/23. I was not responsible nor have any knowledge on the validation process or who signed it off

20. Who oversaw contractual compliance? Who was responsible for ensuring that the paperwork was produced to confirm contractual compliance? What action, if any, did you take to ensure that paperwork was in place to ensure contractual compliance? Was validation of the ventilation system a contractual requirement? If so, who signed off on contractual compliance given the lack of validation?

**A**. The external Technical Team oversaw the contractual compliance. I do not know who this involved

21. Describe your role in the lead up to accepting handover. What action, if any, did you take to ensure that the wards within RHC met the guidance requirements of SHTM.

**A.** My only involvement in this was the walk round inspections in the lead up to handover to check the room layouts and equipment installed for any omissions or obvious snagging.

22. How were you assured that the wards met the requirements of the specific patient cohorts?

**A.** I was not aware of any major issues regarding fit out

23. The Inquiry is aware that the ventilation system in respect of Wards 2A and 2B did not meet the requirements of SHTM – knowledge and awareness/ involvement in derogation. Did you have any concerns at the time? If so, please describe. The Inquiry is aware that Ward 2A was handed over without HEPA terminals being in place in wards, how did sign off come to take place without these being in place? Who signed off the RHC as ready for handover, without HEPA being in place?

**A**. I was not responsible nor involved in the design or sign off of the ventilation system

24. The Inquiry understands that there was no validation of the ventilation system prior to handover. Who was responsible for ensuring that this was in place? Why was validation not carried out? When did you become aware that it had not been carried out and what action did you take in respect of validation having not been carried out? What was the consequence of validation not having been carried out? Should the hospital have opened without the ventilation system having been validated?

**A**. I do not know why there was no validation of the ventilation system. It is reasonable to think it should have been validated ahead of the hospital opening.

25. Describe your knowledge and involvement, if any, in the PMI allowing Multiplex's role as Independent Commissioning Engineer. What was the impact of this?

**A.** I had no knowledge or involvement in the decision taken.

26. At handover, had a preoccupation L8 risk assessment been carried out? Who was responsible for ensuring that this was in place prior to patient migration? were you aware of a preoccupation L8 assessment having been carried out? Who instructed it? When did you become aware? Why did you not raise it as a concern that you had no seen this prior to patient migration, was this not within your role as Project Manager of RHC?

**A**. I was not aware of the L8 risk assessment. i was not involved in any aspect of this as it was not part of my role or responsibility.

27. Who was responsible for providing asset tagging. Why was there no asset tagging who decided to proceed without it?

**A.** I have no knowledge and was not involved.

28. What, if any, testing and maintenance protocols and regimes were in place at handover? Who was responsible for putting these in place? If they were not in place, why not, and what action was taken and by whom to address this?

**A.** This did not form part of my role or responsibility. I would have expected Estates to be involved in these protocols and regimes

29. Describe your knowledge, if any, of the water system being filled prior to handover. Why was this done and by whom? What concerns, if any, did you have regarding this? Did you escalate these concerns? If so why, if not why not?

**A.** No responsibility, knowledge or involvement

30. The Inquiry is aware of concerns in respect of the cold water temperature. Describe your awareness, if any, in respect of these issues. Describe your involvement, if any, and any action taken. If you were not aware of these issues at the time, with the benefit of hindsight is this something you should have been aware of?

**A.** No responsibility, knowledge or involvement.

31. As project manager responsible for the tendering, planning, design, commissioning and delivery of the Royal hospital for Glasgow. Please explain why you are unable to answer the relevant questions above which are clearly within your remit as described by you. The Inquiry is keen to understand what you say your role was and why, if it is the case, it was not your role to ensure that the RHC was handed over in all respects as desired?

**A.** Issues relating to hard FM, which would include water and taps, were there responsibility of Ian Powrie and the Estates team and were not within my remit. My role was to manage the stakeholder input to the design of the Children's hospital, this involved ensuring that expectations were managed and that the programme targets and costs were contained. Engineering, Plumbing and Electrical design for the build were not within my remit.

**Declaration**

I believe that the facts stated in this witness statement are true. I understand that proceedings for contempt of court may be brought against anyone who makes, or causes to be made, a false statement in a document verified by a statement of truth without an honest belief in its truth.

The witness was provided the following Scottish Hospital Inquiry documents for reference when they completed their questionnaire statement.

**Appendix A**

N/A

The witness provided the following documents to the Scottish Hospital Inquiry for reference when they completed their questionnaire statement.

**Appendix B**

N/A

**Appendix C**

**CURRICULUM VITAE - Mairi Macleod**

Full name Ms Mairi Macleod

**NHS EMPLOYMENT HISTORY**

**1985-1989 - West of Scotland Consortium of O&M/Work Study Unit**

Entered the NHS as trainee O&M/Work Study Officer responsible for: implementation of bonus schemes for ancillary staff; conducting time & motion studies; calculating requirement for In-house bids in Competitive Tendering process.

**1988-1990 - O&M/Work Study Officer at Lanarkshire Health Board**

Responsible for: producing staffing levels for In-house bids in ancillary Competitive Tendering process; negotiation with management and TUs; Implementation of successful In-house bids; and where in-house bid was successful the monitoring of the contract.

**1990- 1992 - Principal  Admin Assistant at Law Hospital**

Providing administrative support to the Unit General Manger and Director of Admin. Handling of claims and complaints.  Publication of staff newsletter.

**Assistant Administrator at Lanarkshire Health Board**

As a member of the Health Board's Nursing Home Inspection Team visited and inspected nursing homes throughout Lanarkshire.  Produced a report with recommendations which the team then monitored for compliance.  Also responsible for legal claims and compiling responses to complaints for Chairman or General Manager's signature.

**Headquarters Administrator at Lanarkshire Health Board**

Provided administrative support to General Manager and Chairman.  Secretariat support to Board Committees.  Assisted with handling of media and communications. Provided admin support to Outbreak Control team during E.coli outbreak in Lanarkshire in 1996.

**2000- 2003 - Corporate Affairs Manager South Glasgow University Hospitals NHS Trust**

Responsible for providing secretariat to Trust Committees. Responsible for internal and external communications in the Trust. Provided admin assistance to Chief Executive, the Trust Chairman, Executive Directors and Trustees.

**2003-2006 - Project Manager, Acute Services Strategy: ACH Project**

Responsible for the management, planning and delivery of the clinical design aspects of the new Victoria Hospital. Involved working closely with key clinicians whose services would be transferring to the new hospital.

**Project Manager: New Children's Hospital**

Responsible for the delivery of stakeholder input to the spatial design of the Royal hospital for Children (Glasgow) from the tendering stage, through the planning and design of the build, the familiarisation of staff during the commissioning of the building and the migration of services. The Children's Hospital was part of an £840m project in the South of Glasgow which delivered a Laboratory & Mortuary build, a new Adult and Children's hospital, car parking, a teaching and learning facility and new office block.

**Retirement Project Manager: Standardise & Rationalise Project**

**Scottish Hospitals Inquiry**
**Witness Statement of**
**Fiona McCluskey**

This statement was produced by the process of sending the witness a questionnaire with an introduction followed by a series of questions and spaces for answers. The introduction, questions and answers are produced within the statement.

**Personal Details and Professional Background**

1. Name, qualifications, chronological professional history, specialism etc – please provide an up-to-date CV to assist with answering this question. Please include professional background and role within NHS GGC, including dates occupied, responsibilities and persons worked with/ reporting lines.

**A.** My name is Fiona Jane McCluskey. I am a retired Registered Nurse.
I started my general nurse training in July 1978 at Glasgow Royal Infirmary and qualified in August 1981 as a Registered General Nurse.
I worked for 39 years within NHSGGC in a variety of clinical and senior nursing management roles. I retired from NHSGGC on 31st March 2017. On 31st August 2017 my Nursing Registration lapsed with the NMC and since then I have not practiced as a Registered Nurse.

I have attached my CV which details my chronological professional history **(See Appendix C)**

**<u>Qualifications:</u>**
BSc Health Studies (Hons 1st Class) 1998
Diploma in professional Studies in Nursing (Distinction ) 1995
Scottish National Board Certificate in Operating Department Nursing 1982
Registered General Nurse 1981
SQA Certificate in Patient and Public Involvement 2008

**Role as Senior Nurse Adviser – New South Hospitals Project**

I was appointed as Senior Nurse Adviser for the New South Glasgow Hospitals Project team on 1st April 2009 following a competitive interview process in December 2008. This was initially advertised as a secondment opportunity for 2 years. In 2011 the post was made substantive due to the value of the project. My post with the project ended on 30th June 2015. I have attached the Job Description for my post as Senior Nurse Adviser.

On the 1st July 2015 I was redeployed through the NHSGGC Organisational Change Policy to the post of Assistant Chief Nurse Governance and Regulation in the Nursing, Midwifery & Allied Health Professionals Directorate based at NHSGGC Health Board HQ.

**The main purpose of my role as Senior Nurse Adviser was:**

- to provide expert nursing professional advice in relation to all service redesign, planning and implementation aspects associated with the New South Glasgow Hospital and New Children's Hospital Project.
- To develop training programmes with clinical services to ensure that staff were well prepared to facilitate new models of care.

**My responsibilities as Senior Nurse Adviser were to:**

- build key internal and external stakeholder networks to achieve key project objectives
- be responsible for ensuring there is user involvement in the Project
- challenge and lead the drive for modernisation of clinical services by encouraging innovation, identifying new ideas and practices and use of new technology
- work with the Acute Nurse Director in providing expert Nursing advice and significantly contributing to the identification of a nursing workforce for the new hospitals
- identify changes in roles and skill mix and identify training requirements in taking forward the new ways of working

**Persons worked with during the New South Glasgow Hospital Project**

The core project NHSGGC team members I worked with were the Project Medical Director's for both adult (Dr Stephen Gallacher) and children's hospitals (Mr Morgan Jamieson in 2009 until his retirement. When Mr Jamieson retired, Dr Jane Peutrell took over as the children's Project Medical Director. I worked with the adult and children's Project Managers (Heather Griffin and Mairi Macleod) the Facilities Management Lead (Karen Connelly), Project Technical Manager (Frances Wrath) and Project Deputy Medical Director (Peter Moir).

I reported to the Project Director Mr Alan Seabourne from 2009 until his retirement then I reported to Mr David Loudon. My professional reporting line was to the Acute Director of Nursing Mr Rory Farrelly from 2009 -2014. After Mr Farrelly left NHSGGC, I reported to the Board Director of Nursing Mrs Roslyn Crocket.

I also worked with other NHSGGC project managers including Technical Managers, Community engagement, Health Information & Technology, Telephony, Clinical Physics, Procurement and equipping. I also worked with the Laboratory Project Manager, Lorraine Peebles, on a project 'enhancing the environment for the bereaved'. We obtained Charity funding to enhance the bereavement areas and the mortuary viewing rooms in the paediatric mortuary based in the Laboratory building. I also worked with David Hall (Currie and Brown).

**Design and Specifications**

2. When did you first become involved in the design of QEUH/RHC. Please describe your role and responsibilities.

**A.** I commenced in post as Senior Nurse Adviser with the New South Glasgow Hospital Project Team on 1st April 2009. I first became involved in the design of the hospital during the competitive dialogue process which began May/ June 2009. I cannot remember the exact dates. I was assigned to the adult and children's clinical group meetings which were held with the bidder teams' architects. I attended these meetings along with Dr Stephen Gallacher, adult hospital Medical Director, Dr Morgan Jamieson, Children's Hospital Project

Medical Director, Heather Griffin, Project Manager - adult hospital meetings and Mairi Macleod, Project Manager - children's hospital meetings and Annette Rankin Consultant Infection Control Nurse. My main role was to provide expert nursing advice to the clinical meetings. These meetings were led by the bidder teams' architects and started with the 1:500 block plans of their design, working through some departmental 1:200s, then specific 1:50 rooms. These meetings largely concentrated on clinical adjacencies, clinical flows and 1:50 room layouts. This was a 2 -way process where we would review the design presented by the architect and give feedback at the meeting. The adult and children's meetings were held concurrently in a large room to facilitate access from Annette Rankin and myself to both groups. I had no input to technical or commercial meetings during competitive dialogue.

I was a member of the clinical evaluation group during bidder evaluation with Dr Stephen Gallacher, Dr Morgan Jamieson, Heather Griffin and Mairi Macleod and Annette Rankin the Consultant Infection Control Nurse. My main role was to provide expert nursing advice to the clinical evaluation process.
I had no input to any technical meetings or any commercial meetings during the bidder evaluation stage. The next stage of the design process was when the user group meetings were set up. My main role was to provide expert nursing advice to the clinical user group meetings.

a) Can you please explain what you mean by providing, "expert nursing advice" and provide some examples to provide context.

**A.** The Job description for the Senior Nurse Advisor post (attached) states that the post holder is required to provide the project team with expert nursing advice. The post holder was also required to have 'substantial professional nursing experience with additionally several years working in senior management posts'.

Providing expert nursing advice in the context of the Senior Nurse Advisor post required me to use knowledge gained through my nursing education and experiential learning from previous clinical and nursing leadership roles. This fits with the 'expert nurse 'as described by Patricia Benner in her book 'From novice to expert, excellence and power in clinical nursing practice' Benner P (1984). Addison -Wesley Publishing Company.

I provided nursing advice on many occasions. Five examples to provide context are detailed below. These examples influenced changes to the design to support the delivery of safe patient - centred care. I did not provide nursing advice in isolation. I collaborated with other nurses and specialist advisory groups through a 'hub and spoke model'. This included nurses within NHSGGC and other external organisations.

**Examples to provide context**

In April 2009, when I commenced in post, the majority of the hospital estate was built in the late 19th & early 20th century. The design of ward areas in the demitting hospitals consisted of a variety of multi-bedded wards, ranging from nightingale wards to four bedded rooms. It was recognised that the move from multi-bed accommodation to 100% single rooms was going to mean a significant change in practice for nursing staff.

A number of UK sites were visited by me with other nursing staff in support of design development. This included the Bevan Ward at the Hillingdon Hospital NHS Trust which was a Royal College of Nursing research pilot site for different layouts of 100% single rooms. One of the key learning points to maximise patient safety was good visibility into the bedrooms.

A key aesthetic feature in the new hospital design was that each patient would have his or her own en-suite toilet & shower room. This required an uncomplicated route from bed to en-suite in the design to maximise patient safety and give patients direct access to toilet and shower facilities.

1. **Visibility into the bedrooms**

A key design principle was to maximise visibility from the corridor into the bedrooms. This was achieved by incorporating large observation panels to enable nursing staff to have a direct line of sight into the bedroom. Privacy issues were addressed by the incorporation of interstitial blinds into the observation windows.

1.1 **Observation windows**

The initial design presented by the Multiplex design team was an observation window with interstitial blinds (blinds in the double glazed panel). The initial design of the blinds reduced visibility into the bedrooms which was unacceptable for nursing observation. After several iterations the Multiplex design team produced a blind design which increased the space between the blind slats and maximised the visibility into the bedrooms to enable easier nursing observation of patients.

1.2 **Door panels**

The initial design presented by Multiplex was a narrow visibility panel on the upper part of the bedroom door which gave little visibility into the room and was unacceptable for nursing observation. Multiplex changed the design to full 'Vistamatic' panels thus increasing the visibility into the bedrooms

2. **Direct access to toilet and shower facilities**

2.1 **En-Suite Doors**

The initial design of the en-suite doors was a bifold arrangement which I felt was unacceptable for patient safety. I had seen the door with other nursing colleagues at another hospital site and based on our opinion and that of a Health and Safety assessment we felt that there was a high risk of finger trapping. In addition, we felt that many older people and wheelchair users would find the door difficult to use and reduce accessibility into the en-suite.

The Multiplex design team changed the design to twin doors opening outwards set on piano hinges. This enabled the doors to swing outwards and be set flat against the wall, an innovative design at the time. This in turn gave patients easier access to the en-suite and increased the area around the toilet to enable nurses to carry out moving and handling of patients from both sides of the toilet. This also assisted in wheelchair bound patients independent accessibility on and off the toilet.

2.2 **Ensuite Floor**

The initial design of the en-suite wet room floor included a 'lip' around the shower area to reduce egress of water. From a nursing perspective this design was felt to be unacceptable for patient safety as the lip had the potential to be a trip hazard for patients. The lip was also too high for wheelchair users to access the shower unaided, thereby reducing their independence. The lip also had the potential to be a moving and handling hazard for nurses who would be required to assist a patient into the shower area on a mobile shower chair. After a number of iterations, the Multiplex design team re-designed the floor and removed the lip replacing it with a shallow slope towards the drain.

2.3 **Vinyl Flooring**

The initial floor vinyl design presented by the contractor was a heavily spotted design which was unacceptable for patients with dementia or cognitive problems who can experience visual-perceptual difficulties, leading to misperceptions and distortions of reality e.g. dark patches on a floor can be mistaken for a hole. The contractor supplied a different design which was acceptable for patients with dementia.

3. **Hoist Strategy**

In conjunction with the NHSGGC Moving and Handling Lead, I developed a hoist strategy for the whole hospital. Overhead hoists were fitted to specific rooms in the wards and included some rooms fitted with bariatric hoists. This reduced the need for the use of mobile hoists which can take up a lot of space in a ward area.

4. **Nurse Call Handset**

The initial patient handset presented to the project team by the contractor had the potential to operate the lighting system and the entertainment system as well as connecting the patient to the nurses via the 'call bell' system. Following a review with nursing colleagues it was felt that the handset may be confusing for some patient groups so a simpler handset suitable for patients in both paediatric and adult settings was chosen. An additional feature of a torch was included in the handset and proved to be popular with patients when using the handset at night.

5. **Supporting the delivery of patient centred care**

I also utilised best practice nursing standards to support the delivery of safe patient care and to create patient-centred environments within the new hospital.

Examples of these in the hospital are the locations of the 'Care Assurance Standard Boards' in the entrance to every ward, the 'What Matters to Me' Boards in every bedroom and the 'Patient Status at a Glance' Smart Boards located at staff bases in every ward, in the Acute Assessment Unit and in the Emergency Department where clinical huddles are carried out.

I liaised and fed back output from the clinical user group meetings to the Director of Nursing / Heads of Nursing meeting which were held on a monthly basis and in 1:1 meetings with the Director of Nursing. I also gave feedback to the Project Director and at Project Team meetings. There were circa 70 user groups involved in the design of the hospitals, these were clinical and non clinical. I attended most clinical meetings. I cannot recall all the meetings that I did attend as it was 15 years ago. I did not attend any non clinical meetings regarding the design of facilities or estates rooms e.g. Regen kitchens, plant rooms, mechanical or electrical systems, ventilation or water systems, IT hub rooms, basement areas & AGV's or the helipad.

**The main purpose of my role as Senior Nurse Adviser was:**

- to provide expert nursing professional advice in relation to all service redesign, planning and implementation aspects associated with the New South Glasgow Hospital and New Children's Hospital Project.
- To develop training programmes with clinical services to ensure that staff were well prepared to facilitate new models of care.

**My responsibilities as Senior Nurse Adviser were to:**

- build key internal and external stakeholder networks to achieve key project objectives
- be responsible for ensuring there is user involvement in the Project
- challenge and lead the drive for modernisation of clinical services by encouraging innovation, identifying new ideas and practices and use of new technology
- work with the Acute Nurse Director in providing expert Nursing advice and significantly contributing to the identification of a nursing workforce for the new hospitals
- identify changes in roles and skill mix and identify training requirements in taking forward the new ways of working

Further detail on my role and responsibilities are detailed in the Senior Nurse Adviser Job Description which is attached with my statement.

3. The Inquiry understands that you were Senior Nurse Advisor for the QEUH/ RHC Project Team from around 2010 to 2012. Describe in detail this role, including when you started and left this role. Including your role, if any, in the User Groups.

**A.** As detailed earlier in my statement, I was appointed as Senior Nurse Adviser for the New South Glasgow Hospitals Project team on 1st April 2009 following a competitive interview process in December 2008 which I held until my role on the project ended on 30th June 2015.

I have attached the Job Description for my post as Senior Nurse Adviser.

**The main purpose of my role as Senior Nurse Adviser was:**

- to provide expert nursing professional advice in relation to all service redesign, planning and implementation aspects associated with the New South Glasgow Hospital and New Children's Hospital Project.
- To develop training programmes with clinical services to ensure that staff were well prepared to facilitate new models of care.

**My responsibilities as Senior Nurse Adviser were to:**

- build key internal and external stakeholder networks to achieve key project objectives
- be responsible for ensuring there is user involvement in the Project
- challenge and lead the drive for modernisation of clinical services by encouraging innovation, identifying new ideas and practices and use of new technology
- work with the Acute Nurse Director in providing expert Nursing advice and significantly contributing to the identification of a nursing workforce for the new hospitals
- identify changes in roles and skill mix and identify training requirements in taking forward the new ways of working

**My role also included the following**

- Competitive dialogue - member of the clinical group - nursing input
- Bidder evaluation - member of the clinical evaluation team - nursing input
- Clinical User groups meetings - nursing input
- Clinical Migration Project Planning Lead 2013 -2015 – with Dr Stephen Gallacher, Adult Hospital Medical Director
- Hoist Strategy - with Cameron Raeburn Moving and Handling Lead NHSGGC
- Resuscitation Strategy - with NHSGGC Resuscitation Training Officers
- Nurse call system – nursing input
- Chair of the Generic Ward Operational Policy Group
- Patient Focus / Public Involvement Group
- Scrub sink and clinical wash hand basin assemblies - with J Barmanroy
- Dispenser locations - with J Barmanroy
- Art Strategy - enhancing the healing environment led by Jackie Sands Arts Lead
- Wayfinding strategy
- Patient entertainment system
- Dementia Signage
- Bereavement Strategy - Chair of the short life working group
- Improving the Environment for the bereaved - successful bid for charity funding to enhance the paediatric mortuary rooms situated within the laboratory building
- Bedroom and critical care bedhead and ceiling lighting workshops & demonstrations for clinical staff - with the lighting contractor Whitecroft
- Mock rooms - 2011
- Mock Ward - 2014
- Chair of scenario planning Working Group -2014
- Horne Taps briefing paper 2012 - in conjunction with J Barmanroy
- Bedpan washers vs Macerators- in conjunction with J Barmanroy
- Patient and public Events - in conjunction with Community Engagement
- Staff events - with H Griffin/ M Macleod
- Meetings with local GP’s - with Dr Stephen Gallacher Adult Hospital Medical Director
- New Hospital Staff tours – with other Project Team members
- New Hospital Staff induction Programme - with other Project Team members

- Senior Charge Nurse generic ward training programme
- Medical Directorate 'On the Move' operational planning groups
- Clinical Migration Logistics Group
- Patient Flows Event - testing patient flows to the new adult outpatients with members of the public prior to the hospital opening
- BBC filming – 'Our New Super- Hospital'.
- Risk assessment tool for nursing patients in single room ward accommodation -2015
- nursing workforce plan for clinical migration/ double running

**Role in User Groups**

My main role was to provide expert nursing advice to the clinical user group meetings. I liaised and fed back output from the meetings to the Generic Ward Users Group, the Director of Nursing / Heads of Nursing meeting which was held on a monthly basis and in 1:1 meetings with the Director of Nursing and the Project Director and at Project Team meetings.

My recollection is that there were circa 70 user groups involved in the design of the hospitals, these were clinical and non clinical. I attended adult and children's meetings relating to wards and clinical departments. I did not attend any meetings regarding the design of facilities or estates rooms e.g. Regen kitchens, plant rooms, mechanical or electrical systems, ventilation or water systems, IT hub rooms, basement areas & AGV's or the helipad.

a) Confirm who attended the user groups meetings from IPC, Estates, Clinical and the GGC Project Team for the following areas: Ward 4B – QEUH; Ward 4C – QEUH; Level 5 – QEUH; Renal – QEUH; Critical Care – QEUH; Ward 2A & 2B – RHC; PICU RHC – RHC; All Isolation rooms

**A.** My recollection was there were circa 70 user groups. For the areas specified above in the question it is impossible for me to be able to detail everyone from the specialties who attended these meetings because I no longer have access to my NHS emails or project folders kept during my time with the project. A register of attendance at meetings was taken at the user group meetings by the Project Managers.

User groups were represented by subject matter experts, usually senior clinicians / nurses/ AHP's who were experts within their specialty. The representatives were nominated by their Director. The Project team had no involvement in nominating clinical users. The user group lead was either a Clinical Director (a senior doctor), a Senior Nurse, a General Manager or a Lead Allied Health Professional.

My recollection of Project Team members at the above user group meetings were as follows:

**Project Manager:**

Heather Griffin for the adult Hospital meetings

Mairi Macleod for the children's hospital meetings

**Infection Control**

Pamela Joannidis and Sandra MacNamee (Devine) attended meetings until Jackie Barmanroy came into post in 2010, then Jackie Barmanroy attended the meetings

**Project Medical Directors:**

Dr Stephen Gallacher (Adult hospital)

Dr Jane Peutrell (Children's Hospital)

**Senior Nurse Advisor**

Fiona McCluskey

**Project Technical Manager**

Frances Wrath

**Technical Adviser**

David Hall (Currie and Brown) or a deputy in his absence

**Architects**

The architects from Nightingale Associates were responsible for the design of the hospital including all wards and departments and led the users through the meetings.

b) How often were user group meetings scheduled to review design proposals and agree the design with the user groups.

**A.** My recollection was that there were approximately 3 rounds of User group meetings. I cannot recollect how often each of the user group meetings were held. Some smaller/less complex departments or specialties with individual rooms perhaps only required a couple of meetings whereas other more complex departments had more meetings scheduled.

c) Describe your involvement in the design of the Schiehallion unit, PPVL and BMT rooms. Who signed off these areas from Infection Control?

**A.** The Schiehallion Unit wasn't given its name until after the hospital opened so my recollection is that the name Ward 2a was used during user group meetings. My recollection was that I attended most if not all of the ward 2a user group meetings although it is hard to remember. The meetings were held on the Yorkhill site at the request of the users to ensure maximum attendance from clinical users at meetings.

My recollection is that the ward 2a meetings followed a standard format used in all user group meetings.

In the first meeting the group were introduced to the project team and the architect. The architect had the responsibility for the design of the ward. The architect took the group through the 1:500 block plans, clinical adjacencies and artists impressions of the hospital site. The purpose of this was to give the group a high level understanding of the whole hospital.

My recollection is that the architect then showed the group the proposed plan for ward 2a on the 1:200 departmental layout. This included the ward bedrooms and the support rooms within the Ward, the Teenage Cancer Trust (TCT) area, the MIBG (meta-iodobenzylguanidine) suite and the seminar room. The user group was told that they could change round the layout of the ward if they wished, providing they remained within the 1:200 envelope.

At subsequent meetings the architect worked with the user group on the detail of all rooms within the entire Ward area using 1:50 graphical room layouts.

Separate meetings were held with TCT, although I do not recall attending these meetings.

I attended the MIBG suite meetings which were held separately from the 2a meetings. These were also attended by the architect, the Project Manager Mairi Macleod, Technical Advisor Frances Wrath, Jackie Barmanroy ICN and David Hall Currie and Brown. Clinical Physicist Dr Michael Bradnam was the lead user. Other users attended but I cannot recall their names.

PPVL / BMT rooms were discussed at the 2a meetings . My recollection of this is that the discussion focused more on the 1:50 floor layout, nursing staff/ and patient flows within the rooms, the practicalities of how nurses would work in the PPVL rooms, how the lobby would be used, donning gowns and masks, visibility into the rooms from the corridor, wall and floor finishes, clean and dirty flows and patient flows throughout the ward. I cannot recall any technical discussion or discussion about ventilation.

At a very early 2a user group meeting, Dr Brenda Gibson, who was the nominated User Group Lead, with other clinicians present at the meeting raised concerns regarding the lack of accommodation / office space for medical staff within the ward. They were extremely unhappy about a previous executive decision made by NHSGGC Health Board to build an office block adjacent to the hospital which meant that all medical secretaries and administrative support

teams would be based within the office block. Dr Gibson stopped attending user group meetings at this stage.

I cannot recall who then became the User Group lead although I recall some medical staff attended some further meetings. The Senior Charge nurse, charge nurse, nurse specialists, pharmacists and play specialists continued to attend all the meetings.

I recall Mairi Macleod raising Dr Gibson's concerns regarding medical staff accommodation with Mr Alan Seabourne the Project Director and also at a Project Team meeting although I cannot remember the dates. I think she also contacted Jamie Redfern the General Manager at Yorkhill to discuss.

As part of the generic ward design all wards including Ward 2a were designed with an office for the Senior Charge Nurse and an interview room designed as a quiet space for 'difficult conversations' with patient's relatives. There were also small meeting rooms and quiet rooms out-with the ward. These were dotted throughout both hospitals and could be accessed on a bookable basis.

My recollection is that Multiplex was responsible for the design of the PPVL/BMT rooms. I do not recall attending any technical meetings regarding PPVL/BMT rooms

d) In your view, would there have been a requirement for infection control input into these technical meetings?

**A.** I don't know if there would have been a requirement for infection control input to these technical meetings as I was not involved in any aspect of these technical meetings.

e) From your recollection of those involved at the time, who would have been most appropriate to provide this input to Multiplex?

**A.** If there had been a requirement for infection control input to these technical meetings, Doctor Craig Williams NHSGGC Lead Infection Control Doctor would have been the most appropriate to provide input. Mr David Hall (Currie and

Brown) would be most appropriate to provide technical advice with Wallace Whittle, the mechanical and engineering consultants.

Jackie Barmanroy signed off the 1:50 layout drawings at the user group meeting from an Infection Control perspective and if any issues arose, she would discuss these with her professional lead, Sandra McNamee and Dr Craig Williams, Lead Infection Control Doctor. My recollection is that the 1:50 drawings at the Ward 2a meetings only showed the placement of equipment and furniture within the rooms and used ADB component codes on the drawings. I cannot recall any technical sheets being used at user group meetings.

f) In respect of PPVL rooms, Dr Peters raised concerns with you in late 2014. What is your recollection of these concerns? Do you agree with Dr Peters oral evidence that the PPVL rooms didn't look like they were negative pressure? What action, if any, did you take following Dr Peters concerns? Who signed off the PPVL rooms?

**A.** I have no recollection of Dr Peters raising any concerns with me.

g) When did you first see the PPVL rooms?

**A.** I cannot recall seeing the PPVL rooms. I would not have expected to visit these rooms with regard to the technical requirements as I had no involvement in the technical specifications of these rooms or had any involvement in the technical meetings.

h) Did you have any concerns when you first viewed these rooms?

**A.** I cannot recall viewing the PPVL rooms.

i) How were designs approved for construction and who signed off on the agreed design?

**A.** My understanding was that contractor was responsible for the design of the hospital.

My understanding is that designs were signed on behalf of NHSGGC by Frances Wrath to allow the contractor to proceed to the next stage

4. Explain the purpose of the guidance relied upon by the design team and why this was important.

**A.** I don't know which guidance the Multiplex design team relied upon. I can only assume it would be Scottish Health Planning Memorandums.

5. Explain how the output for the design of the Wards was confirmed and signed off. In doing so describe the purpose of the clinical output specification, and your involvement.

**A.** The generic ward design principles were agreed prior to my taking up post on the project. My understanding is that the principles of the generic ward design, the development of the clinical output specification and schedule of accommodation for a generic ward was developed with health planners and agreed by a multidisciplinary group, the Generic Ward User Group, chaired by the Director of Nursing, Mr Rory Farrelly. This group had representation from medical staff, nursing staff, Allied Health Professionals and Facilities Management staff with input from Health & Information Technology. The meetings also had significant patient and public involvement, both from an adult and a children's perspective.

The purpose of a clinical output specification is to detail the current service, the patient group and how the service will work in the future. These are developed and signed off by clinical users. All clinical output specifications were signed off before I took up post.

6. Describe the role and involvement of Infection Control in the design process, in particular, describe your role in the design process. Who from infection control signed off the design?

**A.** During my time with the Project, I recall that Infection Control were actively involved in the clinical design process.

During Competitive Dialogue meetings I recall Annette Rankin being actively involved and she was also present during the Bids evaluation phase.

In early-stage user group meetings I recall Dr Redding, Pamela Joannidis and Sandra McNamee being involved until a Project Consultant Infection Control Nurse was appointed to replace Annette Rankin.

From 2010 Jackie Barmanroy was the full time Consultant Infection Control (IC) Nurse on the Project Team. She was present at both adult and children's meetings during the user group process. This was agreed with the IC Senior Management team in order to maintain consistency of IC advice across both the adult and children's hospitals meetings.

My understanding is that Jackie Barmanroy sought nursing Infection Control advice at the weekly NHSGGC IC Lead Nurse meetings on a range of practical infection control issues. Jackie Barmanroy sought technical advice from the Infection Control Senior Management Team, namely Assistant Director of Nursing Sandra McNamee( Devine), who was Ms Barmanroy's professional lead and the NHSGGC Lead infection Control Doctor Dr Craig Williams.

My role was distinct from Infection Control, in that I was responsible for giving nursing advice to the Project Team. My main role was to provide expert nursing advice to the clinical design meetings. I have no qualifications in Infection Control.

Jackie Barmanroy signed off the 1:50 graphical room layouts on behalf of Infection Control at the user group meetings.

**7.** Describe the intended use and purpose of the following wards in QEUH/RHC: Ward 4B – QEUH; Ward 4C – QEUH; Renal – QEUH; Level 5 – QEUH; Critical Care – QEUH; Ward 2A & 2B – RHC; PICU RHC – RHC; all Isolation rooms. What guidance was considered in the design of these wards, what processes were in place to ensure guidance compliance? Were there any changes to the design during the design and build, if so, please describe any such changes, describe the impact, if any, on guidance compliance, and described the sign off process for any such changes, your involvement and how any changes were communicated to the Board. Was external advance ever sought in respect of design changes?

**A.** Ward 4B QEUH - initially haemato-oncology until the change request to move the Beatson wards in 2013. The ward was then split between haemato-oncology / BMT

Ward 4C QEUH - Renal

Level 5 QEUH - Wards A/B/D General Medicine; Ward C Infectious Diseases (initially this was assigned to General Medicine until the change request in 2014)

Critical Care QEUH - Intensive Care / High Dependency/ Coronary Care.

Ward 2A RHC - Haematology/ Haemato-oncology/ BMT

Ward 2B RHC - outpatients haematology/ haemato-oncology

PICU RHC - paediatric intensive care unit

Isolation rooms - I cannot recall all the isolation room locations and purpose.

Guidance used in the design of these wards would have been the relevant SHPN and SHTM in use at that time. I cannot recall the versions used.

I cannot recall any changes to the design and build. I cannot recall if external advice was sought in respect of design changes.

a) What do you recall in respect of a) the change request for ward 4B

**A.** I was aware of the change order request for 4B from Jonathon Best in 2013 as I have also stated in my answer to Question 17, but I was not involved in any aspect of this.

b) And Ward 5C?

**A.** I do not recall being made aware of a change request for Ward 5C.

c) What actions were taken upon agreement of the change request?

**A**. I was not involved in any aspect of this.

d) How was this change communicated to teams?

**A.** I was not involved in any aspect of this.

e) How was this change communicated to Multiplex?

**A.** I was not involved in any aspect of this.

f) Are you aware if any risk assessments took place following the change request?

**A.** I was not involved in any aspect of this.

g) Are you aware of the input, if any, infection control had before and after the change request was agreed?

**A.** I was not involved in any aspect of this.

8. The Inquiry has heard evidence from Pamela Joannidis that Jackie Barmanroy confirmed that SHTMs were being followed in respect of all ventilation systems in the hospital. Describe your role relative to Jackie Barmanroy. Were you aware that SHTMs were being followed in respect of ventilation systems? What information, if any, had you seen that allowed you to confirm this?

**A.** I was Jackie Barmanroy's operational line manager on the Project Team**.** I signed off her annual leave and carried out appraisals. I have no qualifications or expertise in Infection Control. Jackie Barmanroy's professional line management was to Sandra McNamee the Assistant Director of Nursing for any issues, support or advice regarding Infection Control.

Jackie Barmanroy also sought nursing Infection Control advice at the weekly NHSGGC IC Lead Nurse meeting on a range of practical infection control issues. She sought technical advice from the Infection Control Senior Management Team, namely Assistant Director of Nursing Sandra McNamee (Devine) who was her professional lead and the Lead infection Control Doctor Dr Craig Williams.

I was not involved in any technical meetings regarding ventilation or have any knowledge or experience regarding ventilation systems so I cannot comment on whether SHTMs were being followed.

9. Describe your involvement and understanding, if any, in the removal of the maximum temperature variant? Why was the decision taken and by whom? What risk assessments, if any, were taken prior to making this decision? What was the impact, if any, in removing the maximum temperature variant?

**A.** I had no involvement in the removal of the maximum temperature variant.

10. Please describe and name the people who were involved, the sign off process involving RDD, and your knowledge and understanding of the purpose of the scale drawings and designs, how the technical requirements for the rooms were managed, including your role and involvement.

**A.** I don't know as I had no involvement in technical matters.

11. Describe the IPC involvement in the design of Ward 4B – QEUH; Ward 4C – QEUH; Level 5 – QEUH; Renal – QEUH; Critical Care – QEUH; Ward 2A & 2B – RHC; PICU RHC – RHC; all Isolation rooms, who was involved and who signed off the final design and when.

**A.** In early-stage user group meetings for the above areas, I recall Dr Redding, Pamela Joannidis and Sandra McNamee (Devine) being actively involved. They also agreed and advised the Project Team on the number of isolation rooms required for both hospitals prior to competitive dialogue.

From 2010 Jackie Barmanroy was the full time Consultant Infection Control (IC) Nurse on the Project Team. She was present at adult and children's meetings during the user group process. The post had been agreed with the IC Senior Management team in order to maintain consistency of IC advice across both the adult and children's hospitals.

My understanding is that Jackie sought nursing Infection Control advice at the weekly NHSGGC Lead Nurse meeting on a range of practical infection control issues and sought technical advice from the Infection Control Senior Management Team, namely Assistant Director of Nursing Sandra McNamee (Devine) who was her professional lead and the Lead infection Control Doctor Dr Craig Williams.

My recollection is that User group meetings focused on the 1:50 scale drawings that the architect supplied. Any changes requested by the users were marked up by the architect on the 1:50 drawings at the meeting. Jackie Barmanroy signed off the 1:50 graphical room layouts on behalf of Infection Control at the user group meetings. My recollection is that the1:50 drawings at user group meetings only showed the placement of equipment and furniture within the rooms and used ADB component codes on the drawings. Discussion focused on the clinical use of the room. I cannot recall technical sheets being used at user group meetings.

12. What concerns, if any, did you have regarding the final design specification of Ward 4B – QEUH; Ward 4C – QEUH; Level 5 – QEUH; Renal – QEUH; Critical Care – QEUH; Ward 2A & 2B – RHC; PICU RHC – RHC; all Isolation rooms, and what action, if any, did you take in respect of these concerns?

**A.** I cannot recall having any involvement in final design specification.

13. Describe the purpose of the ABD sheets and the relevance of ADB in respect of the intended patient cohorts. Who was responsible for sign-off of the ABD sheets? From the point of signing off the ADB sheets when did it become apparent that the ventilation specification of in parts of Ward 4B – QEUH; Ward 4C – QEUH; Level 5 – QEUH; Renal – QEUH; Critical Care – QEUH; Ward 2A & 2B – RHC; PICU RHC – RHC; all Isolation rooms did not meet the requirements of SHTM/ HTM? What action, if any, did you take in respect of this?

**A**. ADB sheets were used during the User group meetings so that the clinical users could ensure that the architects had captured their clinical requirements on the 1:50 scale drawings that the architect supplied. The technical ADB sheets were not used at these meetings.

Any changes requested by the users were marked up by the architect at the meeting. Jackie Barmanroy signed off the 1:50 graphical room layouts on behalf of Infection Control at the user group meetings and Frances Wrath signed them off on behalf of the Project to allow the contractor to move to the next stage.

My recollection is that the1:50 drawings at the user group meetings only showed the placement of equipment and furniture within the rooms and used ADB component codes on the drawings. I cannot recall technical sheets being used at user group meetings.

I was not involved in ventilation specifications and I don’t have the knowledge or skills to comment.

14. What concerns, if any, did you have regarding isolation rooms and compliance with SHTM/HTM? What action, if any, did you take in respect of any such concerns?

**A.** I do not recollect being made aware of any compliance problems regarding isolation rooms.

a) The Inquiry has reviewed the RDS in excel format and note there is an entry under 'Design Notes' relating to Ward 2A isolation rooms; the entry states: 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). Specialist advice should be sought on its design. The lamp repeat call from the bedroom is situated over the door outside the room.

(i) Was this note entered on the RDS? If so, why and by whom?

**A.** I didn't review the RDS. I wasn't involved in the RDS process so I am unable to comment.

(ii) Question for witness: Can you advise who was involved in the RDS process And may be able to assist us with this question?

**A.** David Hall Technical Advisor from Currie and Browne attended all technical meetings. Wallace Whittle were the engineering consultants.

(iii) What specialist advice was sought relating to the design of these rooms?

A. I wasn't involved in the RDS process so I am unable to comment.

(iv) What was the final agreed design for isolation rooms and who approved this?

**A.** I wasn't involved in the design for isolation rooms so I am unable to comment.

b) The Inquiry has reviewed the RDS in excel format and note there is an entry under 'Design Notes' in the RDS which refers to HBN 4 Supplement 1, paragraph 1.10, and states:

"EXCLUSIONS"

This supplement does not describe the specialist facilities required in infectious disease units or on wards where severely immuno-compromised patients are nursed. Guidance for these facilities will follow in a further supplement to HBN 4."

(i) Were you aware of the exclusion in para 1.10? If so, what action was taken? What was the impact, if any, of the exclusion?

**A.** I wasn't involved in the RDS and was not aware of the exclusion.

c) What ceiling types were specified and approved for use in isolation rooms? Who from the GGC Project Team approved this? Describe your involvement, if any? What was the impact, if any, of the choice of ceiling tiles? What concerns, if any did you have regarding the choice of ceiling tiles?

**A.** I don't know. I don't recall having any choice of ceiling tiles.

15. The Inquiry is aware that in respect of a derogation being agreed in respect of the ventilation system and the requirement to achieve ACH in compliance with SHTM. Where you aware of this at the project phase?

**A.** I recall being asked to attend one meeting regarding Brookfield's design solution for the ventilation in general ward bedrooms. There were other members of the Project Team also in the room, but I cannot recall all present. I recall Mr Alan Seabourne, Mr Peter Moir and Mr David Hall being present.

I cannot recall the date, but I think it was before the contract was signed.

I cannot recall the detail of the meeting but do remember some discussion about the maximum numbers of people in a general ward bedroom and the air changes required. There was a lot of discussion about who would be present with the patient in the bedroom during ward rounds and how many relatives would be in the room during visiting hours.

I recall being told at the meeting that Dr Hood, a microbiologist at Glasgow Royal Infirmary, had been contacted for advice on air changes. Dr Hood had contacted Mr Peter Hoffman at the Health Protection Agency in England as he was an expert on this matter. My recollection is that Mr Hoffman had advised that air changes in general ward bedrooms were specified for temperature control and were related to patient comfort and not infection control.

After this meeting I had no further involvement in any other meetings regarding ventilation system requirements or the final derogation decision.

a) If not, when did you become aware? In hindsight, should you not have been aware of this at the time?

**A**. I was in attendance at one meeting (as explained above) but had no further involvement.

b) What concerns, if any, at the project phase did you have in respect of the ventilation system?

**A.** I cannot recall having any concerns as I was not part of the discussions on ventilation other than described above.

16. Describe your involvement, if any, in respect of the decision to use Horne taps.

**A.** I attended a meeting in 2012 along with several members of the Project Team; this included Alan Seabourne, Peter Moir, Heather Griffin, Mairi Macleod and David Hall (Currie and Brown). I cannot recall the date of the meeting.

The group were advised that Multiplex proposed to install the Horne Optitherm thermostatic tap for clinical use within both the adult and children's hospitals at all clinical wash hand basins and scrub sinks.

The purpose of the meeting was for the Project Team to view a demonstration of the Horne Optitherm tap, followed by a questions and answer session. There was a follow-on technical meeting which I did not attend. The Horne tap representative demonstrated the dual lever arrangement which allowed the tap to be operated by using the thumb then turned off using the elbow or upper forearm. There appeared to be no issues in relation to performing a clinical hand wash or full surgical scrub.

We were told that the Horne tap differed from the standard design of other hospital taps as there was no requirement to remove IPS panels for maintenance purposes which interrupts clinical activity. This seemed very attractive from a clinical point of view as it meant less disruption in the clinical area, less downtime for the ward bedrooms and less interruptions to the patient flows through the hospital.

We were also told that testing and sampling for micro-biological analysis could be carried out in situ with the use of the manufacturers 'Flushing kit'. The manufacturer recommended the use of 'Thermal Disinfection' of the tap instead of chemical disinfection, commonly used for other taps within NHSGG&C, as they believed chemical disinfection would degrade the components inside the Opthitherm tap.

I do recall a discussion between the estates representative and others in attendance at the meeting that the best way to facilitate thermal disinfection would be to have a stock of spare taps already disinfected within the estates workshop to facilitate a 'swap over' process to replace the taps in situ therefore preventing a bedroom being closed down for disinfection.

Following on from the meeting Mr Seabourne asked me to carry out a 'fact finding' exercise to find out if there were any hospitals locally that had installed the taps. The Horne Optitherm tap was installed in Monklands Hospital Lanarkshire and in the Vale of Leven Hospital Theatre Suite.

Mr Seabourne and I visited Monklands Hospital and met with the Senior Infection Control Nurse (ICN). He advised that thermal disinfection had not been an issue in practice and advised us to accept the training sessions offered by the company to train staff on the use of the taps.

Jackie Barmanroy and I met with the ICN at the Vale of Leven. She provided us with the information she had been given from the company. We were also advised that the internal mechanism was seen to be 'nurse proof' and over tightening of the tap was not a problem, which had proved to be an issue causing leaking taps in other tap designs within NHSGGC. Both infection control nurses gave us positive feedback in terms of clinical usability, infection control and domestic cleaning. They reported that maintenance was straightforward and removing the IPS panel is unnecessary therefore disruption in the clinical area is minimal.

Jackie Barmanroy also attended a national Infection Control conference and gave Mr Seabourne and I an update on this. Horne had a stand at the conference and attendees gave her very positive feedback. Jackie Barmanroy and I co-wrote a paper to update Mr Seabourne in July 2012 and this was circulated to the full Project Team including Facilities Management and David Hall.

a) What concerns, if any, did you have regarding the use of Horne taps?

**A.** Following the demonstration by the Horne team and benchmarking with other sites, there appeared to be no clinical issues in relation to performing a clinical hand wash or full surgical scrub.

There also appeared to be no infection control issues provided the correct disinfection process and maintenance regimes were followed.

We did take up the offer of the Horne training and this was incorporated into the training provided to Senior Charge Nurses and departmental managers during the 12-week operational commissioning process.

b) What risk assessments were carried out in respect of the use of Horne Answer

**A.** I don't know.

c) Who was involved in, and who signed off the use of Horne taps?

**A.** The whole Project team were involved in the meeting ( as described above) with Horne, including Facilities Management, Infection Control, Project Managers, myself, the Project Director and David Hall from Currie and Brown. As far as I can recall the paper that Jackie Barmanroy and I co-wrote was circulated to all members of the Project Team. As I do not have access to the Project Team folders or my emails, I cannot confirm this. I don't know who signed off the use of the Horne taps.

d) Did you attend the meeting regarding the use of Horne taps in 2014? If so, why was the decision made to proceed with Horne taps?

**A.** No.

e) Question for the witness: Please refer to Bundle 3, Document 1, page 5 (A33680955). Have you seen this SBAR before?

**A.** I have been asked to refer to Bundle 3, Document 1, page 5 (A33680955). **I** have not seen this SBAR before.

f) Having read it, do you now have concerns about the decision to proceed to use Horne taps?

**A.** Having read the SBAR I would follow the advice given in the recommendation.

g) The Inquiry understands that despite the decision to proceed to use Horne taps no management or maintenance of the taps or water sampling schedule was put in place? What is your view on this?

**A.** I don't have the technical knowledge to comment on management and maintenance of taps or water sampling schedule. I was not involved in any management or maintenance of the taps or water sampling schedule.

**Bone Marrow Transplant Unit and Ward 4C**

17. The Inquiry understands that the BMT service was to transfer from the Beatson following a change order request, issued by Jonathan Best in July 2013.

a) Following the Change order request, what actions did the GGC Project Team take to confirm the technical and environment requirements (in particular air change rates, pressure regimes and HEPA and air permeability requirements) for the BMT Unit?

**A.** I was aware of the change order request from Jonathon Best but was not involved in any aspect of this.

b) What design review meetings were held to confirm with the user groups to confirm the requirements for the BMT Unit.

**A.** I cannot recall

c) Was the design for the BMT Unit subject to the RDD process

**A.** I don't know

d) If so, who was involved in the RDD process for the BMT Unit

A. I don't know

e) What feedback regarding Air Change Rates and pressure differentials was received from Multiplex regarding the Change Order?

**A.** I don't know

f) Prior to handover did the BMT unit at QEUH/ RHC meet the requirements and specifications of the intended patient cohort and comply with SHTM guidance? If not, why not, and if not, how was this area of the hospital accepted at handover? Who from infection control was responsible for singing off on handover?

**A**. I don't know.

g) In his oral evidence during the hearings commencing 20 August 2024 Professor Craig Williams told the Inquiry that Jackie Barmanroy was the infection control nurse leading on the projects and that she was saying that the hospital had been built and was compliant with the appropriate legislation. Do you agree with this statement? If so, how did you satisfy yourself that compliance had been achieved? With the benefit of hindsight do you now agree this this to be the case?

**A**. My understanding at the time was that the contractor was responsible.
I had no involvement in compliance. I don't have the technical knowledge or qualifications to comment.

18. In respect of the BMT unit describe your involvement, in the decision to return the BMT unit to the Beatson in July 2015? Please include details of the escalation process and whether any external advice and support was sought and why the decision was taken.

**A.** I was not involved.

19. The Inquiry is aware that the change order not only confirmed that the Bone Marrow Transplant (BMT) service would transfer to Ward 4B in the QEUH but also that the haematology patients that were originally planned to accommodate Ward 4B would move to Ward 4C.

a) Describe how this change was communicated to the project team and Multiplex and how this change was captured in the design and specification documentation.

**A.** I was not involved in the change order regarding the transfer of the BMT Service to ward 4b and 4c. I do not know how this change was communicated to the project team. I do not know who communicated this to Multiplex.
I did not have any involvement in the design and specification documentation

b) Prior to handover did the BMT unit at QEUH/ RHC meet the requirements and specifications of the intended patient cohort and comply with SHTM guidance? If not, why not, and if not, how was this area of the hospital accepted at handover? Who from infection control was responsible for singing off on handover?

**A.** I was not involved in the handover process.

c) The Inquiry understands that 10 rooms were provided for Haemato-oncology patients (Rooms 66 to 75) in Ward 4C, these rooms had no HEPA filtration, 2.5 – 3 ACH per hour, included chilled beams; rooms were at a balanced or slightly positive pressure to the corridor and had suspended ceilings fitted in patient bedrooms and ensuites.

(i) Who approved and signed off on this specification for the Haemato-oncology patients to be accommodated in Ward 4C?

**A.** I don't know

d) Describe the IPC involvement in the design of Ward 4C, who was involved and who signed off the final design and when.

**A.** I don't know

**Infectious Disease Unit**

20. Describe the impact, if any, of the move of the Brownlee Unit and on the hospital design. What concerns, if any, did you have regarding this, and what action, if any, did you take? Describe the discussions and involvement, if any, you had with Multiplex in respect of this matter? What concerns, if any, did you have regarding the compliance with SHTM. Describe the commissioning and validation process in respect of the infection disease unit and confirm how you were satisfied it complied with SHTM requirements?

**A.** I was asked to attend a meeting at the Brownlee Centre (Infectious Diseases Unit) based at Gartnavel General on behalf of Mr David Loudon. This was regarding the move of the infectious diseases unit to the new hospital. I cannot recall the date.

I recall the meeting was chaired by Anne Harkness the South Sector Director and included Infectious diseases consultants, the Senior Charge Nurse from the Brownlee Unit and Lead Infection Control Doctor Dr Craig Williams.

I recall telling those present at the meeting that the hospital was built and my understanding was that they would be moving to a general ward in the adult tower. Although I cannot recall a lot of the detail of the meeting as it was around 11 years ago I do recall being asked about technical details regarding the suitability of infectious diseases being cared for in a general ward. I was unable to answer these technical questions but reported that I would relay the request back to Mr David Loudon.

I recall returning to the project office and discussing the output from the meeting with Mr Loudon and other team members. I cannot recall if it was the same day or the next day. I had no further involvement with any technical matters relating to the transfer of the Brownlee Unit. I was not involved with any discussions with Multiplex on this matter. I was not involved in any technical commissioning or validation of the Infectious diseases Ward.

a) Question for Witness: What do you recall in respect of your discussions with David Loudon?

**A.** I cannot recall the detail of the discussions with David Loudon.

b) Are you aware of what actions Mr Loudon took following this?

**A.** I don't know. I had no further involvement in any technical matters.

**Renal**

21. Describe your involvement, if any, in respect of the ventilation in the renal unit. What concerns, if any, did you have regarding this, and what action, if any, did you take in respect of this matter?

**A.** I cannot recall any involvement with this.

**Handover**

22. Commissioning and validation:

a) Describe what commissioning of the water and ventilation system took place prior to handover, and your involvement, if any.

**A.** I don't know. I had no involvement.

b) Who was responsible for ensuring that commissioning of the water and ventilation system was carried out, and who signed off that it had been carried out? What concerns, if any, did you have regarding commissioning and validation being carried out prior to handover?

**A.** I don't know. I had no involvement.

c) The Inquiry understands that NHS GCC decided to forgo the requirement to have an independent commissioning engineer. Who made this decision? What was the impact, if any, of this decision? In hindsight, do you think that it was the correct decision?

**A.** I don't know. I had no involvement.

d) The Inquiry understand that no validation was carried out in respect of the ventilation system. When did you become aware of this? How did handover come to be accepted without the ventilation system being validated? Who was responsible for this and who signed off on this?

**A.** I was not involved in the validation of the ventilation system. I don't know who was responsible and signed off the validation of the ventilation system.

23. Who oversaw contractual compliance? Who was responsible for ensuring that the paperwork was produced to confirm contractual compliance? What action, if any, did you take to ensure that paperwork was in place to ensure contractual compliance? Was validation of the ventilation system a contractual requirement? If so, who signed off on contractual compliance given the lack of validation?

**A.** I don't know. I was not involved with contractual compliance.

24. **Please see Bundle 12, page 936 and 937.** This is an email from Frances Wrath to you dated 5 May 2015. Frances Wrath states *'All areas have been commissioned in line with contract ER's and all legislative requirements.'*

a) What documentation, if any, did you have sight of in order to accept this statement at the time?

**A.** I have been asked to comment on **Bundle 12, page 936 and 937 an email from Frances Wrath dated 5th May 2015**

I have read the email. The email title is 'Re: New Children's Hospital.

This is addressed to Jackie Barmanroy cc'd to Lynne Robertson and Pamela Joannidis. I was not copied into this email.

b) At the time, how were you satisfied that all areas had been commissioned in line with contact ER's?

**A.** I was not involved technical commissioning so am unable to answer this question.

c) Please explain how 'all areas had been commissioned in line with the contract ER's and legislative requirements' give the agreed ventilation derogation which provided for achieving air changes below the required level as provided for in SHTM 03-01 guidance at the time?

**A.** I was not involved technical commissioning so am unable to answer this question.

d) With the benefit of hindsight do you consider that 'all areas had been commissioned in line with the contract ER's and legislative requirements'? If so, why, and if not, why not?

**A.** I do not have the technical knowledge to comment.

e) Describe your role in the lead up to accepting handover. What action, if any, did you take to ensure that the wards within QEUH/RHC met the guidance requirements of SHTM.

**A.** A number of members of the Project team, including myself were asked to carry out a programme of checks of the wards and clinical departments. I cannot recall which wards and departments I was asked to check. This was recorded on paper in a series of folders. The folders contained 1:50 drawings of rooms within departments and wards. The folders contained a checklist related to a general visual check of the room to record if there were any issues e.g. scuffed walls, doors sticking, blinds not working, flooring cracks. This did not include electrical or engineering checks or any checks of lighting, ventilation or water systems.

I was not involved in anything related to the guidance requirements of SHTM for any technical, mechanical or engineering checks up to handover.

f) How were you assured that the wards met the requirements of the specific patient cohorts?

**A.** I was not involved in anything related to the guidance requirements of SHTM for any technical, mechanical, ventilation or water systems or engineering checks up to handover. Apart from issues regarding snagging I cannot recall being made aware of any technical issues from the Senior Charge Nurses, Infection Control Nurses or technical managers during the operational commissioning period.

g) In her evidence Dr Peters tells us that you gave her a tour of the QEUH/RHC campus in around late 2014. Dr Peters told the Inquiry that she noticed that the sinks had a greenish puddle where the drain was, and that she asked about this, and you assured her that the sinks were compliant. How were you assured that the sinks were compliant? What action, if any, did you take follow Dr Peters comments? In hindsight, what action, if any, should you have taken?

**A.** I do not recall a tour of the QEUH/RHC campus with Dr Peters in late 2014.

h) Based on Dr Peters' recollection, do you feel you would have been in a position to advise of the compliance of the sinks at the time?

**A.** I don't have the technical knowledge to advise on compliance of sinks.

i) Did you have any concerns about the sinks or anything else?

**A.** I don't recall having any concerns about the sinks or being made aware of anything else.

j) The Inquiry is aware that the ventilation system in respect of Wards 2A and 2B did not meet the requirements of SHTM knowledge and awareness/ involvement in derogation. Did you have any concerns at the time? If so, please describe. The Inquiry is aware that Ward 2A was handed over without HEPA terminals being in place in wards, how did sign off come to take place without these being in place? Who signed off the RHC as ready for handover, without HEPA being in place?

**A.** I was not aware that the ventilation system in respect of Wards 2a and 2b did not meet SHTM requirements. I wasn't involved in handover and was not made aware of HEPA terminals not being in place. I don't know who signed off the RHC, without HEPA being in place.

k) The Inquiry understands that there was no validation of the ventilation system prior to handover. Who was responsible for ensuring that this was in place? Why was validation not carried out? When did you become aware that it had not been carried out and what action did you take in respect of validation having not been carried out? What was the consequence of validation not having been carried out? Should the hospital have opened without the ventilation system having been validated?

**A.** I don't know. I had no involvement in technical matters.

l) Question for the witness: In your view, should the hospital have opened without the ventilation system having been validated?

**A.** I don't have the technical knowledge to advise on validation of the ventilation system.

m) Describe your knowledge and involvement, if any, in the PMI allowing Multiplex's role as Independent Commissioning Engineer. What was the impact of this?

**A.** I had no involvement

n) At handover, had a preoccupation L8 risk assessment been carried out? Who was responsible for ensuring that this was in place prior to patient migration? were you aware of a preoccupation L8 assessment having been carried out? Who instructed it? When did you become aware? Why did you not raise it as a concern that you had no seen this prior to patient migration, was this not within your role as Project Manager of RHC?

**A.** I don't know if a preoccupation L8 risk assessment was carried out. My role was Senior Nurse Adviser so that was not part of my role. I was not the Project Manager of RHC and cannot comment.

o) Who was responsible for providing asset tagging. Why was there no asset tagging who decided to proceed without it?

**A.** I don't know

p) What, if any, testing and maintenance protocols and regimes were in place at handover? Who was responsible for putting these in place? If they were not in place, why not, and what action was taken and by whom to address this?

**A.** I don't know

**Declaration**

I believe that the facts stated in this witness statement are true. I understand that proceedings for contempt of court may be brought against anyone who makes, or causes to be made, a false statement in a document verified by a statement of truth without an honest belief in its truth.

The witness was provided the following Scottish Hospital Inquiry documents for reference when they completed their questionnaire statement.

**Appendix A**

**A47069198** - Bundle 12 - Estates Communications

**A33680955** – Bundle 3 – NHS NSS: SBAR Documentation

The witness provided the following documents to the Scottish Hospital Inquiry for reference when they completed their questionnaire statement.

**Appendix B**

**A51989087 -** Bundle 43, Volume 4, Document 1, Page 14

**Appendix C**

**CURRICULUM VITAE**

**Fiona McCluskey**

**PROFILE**

I retired from the Health Service in 2017 after 39 years' service. During my career I held a variety of clinical and senior nursing management posts. I was the Senior Nurse Advisor on the New South Glasgow Hospital Project team from 2009-2015. The remit of the post was to provide expert clinical nursing advice for the Project Team.

Following the reorganisation of NHSGGC in 2015 I took up post as Assistant Chief Nurse for the Nursing, Midwifery and Allied Health Professionals Directorate,

providing a leadership role for all aspects of professional governance for nurses and midwives within the board area.
Following my retirement, I was approached by Children's Health Ireland to lead and support the development of a Clinical Migration Plan for the transfer of 3 acute paediatric hospitals in Dublin.

**EXPERIENCE**

**Lead Clinical Migration Manager - Children's Health Ireland (CHI) Dublin 2021-2022**

Provided a leadership role in the development of the Clinical Migration Plan for CHI. Provided input to the overall Clinical Commissioning plan for the transfer of the 3 acute paediatric hospitals in Dublin into the new children's hospital.

**Assistant Chief Nurse Professional Governance and Regulation NHSGGC —- 2015 - 2017**

Provided a leadership role in all aspects of the regulatory requirements for nurses and midwives. Led the implementation of NMC Revalidation for 12,400 Registered nurses and midwives across the health board. Took a lead role in a number of service improvements through the adoption of improvement methodology. Led the implementation of the national programme for Older People's Care within the Board area. Acted as an ambassador for NHSGGC representing the board on a number of national initiatives.

**Senior Nurse Advisor New South Glasgow Hospital Project —2009- 2015**

Provided expert clinical nursing advice into the design of the new Glasgow adult and children's hospitals working with a wide range of clinical and public stakeholders. Led the redesign of clinical services and systems including the development of the nursing workforce plan. Worked with service users to ensure their views were incorporated into the design of the Hospital. Developed training programmes with clinical services to ensure that staff were well prepared to facilitate new models of care. Led the development and delivery of the Clinical Migration Plan which involved the transfer of 4 hospitals onto the new site.

**Lead Nurse Cardiac Rehabilitation NHSGGC — 2003 - 2009**

Manager for the Board wide Cardiac Rehabilitation service across six hospital sites. Led the development of the Multicultural Inequalities service for Cardiac rehabilitation patients. Led a number of service redesign initiatives including the development of home rehabilitation and the Ambulatory rehabilitation service. Chaired the MCN Cardiac Rehabilitation sub group which developed the new Cardiac Rehabilitation Strategy. Manager of the secondary care smoking cessation service for all patients across NHSGGC.

**Project Manager North Glasgow Hospitals NHS Trust —2003**

Project Manager for the redesign of medical services at Glasgow Royal Infirmary. Developed the redesign of clinical pathways for patients with Upper Neck surgery across the West of Scotland. Developed a redesign of Cardiology clinics at Glasgow Royal Infirmary.

**Divisional Nurse North Glasgow Hospitals NHS Trust —2002 - 2003**

Acting Divisional Nurse (secondment opportunity). Provided a senior management role for the Cardio-Respiratory Directorate on all aspects of the professional regulatory function for nurses. Professional lead for circa 800 nursing staff.

**Lead Facilitator RCN Clinical Leadership Programme Glasgow City 2000–2002**

Led the implementation of the pan-Glasgow RCN Clinical Leadership Programme. Had overall responsibility for the planning and implementation of the programme in collaboration with the RCN and the four Glasgow Hospital Trusts.

**Surgical Assessment Co-ordinator 1997-2000**

Manager of a nurse led service to screen patients prior to a general anesthetic. Developed the service from its inception in conjunction with a range of medical stakeholders.Developed clinical pathways for patients from home to admission to hospital. Increased same day admission rate to 93%.

**PREVIOUS EXPERIENCE**

Theatre/ Anesthetics Team Lead - CEPOD & Trauma Theatres Glasgow Royal Infirmary 1986-1997

Theatre Sister - ENT & Laser Theatre's Glasgow Royal Infirmary 1983 -1986

Theatre Staff Nurse - Glasgow Royal Infirmary 1981- 1983

**EDUCATION**

Glasgow Caledonian University — BSc Health Studies (Honors 1st Class)1998

Glasgow Caledonian University —Diploma in professional Studies in Nursing (Distinction) 1995

Scottish National Board Certificate in Operating Department Nursing 1982

Registered General Nurse 1981

Certificate in Patient and Public Involvement 2008

**VOLUNTARY WORK**

**Board Trustee 2017 - 2019**

The Nurses Memorial Charity to King Edward V11 in Scotland

**PUBLICATIONS**

Music in the Operating Suite. NATNews September 1983

Does wearing a face mask reduce bacterial wound infection? A literature review. British Journal of Theatre Nursing. August 1996

**Scottish Hospitals Inquiry**
**Witness Statement of**
**Jacqueline Barmanroy**

This statement was produced by the process of sending the witness a questionnaire with an introduction followed by a series of questions and spaces for answers. The introduction, questions and answers are produced within the statement.

## Personal Details and Professional Background

1. Name, qualifications, chronological professional history, specialism etc – please provide an up-to-date CV to assist with answering this question. Please include professional background and role within NHS GGC, including dates occupied, responsibilities and persons worked with/ reporting lines.

**A. As per attached CV (Appendix B)**

## Design and Specifications

2. When did you first become involved in the design of QEUH/RHC. Please describe your role and responsibilities.

**A.** I joined the new build project team in April 2010 on a 2-year secondment. My role was to advise on the general aspects of infection prevention and control. When I joined the team the architects and construction company had been decided upon. In addition, the layout of the hospitals had also been decided. At the point I joined it was at the 1:200 stage. This means the footprint of wards and departments had been decided and it was a matter of working with the clinical teams to decide the placement of the rooms within the wards and departments.

a) Please refer to **Bundle 27, Volume 8, Document 3 at page 41** please confirm whether you in fact arrived by April 2010 and left the team after July 2014? If this is not the case please explain.

**A.** I can confirm that I was in the project team from April 2010 to April 2012 when I left the project team. I then returned to the IPCT. Please see below the explanations for what was in the bundle –
Domestic Services Teaching – as an ICN with the South team I was still involved in teaching domestic services just not in the capacity of the project team after April 2012.

The construction interface weekly meetings – I only attended as an ICN of the South team if I was available and it was only to get a catch up on general progress of the build and not to answer and specific issues.

Zone checks and snagging – Clare Mitchell as the lead nurse was asked to review the cleanliness of a ward before opening the hospital and Clare asked me to help. Any issues raised with the cleanliness of the ward we checked was fed back by Clare to domestic services. Clare and I were not asked to do formal snagging checks.

The endoscopy decontamination unit was commented on and mainly guided by Alan Stewart who managed the decontamination unit at the time. I do not remember being involved in February 2014. Alan was the main source of expertise in this specialty.

Plastic bedpan units – by this do you mean holders for the disposable bedpan boxes in the dirty utility rooms?

Sanitary waste bins vs clinical bins – this is not a unique issue for the QEUH or RHC. When this was highlighted by facilities management, it was because all other hospitals in Scotland were looking at a safe and more cost efficient way of dealing with sanitary waste. IPC service made the decision not myself alone and was not project team directed.

Waiting room chairs – again this is not me in the project team role but Clare and I were asked our opinion as part of the clinical IPCT for the South, to comment on the chairs procurement wished to buy.

3. The Inquiry understands that you were Consultant Infection Control Nurse for the QEUH/ RHC Project Team from around 2010 to 2012. Describe in detail this role. Including your role, if any, in the User Groups.

**A.** My role was generic. Once the clinical teams were satisfied with how the flow of the rooms worked at the 1:200 stage, the next stage was the 1:50 stage. The 1:50 stage was more detailed and involved members of the project team and relevant clinical staff. During this process any necessary pieces of equipment and patient furniture was positioned to ensure the correct functionality of the room. This included positioning of clinical wash hand basins and patient beds. Can I also clarify that although the term consultant nurse is used in the sense, I am providing advice and not in the sense of my status. I was consulting on the project and not a qualified consultant nurse.

a) What was your role, specifically from an infection control perspective, in respect of a) the 1:200 stage and b) the 1:50 stage?

**A.** My role was to advise on positioning of wash hand basins, patient furniture that could withstand a high level clean with hypochlorite if contaminated with blood or body fluids. Discuss and agree the flow of the rooms with the clinical teams in the wards and departments. It was also to discuss the suggested room layouts included in the relevant guidance documents at the time (SHTMs and SHBNs). So generic and not technical.

b) Confirm who attended the user groups meetings from IPC, Estates, Clinical and the GGC Project Team for the following areas: Ward 4B – QEUH; Ward 4C – QEUH; Level 5 – QEUH; Critical Care – QEUH; Ward 2A & 2B – RHC; PICU RHC – RHC; All Isolation rooms

**A.** User groups included the project manager for either adults or children, lead nurse, architects, technical experts from the project team where required, specialty medics, nurses, and myself. Sometimes the senior charge nurses

were invited by the lead nurse attending. Water and ventilation meetings were separate groups and not discussed in the user group meetings.

c) Were you involved in water and ventilation meetings? In what way did the membership/attendance for water and ventilation meetings differ from the user group meetings?

**A**. I was not involved or invited to attend the above meetings. This would be for Professor Williams to attend. I cannot comment on the project team water and ventilation meetings and how they differed from the user group meetings.

d) How often were user group meetings scheduled to review design proposals and agree the design with the user groups

**A.** This could be around 2 to 3 times and could vary depending on what was required, the groups met until the clinical teams were satisfied with the design.

e) Describe your involvement in the design of the Schiehallion unit, PPVL and BMT rooms. Who signed off these areas from Infection Control?

**A.** I was involved early in the design with the basic room designs and did not sign off any specialist ventilation requirements or indeed any ventilation specifications.

f) If you did not sign off any specialist ventilation requirements or ventilation specifications, are you aware who did sign them off? Was there infection control input into these decisions?

**A.** I do not know who signed the specifications off or if there was infection control input into these decisions.

g) In respect of PPVL rooms, Dr Peters raised concerns with you in late 2014. What is your recollection of these concerns? Do you agree with Dr Peters oral evidence that the PPVL rooms didn't look like they were negative pressure? What action, if any, did you take following Dr Peters concerns? Who signed off the PPVL rooms?

**A.** I cannot remember specifics of Dr Peters concerns. I do not know who signed off the PPVL rooms. I had been away from the project team for over 2 years

by late 2014 so would not have been able to help personally and probably suggested that Dr Peters contacted Professor Williams.

h) When did you first see the PPVL rooms which Dr Peters described in her evidence? Did you agree that they did not look like negative pressure rooms? Did you have any concerns about the PPVL rooms at any point, either when you were working with the project team or afterwards?

**A.** From my memory I first saw these rooms after the hospital opened and by that time I was informed that Professor Williams was dealing with the issues. This was purely to highlight the concerns raised.

i) How were designs approved for construction and who signed off on the agreed design?

**A.** I cannot comment on this because the architects, building firm and the number, location of specially ventilated rooms had also been decided prior to me joining the team.

j) Please clarify when you were in the role of Consultant Infection Control Nurse for QEUH/ RHC Project Team.

**A.** April 2010 to April 2012

k) Please confirm who attended the User Group Meetings from:
IPC
The Schiehallion Unit
Adult BMT
Adult Haematology
Infectious Diseases

**A.** The user group meetings held during my time in the project team (2010 to 2012) would have been me for IPC.

Adult BMT, in my opinion it would have been the general manager, lead nurse and senior charge nurse and lead clinician, apologies I cannot remember names. From memory there was not much in the way of user group meetings

because it was not certain when I was in the project team if BMT, adult haematology was moving over from the Beatson.

The same people would have been invited for the Schiehallion Unit. Pamela Joannidis did a lot with these meetings as Pamela was previously the lead nurse for Yorkhill hospital and paediatric trained.

l) Was there at time (and if so when and in what circumstances) when you were told or saw documentation that set out the Air Change Rate, Pressure Differentials or presence or absence of HEPA filtration for any part of the hospital?

**A.** I was not shown these. These should have been checked by the technical specialists and Professor Williams.

m) Was there at time (and if so when and in what circumstances) when you were told or saw documentation that described the specification of the proposed isolation rooms within the hospital or used the expression Positive Pressure Ventilated Lobby or 'PPVL' to describe any of those rooms?

**A.** My answer is as above as I am not qualified to comment.

4. Explain the purpose of the guidance relied upon by the design team and why this was important.

**A.** The guidance for all members of the project team and builders would have been the Scottish Health Technical Memorandums and Scottish Health Building Notes that were available at the time. These documents are updated as necessary and are there to provide guidance in order that the environment is a safe as possible for patients, public and staff.

a) Have you ever read any part of SHTM 03-01 (Part A), HBN 4 Supplement 1 or SHTM 04-01 (Part A)? Which part and in what circumstances?

**A.** As an ICN these guidance documents are used as reference documents as it is expected that the technical experts are there to guide us, but ICNs do dip into these documents for their own reference.

5. Explain how the output for the design of the Wards was confirmed and signed off. In doing so describe the purpose of the clinical output specification, and your involvement.

**A.** When I joined the infection control team in April 2012 the footprint of the wards was already established and the patient bedrooms were all to be on the outer aspect of the wards to ensure patients had a view out of the window. All the support rooms, clean utility, dirty utility ward pantry were placed in the centre of the wards with walk ways to allow easy access and prevent staff from having to walk all the way around the ward to access these rooms. It was planned that all the wards should be laid out the same for governance and health and safety. An example of this is a nurse helping in a different ward would know where equipment and consumables were kept without having to keep asking, which is helpful especially in emergency situations.

6. Describe the role and involvement of Infection Control in the design process, in particular, describe your role as Consultant Infection Control Nurse in the design process. Who from infection control signed off the design?

**A.** As mentioned previously I only helped with placement of patient furniture and equipment after listening to the clinical teams who were going to have to work in the ward. That is all I would have signed off in conjunction with the clinical team.

a) If you were not involved, then who, from Infection Control, was involved in the design process?

**A.** I cannot comment if my predecessor signed off the design of the hospitals or not. Annette Rankin was my predecessor.

7. Describe the intended use and purpose of the following wards in QEUH/RHC: Ward 4B – QEUH; Ward 4C – QEUH; Level 5 – QEUH; Critical Care – QEUH; Ward 2A & 2B – RHC; PICU RHC – RHC; all Isolation rooms. What guidance was considered in the design of these wards, what processes were in place to ensure guidance compliance? Were there any changes to the design during the design and build, if so, please describe any such changes, describe the impact, if any, on guidance compliance, and described the sign off process for

any such changes, your involvement and how any changes were communicated to the Board. Was external advance ever sought in respect of design changes?

**A.** I was not heavily involved in these wards. For the last 6 to 8 months of my secondment I spent it teaching facilities staff infection control principles. Whilst I was in the project team I knew the following – Ward 4B – there was discussion about Bone Marrow Transplant moving over from the Beatson but this was not confirmed when I left in April 2012. Ward 4C, I was aware half the ward was listed for renal but no speciality had been assigned the other half of the ward by the time I had left. I cannot comment on level 5 as the decision to move infectious diseases happened after I left the team. Critical Care comprised of intensive care beds, high dependency beds and coronary care. It was designed to allow flow between the units depending on the acuity of the beds required. The guidance available at the time should have been adhered to but as I was not part of the technical groups and the foundations were only going in at the time I left the project group, I cannot comment. Pamela Joannidis helped with some of the paediatric wards as I am not paediatric trained. However, ventilation and water would have had to be signed off by a microbiologist.

a) When you taught Facilities infection control principles to what extend did you describe or teach the HAI Scribe system and its application to new or refurbished hospitals?

**A.** The teaching I was involved with was for domestic services on standard infection control standards and not HAI Scribes.

8. The Inquiry has heard evidence from Pamela Joannidis that you confirmed that SHTMs were being followed in respect of all ventilation systems in the hospital. When did you confirm this? What information, if any, had you seen that allowed you to confirm this?

**A.** Absolutely, all the relevant guidance should have ben adhered to and when I spoke with Pamela Joannidis I had been assured by Frances Wrath that the guidance was being followed. I was not part of any technical group as I am not qualified to comment on such issues. When the technical groups were being

set up, I was asked who would attend and I gave Professor William's name as instructed by Sandra McNamee (now Devine).

a) When did you first become aware that guidance had not been followed? What was your reaction?

**A.** I first became aware when maintenance issues were being highlighted to the infection control team by the local estates' teams.
My reaction was one of disbelief. I could not understand why a brand-new building was having so many issues. I am not qualified to comment on validation, verification, and commissioning results/reports but personally I would expect any concerns or issues would have been picked up at this stage.

b) When and in what circumstances were you *assured by Frances Wrath that the guidance was being followed"*? What evidence, if any, did you see that assured you of this? Please confirm exactly how Frances Wrath assured you of this.

**A.** This was a verbal reassurance but Frances Wrath said she would send an email to the senior management team for infection control.

c) Please identify the technical groups that were being set up for which you gave Professor Williams's name.

**A.** The technical group being set up was the ventilation group. At this time, I also mentioned that he should be the person to contact when the water group was formed.

d) Please confirm a date of when you first became aware that guidance had not been followed.

**A.** This would have been after the hospitals opened in 2015, apologies I cannot give you an exact date and I found out about this via my lead nurse.

9. Describe your involvement and understanding, if any, in the removal of the maximum temperature variant? Why was the decision taken and by whom?

What risk assessments, if any, were taken prior to making this decision? What was the impact, if any, in removing the maximum temperature variant?

**A.** I cannot comment as this is not infection control and I was not involved.

10. Please describe and name the people who were involved, the sign off process involving RDD, and your knowledge and understanding of the purpose of the scale drawings and designs, how the technical requirements for the rooms were managed, including your role and involvement.

**A.** As I described previously my sign off input is limited, however I would expect the technical groups would have signed off RDD in a similar manner and Franes Wrath perhaps would have overseen this for the project team.

11. Describe the IPC involvement in the design of Wards 2A and 2B, who was involved and who signed off the final design and when.

**A.** Apart from the early basic room contents I was not part of any further review., so cannot comment.

a) What would you have expected IPC involvement in the design of Wards 2A and 2B to have been?

**A.** From the perspective of an infection control nurse, then I would expect what I have previously described to be the level of involvement. From the technical side of the design, I would expect the microbiologist (Professor Willimas or his deputy) to ensure the ventilation and water systems were safe. Also to involve experts in the field if necessary and liaise with the clinicians.

b) Who was the deputy of Professor Williams for the new hospital?

**A.** I was never told officially but heard it was Dr Teresa Inkster.

12. What concerns, if any, did you have regarding the final design specification of Wards 2A and 2B, and what action, if any, did you take in respect of these concerns?

**A.** I cannot comment as I left in 2012 before the building was complete, therefore was unaware of issues.

a) With hindsight, what concerns would you have had in respect of the final design specification of Wards 2A and 2B?

**A.** I am not qualified to comment on this and the guidance has changed since the hospital was built. Personally, the minimum I would expect is that the isolation rooms met specifications of the guidance at the time.

b) You state that you *"left in 2012"* and at Q2 you states that *"joined the new build project team in April 2012"*. Please can you confirm the position. If you did join the team in 2012 please can confirm what concerns you had, if any, regarding the final design specification of Wards 2A and 2B, and what action, if any, did you take in respect of these concerns?

**A.** I was part of the project team April 2010 to April 2012. I was never aware of any concerns in regard to 2A and 2B.

13. Describe the purpose of the ABD sheets and the relevance of ADB in respect of the intended patient cohorts. Who was responsible for sign-off of the ABD sheets? From the point of signing off the ADB sheets when did it become apparent that the ventilation specification of Wards 2A and 2B did not meet the requirements of SHTM/ HTM? What action, if any, did you take in respect of this?

**A.** I cannot comment as I was not involved or qualified and this would have been the responsibility of the microbiologist.

14. What concerns, if any, did you have regarding isolation rooms and compliance with SHTM/HTM? What action, if any, did you take in respect of any such concerns?

**A.** Ventilation was not my remit. I had left the project team and unaware of issues. Therefore, cannot comment.

a) The Inquiry has reviewed the RDS in excel format and note there is an entry under 'Design Notes' relating to Ward 2A isolation rooms; the entry states: *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).*

*Specialist advice should be sought on its design. The lamp repeat call from the bedroom is situated over the door outside the room.*

(i) Was this note entered on the RDS? If so, why and by whom?

**A.** I do not know on both counts.

(ii) What specialist advice was sought relating to the design of these rooms?

**A.** I do not know.

(iii) What was the final agreed design for isolation rooms and who approved this?

**A.** I do not know who approved this.

(iv) Who would you have expected, from an infection control perspective, to have approved the final design for isolation rooms?

**A.** The infection control doctor for the project and the clinicians.

b) The Inquiry has reviewed the RDS in excel format and note there is an entry under 'Design Notes' in the RDS which refers to HBN 4 Supplement 1, paragraph 1.10, and states:

*"EXCLUSIONS: This supplement does not describe the specialist facilities required in infectious disease units or on wards where severely immuno-compromised patients are nursed. Guidance for these facilities will follow in a further supplement to HBN 4."*

Were you aware of the exclusion in para 1.10? If so, what action was taken? What was the impact, if any, of the exclusion?

**A.** No

c) Who would you have expected to have been aware of this exclusions on the RDS?

**A.** The Board, the project director, the project manager for the hospitals, the clinicians that would be working in these areas, the local estates department and the infection control manager.

d) What ceiling types were specified and approved for use in isolation rooms? Who from the GGC Project Team approved this? Describe your involvement,

if any? What was the impact, if any, of the choice of ceiling tiles? What concerns, if any did you have regarding the choice of ceiling tiles?

**A.** I did not have any involvement.

e) What are the practical implications of using suspended ceilings with ceiling tiles in single patient bedroom on infection control risk and practice?

**A.** Suspended ceiling tiles make it easier for maintenance access, however, in a special isolation room with controlled ventilation, then solid ceilings are preferred to stop any breaks in the ceiling interfering with air flow and air changes.

15. The Inquiry is aware that in respect of a derogation being agreed in respect of the ventilation system and the requirement to achieve ACH in compliance with SHTM. Where you aware of this at the project phase?

**A.** No, I was not.

a) If not, when did you become aware? In hindsight, should you not have been aware of this at the time?

**A.** My understanding is that derogations require to be signed off by the Board and clinical team.

b) What concerns, if any, at the project phase did you have in respect of the ventilation system?

**A.** Not involved so cannot comment.

c) What the basis of your understanding that derogations require to be signed off by the Board and clinical team?

**A.** I cannot say exactly what was required to be signed off regarding the QEUH or RHC. My understanding is that derogations require to be signed off if for any reason the guidance cannot be met and if the Board and clinical teams are happy to accept any risk involved.

d) From the perspective of an ICN what would be the practical implications on infection control risk and practice if a single patient bedroom housing an

immunocompromised patient did not have adequate ventilation to remove contaminants such as *Aspergillus spp* spores or to prevent such contaminants from entering the room?

**A.** It may possibly lead to an increased risk of the patient developing an infection

e) From the perspective of an ICN what would be the practical implications on infection control risk and practice if a single patient bedroom housing a patient with an infectious disease did not have adequate ventilation to prevent their infection from spreading out of the room?

**A.** Depending on the pathogen, the infection control practice of staff and visitors and the cleanliness of the area, this could lead to other patients being put at risk.

16. Describe your involvement, if any, in respect of the decision to use Horne taps.

**A.** I was asked by my immediate boss Fiona McCluskey to telephone around neighbouring health boards to see if any of them had installed the Horne tap. I spoke with Richard Fox from NHS Lanarkshire who advised they had used them without any issues.

a) What concerns, if any, did you have regarding the use of Horne taps?

**A.** I was reassured with Richard Fox's information and at the time there was a Horne tap in use in Yorkhill hospital, I cannot remember which ward.

b) What risk assessments were carried out in respect of the use of Horne taps?

**A.** I was advised that the technical team were speaking with Health Protection Scotland about using Horne taps.

c) Who was involved in, and who signed off the use of Horne taps?

**A.** I do not know.

d) Did you attend the meeting regarding the use of Horne taps in 2014? If so, why was the decision made to proceed with Horne taps?

**A.** No, I had left the project team 2 years previous and cannot comment on the meeting.

e) Were you aware of the requirement to implement a regular maintenance system following the decision to proceed to use Horne taps?

**A.** Any water system should be maintained regardless of the supplier. The only point to mention regarding the Horne tap is that Richard Fox in NHS Lanarkshire said they had adopted them as the TMV (thermal mixing valve) could be replaced without having to remove the panel at the back of the sink.

f) When did you speak with Richard Fox from NHS Lanarkshire?

**A**. I cannot remember exactly when I spoke with Richard Fox.

g) Please refer to **Bundle 27, Volume 8, Document 3 at page 41** this suggests that you approved an aspect of the project from an IPC perspective in July 2014 (described as “Sanitary Waste Bins vs Clinical Bins in en-suites”) and that you were on the project was around at the time of the meeting on 5 June 2014. Please confirm whether the Inquiry’s understanding is correct. If not, please explain why not.

**A.** As mentioned above, this was not my sole decision and I was not part of the project team at the time. Sanitary waste bins vs clinical bins – this was not a unique issue for the QEUH or RHC. When this was highlighted by facilities management, it was because all other hospitals in Scotland were looking at a safe and more cost-efficient way of dealing with the waste. IPCT made the decision not myself alone and was not project team directed.

h) Please confirm how you knew that NHS Lanarkshire had the same type of Horne TMV installed in the same way?

**A.** I can only confirm that Richard Fox confirmed NHS Lanarkshire had the Horne Taps and reported no issues. I cannot comment on how they were installed.

**Bone Marrow Transplant Unit and Ward 4C**

17. The Inquiry understands that the BMT service was to transfer from the Beatson following a change order request, issued by Jonathan Best in July 2013.

a) Following the Change order request, what actions did the GGC Project Team take to confirm the technical and environment requirements (in particular air change rates, pressure regimes and HEPA and air permeability requirements) for the BMT Unit?

**A.** Again I cannot comment as I left the Project Team in April 2012.

b) What design review meetings were held to confirm with the user groups to confirm the requirements for the BMT Unit.

**A.** I was not involved.

c) Was the design for the BMT Unit subject to the RDD process

**A.** I cannot comment, was not involved.

d) If so, who was involved in the RDD process for the BMT Unit

**A.** I cannot comment, was not involved.

e) What feedback regarding Air Change Rates and pressure differentials was received from Multiplex regarding the Change Order?

**A.** I cannot comment, was not involved.

f) Prior to handover did the BMT unit at QEUH/ RHC meet the requirements and specifications of the intended patient cohort and comply with SHTM guidance? If not, why not, and if not, how was this area of the hospital accepted at handover? Who from infection control was responsible for singing off on handover?

**A.** I cannot comment as I was not involved in any handover.

g) In his oral evidence during the hearings commencing 20 August 2024 Professor Craig Williams told the Inquiry that you were the infection control nurse leading on the projects and that you were saying that the hospital had been built and was compliant with the appropriate legislation. Do you agree with this statement? If so, how did you satisfy yourself that compliance had been achieved? With the benefit of hindsight do you now agree this this to be the case?

**A.** I disagree with Professor William's statement. I had a limited input very early on with the project team as described earlier in the 1:50 stage and certainly no technical involvement. My involvement although limited was compliant with the guidance available at the time, but that was only for what I have described earlier.

h) What is your understanding of who was responsible from infection control in respect of ensuring technical compliance with the guidance?

**A.** The infection control doctor for the project team or his deputy. Also perhaps Frances Wrath who was the technical lead for the project team.

i) Please refer to **Bundle 27, Volume 8, Document 3 at page 41**. You have suggested that you were in post in some form until July 2014. What was your involvement in each year from 2010 to 2014?

**A.** No April 2010 to April 2012. I have explained the anomalies in the clarification requested in question 2A above.

j) You describe your role as being limited to whether the hospital was *"compliant with the guidance available at the time"*. Could you have carried out this role if you did not understand or had not read HTM 03-01 (Part A), SHTM 04-01 (Part A)?

**A.** Much of what I did was from experience and general good infection control principles. As I mentioned before many of these guidance documents have suggested layouts for hospital rooms.

k) What the process was when a technical issue arose that required you to seek the advice or involvement of *"the infection control doctor for the project team or his deputy"* and also how you would know when a technical issue that you needed to seek advice from Professor Williams had arisen?

**A.** During my time with the project team, I did not have any technical issues highlighted to me as the hospitals were in the process of being built in 2012. In general, a technical issue is usually highlighted by maintenance technicians or technicians that have responded to a break down.

18. In respect of the BMT unit describe your involvement, in the decision to return the BMT unit to the Beatson in July 2015? Please include details of the escalation process and whether any external advice and support was sought and why the decision was taken.

**A.** This was not myself but perhaps my lead nurse at the time Clare Mitchell, although I'm unsure what if any involvement Clare had.

19. The Inquiry is aware that the change order not only confirmed that the Bone Marrow Transplant (BMT) service would transfer to Ward 4B in the QEUH but also that the haematology patients that were originally planned to accommodate Ward 4B would move to Ward 4C.

a) Describe how this change was communicated to the project team and Multiplex and how this change was captured in the design and specification documentation.

**A.** I do not know.

b) Prior to handover did the BMT unit at QEUH/ RHC meet the requirements and specifications of the intended patient cohort and comply with SHTM guidance? If not, why not, and if not, how was this area of the hospital accepted at handover? Who from infection control was responsible for singing off on handover?

**A.** I do not know as I was not involved.

**Handover**

20. Commissioning and validation:

a) Describe what commissioning of the water and ventilation system took place prior to handover, and your involvement, if any.

**A.** I do not know and was not involved.

b) Who was responsible for ensuring that commissioning of the water and ventilation system was carried out, and who signed off that it had been carried out? What concerns, if any, did you have regarding commissioning and validation being carried out prior to handover?

**A.** I do not know and was not involved.

c) The Inquiry understands that NHS GCC decided to forgo the requirement to have an independent commissioning engineer. Who made this decision? What was the impact, if any, of this decision? In hindsight, do you think that it was the correct decision?

**A.** I do not know. I am not qualified to comment on this question.

d) The Inquiry understand that no validation was carried out in respect of the ventilation system. When did you become aware of this? How did handover come to be accepted without the ventilation system being validated? Who was responsible for this and who signed off on this?

**A.** I do not know how this happened or who was responsible and only became aware when the inquiry started.

21. Who oversaw contractual compliance? Who was responsible for ensuring that the paperwork was produced to confirm contractual compliance? What action, if any, did you take to ensure that paperwork was in place to ensure contractual compliance? Was validation of the ventilation system a contractual requirement? If so, who signed off on contractual compliance given the lack of validation?

**A.** I believe it was Capita? I cannot say for certain. Sorry I cannot help with any of these questions.

22. **Please see Bundle 12, page 936 and 937.** This is an email from Frances Wrath to you dated 5 May 2015. Frances Wrath states *'All areas have been commissioned in line with contract ER's and all legislative requirements.'*

a) What documentation, if any, did you have sight of in order to accept this statement at the time?

**A.** No, I did not have sight of any documentation. I was asked by the Infection Control Committee which included Tom Walsh and Sandra McNamee, now Devine to get assurance on the commissioning and received the email in the bundle from Frances Wrath. I am not qualified to review commissioning documents.

b) At the time, how were you satisfied that all areas had been commissioned in line with contact ER's?

**A.** I cannot comment as I was not involved.

c) Please explain how 'all areas had been commissioned in line with the contract ER's and legislative requirements' give the agreed ventilation derogation which provided for achieving air changes below the required level as provided for in SHTM 03-01 guidance at the time?

**A.** I cannot comment as I was not involved

d) With the benefit of hindsight do you consider that 'all areas had been commissioned in line with the contract ER's and legislative requirements'? If so, why, and if not, why not?

**A.** I cannot comment as I was not involved

e) Describe your role in the lead up to accepting handover. What action, if any, did you take to ensure that the wards within QEUH/RHC met the guidance requirements of SHTM.

**A.** I left the project team in April 2012 and was not involved in the handover.

f) How were you assured that the wards met the requirements of the specific patient cohorts?

**A.** I cannot comment as I was not involved

g) In her evidence Dr Peters tells us that you have her a tour of the QEUH/RHC campus in around late 2014. Dr Peters told the Inquiry that she noticed that the sinks had a greenish puddle where the drain was, and that she asked about this, and you assured her that the sinks were compliant. How were you assured that the sinks were compliant? What action, if any, did you take follow Dr Peters comments? In hindsight, what action, if any, should you have taken?

**A.** I was on a tour with other infection control colleagues and have a vague memory of this. My action would have been to highlight what was noticed by Dr Peters during the tour to the project team. I informed Dr Peters that the group responsible for the sinks would have had access to SHTM 64 and been guided by Professor Williams. Therefore if this was followed then the sinks were compliant.

h) The Inquiry is aware that the ventilation system in respect of Wards 2A and 2B did not meet the requirements of SHTM – knowledge and awareness/ involvement in derogation. Did you have any concerns at the time? If so, please describe. The Inquiry is aware that Ward 2A was handed over without HEPA terminals being in place in wards, how did sign off come to take place without these being in place? Who signed off the RHC as ready for handover, without HEPA being in place?

**A.** I was not involved in ventilation design or sign off.

i) What concerns did you have when you became aware that Wards 2A had been handed over without any HEPA terminals being in place? Who would have been responsible for signing off the ward?

**A.** When I became aware of this my concerns were for the patients. I also could not understand how this would not have been picked up at the time of validation/verification and commissioning. I would expect the technical experts responsible for the build would have done a hand over and sign off with the Board/s technical experts.

j) The Inquiry understands that there was no validation of the ventilation system prior to handover. Who was responsible for ensuring that this was in place?

Why was validation not carried out? When did you become aware that it had not been carried out and what action did you take in respect of validation having not been carried out? What was the consequence of validation not having been carried out? Should the hospital have opened without the ventilation system having been validated?

**A.** I cannot answer any of these questions. I was not made aware of any issues.

k) Describe your knowledge and involvement, if any, in the PMI allowing Multiplex's role as Independent Commissioning Engineer. What was the impact of this?

**A.** I was not involved and not qualified to comment.

l) At handover, had a preoccupation L8 risk assessment been carried out? Who was responsible for ensuring that this was in place prior to patient migration? were you aware of a preoccupation L8 assessment having been carried out? Who instructed it? When did you become aware? Why did you not raise it as a concern that you had no seen this prior to patient migration, was this not within your role as Project Manager of RHC?

**A.** I cannot answer this and I was not project manager for RHC it was Mhairi McLeod.

m) Who was responsible for providing asset tagging. Why was there no asset tagging who decided to proceed without it?

**A.** I do not know and this is not infection control’s remit.

n) What, if any, testing and maintenance protocols and regimes were in place at handover? Who was responsible for putting these in place? If they were not in place, why not, and what action was taken and by whom to address this?

**A.** Again, I cannot help. I had no involvement with anything to do with the handover.

o) Please can you clarify in light of your response to clarifications at Q2 and Q17(a).

**A.** I have explained the anomalies above regarding the dates.

p) Please confirm what job you were doing when you were on the tour with other infection control colleagues in late 2014.

**A.** I was a band 7 ICN working as part of the adult infection prevention and control, south sector.

23. Have you ever been to the old Schiehallion Unit at Yorkhill?

**A.** Yes, before the QEUH was built the paediatric team and adult team amalgamated at what was the old southern hospital. All the ICNs would take it in turn to respond to patient referrals at Yorkhill

a) Have you ever been to the Adult BMT ward at the Beatson?

**A.** Yes. The ICNs in the south sector took it in turns to cover patient referrals at the Beatson.

b) Are you aware of whether either, both or neither of these wards had a two door 'airlock' style lobby at the entrance to the ward like the refitted Ward 2A RHC now does.

**A.** Yes both units did have an airlock entrance.

**Declaration**

24. I believe that the facts stated in this witness statement are true. I understand that proceedings for contempt of court may be brought against anyone who makes, or causes to be made, a false statement in a document verified by a statement of truth without an honest belief in its truth.

The witness was provided the following Scottish Hospital Inquiry documents for reference when they completed their questionnaire statement.

**Appendix A**

**A47069198 – Bundle 12 – Estates Communications**

**A50039563 – Bundle 27 – Miscellaneous Documents - Volume 8**

The witness provided the following documents to the Scottish Hospital Inquiry for reference when they completed their questionnaire statement.

**Appendix B**

**A51785688 – Jackie Barmanroy - CV**

**Curriculum Vitae**

Jacqueline Margaret Barmanroy

Address:

[redacted]

Telephone:

Home: [redacted]

Mobile: [redacted]

E-mail: [redacted]

D.O.B. [redacted]

Age: [redacted]

Marital Status: [redacted]

General education.

Woodmill High School, Dunfermline. [redacted]

| GRADE | SUBJECT | YEAR | RESULT |
|---|---|---|---|
| 'O' Level | English | 1980 | A |
| | History | | A |
| | Biology | | A |
| | Chemistry | | A |
| | German | | A |
| | Mathematics | | B |

| | | | |
|---|---|---|---|
| | Arithmetic | | B |
| | Physics | | C |
| | | | |
| Higher | English | 1981 | B |
| | History | | B |
| | Biology | | B |
| | Chemistry | | C |
| | German | | B |

I left school at 18yrs after serving as Head Girl for a year.

**Professional Training**

**1982-1985** Attained RGN qualification at Edinburgh Royal Infirmary.

**Further Professional Qualifications**

| | | |
|---|---|---|
| **1991** | The Institute of Counselling | Certificate in Nurse Counselling Skills |
| **1991-1993** | South bank University London. | Diploma in Professional Studies in Nursing. |
| **1995** | Caithness and Sutherland NHS Trust. | Appraisal and PDP Skills. |
| **1995** | Centre for Medical Education Medical School, Dundee. | Audit Module. |
| **1995-1998** | South bank University London. | BSc(Hons)Nursing.(Included Module in Management). |
| **1998** | Scottish Qualifications Authority. | Computer Application Packages. |
| **1999** | University of Stirling. | Nursing Students Supervisors Course. |
| **2008** | University of Highlands and Islands. | MSc Infection Control. |

| | | |
|---|---|---|
| **2009** | Institute of Leadership & Management | Level 3 Introductory Certificate, First Line Management. |

**Employment History**

December 1985 – October 1986

I worked as a staff nurse in the renal dialysis unit of the renal unit in Edinburgh Royal Infirmary. The work was over 3 areas; outpatient renal dialysis, high dependency and an investigations unit, which also taught patients CAPD.

October 1986 – January 2000

I worked in a twin theatre suite in Caithness General Hospital. I progressed from staff nurse to sister, rotating between anaesthetics, scrubbing and recovery. As a sister I was responsible for a team of 14 nursing staff of various grades. I particularly enjoyed the gynaecological surgery. It was in theatre that my interest in infection control developed. This was recognised by the Director of Nursing who in conjunction with the Infection Control Team at Raigmore hospital created the dual post of theatre sister and infection control nurse. My salary was split and I was paid 'F' Grade for theatres and 'G' grade for infection control.

Achievements during this employment:

- Helped to develop infertility services at Caithness General and set up a counselling service for patients.
- Became an infection control nurse for Caithness and Sutherland covering primary and acute care settings, which covered a population of 40,000.
- Taught as an open learning tutor for the pre-nursing course at Thurso College.
- I was awarded 3 discretionary points in 2000 for my part in developing infection control and infertility services in Caithness and Sutherland.

- Presented with an academic achievement award by Caithness and Sutherland Trust in 1999.
- Undertook training in endoscopic surgery.
- Completed the infection control link nurse training.

January 2000 – July 2001

Applied to work full time in infection control from Caithness and Sutherland and was successful in obtaining an 'H' grade post at Raigmore Hospital. Working in Highland Acute Trust meant providing a service for 9,000 staff. A third of the 9,000 staff were working in Raigmore. During this time I worked as an acting 'I' grade to allow my colleague time off to develop the MSc in infection control at the university of Highlands and Islands.

Achievements during this employment

- Worked on committees at Health Board and Trust level particularly in regard to SHTM 2010 and SHTM 2030.
- Wrote and implemented a new hand hygiene policy for the Trust.
- Reviewed and updated the infection control manual.
- Developed and taught the link nurse programme.

July 2001 – April 2002

At Fife Acute NHS Trust I worked as a senior ICN.

Achievements during this employment

- Successfully obtained a place on the MSc programme.
- Participated in the national decontamination audit.
- I was invited to sit on the national steering group for HAI surveillance at SCIEH.
- Undertook training in general risk assessment in occupational health and safety.

April 2002 – April 2010.

I have been working as a senior infection control nurse at Stobhill hospital. In July 2006 I was asked to take up position as interim 'I' Grade ICN based for Glasgow West hospitals, based at Gartnaval General Hospital. This involved strategic clinical leadership. During this time, I also helped provide infection control cover for the dental hospital.
I am currently working as band 7 senior nurse in infection control based at Glasgow Royal Infirmary. I am also responsible for marking cleanliness champions' folders for both nurses and dental students at Glasgow dental hospital. When requested I provide lectures at Glasgow and Caledonian University for student nurses. I regularly work with the capital planning project team giving infection control advice during refurbishment work.

Achievements during this employment

- Worked with the project team on the new Stobhill ACH. I was involved from the user group stage to sign off.
- Worked on research with laboratory staff on the association of antibiotics and *C. difficile*.
- Mentored the first complete team of domestic assistants (oral health directorate) to complete the Cleanliness Champions programme.

April 2010 – Present.

- Take the lead and provide the Project Team with expert professional advice in relation to refurbishment of clinical environments and design of new build accommodation with regards to HAI.
- Provide a research environment.
- Provide professional leadership and vision to the HAI initiatives to ensure compliance with national policy.

**Character profile.**

- I am a hardworking, conscientious team player.

- I enjoy a challenge and as a team leader encourage colleagues to fulfil their potentials.
- Having previously been an interim lead nurse I am used to meeting deadlines and can work under pressure. This was useful during work on the Stobhill ACH.
- I have good interpersonal skills, patience and a good sense of humour.
- I have a lot of experience in working with various disciplines and have been told that I immediately put people at their ease and am easy to talk to.
- I especially enjoy teaching and facilitating ward staff to work through infection control issues, which not only prevents the spoon–feeding syndrome but provides them with necessary experience and competencies.
- My counselling skills have augmented my listening ability and assertiveness.
- During my time in Caithness I worked as a Special Constable with the Northern Constabulary. This was a great life experience pursuit, which certainly taught me a lot about people.

**Leadership**

- As a team leader I enjoy developing colleagues to fulfil their potential.
- With good interpersonal skills, patience and a sense of humour I find it easy to develop productive working relationships with other disciplines. My leadership skills started early as I left school after serving my last year as head girl.
- I have served on many committees locally and nationally. One example was the national steering group for HAI surveillance with SCIEH, now HPS. Networking with colleagues from other health boards empowered me to lead team colleagues and convey to multi-disciplinary teams the goals of these committees, all of which aim to improve patient care.
- I attended a short leadership course organised by the Infection Prevention Society. While I was an interim lead nurse I also studied with the Institute of Leadership and Management at level 3. My goal was to improve my skills in order to lead the team in a motivating manner.
- I regularly take part in corporate inspections in Glasgow & Clyde to provide leadership in order to prepare wards and departments for HEI inspections.

- Completed ‘Ready To Lead’ and the ILM level 3 certificate in leadership and management.

**Clinical Practice**

- I am a member of the infection prevention and control person centred care group. Since the group began there have been 2 posters created and I am a named author on both posters – one on the feelings of the patient in isolation. This was done to see how care could be improved for this group of patients. The second poster is concerned with how the ward staff view the infection control service and how relations can be improved. The group were keen to be more supportive to staff.
- Contributed to SAB surveillance, changes in policy and helped to develop the Clinical Review Tool that is sent to the medical team of patients who have a healthcare acquired bacteraemia.
- Commenced PVC and CVC ward sweeps that are undertaken as soon as possible after a bacteraemia has been investigated and the source is deemed to be a PVC or CVC. The information gathered from these sweeps is given to the ward senior charge nurse and lead nurse to help improve practice.
- Monitoring the levels of C.diff whilst an interim lead nurse encouraged me to instigate project work to help reduce the levels of C.diff. This started with working with staff at ward level and progressed to a group being convened that included a consultant microbiologist, pharmacist and consultant infectious diseases physician.
- As part of service development I developed an infertility service in Caithness and Sutherland. Developed a template for the medical notes in relation to paediatric patients with RSV. This helped with a more lean methodology.

**Facilitation of Learning**

- Provide training for the facilities directorate – this was board wide. I analysed their training needs by liaising with the different site managers. From this I devised a training programme which I delivered and evaluated for future programmes.

- Taught as an open learning tutor for the pre-nursing course at Thurso College.
- I was awarded 3 discretionary points in 2000 for my part in developing infection control and infertility services in Caithness and Sutherland.
- I was presented with an academic achievement award by Caithness and Sutherland Trust in 1999.
- I have in the past lectured nurse students for both Glasgow University and Caledonian University.

**Research and Service Development**

- Throughout my 17 years in infection prevention and control I have been involved in policy development and audit. This includes reviewing audit tools, the audit process and audit platform.

- Became the first infection control nurse for Caithness and Sutherland covering both primary and acute settings, which encompassed a population of 40,000.

- Helped to develop infertility services at Caithness General and set up a counselling service for patients.
- Used my master's degree project to reduce bacteraemia rates in care of the elderly wards.
- Worked with the project team on the new Stobhill ambulatory care hospital.
- Worked as a nurse consultant providing infection control input for the new south Glasgow hospitals, adults and children. This included using national polices health facilities guidance and HAI standards. This was a strategic post communicating with the health board, directorate heads, heads of nursing and the board infection control service.
- Worked on a research project with laboratory staff on the association of antibiotics and C. difficile. This work was written up and presented in a paper and poster at ECCMID in Barcelona in 2008 -
  "An investigation into antibiotic susceptibility and ribotype profiles among community acquired and hospital acquired Clostridium difficile strains isolated in a university teaching hospital laboratory"

**General Points**

- A lot of infection prevention and control is diplomacy. This was certainly tested when I served for 2 years as a special constable in the Northern Constabulary.

**Publications**

- Transmission of Salmonella enteritidis following endoscopic retrograde cholangiopancreatography due to inadequate endoscope decontamination accepted for publication in the American Journal of Microbiology.
- An investigation into antibiotic susceptibility and ribotype profiles among community acquired and hospital acquired Clostridium difficile strains isolated in a university teaching hospital laboratory.

**Hobbies**

I enjoy good food and drink, going to the cinema and spending time with my family.

**Scottish Hospitals Inquiry**
**Witness Statement of**
**Mary Anne Kane**

This statement was produced by the process of a question and answer recorded interview with the witness. The questions and answers are produced within the statement.

**Personal Details**

1. Name, qualifications, chronological professional history, specialism etc – please provide an up-to-date CV to assist with answering this question.

**A.** Mary Anne Kane, BSC Dietetics, Post Graduate Hotel, Accommodation and Catering Management Professional Background – Soft Facilities Management.

I held various Catering Manager posts within NHS Greater Glasgow and Clyde between 1989-1996 (Ruchhill, Knightswood, Southern General Hospital). Between 1996-2009 I was the Hotel Services Manager at Southern General Hospital and South Glasgow Trust locations responsible for the operational delivery of Hotel Services including catering, domestic, portering, waste, fire and transport.

2009-2012 General Manager Estates & Facilities North Glasgow Hospitals responsible for the operational and strategic delivery of estates and facilities services within the Division.

2012-2014 – Seconded to a General Manager Corporate Services role developing and implementing the Boards Catering Strategy including the delivery of two Catering Central Production Units upgrades to support this, Fire Policy and supporting fire safety strategies, staff governance matters, development and implementation of the Board Laundry Strategy and modernisation and efficiency programs as directed by the Director of Estates & Facilities.

2014-2015 Interim Director of Estates & Facilities NHS GGC – Responsible for the operational delivery of estates and facilities within NHS GGC whilst the new SGH campus was being developed, designed and commissioned. To coordinate the transfer of staff from multiple locations to the QEUH campus. Development of the Soft FM operational processes and systems applicable to QEUH/RHC standardising existing processes (2013-2015). Associate Director of Property, Procurement & Facilities NHS GGC – To provide leadership and management of Estates & Facilities within NHS GGC reporting to the Director of Property, Procurement and Facilities (2015-2018). Responsible for operational estates management, Soft FM (including waste, fire, security, domestic, portering, laundry, decontamination, PFI management.

Jan 2018-1st November 2018 Interim Director of Estates & Facilities NHS GGC – Responsible for the operational delivery of estates and facilities within NHS GGC.

November 2018-31st May 2021 Assistant Director of Facilities Corporate & Central Production Units GGC – Responsible for quality & performance within Facilities, Decontamination Services, Central Cook Freeze Production Units, Prison Services with NHS GGC, Procurement Services and Clyde Sector

**Professional Background**

2. Professional role(s) within the NHS.

**A.** I was the lead soft facilities manager for NHS GGC participating in national advisory groups and national working groups for many years in various roles.

3. Professional role (s) at QEUH/RHC, including dates when role(s) was occupied.

**A.** I did not have responsibility for QEUH/RHC as single property within NHS GGC. I was employed for all of the properties within NHS GGC as a general manager/associate director with a management structure within each geographical area who were responsible for the day to day operational delivery of services via the General Managers employed in each geographical sector. Professional leads for Hard and Soft FM supported the geographical General

Managers in delivering the range of disciplines within each area (Sector and Site Maintenance Managers and Site Manager Soft Facilities Manager). A General Manager and Deputy General Manager for Estates was a also added to the structure from 2016 for Hard FM strategic, compliance and professional leadership of hard FM.

4. Area(s) of the hospital in which you worked/work.

**A.** I did not directly work in the hospital. I supported service delivery as required for each hospital in NHS GGC not just QEUH/RHC.

5. Role and responsibilities within the above area(s)

**A.** My role in relation to QEUH/RHC was within my wider remits as Interim Director and Associate Director. This involved liaising directly with the General Manager with overall responsibility for Hard and Soft Facilities Management and their direct reports as required

6. Are there differences between hard and soft facilities in a hospital?

**A.** The disciplines within Hard and Soft FM vary. Soft FM provide front facing patient related tasks such as catering, cleaning, laundry, sterile services etc. Soft FM is patient and customer facing due to the nature of the services that are delivered. There is a higher degree of patient and clinical team interaction due to the direct feedback received on a daily basis on Soft FM service delivery. Hard FM tends to be more back of the house due to the infrastructure and maintenance work completed by estates not being visible on many occasions, as a result of plant rooms and assets not being patient facing, Estates staff are less exposed to direct patient contact and clinical team interactions as a consequence. There is a higher level of technical statutory legislation applicable to estates on a range of specific subjects e.g. Ventilation, Water, Pressure Systems, electrical systems etc.

The delivery of both Hard and Soft FM services within NHS GGC was divided into 5 geographic areas which were reduced to 4 areas over time. A General Manager was employed in a discrete geographic area with line management

responsibilities for Hard and Soft FM. Each Sector's Hard and Soft FM service had a Lead Technical Manager[s] responsible for operational delivery and compliance with national standards, who advised the Sector General Manager on all technical issues. Within Hard and Soft FM, the Sector Technical Leads also led on Board wide statutory and mandatory topics to ensure a consistency of approach and Policy application across the Board. In Hard FM Sector Technical Leads led board wide on Water(Alan Gallacher), Ventilation(Ian Powrie), High voltage/low voltage(Peter Collins) etc until the appointment of the General Manager Estates(Alan Gallacher) and Deputy General Manager Estates(Ian Powrie) after this time they led on professional technical issues and compliance Board wide .Alan Gallacher was responsible for the Compliance Team  In Soft FM, there was a Technical Lead for Catering, Domestic and Laundry.

(a) If so, describe these differences.

**A.** Please refer above

(b) If applicable, explain how hard and soft facilities operate differently?

**A.** Technical qualifications and experience for each service are different. Both services have separate governance structures for technical issues. The management structure internally for both services was specific to each discipline, coming under the leadership and remit of the General Manager for each geographic area in both cases

(c) If applicable, explain how hard and soft facilities are managed differently?

**A.** In many respects both services are managed the same in that national and corporate policies such as HR, Infection Control, Financial Management etc. are the same. Different assurance groups operate in both disciplines e.g. Estates SMT, Estates Statutory Compliance Group, Water Safety etc.

7. Who did you report to? Did the person(s) you reported to change over time? If so, how and when did it change?

**A.** I reported to Mr Alex McIntyre, Director of Estates & Facilities between 1991 and 2014, in various posts which matched my skill set at the time appointed. Between 2014 and 2015, I reported to Mr Robert Calderwood, Chief Executive as the Interim Director of Facilities whilst the new SGH was being constructed and commissioned. From January 2015 until December 2017, I reported to Mr David Loudon, Director of Property Procurement and Facilities. From January 2018 until 1st November 2018, I reported to Mrs Jane Grant, Chief Executive. From 1st November 2018 until 31st May 2021, I reported to Mr Tom Steele, Director of Estates & Facilities.

8. Who selected you for your role(s)? When were you selected for your role(s)? Please describe the selection process for appointment to this/these roles?

**A.** For all posts I held within NHS GGC up until approximately 2009/2010, I applied for posts seen advertised and was selected via competitive interview. In 2009/2010, NHS GGC underwent major organisational change when Trusts were disbanded and a single Health Board for the area was being created. As part of this process I was selected, along with many Managers, to undertake an assessment centre selection process. At this time, I was selected and appointed to the role of General Manager, Estates & Facilities, North Glasgow.

At the same time another three General Managers were selected for Estates & Facilities to cover the geographic areas of West Glasgow, South Glasgow and Partnerships. When Clyde joined NHS GGC this increased to five geographical sectors. In approximately 2012, I was asked by the Director of Estates & Facilities to lead on Corporate Facilities issues aligned to my skill set in Soft FM such as the Catering Strategy, application of standardisation in Domestic Services, Fire Safety arrangements, identification of new technologies which would support the transition to the new hospital, financial planning and staff partnership working. These tasks were in preparation for the changes required to support the migration in future to the new SGH site. At this time the

geographic responsibilities for the other General Managers in Estates & Facilities were aligned to four geographical areas: North, South Clyde and Partnerships. Reporting arrangements to the Director of Estates & Facilities were unchanged by this arrangement.

When I was appointed as Interim Director of Estates & Facilities in 2014 all of the General Managers within Estates & Facilities were asked if they wished to be considered for this role. I was interviewed for this role by Mr McIntyre and Mr Calderwood. This role was interim until the new SGH opened and the Project Director of the new SGH (David Loudon) came into his role as Estates & Facilities Director Designate at handover. When the Director Designate (David Loudon) came into post a revised job description was created for the post of Associate Director of Estates & Facilities to reflect the range of tasks I had been undertaking and would continue to provide. When Mr Loudon announced he was leaving I was approached by the Chief Executive, Mrs Jane Grant, and asked as Mr Loudon's Deputy if I would step into the interim role until a Director of Estates & Facilities was substantively employed for the role, which would be a period of approximately 6 months.

9. Had you worked with any of your QEUH/RHC estates and management colleagues before your current role? If so, who had you worked with before this current role? When did you work with this/these colleague(s)? What role were you in when you worked with this/these colleague(s)? How long were you colleagues in this/these previous role(s)?

**A**. I historically had worked with Mr Hunter, General Manager, Ms Karen Connelly, General Manager and Mr Alistair McLean, General Manager on a range of Soft FM projects over the years. Whilst based in North Glasgow from 2009/2010-2012 I had worked with Mr Ian Powrie, Head of Maintenance as his line manager within the geographic sector arrangements. In approximately 2013, I started working with Mr Alan Gallacher, the Board's Professional Lead for Water Safety on developing a Board wide approach to Water Safety as, historically, each individual Sector had its own arrangements in place which were based on the previous Trust configurations. Alan Gallacher was the Board wide

professional Lead at that time for Water This occurred after the retirement of Mr McIntyre when I took on the role of Interim Director of Facilities

a) What at the time did the role of Professional Lead of Water Safety encompass?

**A.** The Professional Lead for Water coordinated the Board compliance on Water Safety They were responsible for achieving professional consensus on developing standardised processes, practices and documents to support the delivery of a statutory and mandatory compliant systems of water safety management across the Board. They coordinated the Responsible Persons and professional development of all staff at all grades to standardise approaches to delivery of safe systems. This included development of Water Policy, Water Written Schemes and Standard Operating Procedures related to water. This was a professional leadership role that was Board wide. The role of having a professional lead was to ensure the Board on each statutory topic had professional consensus on how to standardise procedures and arrangements that ensured statutory and mandatory compliance

**Specific role(s) at QEUH/ RHC**

10. Describe your role(s) at QEUH; job title and responsibilities including day to day responsibilities, and details of staff who reported to you, who you worked alongside and who you reported to. Please fully describe where the role was in the hierarchy of the organisational structure.

**A.** My role was a Board wide role covering all of the properties and sites within NHSGGC. The Sector General Manager of South Glasgow (Billy Hunter) reported to me on the delivery of operational services for Hard and Soft FM along with the other 3 Sector General Managers with geographic areas of responsibility. My day to day responsibilities in relation to the QEUH/RHC and the other geographic sectors were based on the interactions I had with them and any matters which were escalated to me in relation to service or statutory delivery of services. My role was very much the coordination of internal assurance groups and governance groups which allowed all sectors the

opportunity to escalate areas of concern, report on performance at local level and to drive change and efficiency within Estates & Facilities. These focused on performance, finance, HR, health & safety.

11. When did you start your current role? At this time, how many people worked within hard facilities management at QEUH? At this time, how many people worked within soft facilities management at QEUH? Did the number of people working change during your time at QEUH? If so, how did they change in soft facilities management? If so, how did they change in hard facilities management?

**A.** My role of Associate Director of Estates & Facilities formally commenced in about July 2015 I think. I do not have access to how many staff transferred at the time and I do not recall the detail of this.

The number of Soft FM staff certainly changed over time at QEUH/RHC for instance additional temporary staff were recruited at various points to support the migration of patients, completion of key tasks when there were operational failures such as Pneumatic Tube System failure, Automated Guided Vehicle failure, supporting patients to get from the car parks to the hospital and to improve on cleaning performance.

Over the period at some points, savings were offered for domestic services in some areas of the hospital which were low risk as part of the Board's Financial Performance Improvement Program after the post concerned had been critically reviewed by the local operational team. Savings had been identified for Soft FM provision as part of the FBC for the hospital due to economies of scale being based on a single site, some of these monies were diverted to improve and enhance the patient experience such as the creation of a discharge cleaning team who also took over some nurse related activities to release time to care in the single room configuration. In relation to Hard FM, the number of staff who transferred from the demitting hospitals was never increased whilst I was involved. Savings had been identified as part of the FBC for Estates at a value of £1m from existing budgets; inflationary uplifts were not applied to the FBC costings and some fundamental tasks had been omitted

from the FBC costings which were described in the submission. This meant that from the point of handover the Estates structure was not fully staffed to meet the needs of the site. A number of staff left post when the demitting sites transferred to the new hospital which made the situation very challenging on a day to day basis, particularly with so many defects and issues being identified with the building and operational delivery of services. When I returned from sick leave in August 2017, I was advised by Mr Hunter, Mr Powrie and Mr Gallacher that Mr Loudon had agreed to a reduction in the estates establishment as part of the Boards Financial Improvement Plan while I had been on sick leave which they had not agreed with due to the pressure that the site was still encountering, due to a number of ongoing defects and problems on site. I do not recall how many staff this related to or if other areas of the Board were impacted. This was discussed when I returned from sick leave with Mr Loudon who advised that Mr Gallacher had written to him expressing professional concerns about service delivery at this time, which he in turn had escalated to the Chief Executive. However, the Boards Financial Improvement Plan for the year had to be achieved in all areas

a) What were the fundamental task omitted from budget?

**A**. Management structures to support statutory compliance (such as number of APs), HAI related issues management (these are usually addressed on an ad hoc basis as they occur so require resource flexibility but on a site the size of QEUH this would require a dedicated resource), backlog maintenance requirements ,extraordinary breakdowns and ad hoc operational requests for project work resulting from infrastructure issues

12. How did hard and soft facilities management operate on a daily basis? How were the operations managed? Was responsibility shared between different teams? If so, to what extent was responsibility shared?

**A.** The management structure was the same in all of the geographical sectors of the Board for Estates & Facilities. For example, the General Manager for the Sector (Billy Hunter) had responsibility for the day to day operational delivery of both services. Below the General Manager was a Hard FM Technical Lead (Head of Maintenance) (Ian Powrie/Andy Wilson) and a Soft FM Technical Lead (Site Facilities Manager) (David MacDonald). On a daily basis, teams met discretely in their own specialities to discuss the day to day issues in the hospital and dynamically risk assess what activities would and could be undertaken that day on the basis of risk. Sometimes the General Manager would participate and be directly involved in decision making but more commonly the Technical Lead in each service led this operational work escalating to the General Manager as required. Most work was undertaken in discrete teams due to the different specialities but there was overlap and support provided to each other on some matters e.g. cleaning up after floods/repair work clean ups etc.

13. Refer to the Estates Team Bundle, Bundle 12, Document 29, Page 233 - Organograms showing the organisational structures within QUEH.

a) Does the organogram match the organisational structures of QEUH?

**A.** Yes, in 2015 this reflects the structure. In 2016 the role of General Manager Estates and Deputy General Manager Estates were created and appointed to coordinate specifically the standardisation of approach Board wide to Hard FM technical issues and compliance matters focused on statutory and mandatory guidance.

b) If not, why not?

**A.** N/A

c) How did the structure and hierarchy operate across the different sectors?

**A.** The structure and hierarchy was the same across the different sectors.

14. Between 2014 and 2021 your role varied between Interim and Associate Director. Describe the difference between Interim and Associate Director roles.

a) What was the function and duties of each role?

**A.** The function as Interim Director was that of a caretaker to maintain functioning, operational services until the permanent appointee came into post. This involved participation in a number of Board assurance/governance groups, preparation and presentation of data in various forums, maintain momentum of change in terms of systems, processes and procedures by linking in directly with the General Managers for each Sector as well as via various Estates Management Forums. As Associate Director, I was not involved in Board Assurance groups or the preparation of Board papers although I did input to these and provide data when requested to by the Director. I led, developed and implemented operational delivery of a range of services across the Boards portfolio of properties. I also developed the structure of internal governance meetings within Estates & Facilities to ensure that there were a number of forums which supported the General Management structures within the Board such as Estates Senior Management Team, Statutory Compliance and Risk Tool Group, Partnership Group, Operational Management Group, Senior Managers Group etc.

b) Who did you report to in each role? Detail superiors for each role.

**A.** Associate Director – Mr David Loudon, Director of Property, Procurement and Facilities.

Interim Director 2014 - Mr Robert Calderwood, Chief Executive. Interim Director 2018 - Mrs Jane Grant, Chief Executive. Assistant Director Facilities - 2018-2021 Mr Tome Steele, Director of Estates and Facilities

c) Describe your relationship with your supervisor in each role.

**A.** I was extremely clear in my role and responsibilities in 2014 as Interim Director; I had agreed pieces of work and clarity that my role did not extend into the Project Team or technical advice on subjects I was not qualified to advise on. I did not take on the full role of Director at this time(Procurement and Capital Projects were covered by others in the organisation) I met regularly formally and informally with Mr Calderwood and felt informed enough on what was occurring organisationally to fulfil what was expected of me on a day to day basis. My relationship with Mr Loudon was very informal, we rarely formally met and communicated by 1-1 catch ups which were fairly irregular. I felt Mr Loudon was less interested in the delivery of operational matters by the Estates and Facilities teams than other areas of his role. There was little direction and limited discussion on the other areas of the Board. In 2018, I met with Mrs Grant fairly regularly and was supported by Mr Best as the Chief Operating Officer in the absence of the Chief Executive. Most meetings were on a 1-1 basis.

d) The Inquiry understands that you were not part of the Project Team but understands that you would need to communicate with them. Describe your communications with the Project Team. How would you describe your working relationship with them? Was David Loudon involved? If so, how so?

I had a lot of contact with the project team in respect of soft fm related matters – this included being part of working groups with clinical and ward teams to develop routines within wards and understand demarcation lines between clinical and soft fm staff. I did not routinely attend project team meetings or receive briefings on issues. Karen Connolly was very proactive on the soft fm and commissioning agenda and myself and the soft fm team met regularly with her so received updates and information on project progress mainly from this route. I worked with the IPCT lead Jackie Balmanroy and the Lead Nurse Fiona McCluskey on the Project as required to take forward individual pieces of work linked to soft fm matters. Sometimes David Loudon was part of these meetings but not very often. Information on commissioning and what was required to be

progressed came via this route in terms of opening timelines, building access, building layout etc. I didn't have any direct involvement on Hard FM and most updates I received regarding this came informally from Mr Powrie.The working relationship with these staff was good.

e) How were the meetings, both formal and informal, between you and Mr Calderwood recorded? Please expand on what was discussed during these meetings and confirm how regular they were.

I met with Mr Calderwood if required depending on if there were operational matters which needed to be brought to my attention raised by other teams. On average I would say I met with Mr Calderwood informally every three weeks/month. The type of things I recall being discussed were the formation of various working groups to develop revised service models at which Estates and Facilities would need to participate (Gartnavel General Front Door redesign, Yorkhill Hospital future decision making on use, Glasgow Royal Infirmary Orthopaedic redesign).Future National work discussed at Chief Executive Meetings to obtain background or discuss direct impact on the Board .If through attending any other meeting he had picked up any concerns about soft fm or maintenance issues at local level .

I attended formal meetings on the frequency they were programmed eg Performance Review Meetings were quarterly which covered performance against targets set by the Board for each service or via formal reporting systems such as domestic services, sustainability targets, switchboard quality performance, Finance Meetings were bi monthly which all financial issues were discussed , Capital Investment Group Board meetings were quarterly to discuss ,set and monitor performance against the capital program, Staff Governance was quarterly which reviewed performance against national staff governance standards, Health & Safety Forum met quarterly where specifically Fire, Water, Asbestos & Security were discussed as topics as well as reviewing performance against Health and Safety standards for Estates & Facilities. Informal meetings were not recorded. The formal meetings were all

documented with notes of meetings being routinely produced as part of the governance process

f) Why did you feel that Mr Loudon was less interested in the delivery of operational matters by the Estates and Facilities teams? Describe the areas Mr Loudon was more focused on.

**A.** Mr Loudon never asked any questions on operational matters. Mr Loudon was the Chair of the Operational Senior Management Group Meetings where various items were discussed and presented by General Managers for the Sector which included Estates via the Estates General Manager. This was the main route of contact regarding operational matters.

Mr Loudon was more focused on strategic management and planning of wider issues such as the clinical strategy. It appeared that he spent most of his time on Capital and Procurement and attending various governance groups at Board or National level.

g) Provide details of staff who reported to you and you were responsible for in these roles, and your relationship with them.

**A.** The General Managers for Estates & Facilities reported to me – Mr Alistair MacLean, Mr Billy Hunter, Ms Karen Connelly, Mr David Pace. All of these managers except Mr Pace had all had roles at the QEUH/RHC over time. My relationship with the General Managers was positive but I had inadequate time to spend with them due to the scope and breadth of my role. I had good working relationships with Mr Gallacher and Mr Powrie as General Manager Estates and Deputy General Manager Estates. I also was responsible for Sterile Services – Mr Alan Stewart who I had a good working relationship with. Procurement – Mr Gordon Beattie whom I had a good working relationship with, Mr Scott Young Corporate Services who I had a good relationship with. Mr John Donnelly, Head of Capital Planning who I had a good working relationship with. I felt I had good working relationships with my direct reports although I felt I had inadequate time to spend with any of them to support them fully or to scrutinise

their work in sufficient detail; I had to trust their professional competency, integrity and advice.

h) Provide the name and role of any managers you worked with. Please provide their Job (s) and role responsibilities.

**A.** See previous responses

i) Please describe the handover process when you initially became Interim Director in 2014:

i. How long did handover process last?

**A.** Several months over the phased retiral of the post holder.

ii. Describe the handover process, if any, between you and Mr McIntyre when you took on the role of Interim Director. How was the terms of your handover recorded and where would records of these handover discussions and arrangements have been kept. What information was transferred between and Mr McIntyre during the handover process?

A. Mr McIntyre spent several sessions over many weeks before he retired taking me though the location of documents (there were significant volumes of paper copy records), taking me through capital planning for the year he left and the proposals for the following year which related to the soft and hard fm Board wide, outstanding actions from the Vale of Leven Inquiry. He highlighted on going claims (financial and legal), complaints in the system that needed to be concluded and who was coordinating them. This was all done verbally there were no written notes issued to me that I can remember

iii. What paperwork were you provided with?

**A.** Access to all archived data and current files as well as being shown where these were located and their contents. I was briefed in detail on any projects/papers due in the coming months that were already known about.

iv. Describe how you were briefed about the handover process for the buildings and what your role was in respect of this?

A. No one briefed me on the process of handover of the building except to indicate the indicative date keys would be provided to the operational team (which was then brought forward) and indicative migration timelines which would need detail added to them. My role in respect of handover was to cooperate with getting the hospital ready for patient migration this was the extent of the briefing.

v. What concerns, if any, did you have regarding the handover process? If so, who did you raise these concerns with?

**A.** At that time, I had no concerns as such, I was nervous about my understanding of estates related issues and lack of experience directly managing these at such a senior level. This was discussed with both Mr McIntyre, Director of Estates & Facilities and Mr Calderwood, Chief Executive who assured me my role was to manage the technical experts who were accountable for delivery of compliant services. I was not going to be responsible for Capital Projects, Procurement or the new SGH Project or the development of the estates workforce plans and work plans which would be Mr Loudon's and Mr Powrie's responsibility. My primary focus was to be on ensuring that the Board continued to function operationally and the development and mobilisation of Soft FM services to support the commissioning and migration of patients to the new SGH.

vi. Please provide details of who the technical experts were? How did you ensure that they were carrying out their role(s)?

**A.** The technical experts were Mr Gallacher, Mr Powrie,Mr Collins, Mr Fulton, Mr MacLean and their Deputies within Estates and the General Managers with geographic responsibilities(Alistair MacLean, Billy Hunter, Karen Connolly, David Pace). There were a number of routine meetings in place to ensure that matters were being progressed. These meetings included Estates Senior Management Team meetings, Statutory Compliance meetings, Water Safety Group, Senior Management Team meetings, ad hoc meetings to discuss any

particular topic that required discussion .I engaged externally directly with Health Facilities Scotland if required

vii. What concerns, if any, did Mr McIntyre raise with you regarding the water and ventilation system?

**A.** None that I recall. He indicated I think that there were challenges with achieving BREAM excellent status and significant work was in the concluding phase to be able to achieve this. This however would provide us with major in roads to the national sustainability agenda and make utility consumption affordable for the hospital and campus

viii. What information, if any, did Mr McIntyre provide you with regarding the decision to lower the maximum temperature variant from that set out in the SHTM?

**A.** None that I recall

viiii. What information, if any, did Mr McIntyre provide you with regarding the ventilation derogation as provided for in the M&E Clarification log? What advice or information, if any, did Mr McIntyre provide you with regarding the ventilation derogation?

**A.** None that I recall

x. What information, if any, did Mr McIntyre provide you with regarding the proposal at the time to accommodate the BMT patients from the Beatson at the QEUH/ RHC campus?

**A**. That the BMT patients needed to be co-located with theatres, imaging and ITU/HDU from Gartnavel General as services had been moved from the Gartnavel site .That a general ward was going to be commissioned as a project to accommodate them which would be led by Mr Calderwood, Mr Loudon and supported by Mr Powrie .That was the extent of what I recall at that time

xi. How long were you in this role for? Why did you change roles?

**A.** About 16 months or so I think. My role changed when the Project Director Mr Loudon took up his post fully as Director of Estates & Facilities. Mr Loudon had been appointed as Project Director /Director Designate Estates & Facilities. The role was therefore always going to be temporary.

xii. Did you act as Interim Director again? If so, when? Please explain how this came about.

**A.** In late 2017, Mr Loudon advised he was leaving the organisation. I was asked if I would act into the role until a permanent appointment could be made in the same way as I had previously done in 2014 by Mrs Jane Grant, Chief Executive. My role was to ensure that the Board continued to function operationally. The role commenced in January 2018.

If you acted in this role again, please confirm:

i). Describe the handover process

**A.** There was no formal handover as such – there were a few 1-1 meetings. I was dependent on the support of the personal assistant to both of us to navigate files and information etc.

ii) How long did the handover process last?

**A.** A few weeks in that I was asked in December 2017 if I would act up and Mr Loudon left the organisation in December 2017.

iii) What paperwork were you provided with?

**A.** Access to existing archives and files which were electronic. These however quickly became difficult to access as files began disappearing from the archives and could not be located. This was quickly escalated verbally to the Director of eHealth but no action appeared to be take despite my concerns. This appeared to be linked to the eHealth policy for deletion of files for staff who have left the service.

iv) What concerns if any did you have regarding the handover process? If so, who did you raise these concerns with?

**A.** I did not formally raise concerns with anyone on the hand over as I had previously had minimal contact with Mr Loudon. I felt overwhelmed at this point as I had been off sick for 6 months between Feb and August 2017 and was acutely aware I had missed 6 months' worth of business in this time and needed to get up to speed with what had been happening. I was aware from Mr Hunter, Mr Gallacher and Mr Powrie that they had significant concerns about the QEUH and the number of outstanding issues on the campus which had not been adequately progressed to completion whilst I had been off ill in their opinion.

v) On your return from sick leave, having been made aware of these concerns from Mr Hunter, Mr Gallacher and Mr Powrie, what action, if any, did you take to address these concerns?

**A**. I asked them to collate their greatest concerns into a document for me that I could share and discuss with David Loudon. Which they did. When David Loudon received this he agreed to facilitate a meeting with Multiplex representatives to try to address the issues. A meeting did occur and there was movement in a few areas

vi) If you did not take any action, why not?

see answer above

vii) How long were you in this role? Why did you change roles?

**A.** 10 months until the appointment of Mr Tom Steele as Director of Estates & Facilities. I changed roles with the appointment of the Director.

15. How was work delegated in the Estates team?

**A.** Local management arrangements were in place for the delegation of work within estates. This was controlled and monitored by the Head of Maintenance for Estates and the Estates Site Manager (Ian Powrie/David Bratty and Andy Wilson/Colin Purdon). The General Manager (Billy Hunter) oversaw the delivery of services in its totality within the Sector.

16. How did you keep a record of work delegated?

**A.** I did not delegate work on a day to day basis.

17. How did you check that the work delegated had been carried out?

**A.** This was not my role. I did not complete this task

a) How then did you ensure that tasks including essential tasks responding to issues were managed and dealt with?

The Sector Estates Manager (Ian Powrie/Andy Wilson) was responsible for delegation of tasks at local level. They reported directly to the General Manager (Billy Hunter) who was responsible for scrutinising with the Sector Estates Manager the delivery of service and completion of essential tasks The Sector Estates Managers and General Managers attended the various governance groups to provide updates on progress in relation to workloads, compliance and so on .I depended on the Sector Estates Managers and the General Managers reporting on performance via the governance groups

18. Did you have any concerns about any member of staff? If so, please describe these concerns. What action, if any, did you take in relation to these concerns?

**A.** I had personal concerns about key members of staff at various points due to the level of continuous stress that the team were operating under and the volume of work that was required. I spoke with each person on an individual basis to see if there was anything that I could do to support them personally (Coaching/mentoring/counselling/OHS) and, if appropriate, took action. I tried to identify with them on an ongoing basis if there were organisational actions required to progress any matters which were work related that could reduce stress levels and improve performance

a) Which staff members in particular did you have concerns about?

**A**. Ian Powrie, Billy Hunter, Karen Connolly, Andy Wilson at various points

b) What organisational actions, if any, were taken? The Inquiry has heard evidence from Ian Powrie that there was budget restrictions where staffing levels had to be reduced to meeting budget restrictions. Melville MacMillan also told the Inquiry that *'Insufficient staff were employed to run the QEUH campus.'* How were these staffing concerns managed and what role, if any, did you play in addressing these issues?

**A.** The Estates Workforce Business Case was completed by Ian Powrie and David Loudon for presentation to the Board. I was not part of the process except to be updated on the broad principles applied to the calculations by Ian Powrie and Rob Anderson (the Head of Finance for Estates & Facilities). I believe this may have been presented on a couple of occasions for approval by David Loudon and Ian Powrie to the Chief Executive. I was advised by Mr Powrie and Mr Anderson that the Business Case around staffing levels had been rejected due to financial constraints in the organisation. David Loudon and Ian Powrie both informally advised me that they had concerns about this but that assurance had been provided from the Chief Executive that resourcing levels would be addressed over time. The way this was dealt with at local level was by dynamic risk assessment on a daily basis to prioritise what needed to be addressed

based on daily operational issues and the use of 3rd party contractors to supplement staffing levels. I understood from the various governance meetings that the Head of Maintenance and the General Manager attended that minimum standards were being implemented in respect of ppm etc.On a number of occasions in various governance groups I asked Heads of Maintenance directly in regards to specific tasks such as maintenance of Thermostatic Mixing valves what each sites position was .There was space in each of these groups to escalate areas of non-conformance or concern

I was successful in pursuing funding for a range of 3rd party contractors to supplement the estates profile through service contracts. This occurred I think in 2016/2017 and 2017/18 financial years. I did not formally pursue my personal concerns about this as both Mr Loudon and Mr Calderwood were aware of the resource issue on the campus and I believed and trusted that resource levels would be addressed through time corporately

19. Did you have any concerns/ ever raise any concerns regarding management/ managers? If so, please describe these concerns. What action, if any, did you take in relation to these concerns?

**A.** When I returned from sick leave in August 2017 I raised concerns with Mr Loudon about the pressure that staff were under at the QEUH/RHC Campus due to the volume of work and number of issues that were being dealt with on an ongoing basis. This resulted in a change of geographic responsibility for the General Managers to provide a breathing space for the General Manager covering the South in particular (Billy Hunter). This also resulted in Mr Loudon arranging to meet Multiplex after a time to address the issues raised with him formally in respect of key issues after my return from sick leave. Mr Hunter, Mr Powrie and Mr Gallacher had collated a list of issues which they were concerned about which was provided to Mr Loudon ahead of the meeting with Multiplex. They had during my absence raised these with Mr Loudon on an individual basis, they advised me. I myself had raised my concerns to Mr Loudon and HR about the impact the additional workload and number of defects being dealt with on a daily basis had on my health which resulted in my absence

in 2017 and 2016. I requested a compressed working week to try to minimise the number of hours it was physically possible to work – this request was declined on the basis the post was a 5 day week post and that the workload was not going to change in the foreseeable future .I did not feel my concerns were taken seriously and that they were viewed as relating only to me not the impact on the health and wellbeing of the team more generally

a) Question for Witness: Describe the 'key issues' raised by David Loudon (including those submitted by Mr Gallagher, Mr Powrie, and Mr Hunter with Multiplex.

A. Lack of asset tagging, Zutec content and how it was impacting operational service delivery, lack of CAFM, CHP concerns impacting heating and cooling in the building. I think resourcing was raised at this time with David Loudon as well

b) Question for Witness: What action was taken and by whom to address these 'key issues'?

**A.** Mr Loudon arranged a meeting with Multiplex and eventually asset tags were found for the hospital and asset tagging commenced. This did not go well and in the end the Estates Team took this forward themselves to be able to use the information .It was confirmed formally to us by the Project Team at a meeting which Ian Powrie and the then ehealth Lead for Estates & Facilities attended to discuss what was intended to happen with the CAFM that CAFM was never going to flow with the project and that it had been agreed that Zutec was the main repository of information some time ago in the Project. However we were advised after review that Zutec was fully populated as per the contract and that any difficulties were due to the operational teams competence in using the system .Little occurred in relation to the CHP problems around cooling and heating the building except to advise that the CHP had not been accepted by the Board and that the problems were known about , eventually a letter was issued by myself to Multiplex on the defects associated with it resulting in the withholding of the final payment and a letter being issued to Multiplex .The letter I issued was drafted by David Loudon and left for me to sign off on the first day

I started in the interim Directors role Zurich at the first annual insurance inspection failed the CHP for certification

20. Describe the interpersonal relationships within the Estates team.

**A**. I cannot describe the inter personal relationships within the QEUH/RHC estates team as I was not part of that team and had not had anything escalated to me of concern. However, when I returned from sick leave in August 2017 Mr Hunter, Mr Gallacher and Mr Powrie came to see me to express their concerns at what was occurring at the QEUH/RHC in relation to addressing outstanding contractual matters and defects. They described that during the period I had been off that they felt that they had not been listened to or issues that they had escalated to Mr Loudon in connection with estates delivery were not taken seriously in relation to the impact on operational delivery of services I took these issues to Mr Loudon who arranged to meet with Multiplex to try to address these concerns (asset tagging/Zutec content/ PPM schedules provided not fit for purpose/CHP concerns and impacts on heating and cooling in the building).

a) What, if anything, happened following Mr Loudon meeting with Multiplex to address these concerns?

**A.** Asset tags were produced. Work continued on the CHP trying to get it functional for the site, which was not accomplished by the time David Loudon left the Board. The local estates team dealt with localised pockets of over/under heating on a day to day basis. Work commenced on developing ppms for the site which were paper based by the estates team with a view to implementing the same CAFM system as the rest of the Board

b) What were the defects that you refer to?

**A**. CHP functionality. Lack of asset tagging, heating & cooling in the hospital

c) Did DL explain why the issues raised with him by Mr Hunter, Mr Powrie and Mr Gallacher had not been actioned?

A. No. However I am not sure that the issues they raised with me had been formally raised with David Loudon whilst I was off. When I raised the concerns David Loudon arranged a meeting with Multiplex to discuss

**Training**

21. What training had you undertaken for your role(s) in estates?

**A.** None.

22. What qualifications did you have for your role(s) in estates?

**A.** None

23. What experience did you have working in estates prior to the QEUH/RHC? How similar was the industry, role, and responsibilities to your work in QEUH/RHC estates?

**A.** I was General Manager in North Glasgow between 2009/2010 and 2012 with responsibility for the delivery of Hard FM in the sector. My experience was limited to the period I was General Manager in North Glasgow (2010-2012) and experience on specific projects such as the Catering Strategy.

24. Did you have any formal training or qualifications in respect of:

a) Water

**A.** No

b) Ventilation

**A.** No

c) Infection Control

**A.** No

If so, please detail above any training and qualifications – when trained? When qualified? Who was the awarding body? Please describe how the training and qualifications applied to your work at QEUH.

**A.** I received no training until 2019 when I undertook a Legionella Awareness Course.

d) With the benefit of hindsight how if, if at all, did lack the lack of training impact you carrying out your role?

**A.** On a day to day basis not directly as it is not uncommon in the NHS for senior managers to be responsible for services that they have no technical background in. However, during the water incident, I feel that it did directly impact as I was completely dependent on advice from others who were in the technical roles. I neither had experience or training in these areas and I felt very vulnerable. I found it extremely stressful that I was unable to challenge any of the technical hypothesis and solutions being offered. In order to compensate for this, I agreed and encouraged the use of external technical experts such as Mr Tom Makin, Mr Dennis Kelly, Mr Peter Hoffman, Mr Tim Wafer to find assurance in professional consensus of experts with extensive experience alongside the internal technical experts. However, it is normal for the Director of Estates & Facilities to not have a technical background in all disciplines which the post covers. I trusted the technical experts who advised me. I could not complete the role without their direct advice. The management structure was set up to allow this to happen.

25. Have you ever had any specific roles or duties in relation to the water systems operation or maintenance within NHS facilities? When did you have these roles and duties?

**A.** Not specifically however when I became Interim Director of Estates & Facilities in 2014 I discovered I had assumed the role of Designated Person Water. I found out about this when I started working with the Boards Water Safety Lead, Mr Alan Gallacher who had come to speak to me about the need to create a single Board Water Safety Policy. Mr Gallacher led on the development of the

content of the Board Water Safety Policy. When I enquired of Mr Gallacher as the Board Water Safety Lead if there was a need for me to undertake any specific training or development for this role I was advised that there was not as it was a management only role that would be informed by the technical experts who were Authorised Persons and were the Responsible Persons for each Sector and Site(The Sector Estates Managers ) , who were fully trained and had fully responsibility for these matters. I acted on his advice. This advice was also echoed by other Technical Leads in other geographic areas at various times (Peter Collins,Ian Powrie, Tom Fulton, Ken MacLean) . I proceeded on the basis that when the Director of Estates & Facilities Designate came into post in 2015 that he would assume the roles associated with the post, so took no further action.

a) What action, if any, did you take to ensure that the roles of Authorised Persons were filled?

A. I did not personally take action as I was advised that the Responsible Persons would coordinate this and that they would ensure the training was in place
If a AP had been assessed by the Authorising Engineer as being competent to fill the role the Responsible Person (Sector Estates Manager) or Alan Gallacher would write to me confirming this and requesting I now issue the letter of appointment which was preagreed.

b) The Inquiry heard evidence during the hearings in August 2024 from Phyllis Urquhart that when she took up post that there was no one in post as Authorised Person. What would you say this this?

**A.** I can’t remember when Phyllis Urquhart took up post but I do not recall issuing Authorised Person letters until around 2014/2015 as no requests were made after Authorised Engineer assessment from the Responsible Persons. I think the use of Authorising Engineer for Water did not start in the Board until around 2012/2013. There was no visibility of assessments corporately until the Water Safety Group had been established I issued few of these letters as no recommendations were placed before me for issue to the individual During this

time staff were referred to as Authorised Persons by the Estates Maintenance Managers but no letters issued .I was not aware at that time that staff were not trained or signed off by the Authorising Engineers

c) The Inquiry has heard evidence that you were asked by Ian Powrie to ensure Authorised Persons and other appointed persons for water were appointed and a schedule of names was given to you. Is this correct? If so, what action did you take?

**A**. I issued the pre agreed template for appointment of Authorised Persons to the staff member copying in the Responsible Person. I do not know when Ian Powrie made this request

26. If you did:

a) What were these responsibilities?

**A.** In 2014 I became the Designated Person Water on an Interim basis.

b) Describe your responsibilities and the responsibilities, that you were aware of having as Designated Person for water.

**A.** My understanding of the role now is very different from what it was then. I believed at that time that the Responsible Persons were ensuring that the content of SHTMs were being applied in their areas of geographic responsibility. I believed this as this was in my view the basic role of the Head of Maintenance in each area overseen by a General Manager. No issues or concerns were being escalated to me via the governance groups or individually. I depended on day to day and strategic perspective on advice from them as the technical experts. In particular, I was dependent on advice from the General Manager Estates (Alan Gallacher) on the subject. I felt confident at that time in trusting the advice as he had previously been the Board Water Safety Lead and Responsible Person for Clyde Sector. I did not understand the role of Designated Person Water at that time and my direct responsibilities

c) What was the purpose of these responsibilities?

**A.** My understanding of the role now is very different from what it was then. Many of the individual tasks described in SHTM 04-01 Water Safety Written Schemes were I believed being completed by the Responsible Persons in each Sector. I depended 100% on day to day and strategic advice from them. In particular, I was dependent on advice from the General Manager Estates on the subject. I felt confident at that time in trusting the advice as he had previously been the Board Water Safety Lead.

d) With the benefit of hindsight do you now consider that these responsibilities were not being carried out by the Responsible Persons in each sector?

**A**. I do and I accept I was not fulfilling the role of Designated Person Water appropriately at that time from my current understanding and experience These roles were part of wider remits and often staff had significantly more than two AP /RP roles to fulfil as well as day to day operational responsibility for delivery of estates maintenance .In addition at the QEUH site the constant work demand in the first 2 years due to defects meant it was virtually impossible to provide enough dedicated time into any subject to close out actions or issues

e) Were you aware of any specific legal responsibilities/ obligations relating to working with the water systems. If so, please detail.

**A.** In 2014 I was not aware of specific legal responsibilities except those referred to in the Board Water Safety Policy and discussed with the Board Water Safety Lead.

27. If you did not have any such roles or responsibilities in relation to the water systems operation or maintenance within NHS facilities:

a) Who did?

**A.** Heads of Maintenance in Geographical Sector (Responsible Persons). Site Estates Maintenance Managers. Estates Managers.(Authorised Persons)

b) What were these responsibilities?

**A.** The Estates Managers and Site Estates Maintenance Managers were Responsible Persons for the areas under their control, which was inherent in their job descriptions. Estates Managers performed the role of Authorised Persons

c) What did you understand the responsibilities to be?

**A.** To be responsible for the control and maintenance of the water system within their control in accordance with statutory and best practice guidance.

d) Were you aware of any legal obligations/ responsibilities? If so, please detail.

**A.** I was aware that the Responsible Person for water on each site had legal responsibilities to maintain the water system safely.

28. Have you ever worked on a larger scale water or ventilation system before? If so, when was this? How did this compare to working on QEUH? What was your role and duties?

**A.** No

**Documents, paperwork and processes in place as at 26th January 2015**

We know that handover of QEUH occurred on 26th January 2015:

29. What contractual documentation would you expect to see in place at handover?

**A.** This was not my role at that time. I was not briefed on the contact terms and conditions. However I would have expected full copies of the Operational Manuals, as fitted drawings ,copies of testing regimes applicable to various systems such as water and ventilation, copies of commissioning and validation certificates and so on

30. Describe the process for handover of QEUH:

**A.** For the local team the keys to the hospital were handed over to them after a series of commissioning training sessions related to major infrastructure systems such as water, electrical systems, pneumatic tube system, Building Management System etc which were limited in content and time.

a) What contractual documentation was in place?

**A.** This was not my role- I cannot answer this question I was never provided with the detail of the contract terms and conditions

b) How was the relevant paperwork handed over to QEUH?

**A.** This was not my role. This was coordinated between the Project Director/Director of Estates & Facilities Designate and Ian Powrie who was going to be the Head of Maintenance for QEUH/RHC and had been embedded in the project. My understanding is that there was no /little paperwork handed over prior to handover, which I learned during the ongoing water incident. What was handed over was incomplete in terms of Zutec content

31. Was the building of the QEUH complete at handover – if not, what was incomplete? Was QEUH ready to be handed over at handover? If not, why was it not ready to be handed over? Refer to Estates Team Bundle, Bundle 12, Document 3, Page 23 – 'Stage 3 Adult and Children's Hospital Completion Certificate' defects noted therein when considering this question.

**A**. On the basis of this document, which I have not seen before it is my view the hospital was not complete at handover. There are a number of serious defects/issues that needed to be addressed that I would have expected not to be present such as a number of fire safety related issues, incomplete finishes impacting directly infection control environmental standards. However, on 27th January 2015 several hundred contractor staff presented for sign in to the local estates team to complete a range of works which the local team felt should not have been the case if the hospital had been ready for handover. I cannot provide the details of what they were there to do. However, the local estates

team who were not staffed to manage them required to issue permits to work and contractor ID badges.

32. At handover who was responsible for ensuring that paperwork was produced to confirm contractual compliance?

**A.** The Project Team

a) Paperwork

**A.** Director of Project/Estates& Facilities Director Designate (David Loudon)

b) O&M Manuals

**A.** Director of Project/Estates& Facilities Director Designate (David Loudon)

c) M&E Clarifications Log

**A.** Director of Project/Estates& Facilities Director Designate (David Loudon)

d) Others paperwork as per the contract

**A.** Director of Project/Estates& Facilities Director Designate (David Loudon)

e) Provide as much detail as possible – was anything missing? If so, how was this managed?

**A.** I now understand that very little paperwork was handed over to the local operational team – in some cases due to the contractual position – the Zutec system for instance did not require contractually to be fully populated until well after the handover date, a complete asset list. This became apparent as time progressed as opposed to something which was brought to my attention at the point of handover or mobilisation of the site.

33. Did you see commissioning and validation documentation for the water system at handover? Did you see commissioning and validation documentation for the ventilation system at handover?

**A.** No this was not my role. My expectation and assumption was this was a Project Team responsibility. I was advised this had happened by Mr Loudon, Project Director verbally. I also knew from Mr Ian Powrie that Dr Craig Williams had signed off on the water system after a series of microbiological tests had been completed.

a) How were you satisfied from Mr Powrie that Dr Craig Williams has signed off the water system? What evidence, if any, did you see of this?

**A.** I did not see any evidence that I recall. I trusted Ian Powrie who was directly involved in the process and was satisfied that from Ian Powries description of testing, disinfection and retesting that the system had been signed off by Dr Craig Williams

b) Did Mr Loudon advise you that both commissioning and validation has been carried out?

**A**. Yes, he advised that the hospital was ready for handover, including system testing and approvals. There was no specific discussion on ventilation or water systems detail with Mr Loudon, which I would not have expected if his professional opinion was that all the systems were ready for handover

c) Would you have expected this documentation to be available for both the water and ventilation systems?

**A.** Yes

d) Who was responsible for this documentation?

**A.** Director of Project/Estates& Facilities Director Designate (David Loudon)

e) What role, if any, did you have in respect of overseeing/ ensuring commissioning of the water and ventilation system prior to handover? If you were not responsible from GGC for overseeing/ ensuring commissioning who was?

**A.** I had no role in overseeing the commissioning prior to handover of the water and ventilation system. This work was the responsibility of the Project Team. I was not asked to participate

f) What was your role?

**A.** To provide management support to the Estates & Facilities Teams and to take a coordinating role liaising with the Project Director/General Manager/Head of Maintenance to get the building ready for patient occupation. I had no direct role in the technical handover; this was coordinated by the Project Director, Commissioning Managers and the local operational team.

g) Were you aware when commissioning and validation had been carried out?

**A.** I assumed this was the case as opening date and patient transfer programs were developed by the Project Team and agreed with the Board. I did not have documentation passed to me of this nature as this was not my role and not my technical expertise. This would normally be coordinated between the Head of Maintenance and the Capital Project Lead on other projects – I expected this to take the same course as Ian Powrie was embedded in a project team with significant capital experience (Frances Wrath and Peter Moir in particular).

h) If not, why were you not aware of commissioning and validation having been carried out?

**A.** This was not my role as I was not the technical lead

i) At Question 14.i)v. explained that you were responsible for 'manging technical experts who were accountable for the delivery of compliant services'. Therefore was it not within your role to ensure that commissioning and validation was carried out either by or on the instruction of technical experts? If not, why not and who was responsible for ensuring that commissioning and validation had been carried out?

**A.** It was made clear to me when I took up the role of Interim Director that the new hospital development and commissioning of the building were not my direct responsibility, that this was the responsibility of others; in particular David Loudon who would ensure a smooth transition from the Project to Operational Delivery having been appointed in both roles to ensure this would happen. Historically in NHSGGC the Capital Team completed the work on projects and supplied the commissioning and validation assurances to the local operational teams. The operational teams took control of the verification process which occurred annually after commissioning and validation. There had been no precedent for this to happen in a different way in the Board that I was aware of therefore I assumed this was the case after being advised I had no role in this. However, if at any time I had been advised differently I would have ensured that commissioning and validation occurred by following up the matter with the Head of Estates and the General Manager but I did not believe it was my direct responsibility

34. Was any other important paperwork missing at handover?

**A.** This was not my role and no issues were escalated to me directly except that ZUTEC was not ready for use and O&M manuals were not available. The lack of detailed asset tagging and incomplete data in ZUTEC was a concern for the estates team but one they hoped would be addressed by the Project Director quickly within the contractually agreed timeline which was post-handover of the building. As a consequence, there could never have been a robust planned preventative maintenance program developed for the hospital from handover.

35. If so, were you aware of this important missing paperwork at the time?

**A.** Only that the ZUTEC system was not fully populated. I was advised by the Project Director that this was not the case and that challenges being experienced were a direct result of the estates maintenance team being unfamiliar with the system and its use.

a) For clarity, did David Loudon, Project Director, tell you that Zutec was fully populated, and any issues were due to estates unfamiliarity?

**A.** Yes. He had been advised by the Boards Technical Advisors it was complete I certainly know this was Currie & Browns position from a meeting I attended to discuss the CHP

36. Operating systems at handover:

a) How many staff were allocated to maintaining operating systems and how was this determined?

**A.** My understanding was that staff allocated to maintaining systems and the building came from the budget resource in place on the 4 demitting sites moving into the QEUH/RHC minus the savings identified at FBC.

b) What training was put in place for maintaining the operating systems?

**A.** Estates familiarisation sessions were coordinated between the Commissioning Manager and the local estates staff for staff transferring to QEUH. I was not directly involved in this process or the development of the training content.

c) Who carried out the training? Refer to Estates Team Bundle, Bundle 12, Document 5, Page 57 – 'Brookfield Multiplex Client Training & Familiarisation Register for Ventilation'.

**A.** Multiplex sub-contractors

d) Were Multiplex involved in the training?

**A.** I don't know if they directly were there but they certainly coordinated this.

e) Was sufficient training provided to allow staff to operate the systems?

**A.** On reflection now there was inadequate training provided. I was aware that staff attendance was a challenge due to staff still being operationally responsible for the sites in which they still worked and that catch up sessions were planned to address this on an ongoing basis and when staff physically made the transfer. Those staff who did attend advised the training was not practical in nature in some cases and lacked depth. Sessions were arranged with many of the system suppliers once the hospital was mobilised by the local estates team to address this which was more successful and appropriate than that offered by the Project Team and Multiplex.

f) Please describe the manuals/ documents that were handed over.

**A.** I do not know what documents were handed over. I became aware of significant issues in this respect in 2017 when I returned from long term sick leave and was advised by Mr Hunter, Mr Gallacher and Mr Powrie that manuals/documents were not contained within Zutec which should have been there and if they were there they were stored in the wrong sections of the system resulting in time delays in locating where information was stored. I had previously been advised in 2015 that ZUTEC documentation was incomplete but there was at that time an expectation that this would be addressed – which it had not been by August 2017.

g) For clarity, who told you in 2015 that the ZUTEC documentation was incomplete? Who advised you that there was an expectation that this would be addressed? What was the time for this to be addressed?

**A.** Ian Powrie, Andy Wilson and Alan Gallacher advised me that Zutec was not appropriately populated. Ian Powrie and David Loudon both advised that the contract terms allowed a time for this to occur which I believe was 2017 and in accordance with the contract

37. What was your involvement/role in the handover process? How did you manage this?

**A.** I had no involvement in handover of the building technically. I was involved in commissioning the Soft FM elements of the building and preparing for patients transfer. I tried to support Mr Powrie as best I could but his day to day reporting arrangements were via Mr Loudon at handover.

a) Please explain how you tried to support Mr Powrie.

**A.** I had an open door policy for Ian Powrie and other managers. I met with Ian Powrie informally at various frequencies during the time he was seconded to the project. This was especially so after the handover of the building. I was aware he was under significant stress on an ongoing basis and tried to coach him as best I could while being mindful of the pressure he was under. If I could help facilitate issues I did so (financial, HR matters etc.)

38. Who signed the completion certificates?

**A.** I don’t know

39. Who was the person with the responsibility to sign the completion certificates under the contract?

**A.** I am unsure but I would have thought that the responsibility for formally signing off things would be under the Project Director/Project Managers on behalf of the Board.

40. Estates Team Bundle, Bundle 12, Document 3, Page 23 – ‘Stage 3 Adult and Children's Hospital Completion Certificate’:

a) What is this?

**A.** It is a completion certificate

b) Have you seen it before?

**A.** No

c) Have you seen other such certificates?

**A.** No as this is not my role in the Board

d) Who signed off these certificates?

**A.** I would have thought that the responsibility for formally signing off things would be under the Project Director/Project Managers on behalf of the Board.

e) What checks were carried out prior to sign off?

**A.** I don't know

f) What was your role/ responsibility?

**A.** I did not have a role in this

g) Looking at the defects referred to in the completion certificate documents 3 above: Look also at Estates Team Bundle, Bundle 12, Document 4, Page 27 – 'Capita NEC3 Supervisor's Report (No 46)':

(i) What are these defects?

**A.** A list of incomplete items identified by the NEC3 Supervisor

(ii) What was the impact of these defects?

**A.** Various but many of them could have an impact directly on health and safety for those using the building and for patient safety.

(iii) Why two years to deal with the defects?

**A.** I don't know this was negotiated by the Project Team.

(iv) Who decided that it was appropriate to accept handover with outstanding defects?

**A.** The Project Team

(v) Is this usual practice in the construction industry?

**A.** Some snagging issues are normal after a new build is handed over but these are usually small in number and minor in nature.

41. Refer to Estates Team Bundle, Bundle 12, Document 8, Page 66 – 'Programme for handover to start of migration':

a) Do you know what this is?

**A.** It's a project plan from key handover until patient mobilisation

b) Have you seen it before?

**A.** I don't specifically recall this document however I did participate in many of the work streams therefore I must have had sight of it at the time.

c) What are the numerous defects?

**A.** The defects are items identified as incomplete and requiring attention.

d) What is your understanding of the purpose of this document?

**A.** A project plan of tasks to be addressed before patients transferred then after transfer.

e) Do you have any comments regarding the number of defects?

**A.** There were an excessive number of defects which brought a very high degree of pressure and uncertainty for the operational teams.

f) Were you have been aware of this document at handover?

**A.** I don't specifically recall the content of this document but I must have seen it

g) Assuming you did see the documentation, given its implications do you recall what action you took, if so please describe?

**A.** I took forward the defects that I had any control over but most of these defects related directly to the contract arrangements which I tried to ensure were coordinated between the local managers and the project team.

I'm sorry I do not remember details around this

h) If not, should you have been aware of this document at handover?

**A.** Yes, I may have been aware of it but I can't remember for certain the details.

42. Did the contract provide provision for handover subject to retention of certain parts? Was this enforced and why?

**A.** Yes, most construction projects have retention clauses. The CHP was not accepted by the Board due to defects – monies were withheld for this as part of the contract. I was not involved in this at handover and became aware in 2018 when I issued a letter to Multiplex in relation to the CHP which had been left on my desk by Mr Loudon for me to sign and issue as "my first interim director task".

a) What were the defects with the CHP? What impact, if any, did these defects have? In addition to the letter to Multiplex what action, if any, did you take to remedy the defects?

**A.** There were heat dumps occurring as the dump diverter valve had the incorrect application. There were issues with the boiler plant design which caused the boilers to run under capacity or to shut down completely. Multiplex tried to address this by derating the medium term hot water primary heating circuit which then impacted directly the domestic hot water circuits and heating in the building. The results of the modifications meant the heat exchangers were under sized to meet the design criteria.

All of these issues impacted the thermal comfort of the hospital and led to temperature excursions in the hot water systems. However, this could not be proved over an extended period of time due to the loss of archived data from the Building Management System

Apart from issuing the letter to Multiplex I discussed the issues with Alan Gallacher and Ian Powrie on several occasions. They were still meeting with Multiplex sub-contractors and Currie & Brown on the issues. After several meetings it had become clear Multiplex contractors and Currie & brown felt that all necessary works that were required were addressed by them – they would not take onboard responsibility for the various technical issues as being matters

to be resolved .I then agreed with Ian Powrie and Alan Gallacher it would be appropriate to get an independent third party specialist engineer to complete a review of the CHP as a whole .This led to a report being produced with actions on it and work continued on this to try to get the CHP working as effectively as possible

43. What responsibility for the build did Multiplex retain following handover?

**A.** To address snagging, warranty and minor operational issues directly attributable to the operating systems installed in the building. Mr Loudon coordinated this activity.

44. Did any of the other companies have on-going responsibility following handover? If so, describe the responsibilities. How long post-handover were the other companies involved for?

**A.** I observed sub-contractors of Multiplex on site but I am unsure of the contractual arrangements that were in place between Multiplex and them.

45. What concerns, if any, did you have about the opening of the hospital at handover? Refer to Estates Team Bundle, Bundle 12, Documents 19 and 21 and 21.1 when answering.

**A.** There were numerous issues at hand over which ranged in seriousness and potential risk from cracked and missing floor tiles, poor floor finishing ,poor wall finishes ,missing mastic, signage issues to PTS loss of power and consequent inability to use the system, foam cannons on the helipad not working due to water pressure issues caused by valves and pumps ,Overheating issues in numerous areas of the hospital that could not be addressed ,fire alarm faults ,lights not switching off through the hospital ,steel panel falling from level 4 due to poor fitting, leaks in the ETFE fire roof ,fire doors not closing ,glass panes falling from elevations into the public footpaths and walkways etc .Many of these issues had massive operational implications particularly on resourcing for estates and facilities .These were also very stressful events on an ongoing basis for the Estates & Facilities Teams

a) You have provided a very extensive list of issues; what action did you take?

A. On a day to day basis I was meeting with the Estates Team, Ian Powrie and Alan Gallacher on these issues and their resolution. There were a number of these issues which were addressed via the Project Team such as the glass panes falling, fire doors, the steel panel. It was difficult to navigate through who would make the final repairs but the role of the Estates Team was to try to make the environment as safe as possible on a day to day basis operationally to allow the hospital to continue to function which was extremely challenging. I was involved in work around /creating alternative service provision to keep the site going. This was especially so in relation to soft fm who were also experiencing significant challenges such as PTS system not working which meant that manual distribution of specimens on site were required, the Automated Guided Vehicles did not work for several months, which again required manual work around – these challenges occurring at a time when recruitment was difficult and staff numbers had been reduced. These issues were out with normal business as usual type ad hoc requirements of a site this size. The operational teams frequently felt overwhelmed with everything going on both for the maintenance team and the soft fm team.

b) Was there anything missing that you thought should have been constructed/installed? If so, please describe what was missing.

**A.** I was not aware of anything which should have been installed being missing at handover however I was concerned at the volume of contractors on site still actively working on a range of issues which I felt should have been complete at the time of handover such as fire safety issues, fire doors were a concern from handover, lack of automatic doors, the front entrance door, signage etc.

c) Did you have any other concerns about areas of the hospital at handover?

**A.** I was concerned at the quality of flooring throughout the building and finishes to walls etc. I was also advised of some sewage leaks and floods in various areas, lights not working uneven flooring and signage being incomplete.

46. Detail the snagging process, refer to Estates Team Bundle, Bundle 12, Documents 90 and 91, Page 751, when considering your answer detail:

a) What happened

b) How long were Multiplex on site following handover

c) Main areas for snagging

d) Records of works carried out

e) Sign off – who as responsible and when signed off.

**A.** There were a range of items for snagging including 5 panes of glazing falling from elevated height onto public walkways with no warning, fire damper maintenance not being possible due to concerns around CE markings, system performance and the inability to source a supplier in the UK who could maintain the system, fire doors throughout the building falling off hinges and not performing as fire doors due to poor workmanship. Snagging was coordinated between Multiplex and their sub-contractors with the operational estates team. The Project Director/Director of Estates & Facilities was directly involved in and managed this process. Multiplex and their contractors were on site for a two-year period after handover. There were numerous areas where snagging was identified, some of them significant. The list of areas for snagging are contained in documents 90 and 91. A number of items identified by the local teams were not accepted as defects as demonstrated from the document. In those cases, the local estates team had to address the issue as part of their daily activities over and above operational maintenance. This created significant pressure to an already stretched estates team – this was not part of their role but, due to patient safety concerns, the estates team tended to address issues on their own when advised the matter was not going to be addressed by Multiplex or their sub-contractors.

47. Refer to Estates Team Bundle, Bundle 12, Document 132, Page 936, with hindsight do you agree with Frances Wrath's comments that all area were commissioned in line with Employer's Requirements?

**A.** I do not have knowledge of the Employers Requirements so cannot comment

**Asset Tagging**

48. Describe and detail asset tagging:

a) What is this?

**A.** Asset tagging is the process of attaching tags/labels which are numbered to moveable and static assets in a location to be able to track data and the history of that asset for maintenance purposes. The asset tag identifies where the asset is located, what it is, what the ppm schedule attached to it is, a work history of completion of maintenance and who completed work on it.

b) Why is this important?

**A.** Asset tagging is used to develop PPM and maintenance schedules which allows assurance to be provided that the asset is being maintained and managed. It also allows a complete history of the asset to be maintained to be retained including evidence that PPMs have been completed, date completed and by whom. It is an essential component of the establishment of planned programs of maintenance.

c) Who was responsible?

**A.** Multiplex were responsible for asset tagging as part of the contract we were advised by the Project Team.

d) What was the impact if this was not done?

**A.** The impact of this not being completed at the QEUH/RHC was that there was no complete list of the assets and their location which required to be maintained. This meant that the estates team were unclear on what they were required to routinely maintain with its location, PPM schedules could not be developed to reflect statutory and mandatory maintenance requirements matched to workforce to complete the tasks. This created a great deal of stress and pressure for the entire estates workforce at the time due to the uncertainty around where/what assets were on site. The estates team had to negotiate with the contractor to supply a contractual requirement, which when it was

completed had to be unpicked and completed by the in house team to address the numerous errors the contractor made. Only after this could a functional programme of maintenance be developed and an electronic CAFM (Computer Aided Facility Management) system developed to support operational estates. Estates were forced to develop a paper based manual system to the best of their ability based on what assets they were aware of and dynamic risk assessment on a daily basis. This, coupled with the number of defects on site, the volume of operational issues such as heating and cooling not working in the hospital consistently, ventilation systems not working properly due to cabling for power and signal cables being collocated, chilled beams having dripping condensate, improvements required to clinical environments to keep the hospital operational and inadequate resources to address all impacted directly the estates team on a personal basis but also professionally .The team felt under ongoing significant pressure.

e) What concerns, if any, did you have about this?

**A.** I was extremely concerned about the issues in the hospital and the lack of progress on particularly the asset tagging and CAFM development to support routine planned preventative maintenance. I also learned at this time that the Labs building which opened two years before the hospital had never had the asset tagging addressed either. This was disputed by Multiplex as not being part of the contract and the local estates team completed this task themselves as it was clear that this was not going to be addressed by the Project Team. Mr Hunter, Mr Powrie and Mr Gallacher all indicated their concerns on the lack of progress and the impact of the estates team had been escalated to Mr Loudon in my absence. Mr Loudon never discussed this topic with me except in the formal meeting with Multiplex to address the outstanding issues.

f) How did it become clear that the Project team were not going to address this matter?

**A.** The asset tagging was completed by the Estates Team in the Labs Building because two years after opening despite the issue of asset tagging being raised

from the building opening there had been no movement at all on the topic. The Labs Project Team was not the same team as the Hospital Project Team. It was therefore agreed locally that to get a ppm schedule in place with the necessary relevant data the local estates team needed to address this.

g) Did you escalate these concerns? If not, why not?

**A.** I escalated concerns to Mr Loudon on return from sick leave in 2017

h) Discuss any issues regarding asset tagging and how you managed this?

**A.** As described above the lack of asset tagging had a fundamental impact on the delivery of estates maintenance within the hospital. Paper systems of maintenance completion in a hospital this size were stressful, challenging and often incomplete due to the lack of knowledge on the location of assets. Staff turnover also impacted this as staff became familiar with systems/site then moved on quickly. Retention of staff was a challenge for a short period due to this as staff felt the job was too stressful.

49. Was there a contractual requirement to provide CAFM?

**A.** The operational team had been advised that there was a contractual requirement to provide a fully populated CAFM system. We were later advised around 2014 I believe that there was not and that Zutec would be what was handed over as a document repository

a) Again, what is the purpose of this and who was responsible for providing this?

**A.** That was my understanding of the contractual position and that of others, including facilities, E-Health and Mr Powrie, Mr Gallacher and Mr Hunter. We had initially been led to believe that a fully populated CAFM system was going to be handed over with the building. However, we were subsequently advised by Mr Loudon that ZUTEC was all that was going to be handed over in 2014. This meant that we had no means of developing robust workforce plans or maintenance schedules prior to receiving the asset tagging information which was expected at the end of 2014 to create a full maintenance program. Tagging

on site was not completed by the local estates team until 2018/2019 and a CAFM system rolled out in part in 2019.

b) Is CAFM the same as ZUTEC – describe any differences and purpose.

**A.** No Zutec is a project management software which has been used to store drawings and O&M manuals; it does not have the functionality that would have allowed efficient management of records and the production of a maintenance program. CAFM systems have the functionality to establish maintenance programs, store asset records, capture feedback from remote hand-held devices on plant and systems condition records.

c) Should CAFM and ZUTEC have been provided at handover?

**A.** That was my understanding. This would have allowed the estates team a greater level of control and ability to plan what, how and who was going to maintain the assets within the building. Multiplex's view was that they had fulfilled their contractual obligations by delivering ZUTEC and the Project Team accepted this. Zutec was not handed over until after building handover which makes no operational sense at all in terms of workforce and maintenance planning for the hospital.

d) How do you know project team accepted absence of CAFM. Did you get any explanation?

A. I never received an explanation on this topic. We were advised as an operational team early in the project that this would be part of the project terms and conditions, which would greatly assist the local estates team in delivering services and providing workforce projections based on detail of the assets. Then after repeatedly asking by Ian Powrie when /how this would be taken forward we were advised that this was not the case and it was not part of the contract arrangements. This took us completely by surprise in 2014 and left little time to prepare a ppm schedule especially in the absence of a complete asset list.

(i) Who was responsible for ensuring provision of CAFM and ZUTEC?

**A.** Project Team

(ii) What was consequence of these not being provided?

**A.** There was no software (CAFM) provided to develop and implement robust maintenance schedules linked to the assets in the building and statutory compliance. This also prevented robust workforce planning to be completed prior to hand over based on the assets in the building. There were no storage facilities electronically for documentation which meant that a paper manual system had to be used. With no asset information and tagging being provided the full range of assets to be maintained and their location was unknown and best efforts were made to develop a limited paper based maintenance system. This had an extremely stressful and challenging impact on estates staff especially when defects were emerging or when ad hoc repairs needed to be made as there was no access to essential information on the assets.

(iii) What action was taken to remedy matters? Were Multiplex contacted?

**A.** The Project Director/Estates & Facilities Director Designate was aware that no CAFM was being provided. I was advised that Zutec was all that was being provided. When concerns were raised with the Project Director/Director of Estates & Facilities Designate (David Loudon) he raised the issue with Multiplex and advised the operational team that no CAFM would be handed over and required to be sourced and implemented by the operational maintenance team. Zutec was incomplete in terms of documentation when this was raised. I was advised by Mr Loudon this was due to the operational team not being able to use Zutec competently. Concerns expressed by Mr Hunter, Mr Gallacher, Mr Powrie and myself at hand over and in 2017 were not accepted by the Director of Estates & Facilities (David Loudon) whose view was that Multiplex had provided all documentation in accordance with the contract. Multiplex/Currie & Brown also rejected concerns raised by the operational team until 2018 when HFS confirmed to Currie & Brown in a CHP meeting that ZUTEC was not fully

populated and that information was not stored in the appropriate file structure. ZUTEC then began to be slowly populated.

(iv) Were you involved in getting answers from Currie & Brown? If so, what were they? Did they explain their change of view after HFS intervention?

**A.** The issue of the population of Zutec was repeatedly raised I believe by Mr Powrie. I tried to have a conversation with Douglas Ross from Currie and Brown who advised this was not the case, that it was populated in accordance with the contract. There was no explanation as to why the system was not populated however it appeared to us this was only addressed when HFS (a third party external body) confirmed this. It felt like the concerns of the estates team and Ian Powrie were not believed until this time and our concerns had been dismissed

50. Detail any issues in relation to CAFM and ZUTEC

a) Operation

**A.** The contents of Zutec were incomplete and inconsistent. O&M manuals for assets were missing or the wrong model/version supplied. There were no as fitted drawings for the majority of systems and those that were present were not complete. Access was for many months a major issue associated with the system I think but can't recall the detail of who did not have access to what areas of the system. Lots of information was missing I was advised. This was not taken on board by Multiplex or Mr Loudon as Project Director until HFS advised them in a CHP meeting that the Board's position the system was not fully populated was their experience as they had tried to navigate the system and found the same issues in 2018/19. Multiplex then did work to address the system issues and provide missing documentation.

b) User suitability

**A.** System was functional if it had been properly populated but it was not a CAFM system.

c) Any other matters

**A.** The complete disregard by Multiplex and the Project Director on this subject caused a great deal of stress and anxiety among the estates team. If the system had been properly populated with asset tagging attached to it this would have been one of the greatest assets to the delivery of Hard FM on site and would have allowed a CAFM system to be implemented. It would also have assisted in the management of the water incident. Mr Loudon was aware of the situation, as were Multiplex, but no action was taken by until 2018/19.

Detail above what were the issues, who was this reported to, what action was taken to remedy matters?

51. Did your team or NHS IT develop a system for asset registration?

If so, when and how long did it take following handover.

**A.** The NHS Team had to asset tag the site in 2018 and then populate a CAFM system which occurred in part in 2019. Asset tags were located by Multiplex in one of their staff's garages at home, we were advised when we met with Multiplex and Mr Loudon on my return from sick leave in 2017. They attempted to asset tag but it was so chaotic that NHS estates took over and developed and implemented their own system in the end, I believe. I was not involved in the final solution

**HEPA filters**

52. Were HEPA filters installed in the relevant rooms at handover (January 2015)?

**A.** At handover I do not know. However, they were not in place the weekend before the hospital was due to open to patients. This was identified and escalated to Mr Loudon by the Chief Operating Officer at a meeting on site as we prepared for patient migration. The hospital could not open to patients without HEPA filters being in place in certain PPVL rooms/ specific high risk wards (not all wards require HEPA filtration). Mr. Loudon facilitated through Multiplex the fitting of the filters and confirmed these were now in place and all appropriate testing completed for the hospital opening.

a) Did you find out how a hospital lacking filters and with air permeability issues had been approved for handover?

**A.** No there was no discussion on this. However, there followed significant work around PPVL rooms and isolation rooms which would call into question whether these had been commissioned and validated appropriately once the hospital opened

53. Were you aware of any issues with HEPA filters? Refer to Estates Team Bundle, Bundle 12, Document 22, Page 177.

**A.** Yes, the hospital was ready to open and patients be transferred on to site from other hospitals when it was discovered that no HEPA filters were fitted to a number of ventilation systems in the hospital. Multiplex did not seem to see the opening of the hospital with no HEPA filtration fitted as an issue and it was only when they were pressed with the Project Director (David Loudon) by the then Chief Operating Officer that the hospital could not open without them that arrangements were made to courier filters from other locations in the UK to the QEUH/RHC. These were then fitted and assurances provided these were in place and HEPA systems ready to be used having been fully tested.

54. If so, what issues were you aware of?

**A.** PPVL rooms not having HEPA filters fitted.

55. Dr Gibson in her statement refers to HEPA filters not being in place at the point of handover in wards 2A/B.

a) Explain your understanding of the situation.

**A.** My understanding of the situation was that this was addressed by Multiplex and the Project Director when it was brought to their attention prior to patient movement.

b) What was the impact of HEPA filters not being installed?

**A.** The effectiveness of the ventilation system could not be guaranteed and HEPA filters were required specifically in areas of high risk patient occupation to protect patient safety

c) What was the potential patient impact of the absence of HEPA filters?

**A.** Risk of patient infection due to cross contamination from air borne bacteria.

d) What was done to resolve any HEPA filter issues?

**A.** HEPA filters were fitted by the Project Team and Multiplex prior to patient migration was my understanding of the situation at the time.

e) Should HEPA filters have been installed at handover?

**A.** Yes in areas where this had been identified as a requirement (areas with high risk patient population) – Bone Marrow Transplant Areas, PPVL rooms, ITUs etc

f) Who was responsible for providing HEPA filters and ensuring that they were installed during the build?

**A.** The Project Team and Multiplex

g) Who signed off handover without HEPA filters being installed?

**A.** I do not know but obviously the Project Team were involved in accepting the hospital and the certification to underpin this.

h) Were infection control doctors and nurses consulted? If so, who?

**A.** I do not know but I had assumed that Dr Craig Williams had been involved in ventilation as he was the Ventilation Lead ICD for the Board.

i) Question for Witness: Please explain how you came to assume this, who advised you of this and when? Do you have any documentation which confirms this?

**A.** I assumed this due to Dr Craig Williams role as Infection Control Doctor and Chair of the Board Ventilation Group. I was advised by David Loudon that Dr Williams had completed the system sign offs for the hospital
I do not have any documentation to support this

j) Why was handover signed off without HEPA filters?

**A.** I do not know.

56. Were HEPA filters missing from any other wards following handover?

**A.** I cannot advise specifically the locations HEPA filters were missing from. My understanding was that HEPA filter fitting across the site was addressed by the Project Team and Multiplex prior to the hospital receiving patients. My understanding at the time was that the Project Director (David Loudon) took control of the situation at the time of handover and addressed all of the HEPA Filter /Ventilation issues as they arose. As time went on I realised that this had not in fact been the case e.g. when I returned from sick leave in August 2017, the PPVL room air permeability issue was the subject of a Capital Team Project to address deficiencies.

a) Discuss how this was managed follow Q55 above.

**A.** I do not know how the Project Team managed the sign off and certification of HEPA filter based areas prior to handover.

**Chilled beams**

57. Can the witness recall any specific events in relation to chilled beams?

**A.** I cannot recall the detail of any single incident. However, I was aware that there were incidents happening on site with water dripping from chilled beams and with the ongoing cleanliness of the chilled beams which posed a potential infection control risk. The chilled beams appeared to become dirty very quickly with dark particulates. It was also identified by the estates team that dew point controls had not been fitted to the chilled beams which was a contributory factor to the condensate drips. This was escalated to the Project Director and Multiplex. However, in many cases estates completed the retro fitting of dew point control I was advised.

For example:

a) Dripping chilled beams in critical care refer to Estates Team Bundle, document 63.

**A.** I do not recall this specifically.

b) Ward 2A cubicles 8-11 refer to Estates Team Bundle, Bundle 12, Document 106, Page 818.

**A.** I do not recall this specifically but the content of this document reflects my more generic recollection of what was being raised by the estates team.

c) Water samples being taken from chilled beams in Ward 6A refer to IMT Bundle, Document 73, Page 325.

**A.** I was unaware of this incident as I was no longer involved in the IMT or with Estates management.

d) Leakage chilled beams Ward 6A refer to Estates Team Bundle, Bundle 12, Document 138, Page 958.

**A.** I was unaware of this incident as I was no longer involved in the IMT or with Estates management.

e) Leakage chilled beams Ward 6A refer to Estates Team Bundle, Bundle 12, Document 139, Page 964.

**A.** I was unaware of this incident as I was no longer involved in the IMT or with Estates management.

f) Leakage chilled beams Ward 6A refer to Estates Team Bundle, Bundle 12, Document 142, Page 974.

**A.** I was unaware of this incident as I was no longer involved in the IMT or with Estates management.

g) Any other issues/ incidents not mentioned above.

**A.** N/A

h) When was a cleaning regime put in place in respect of chilled beams? How frequently were they to be cleaned?

**A.** I think a cleaning regime was put in place around the end of 2016/beginning of 2017 on an ad hoc basis. This was then developed into a longer term planned maintenance task after assessment over time of the systems need for cleaning.

For each event please tell us:

a) What was the issue?
b) The impact on the hospital (include wards/areas) and its patients (if applicable)
c) Who was involved?
d) What was the escalation process?
e) Were any external organisations approached to support and advise?
f) If so, what was the advice?
g) Was there opposing advice and by whom, and what was the advice?
h) What remedial action was decided on and who made the decision?
i) Was the issue resolved – consider any ongoing aftercare/support/monitoring;
j) Any ongoing concerns witness had herself or others advised her of?

k) Was there any documentation referenced during or created after the event. For example, an incident report?

l) Did anyone sign off to say the work had been completed and issue resolved/area safe.

**A.** I am sorry I don't remember the detail of this and reviewing the documents supplied has not assisted this

**Combined Heating and Power Unit**

58. Describe the Combined Heating and Power Unit (CHP)

**A.** I am unfamiliar with the QEUH/RHC CHP design and specification detail

a) What is the purpose of the CHP?

**A.** The purpose of the CHP was to generate electricity whilst capturing and utilising heat generated from the production of electricity. By generating heat and power for the site simultaneously carbon emissions can be reduced and utilities bills minimised. The CHP had been designed specifically to achieve BREAM excellent requirements.

b) What condition was the CHP in at handover?

**A.** The CHP was not fully functioning at the handover of the hospital. My recollection is the CHP was not fully handed over to the Board due to the unit not fully functioning and being non-compliant with the Employers Requirements. Refer question 42A . There was retention of payments associated with this. I was not directly involved in this until Mr Loudon left the organisation in January 2018.

c) In what way was the CHP not compliant with the Employers Requirements?

**A.** Refer question 42A

d) What information do you have to support your view on the CHP's condition?

**A.** Temperature control of the environment and the water systems were an ongoing challenge from hand over. Areas of the hospital were frequently overheating and over cooling which impacted directly on patient comfort and health and safety. The estates team spent a great deal of time on this initially trying to get consistency in the hospital temperatures and the water system temperatures. In the first year the size of the calorifiers and heat plate exchangers was looked at by Mr Gallacher and Mr Powrie in an attempt to improve on the situation.

59. Was commissioning and validation of the CHP carried out prior to handover?

**A.** I do not know what process was carried out as the CHP was not fully handed over at handover of the hospital

a) Did you see any commissioning and validation documentation?

**A.** No. This was not my role.

b) If so, what commissioning and validation documentation did you see?

**A.** I have never seen any.

c) Who was responsible for ensuring that the commissioning and validation documentation was in place?

**A.** Multiplex and the Project Team.

d) Were records of the commissioning and validation for the CHP kept? If so, where were they kept?

**A.** I do not know.

60. Who was responsible for ensuring that the CHP was operating correctly?

**A.** At handover the Project Team and Multiplex. Once the CHP was working the estates team were responsible for its operation.

61. If the CHP was not operating correctly, could this impact patients? If so, how?

**A.** Yes, this would impact patient care directly. Environmental temperature control is very important to delivering a safe patient environment which supports healing and recovery. Variations in temperature can impact recovery times and outcomes. Failing to control water temperatures can create the risk of microbiological contamination within the water system. This can have adverse health effects especially to those who are already ill.

62. What was your understanding of how the CHP should be operated?

**A.** I had no understanding of how it would operate except I had been advised that it would be one of the most advanced CHPs in the country in terms of its efficiency, running costs, technology and its contribution to the national Sustainability agenda. It had been designed with achieving BREEAM excellent in mind.

63. Were there cost considerations about operating the CHP? If so, did these considerations impact on its operation? How did they impact on the operation of the CHP?

**A.** There had been calculations completed to achieve BREAM excellent which was a standard stipulated by the Scottish Government as part of the contract I believe, which would result in a reduction in the level of utilities being used by the site when operational. This then impacted on the carbon footprint of the site and the Board. The calculations had a financial model attached to them. However, from an operational perspective the initial cost considerations were not a factor which impacted on trying to remedy the impact of the CHP not working. The CHP never ran to the projected financial model and it was never a subject discussed with me.

64. How was the CHP system being operated by GGC?

**A.** I do not remember any detail on this subject.

65. Were you aware of any operational issues encountered by GGC with the CHP? Refer to Estates Team Bundle, Bundle 12, Document 12, Page 101.

**A.** Yes, there were significant over heating and cooling issues throughout the hospital as a result of issues with the CHP.

66. Refer to Estates Team Bundle, Bundle 12, Document 16, Page 137:

a) Have you seen this before?

**A.** I think so – I have certainly seen versions of this document.

b) What is this document?

**A.** It is a snagging list of defects identified by the users of the building, estates and facilities impacting on the operational use of the building.

c) Column 274 – 'all CHPs cut out' – what does this mean? What would have been the impact on patients as a result of this?

**A.** I cannot find the reference referred to. However, CHPs cut out I would take to mean that the CHP stopped working completely for a period of time. This would result in all heating and cooling in the building going off which would impact the buildings overall temperature. It also would have a direct impact on temperature control of the water system which could result in a microbiological contamination risk.

d) Refer to Estates Team Bundle, Bundle 12, Document 36, Page 272 what was the incident referred to? Were you involved? How was this matter resolved?

**A.** This document refers to room pressure testing and air permeability checks in ward 2A before patient transfer. I was not at this point involved with this. Mr Loudon, Mr Powrie and Mr Calderwood were directly involved in this. I

understood all issues of this nature were addressed prior to patients occupying the area

67. What happened in respect of Zurich?

**A.** Zurich failed the insurance test for the system in the CHP.

a) Please describe why Zurich failed the insurance test, who was responsible for this?

**A**. I believe components were not CE approved and contravened the pressure systems legislative requirements

68. Refer to Estates Team Bundle, Bundle 12, Document 113, Page 848:

a) What is this?

**A.** This is the final NEC3 Supervisors Final Defects Certificate

b) Why was it issued in 2017 and not earlier?

**A.** My understanding was there was a contractual agreement that the defect period was 2 years.

c) What was the consequence of this?

**A.** In my view there was no rush by Multiplex or the Project Team to take on board issues and address them quickly. Often issues being raised were rejected or disputed as being the responsibility of Multiplex. Management of this defects list and completion of tasks on it was a major undertaking for the estates team. All the defects had an operational consequence to estates or facilities on an ongoing daily basis which far exceeded any projected workforce projections or estates & facilities expectations of what tasks they required to fulfil on an ongoing basis. There was little understanding or appreciation of the consequences of this by Multiplex or the Project Team on the site or the ability of the estates team to manage the building.

d) Whose job was it to ensure that the there was an appreciation of the operational consequences by Multiplex and the Project Team?

**A.** David Loudon and Ian Powrie supported by Frances Wrath and Peter Moir I believe as part of the Project Team. All of these individuals were experienced healthcare Estates and Capital managers

The intent of Ian Powrie moving over to the Project Team was to ensure that operational consequences of decisions were understood. However, by the time he moved over most of the designs had been completed and agreed

e) On what basis did Multiplex carry out the work?

**A.** Work was completed in bundles by Multiplex and their contractors.

69. Refer to Estates Team Bundle, Bundle 12, Document 135, Page 949:

a) Please explain what this email was about.

**A.** This email relates to the retention of monies instructed by the Board to its advisors Currie & Brown in respect of the CHP not working. Currie & Brown were looking to release the final payments to Multiplex for the CHP on the basis that as far as they were concerned matters had been rectified. I was not in a position of authority to release this money and instructed Currie and Brown not to release these monies until the CEO and the Board Director of Finance had approved these. This was then handed over to them to conclude.

was the money released or not?

**A.** Sorry I am not sure.

**Water Guidance and Obligations**

70. What guidance applies to water? How did you/others ensure that guidance was complied with? What contractual documents, if any, would you consult to ensure guidance was complied with?

**A.** Health & Safety at Work Act (1974), The Control of Substances Hazardous to Health Regulations (1994) and ACOP L8 (Approved Code of Practice Legionnaires Disease; Control of Legionella bacteria in water systems), SHTM's. I did not complete a physical check of whether guidance was being applied – this was the role of the advisors and the Project Team in my view. I was never asked to participate in this or to check any contractual documents relating to the hospital to ensure guidance had been included.

71. Who was responsible for ensuring a safe water supply following handover?

**A.** Operational Estates Maintenance managed via the Sector hierarchical management structure reporting to myself.

72. What was your knowledge and understanding of Health and Safety regulations on control of legionella at the time?

**A.** My understanding was extremely limited at this time. I understood that the Health & Safety at Work Act (1974), the Control of Substances Hazardous to Health Regulations (1994) and that ACOP L8 which is the Approved Code of Practice Legionnaires Disease; Control of legionella bacteria in water systems was applicable. I learned this whilst working with the General Manager Estates on developing a Water Safety Policy for NHS GGC around 2014 when I read as much as I could on the subject.

73. Who was the Dutyholder?

**A.** The Chief Executive was the Duty Holder. I was the Designated Person for NHS GGC. When I took over as Interim Director in 2014 no one discussed this role

with me or what was involved in it. I realised I had a role in water safety management when working on the Board Water Safety Policy and thereafter tried to improve my understanding on the topic by reading and instigating discussions in various estates management forums with the Responsible Persons from each Sector. I felt I could trust the Responsible Persons as they had decades of water safety management experience and were mainly qualified engineers. I also had the General Manager Estates who had previously been the Water Safety Professional Lead for GGC until he was appointed as General Manager and compliance lead for the Board.

74. Were you aware of obligations to appoint an authorised person or the like to discharge water supply safety? If so, who was appointed? When, for what period? If not, why not?

**A.** I was not aware of the range of duties that I was expected to complete at this time. I had been advised by the technical leads and others that this was a management position to coordinate the output from the technical experts. When I read the SHTM's I became aware of the need to appoint an authorised person. The advice from all of the technical leads in GGC at this time was that SHTM's were best practice guides which we should try to achieve but that these were not mandatory. Each Sector Responsible Person placed little importance on the appointment of Authorised Persons at that time which was described to me by all of them as being best practice, not mandatory or statutory, and that initial focus should be on processes and procedures being developed to maintain each individual water system safely with its own unique issues with the statutory standards before moving on to making formal AP appointments. Some AP appointments were made on the recommendation of some of the Responsible Persons and Authorising Engineer in various Sectors which I signed off and issued as directed.

a) Can you help us understand who in NHS GGC was telling you this about SHTM, and not to make formal appointments of Authorised Persons?

**A.** No one told me not to make formal appointments of APs.The advice to me from the senior management team in estates at that time was that there was a process to go through for AP appointments and that there were a range of issues relating to water safety that should be the focus of attention such as development of written schemes, I issued the letters as requested and signed off by the Authorising Engineers. I did not understand at that time that the number of APs and their appointment was my responsibility. I heard the Responsible Persons referring to having APs in post and did not directly ask questions of how the designation was made between individuals.

75. Commissioning of water system prior to handover/ patient migration to QEUH:

a) Requirements

**A.** I was aware that the water system required to be tested for TVCs, Legionella and Pseudomonas prior to hand over. As part of commissioning the system temperature control parameters and water system temperatures compliance with the ACOP L8 guidance should have been checked and considered SHTM 04-01 Part A Design Installation and Testing, HSG274 Part 2.

b) Who was responsible for this?

**A.** Project Team as part of commissioning and sign off of the water system prior to handover of the building

d) Can you assist the inquiry to understand why an L8 assessment was not done before accepting handover?

**A.** I am sorry I cannot .Based on what I now know and understand I should have ensured this was in place and dealt with before patients migrated into the building .I did not believe pre occupation risk assessments of any kind were my responsibility after being advised that I was not responsible for the project, commissioning and handover of the building by the Chief Executive when I was made Interim Director I also believe that this should have been picked up by the Project Team and their Technical Advisors I wrongly assumed this would

be picked up by the Project Team as it was a pre occupation risk assessment which I believed was their responsibility .

e) What checks were carried out to ensure that the water system had been commissioned. Refer to Estates Team Bundle, Bundle 12, Document 132, Page 936.

**A.** Multiplex contractually I believe, overseen by the Project Team. Normally independent testing is carried out for commissioning and verification of systems but I believe GGC gave up the right to this as part of contract negotiations with Brookfield.

f) Was SEPA/ the Water Board involved? Describe role and involvement.

**A.** I do not know I do not think they were directly involved other than with mains water testing at the time of connecting QEUH to the main water mains

g) Which teams (such as infection control) were involved in the water system sign off, Who would have signed it off on behalf of those teams?

**A.** The Project Team, Infection Control Team and Ian Powrie from the Estates Team. I understood Dr Craig Williams as ICD signed off on the water system. Dr Williams was also the built environment lead within infection control.

h) Were L8 testing requirements complied with?

**A.** I was advised at the time they were prior to handover. Having seen the information as part of the water incident I believe they were in relation to sampling.

i) Who advised you of this? Was the information not that the L8 pre-occupation assessment had not been done before handover?

**A.** David Loudon and Ian Powrie advised the systems were ready for handover. I assumed this was in terms of testing/sampling regimes, validations and any pre occupation assessments that flowed from these.

j) Were there any legionella concerns at handover? Is so, what was done to deal with these?

**A.** No not at handover as I was advised verbally the water system had been tested and commissioned. Mr Powrie advised there had been some TVCs and low level legionella positives identified in the initial testing, disinfection had occurred and that all results were then signed off by Dr Craig Williams prior to handover. I was satisfied with this information provided verbally.

k) What concerns, if any, did you have about water sitting in the system before the hospital opened?

**A.** Flushing of outlets was put in place prior to opening by using agency staff to supplement Soft FM staff. This was completed on nightshift and overseen by the local Soft FM team. This was an area of concern with the building not being occupied and having so many water outlets that water would stagnate in the system. Water temperatures were also considered particularly due to the volume of little used outlets being flushed It was assumed the water system was clean at handover.

l) Should you have 'assumed' water was clean at handover? Especially without an L8 report?

**A**. I now understand that I should not have assumed this without having the pre occupation L8 assessment. I assumed this was completed as part of the assurance provided that systems were ready for handover. I also was aware that appropriate testing had been completed of the water microbiologically and that this had also been accepted as being fit for purpose by the Project Team

m) Were you aware of any issues with the testing of the water system?

**A.** Mr Powrie advised there had been some TVCs and low level legionella positives identified in the initial testing, disinfection had occurred and that all results were then signed off by Dr Craig Williams prior to handover. I was satisfied with this information provided verbally. Mr Loudon also confirmed this verbally to me.

n) What is your understanding of the SHTM guidance in respect of water?

**A.** The SHTM's provide advice and guidance to healthcare management, design engineers, estates managers and operational managers on the legal requirements, design, maintenance for hot and cold water systems.

o) Was the QEUH/ RHC water system SHTM compliant at the date of handover – if not, what was outstanding? Who was responsible to ensure that the water system complied with SHTM?

**A.** I did not assess the compliance of the system at handover. I was advised throughout the building process and commissioning process verbally that the water system was compliant with all guidance. The Project Team and the Board Technical Advisors were responsible for this review I believe.

p) Who told you system was compliant with all guidance?

**A.** I recall a conversation with Alan Seabourne, the project director before David Loudon advising me when I asked if there was anything I needed to do regarding the water system at that stage. Alan Seabourne advised that I was not to worry about it that designers were ensuring we would have the best water system we possibly could and the Project team would ensure this. David Loudon also indicated in conversation that the hospital systems would be the best in Europe such was the focus that had been placed on development of compliant systems

q) Was a pre-occupation water test done prior to occupation? Refer to Estates Team Bundle, Bundle 12, Documents 14, 14.1, 14.2, Page 110:

**A.** These documents indicate that there was testing of the system completed as part of the process.

r) Who carried this out?

**A.** I do not know who carried this out – I think it may have been DMA Canyon. As indicated in the report there were 12 items identified as needing to be addressed.

s) If this was not done, should it have been done and why?

**A.** I do not know if these were addressed at the time. They should have been addressed to maintain the water system integrity.

t) Consequences of not doing it.

**A.** The consequence of not completing the items would be the potential to compromise the water system.

76. What was the post occupation water testing regime at QEUH?

a) Was carried this out?

**A.** Legionella control testing, TVCs and pseudomonas testing in high risk augmented care areas. Temperature control checks were also being completed. The estates maintenance team were carrying this out supplemented by DMA Canyon when required.

b) Who carried out testing?

**A.** Estates staff and DMA Canyon on occasions.

c) Your involvement with the testing?

**A.** I had no day to day operational involvement in testing or oversight of results.

d) How frequent was testing?

**A.** I do not remember being advised that testing was not in line with guidance by any of the technical estates leads. I can't remember what the frequency of testing was.

e) Did this comply with L8 and SHTM guidance? If not, why not?

**A.** I understand now that wider testing would be required to comply with L8 guidance but testing was managed on a risk basis at that time. At the time the technical leads assured me that enough was being done to comply with guidance.

f) Did you know an L8 report should have been done. If so, did you try to find out if it had?

**A.** I am not sure that I did know this detail. I did however ask Ian Powrie if all the systems were fully signed off and documentation in place. He advised that was what he had been told by the Project Team that all systems were ready for handover although he did not get access to the documentation directly.

g) What happened to the results?

**A.** Results were retained by the estates department

h) Your role in connection with the results of water testing?

**A.** I did not have a day to day role unless the Estates Responsible Person escalated to me any areas of concern , which they did not.

i) Where were the results stored?

**A.** These were stored electronically and on paper by estates.

j) What action was taken in response to results?

**A.** Elevated counts which triggered guidance thresholds resulted in disinfection processes being applied and system retesting until acceptable levels are met this involved discussion between Infection Control and Estates.

k) Was there an escalation process?

**A.** Out of spec results were discussed with local infection control teams and addressed locally in terms of corrective actions. If there were any patients

involved in an incident the local team attended the PAG or IMT. If they were concerned the estates team Responsible Person then escalated to me. The only escalation I ever received was in respect of the RHC IMT in March 2018.

77. To what extent, if any, does the water system now comply with SHTM guidance?

**A.** I cannot answer that question. I left GGC in 2021 and my involvement in estates and water safety ended in 2019.

78. What documentation have you seen to confirm this?

**A.** N/A

79. What work has been carried out to comply with SHTM guidance?

**A.** N/A

80. What work was carried out before GGC took occupation?

**A.** I cannot answer this.

**Water - Commissioning and Validation (C&V)**

81. Have you had sight of the commissioning and validation documentation prior to handover in 2015 – if not, who would have had sight of this?

**A.** No. This would have been seen by the Project Team

82. Where is this commissioning and validation documentation ("C&V") stored generally on the hospital system?

**A.** In this case it should have been in ZUTEC. There was no designated location for the storage of such documents in a wider organisational sense .Historically these are paper copies which are handed over by the Project Teams at completion /building handover.

83. What is the purpose of C&V?

**A.** Commissioning is to ensure that the system is operating as it should be based on the design and construction such as pumps, pressure vessels, calorifiers are working within defined design parameters. Validation measures the output from the system as a whole to ensure that the system individual parts and components are working together to ensure the system is working as designed.

84. What are the consequences of it not being carried out?

**A.** Potential contamination of the system and issues with the day to day operation of the system. Failure to commission and validate a system does not necessarily mean that it will be contaminated however it can be an indicator that the system has a risk of contamination if the system is not operating within design parameters and has not been checked then there is no evidence that for instance temperature control of the water system is being maintained.

85. If the water system were to have no C&V before handover in 2015, what concerns, if any, would you have? Why would you have these concerns?

**A.** That the water system may be potentially contaminated microbiologically. Commissioning and validation is the last opportunity before handover to ensure that the water or ventilation system is clean and free from contamination and operating at a level to prevent contamination.

86. Describe the same in respect of verification and the cold-water supply system.

**A.** That the water system may be potentially contaminated microbiologically. Commissioning and validation is the last opportunity before handover to ensure that the water system is clean and free from contamination.

87. Were you aware of C&V of the water system being carried out post-handover?

**A.** No

a) Who was responsible?

**A.** The Project Team

b) How was the C&V recorded?

**A.** I don't know

c) Any concerns arising from post-handover C&V? If so, why did these concerns arise?

**A.** I don't know

**Water Maintenance**

Refer to Estates Team Bundle, Bundle 12, Document 10, Page 75. This is the Infection Control Workplan and does not refer to Estates related cleaning documents.

88. Explain the cleaning and maintenance of the water system, taps, drains, shower heads etc. When doing so consider:

a) What is the cleaning regime?

**A.** I cannot answer as I cannot access the information referred to

b) What is the importance of this?

**A.** I cannot answer as I cannot access the information referred to

c) What responsibilities did you have a result of this?

**A.** I cannot answer as I cannot access the information referred to

d) What did you do to ensure these responsibilities were executed?

**A.** I cannot answer as I cannot access the information referred to

e) What issues, if any, did you have fulfilling these responsibilities?

**A.** I cannot answer as I cannot access the information referred to

f) Were there ever concerns raised about cleaning practices? IMT bundle, Bundle 1, Document 22, Page 91. Detail these concerns. Have regard to that in her statement Dr Teresa Inkster stated that she *'emailed Karen Connelly and Maryanne Kane in May 2018 highlighting concerns in relation to level 4 QEUH, Ward 2A RHCG, PICU and Ward 3C reported by staff or IPC colleagues. They met with relevant teams and IPCNs to discuss and thereafter addressed the concerns.'* Dr Teresa Inkster comments that the cleaning issues were taken seriously, but were reactive rather than proactive – discuss, do you agree, please explain why.

**A.** No I don't agree with Dr Inkster there had been significant work completed on the site in relation to cleaning services when I returned from extended sick leave as a result of two HAI Inspections for the hospital and concerns about cleaning standards on site. I cannot speak to concerns about standards of cleaning whilst I was off sick. I returned from sick leave in August 2017. I was asked by Mr Loudon to complete a review of cleaning standards on site during the period August – December 2017. This resulted in a re alignment of the general management structure and staff structure for domestic services on site. This included a comprehensive review of hours on site, training and retraining of staff, supervisory cover and so on. Reviews of this nature occur on a routine basis for cleaning services in GGC. Dr Inkster would not be aware of any of this work being ongoing and never discussed this directly with me that I can recall.

g) What, if any, matters regarding the maintenance of the water system were escalated? If so, were they escalated BICC or AICC?

**A.** I don't remember any issues being escalated to AICC or BICC until IMTs commenced

h) Explain the use of dosing and chlorine dioxide in the cleaning regime. IMT bundle, Bundle 1, Document 30, Page 128.

**A.** Chlorine Dioxide had been identified by the Water Technical Group as being the most likely method of bringing the water system under control. It would also address any biofilm identified in the system. However, what the Water

Technical Group did not know was how long it would take to bring the water system under control. There were detailed discussions on other locations where chlorine dioxide took 6-9 months to address a water system and that treatment needed to start before a realistic consideration could be made to how long it may take to bring the system under control. At this stage there was no proof that this would work. What was also unknown was how much biofilm would be released from the pipework of the system. If biofilm was released in quantity the dosing regime would take longer to impact the system. The strength of the chlorine dioxide being dosed also needed to be built up in the system to be effective – this took place over time. What is being described in the document is the high level implementation of the chlorine dioxide and its potential impact on the hospital. The introduction of shock dosing over a 24-hour period was logistically challenging to keep the hospital running and required a great deal of clinical coordination to ensure patient safety. This was later discounted by the Water Technical Group as not required as part of the implementation of the chlorine dioxide dosing of the system from a technical perspective.

i) Clearing of drains in June 2018 following water incident -relevance and purpose. IMT bundle, Bundle 1, Document 27, Page 114. Did this resolve the issue? IMT bundle, Bundle 1, Document 38, Page 164, why was expert advice required?

**A.** Drain cleaning became of relevance when black sludgy material was identified in the drain areas of sinks throughout the hospital. There had also been a positive patient case in Spinal Injuries that year which had been connected to drain contamination I am unsure if this was a confirmed or suspected case as I had not been involved in the incident. This highlighted further the need to consider all possible routes of contamination in the hospital. It was decided that drains therefore had to be cleaned to rule out contamination from this source. Testing also occurred on the drain pipe connections which were identified as being a product which could be degraded when fitted. These were replaced by the same part made from a different product which assisted in resolving the problem.

j) What happened in response to concerns about on-going maintenance and cleaning? Did you personally take further action? For example, taps, refer to Estates Team Bundle, Bundle 12, Document 121, Page 911.

**A.** I tried to address any concerns about maintenance in any area as they arose – this was not just at QEUH/RHC .I did this by linking in with the Sector Estates Manager and the Sector General Manager to identify what the issue was, how it had come about ,what the immediate risk was to patient safety and what potential solutions were .If the solutions required capital funding, papers were produced for the Board Capital Investment Group; if the issues were revenue solutions (pays or supplies), discussion occurred with the Head of Finance to try to resolve these. A lot of the ongoing concerns identified at QEUH/RHC were addressed by sub-contracting work from estates as there was inadequate resources to address all of the issues being identified. The WTG dealt with most of the estates related issues and cleaning was never discussed in this forum for the hospital generally.

k) What more could have been done?

**A.** I do not know it was an extremely high pressure environment at the time which stretched already thin resources and individuals professionally

89. In her statement Dr Teresa Inkster states ‘there was a direction from Mary Anne Kane, who was at senior director level, not to give microbiologists access to water testing results’:

a) Do you agree with this statement? If so why, and if not, why not?

**A.** No, I did not instruct any member of staff not to give microbiologists access to water testing results. In my view microbiological testing needs to be assessed by the microbiologist, not the estates team. I do not know why Dr Inkster would allege this.

b) If you do agree with the statement, why did you direct that microbiologists should not have access to water testing results?

**A.** I do not agree that I instructed anyone to not give access to microbiologists to any documentation

c) Have you ever been advised not to contact someone/ not to provide water testing information? If so, when? By whom? and why?

**A.** When I returned from long term sick leave in August 2017 as part of my phased return to work, Mr Loudon advised me that if I was contacted by the microbiologists for water or ventilation information relating to the QEUH/RHC commissioning results I was not to provide this but to refer them to Mr Craig Williams, Infection Control Doctor who had the data to share. I was advised that there was an ongoing whistleblowing complaint in progress which was highly political internally and I was not to become involved. In any case I did not have access to this data directly and would have needed to point anyone asking for such data to Dr Williams or Mr Loudon

d) Have you ever refused, or directed others to refuse to provide water testing information requested by microbiologists or infection control? If so, why? Provide as much detail for your rational and the consequences of withholding information.

**A.** I have never refused or directed others to refuse to hand over information to microbiologist. I received one enquiry for this information from Dr Peters which I responded to as requested by Mr. Loudon – that the information sought could be obtained from Dr Williams. I advised Mr Loudon that I had followed this course of action on this occasion. I never responded to any requests for information like this again nor was asked to.

e) Detail how you dealt with requests for water testing results from microbiologists and infection control - was all the information requested provided and if so, what was provided – if not why was paperwork not provided?

**A.** I did not receive requests for access to water results from microbiologists. I had no day to day contact with microbiologists I did not have access to water results without referring to the Estates Technical Lead on each site and sector who

retained the details at local level. If I did receive a request, I would have directed them to Mr Powrie or Mr Wilson as Head of Maintenance for the QEUH site.

f) In her statement Dr Teresa Inkster has stated ‘As sector ICDs in the QEUH we often had trouble getting access to some results such as water results. Christine Peters and I would email a range of people including the then ICM Maryanne Kane and Prof Williams. Often, senior management would respond asking why we needed to see the results because the lead ICD had already seen them rather than providing what we asked for.’
Do you agree with this statement? If so, please provide the rational for adopting this approach.

**A.** No I don’t agree with this statement. I recall one request from Dr Peters which I directed her to Dr Williams, as instructed by Mr Loudon. I also advised Mr Loudon when the request was made. I was not at work for approximately 8 weeks in 2016 and for 6 months in 2017 due to long term sickness. During this time any request made to me would not have been responded to as I was not physically present at work. I do not know if an out of office message was placed on my email account by the organisation to advise others of my absence whilst I was off When I returned to work I had a specific range of tasks to complete which were to be my focus. I did not take up my full range of duties until October 2017 due to a phased return I was also never a ICM my post was at that time Associate Director

g) Who was responsible for dealing with these requests for information?

**A.** If I had not been instructed to answer in this way, I would have directed them to the estates maintenance manager for the site- Mr Ian Powrie or Mr Andrew Wilson to access these. There was no reason not to provide access to these in my view except I had been instructed not to do so directly. The Estates Maintenance Managers on each site retained the water testing results I did not.

h) Your role in dealing with these requests for information?

**A.** Routinely I did not have access to the water testing results. I do not have contact with microbiologists on a day to day basis. If I had received a request, I would have had to refer the requestor to the Estates Technical Lead who had access to the reports. However, I did not routinely receive such requests for information. Local Estates Maintenance Managers on other geographical sites dealt directly with the microbiologists and provided any information via this route. QEUH/RHC was no different in that regard

i) How were these requests for information managed by your department? What did you do/ not do – who directed this?

**A.** I did not get direct requests for water testing information. Sector and Site Maintenance Managers dealt with these requests on an ongoing basis and worked alongside microbiologists at local level.

j) What concerns, if any, did you have with how matters were being handled? If so, what steps did you take in response to these concerns?

**A.** I did not understand why this approach was being taken. I was advised that there was a whistleblowing case being handled by the Chief Executive, the Medical Director and the Director of Estates and Facilities which I was not to become involved in as it was being dealt with through the appropriate channels. If a request was received from the microbiologists, in particular Drs Peters Inkster and Reading, then I was to direct them to Dr Williams and I complied with the request of my line manager. I had just returned from 6 months sick

leave and acted on the direct instruction of my line manager I did not feel in a position to challenge a direct management instruction especially when it was made at the same time as me being advised that if I was off sick again there were very serious consequences to my continued employment with the Board.

k) Who advised you there would be very serious consequences?

A. David Loudon

**DMA Canyon Reports**

Refer to Bundle 6 – Miscellaneous documents – Documents 29 and 30, Page 122.

90. Was this the DMA Canyon 2015 report (document 29)?

**A.** Yes

91. Who ordered this?

**A.** Ian Powrie after a Project Team Meeting where it was discussed- I believe from discussions after the event.

92. Who signed off on payment?

**A.** I don't know – the Project Team I assume

93. How was this signed off or payment processed?

**A.** I don't know

94. Who was the report sent to?

**A.** Mr Powrie I later found out in 2018 when it was submitted to HFS by Mr Powrie in a bundle of information relating to the handover of the QEUH/RHC. However, at the time of the report being produced Mr Powrie remembered receiving it at a meeting with DMA Canyon to discuss its accuracy. At this meeting I was advised David Bratty and Jim Guthrie were in attendance.

95. When did you first become aware of the DMA Canyon 2015 report?

**A.** Around May 2018.

a) Ian Powrie told the Inquiry that you were aware at the time that he ordered the 2015 Report. Do you agree with this? If you were not aware, should you not have been given your role as Designated Person for water?

**A.** I don't remember a conversation about this at all I am sorry. If Ian Powrie indicated to me that this was required I would certainly have replied that the work should be instructed. I did not believe it was my responsibility I believed this was the role of the Project Team as pre occupation risk assessments should occur before handover of the building

What was the purpose of the report?

**A.** This was the pre occupation risk assessment.

96. Who had the report?

**A.** Mr Powrie had the report. I understand that It was not circulated any further than at a local level I later found out in 2018.

97. When Were DMA Canyon present at QEUH/RHC site between 2015 and 2018?

**A.** Yes – they were on site on numerous occasions. A Risk Assessment was completed by them in 2015,2017 and 2018. They also attended site to carry out water system disinfections and minor work requested by the Estates Team. I do not know what else they did on site. They were managed by the Estates Team.

98. Did DMA Canyon ever mention the report during their time on site between 2015 and 2018? If so, when and what was mentioned?

**A.** I don't know I never met with DMA Canyon. This was the role of Mr Powrie as Estates Manager and Mr Gallacher as Water Lead for the Board.

99. When were the works suggested in the 2015 report actioned?

**A.** 2018 onwards to my knowledge however in reviewing the 2015 and 2017 reports it was apparent that some work although minor in nature seemed to have been addressed at local level by David Bratty and Jim Guthrie.

100. What is your own view of the findings of the 2015 report? Do you agree with it or not?

**A.** I am not technically qualified to comment on the findings of the report as they are written mainly due to lack of site and system familiarity. I was also not part of the audit process. However, the normal process would be that the person who requests the report would formally review the report for factual accuracy when it is produced and if necessary provide access to areas that had not been accessed if appropriate. This does not appear to have happened in this case. After review and agreement, a revised final draft would be produced and an action plan created. This appears to have never happened

101. DMA Canyon prepared another report in 2017 (document 30). What works, if any, recommended in the 2015 were carried out prior to the 2017 report?

**A.** The majority of works from the 2015 report were still not addressed in the 2017 report. The 2017 report was not received from DMA Canyon until 2018 just after work on completing the 2018 Risk Assessment commenced I believe

102. What happened with DMA Canyon in 2017 – discuss and provide as much detail as possible. Who dealt with matters, what was your role and when did you become involved? Who sanctioned the works in 2017 report?

**A.** The DMA Canyon report of 2017 was actioned in 2018 when I became aware of the existence of these reports. The 2017 report was in the possession of Mr

Powrie and Mr Gallacher. I believe Mr Gallacher had commissioned the report but I am not completely sure. They were responsible for actioning the works reporting to the General Manager for the QEUH. I had no direct role in the report in 2017. In 2018 when I discovered there had been a 2015 report I asked had subsequent reports been produced and was advised there was a 2017 report – which had not been progressed as much as it should have been. The 2017 report was not issued by DMA Canyon until 2018 I found out but received no explanation regarding the delay.

103. What was the impact, if any, of the failure to implement the 2015 recommendations on patient safety?

**A.** It actually cannot be identified what impact the failure to address the report had on patient safety at the time. However, the report identifies a number of actions which required to be addressed and were deemed high risk by the assessors. These were linked to temperature control and these could impact directly on patient safety if temperature excursions impacted the microbiology of the system. Deadlegs were identified which again can cause microbiological implications of the system. It might have been expected that any new water system would have had these risks designed out. These issues should have been dealt with immediately due to the risk rating attached to them

104. We understand that Infection Control were only advised about the 2015 DMA Canyon Report in 2018. Why do you think this was the case? What happened?

**A.** I only became aware of the report in 2018, when Infection Control became aware of the report. The report was given to me by the Chief Executive, Mrs Jane Grant. Mrs Grant had obtained this from Mr Tom Steele, Director of HFS, who had identified its presence as part of the documents provided to HFS by Mr Powrie from his archive files from the QEUH/RHC. Until that time I was unaware of its existence.

105. In her statement Dr Teresa Inkster states ‘I don’t understand how the lack of such a risk assessment wasn’t identified in 2015 by those who had not seen

the DMA Canyon report. It would have been for someone in Mary Anne Kane's or David Loudon's position to satisfy themselves that the risk assessment had been done by actually seeing the resulting report.'

Do you agree with this statement? If so, why? If not, why not? Whose responsibility was it to be satisfied that the risk assessment had been carried out? Explain how you were satisfied that the appropriate risk assessment had been carried out prior to patient migration to QEUH.

**A.** I agree with statement that the 2015 DMA Canyon report should have been acted upon once received prior to the handover of the building. However, the report was not circulated or acted upon at that time. My understanding is that neither myself, Mr Hunter, Mr Gallacher or Mr Loudon received this report when it was generated. My understanding is that David Loudon may have commissioned Ian Powrie to instruct the report at the time. No one in the Project Team or Multiplex identified that the report discussed had not been received at that time. In 2015, this was not my role and I assumed that all technical issues relating to the commissioning of the building were being taken forward by Mr Loudon and Mr Powrie. I also assumed that Mr Gallacher as Water Lead would have ensured this was in place with Mr Powrie.

a) What give you cause to think that 'David Loudon may have commissioned Ian Powrie to instruct the report'?

**A**. I don't remember commissioning it directly therefore the commission could only have come from the Project Team

b) Did you ever question in your role as Designated Person for water whether a L8 pre-occupation risk assessment had been carried out? Was this not within your remit?

This was directly within my remit I understand now and I should have. I did not question this as I assumed, wrongly that prior to handover all of these matters should be in addressed by the Project Team before handover to the operational team. I recognise in hindsight my misunderstanding in this regard and should have ensured that the operational team had much more involvement in

commissioning and hand over of systems directly .At the time due to resource levels I'm not sure how we would have resourced this .The requirement to do anything in commissioning was never made by the Project Team to the Operational Team in relation to any aspect of the systems .I believed up to handover the commissioning in all its components was the responsibility of the Project Team until handover based on how I was briefed in my role as Interim Director . I also believed given the operational and capital experience in the team and the fact that the Director of Estates & Facilities was also the Project Director that these matters were in hand

106. Dr Christine Peters also states that she asked for 'asked for risk assessments for waterborne infection in the QEUH and they were not forthcoming from the Project Management Team, Estates, or Mary Anne Kane.'
Did you provide the information requested? If so when and by what means? If not, why not?

**A.** As previously stated I followed a direct management instruction from my line manager in 2017 to direct Dr Peters to Dr Williams for access to water testing results from commissioning and in the period I was on long term sick I was not at work to respond to any requests if they were made to me .I did not see personally a Risk Assessment until 2018, which was shared via the Water Technical Group

**Water incident 2018**

107. Walk through the concerns as they emerged in 2017 into 2018 in respect of the water issues. Initially focus on your recollection of events as they happened. In relation to the concerns:

a) When did the concern arise?
b) Nature of concern?
c) Possible cause of concern?
d) Action taken in response to concern?
e) What actions were taken in response to concern?

f) How sufficient were these actions?

**A.** Prior to around March 2018 I was unaware of concerns specifically around water issues. When I returned from sick leave in August 2017 during my return to work phased program Mr Loudon advised that there was a whistleblowing case in which queries were being made by microbiology regarding the initial water testing and ventilation sign offs for the hospital and that, if approached, I was not to provide access to these but to direct the query to Dr Williams ICD. This concerned me as I had never had such a request made to me during my career by anyone . However, I had been unwell and felt that I required to comply with my direct line manager's instruction as my sick leave had been specifically linked to work related stress and I was fearful for my continued employment. I did not feel I could discuss this with anyone as I had been advised this had come straight from the Director of HR and CEO of the Board. From March 2018 when I became directly involved in the water incident via the IMTs, I did my best to get to the bottom of what had happened to the water system and to restore it to a safe condition. I tried my best in extremely difficult stressful situations to address the matter when I had the ability to do so.

g) Question for Witness: Describe your first involvement in the water incident, explaining when you first became aware of it and what matters were brought to your attention and by whom?

**A**. From March 2018 I started attending the IMTs after Alan Gallacher and Ian Powrie both advised me over the space of a couple of days that I should know there was an IMT running at RHC which may be a water incident .That the IMT had been meeting for a few months and that patient safety concerns were being expressed with possible patient bacteraemia from the built environment being considered as a potential .They felt I should start to participate directly in the IMT .They shared the date ,time and location of the meeting which I went along to

h) Question for Witness: What action did you take to address these issues and to restore the water system 'to a safe condition'?

**A**. I met immediately after the IMT with Ian Powrie and Alan Gallacher to go over what had been covered in the meetings I had not attended and to find out what investigation had occurred into the water system or the built environment up until then. I quickly realised that the Estates response did not seem coordinated with individuals doing actions and investigations and not reporting to each other their findings. I arranged for an Estates Meeting to occur routinely to address this. The Group then turned into the Water Technical Group with the addition of IPCT, microbiology and 3rd party specialists

i) Question for Witness: Who advised you it had come straight from the CEO?

**A.** David Loudon

108. The following IMTs have been highlighted to assist with this. If you are also able to respond to the questions raised in respect of the IMTs below when considering your recollection of events.

a) Refer to IMT bundle, Bundle 1, Document 13, Page 54:
Cupriavidus bacteraemia in ward 2A at the end of January 2018

(i) What do you recall of this incident/ issue?

**A.** I became aware of this in March 2018 when either Mr Gallacher or Mr Powrie escalated their concerns to me about the formation of an IMT in respect of this issue and that patients were implicated.

(ii) When did it begin?

**A.** The IMT notes indicate that there was a patient identified in ward 2A in January 2018 and that in February 2016 the Aseptic Pharmacy had been implicated in a positive case therefore the Aseptic Pharmacy had been reviewed when the patient in January 2018 was identified.

(iii) How did it come to light? Who first reported the incident?

**A.** I am unaware of who first identified concerns regarding the level of patient bacteraemia in the area

(iv) What was your involvement?

**A.** I started to attend the IMT in March 2018. I linked in with Estates & Facilities to ensure that actions were being progressed in accordance with timelines and also fed back to the COO and CEO as requested.

(v) Were you asked by Ian Powrie or Teresa Inkster about replacing all the taps within Ward 2A? What did you do? Did you discuss this with anyone else? What was the outcome?

**A.** I was - At this time I was hesitant as I was not convinced about what tap we would fit that addressed concerns about flow straighteners. The Water Technical Group did a piece of work on taps available on the market. In the short term the taps were thoroughly cleaned and disinfected and put back in place. When an alternative tap was identified through the water technical group it was agreed to change these. This happened in January 2019.

b) Refer to IMT bundle, Bundle 1, Document 16, Page 63:
Multiple positive results Cupriavidus and now Stenotrophomonas, Dr Inkster states that the test results are from taps which have not been replaced in rooms 15 and 26. Shower head in room 12. At that IMT no cause for patient concern.

(i) What was done as result of this meeting and why?

**A.** Shower heads were removed and sent for testing to the labs. Disposable shower heads were fitted. Patients were not allowed to use water from the water system for any purpose to reduce exposure. Taps were disinfected.

c) Refer to IMT bundle, Bundle 1, Document 17, Page 66:

(i) Your involvement and what measures were taken?

**A.** I was in attendance and coordinated the efforts of the estates team to ensure that milestones were being met and procedures followed as instructed by the IMT.

(ii) Did you discuss this with David Loudon?

**A.** No he left in January 2018.

(iii) If you did not discuss it with David Loudon who then did you discuss it with?

**A.** Directly with the Chief Executive Jane Grant and via the Executive oversight group with Jonathan Best, Chief Operating Officer

(iv) Do you recall anything about how matters were managed?

**A.** I don't understand the question. The IMT ran as normal in terms of agendas and meeting content relevant to a serious infection issue. The focus of attention was on patient safety

(v) How were costs managed?

**A.** There was never an issue with costs. Forecasts were produced for works and supplies and flagged to Finance. No request for financial support was ever declined.

(vi) Who carried out the work?

**A.** Estates & DMA Canyon

(vii) How was this reported and managed?

**A.** Through the Water Technical Group with progress updates being made to the IMT, verbally when requested in meetings

d) Refer to IMT bundle, Bundle 1, Document 18, Page 70:

(i) As above, what was the outcome of this IMT, your involvement, actions and how you followed it up.

**A.** Point of Use filters were fitted, twice daily domestic services cleaning with a hypochlorite was introduced, no water was in use in the ward from the water system, temporary sinks were brought in. I followed up with the Estates Team and Soft FM on sourcing products, arranging staff and development of timelines

that could be delivered. I discussed the situation on a nearly daily basis with either Mr Powrie or Mr Gallacher and sometimes with Colin Purdon

(ii) At this point did you have any concerns about Stenotrophomonas impacting patient safety?

**A.** At this point I was concerned about the range of organisms being found in the water system and linked to patient bacteraemia – I was not just concerned about Stenotrophomonas as a patient safety issue. I felt overwhelmed having to deal with a rapidly evolving and unknown scenario with requests for information and solutions being made from every area of the NHS GGC organisation and SG as well, with little time being given to identify solutions and problem solve This created an additional stress added to trying to identify how the water system was contaminated, how this could be addressed and maintaining day to day operational safety .I was also still expected to fulfil my range of responsibilities across the wider Board area on a range of subjects which was extremely stressful

(iii) Refer to Estates Team Bundle, Bundle 12, Document 121, Page 911; how does this link to the IMT? Was this as a result of what was being discussed? What happened following this email?

**A.** This is a copy of an email I sent to Ms Rankin following discussion with Mr McLaughlin, HFS and Mr Powrie regarding the installation of the Horne taps at the QEUH. This was at the time when this was first raised with me by Mr McLaughlin, who advised me that GGC had been advised not to install the taps and had chosen to do so. These were the taps in ward 2A. I was trying to gather background information and find out who would have a copy of any documentation relating to this. I had not been involved in this decision making process and Mr McLaughlin and Mr Powrie had two different views on what had been agreed. Following this email Mr Powrie was able to source the information and shared this with me. The situation was as Mr Powrie recollected this in that a meeting had been convened with GGC, HPS and HFS to discuss the situation and it had been agreed that subject to a maintenance program being in place

for the flow straighteners the taps could remain in place. Work then commenced on the disinfection of the Horne taps and the development of a robust flow straightener replacement program.

e) Refer to IMT bundle, Bundle 1, Document 19, Page 75:

(i) As above - the fitting of water filter – discuss – why were these filters not on the taps initially?

**A.** Point of Use filters had not been used in GGC before – they were relatively new to the market place. No one in the team including microbiologists had experience of the product and there was some scepticism about the efficacy of the product due to the teams unfamiliarity with the product .Point of Use filters were rolled out on a prioritised basis through areas where the patient pathway would indicate that patients of high risk may be cared for .Locations for point of use roll out were identified by the microbiologists based on clinical assessment.

(ii) Do you have any knowledge of dosing the system with silver nitrate? How did this discussion come about?

**A.** I was not directly involved in this but I was aware of the use of silver nitrate in NHS GGC for routine water system disinfection. It was a commonly used product when there were positive microbiological counts. Discussions were ongoing on what disinfection products could potentially reduce the level of contamination in the water system

f) Refer to IMT bundle, Bundle 1, Document 20, Page 81:

(i) This was scored HAIIT red – why?

**A.** Due to the patient safety implications

(ii) What were the concerns?

**A.** Number and seriousness of condition of patients

(iii) You were asked to look at the historical water results during the commissioning of QEUH/RHC, what did you find out as a result? Did this concern you?

**A.** I found that standard testing of the system from a microbiological perspective had occurred – TVCs, Legionella and pseudomonas and been signed off by Dr Craig Williams although I could not physically find the document in which he advised positively he had done so. During the testing some positive TVCs and legionella were identified. The system was sanitised with Sanosil at the wrong dilution and returned positive counts again. However, this was rectified by Sanosil being used at the right strength. The system was signed off by Dr Williams and Mr Powrie as being fit for use once microbiological results demonstrated that the Sanosil had been effective .

(iv) You emailed on 26th March 2018 – (see Estates Team Bundle, Bundle 12, Document 124, Page 918) seeking information regarding the commissioning – did you receive a response to this? Did you do anything in response to this?

**A.** Yes, all documents received were shared with the Water Technical Group members and HFS.

(v) This was not discussed at the next IMT, why?

**A.** I think it was discussed at the water technical group. I don't know why it wasn't picked up at the next IMTs.

vi) Should this not have been picked up by the IMT? Who would have been responsible for ensuring that it was picked up by the IMT?

**A.** Yes, it should have been. I should have raised this or the Chair of the IMT who participated directly in the Water Technical Group. The Water Technical Group was not asked as part of the IMT agenda to provide regular updates. In hindsight I should have insisted that this was the case

109. Refer to Estates Team Bundle, Bundle 12, Document 125, Page 919 and Document 133, Page 938, what was the relevance of these document to the water incident?

**A.** This is a summary of ongoing management arrangements put in place to address the ongoing incident to Tom Steele, Director of HFS.

**Taps**

110. The use of Horne Taps was discussed in the IMTs relative to the water incident. IMT Bundle, Bundle 1.
Please confirm:

a) Your understanding of use of Horne taps.

**A.** Horne taps were fitted throughout the hospital after selection by the Project Team.

b) Who authorised the use of Horne taps?

**A.** Project Team

c) Why were Horne taps selected?

**A.** At that time, when selected, they were considered to be a low risk tap. The Horne taps had been implicated in an outbreak of pseudomonas in a Belfast Children's Hospital in 2012. The Horne taps were identified as having flow straighteners which had potential risks from growth of bacteria. As this evidence was emerging and before the guidance had been published the taps had already been selected and installed for the Hospital. After a period of consultation and discussion with HPS and HFS with the Project Team a consensus was reached that the Horne taps could be retained as the tap of choice , with the proviso that risks associated with taps should be mitigated through regular maintenance (periodic strip, clean, disinfect and reassemble).

d) What was your involvement, if any, in the decision to use Horne Taps - SBAR Bundle, Document 1, - please discuss your involvement and understanding?

**A.** I had no involvement and learned of this decision via documentation reviewed as part of the Water Technical Group in 2018.

e) Eddie McLaughlin and Ian Powrie have different views about the use of Horne taps – please explain your recollection of the use of Horne taps.

**A.** I was not involved in the decision making process so cannot comment on the detail or discussions to reach the decision that was made. However, Mr McLaughlin had brought the matter of the Horne taps to my attention at the Water Technical Group. Mr McLaughlin advised me that the Board had been advised by HFS not to fit the Horne taps but had proceeded with the installation. When I discussed this with Mr Powrie he advised me that the taps after discussion and consultation had been agreed to be fitted and produced the document agreed between GGC, HPS and HFS. The document described the risks associated with the taps and that the taps could be installed subject to a planned preventative maintenance being in place to reduce the risks associated with flow straighteners.

f) Who signed off on the use of Horne Taps after consultation with the Board standing Eddie McLaughlin's advice?

**A.** The advice given to me in the Water Technical Group by Mr McLaughlin which I pursued was factually incorrect. There had been a group that looked at the Horne taps and agreement reached that they could remain in situ subject to the planned preventative maintenance program. A letter was exchanged to this effect from HFS/HPS. I believe the Board project team members and the Chief Executive Robert Calderwood were involved in the process

g) At the time, were you aware of the incidents in Northern Ireland with Horne Taps?

**A.** Yes I was aware of the incident in Northern Ireland but not involved in the tap selection and subsequent review of that decision

h) If so, why did you decided to proceed with the installation of these throughout QEUH/RCH? What was the deciding factor?

**A.** I did not make this decision

i) Discuss Estates Team Bundle, Bundle 12, Document 121, Page 911, explain the situation and your involvement.

**A.** I contacted Ms Rankin to speak to her regarding any recollection or information she could share on the selection of taps for the QEUH after receiving two different views from them on the installation – this was before the document detailing the discussions and agreement was produced. I was trying to get an accurate picture of what had happened around the decision making process.

j) Refer to Estates Team Bundle, Bundle 12, Documents 127 and 128, Page 922, explain the situation and your involvement.

**A.** These emails were picking up on the installation and use of Horne Taps within QEUH. What I was trying to do at this point was to gather as much intelligence as possible on the taps, their use, their maintenance and any manufacturers guidance around them. This was being done to try to establish a clear picture of the risks associated with the Horne Taps to inform future decision making and risk management strategies for the Water Technical Group. I don't think I was able to attend the meeting when Horne attended.

k) Flow straighteners – when did you become aware that they were non-compliant with guidance? Were they non-compliant at handover? IMT Bundle, Bundle 1, Document 27, Page 114.

**A.** I learned of their noncompliance with current guidance in March/April 2018 when the discussions on the taps were occurring with Mr McLaughlin and Mr Powrie. On the basis of the SBAR it was known at handover that the taps were non-compliant but a decision was taken to install these with the proviso that

maintenance was put in place to minimise the risks associated with the flow straighteners.

l) Were new taps replaced in January 2019? If so, why were they replaced? Was the replacement related to the use of chlorine dioxide? IMT Bundle, Bundle 1, Documents 29 & 30, Page 123.

**A.** Yes, they were fitted. The taps were replaced to reduce the risks associated with flow straighteners fitted in the Horne Taps in high risk areas as part of the work completed by the Water Technical Group. Replacement of the taps was not directly linked to the installation of chlorine dioxide dosing to the hospital. The Water Technical Group completed a large piece of work on the risks and design of a range of taps with a view to selecting a reduced risk tap for high risk areas through the hospital not just in ward 2A .

**Water Technical Group**

111. You sat as the chair to the water technical group (WTG) between 2018 and 2019.

a) What is the purpose of WTG?

**A.** The purpose of the Water Technical Group was to make dedicated space to looking at the water system out with the IMT. There were multiple hypothesis evolving and various workstreams emerging amongst the estates team which needed to be viewed holistically to understand what was happening with the water system. For the first few meetings estates met alone to discuss the ongoing work they were involved with. Teresa Inkster then accused the Team of meeting secretly in an attempt to cover up information which was absolutely not the case and the membership was extended to be considered a sub group of the IMT (but never asked to produce routine reports by the Chair of the IMT) with clinical team and microbiologist attendance as well as inviting external water experts to the group . This Group was attempting to identify the cause or causes of the water contamination, how to address this and to gather professional consensus to address patient safety concerns regarding the water

system. The Group did not however routinely submit notes of meetings or hypothesis papers to the IMT formally.

b) Why were you the chair? What experience and expertise did you have for the position of chair?

**A.** I was the Chair in my role as Interim Director, as this group was initially an operational estates group .I remained in Chair as no one else offered to Chair the Group or expressed that it should be Chaired by anyone else .It was not a sub group of the IMT directly but a group that emerged to address operational issues linked to the IMT .I had no experience of Chairing a Water Technical Group.

c) Was this within your remit as interim director of estates?

**A.** Yes

d) Who else was in the WTG, what were their names and their roles within WTG?

**A.** The Water Technical Group comprised of Ian Powrie , Deputy General Manager Estates, Alan Gallacher, General Manager Estates, Andy Wilson, Head of Maintenance QEUH then Colin Purdon, Site Estates Manager, HFS (either Mr McLaughlin or Mr Storrar), HPS (Annette Rankin), Teresa Inkster, John Hood (on occasions at the invite of Teresa Inkster), Ian Kennedy, Public Health, Mr Tom Makin, external water expert, Mr Tim Wafer, Chlorine Dioxide expert and external water expert, Dennis Kelly, NHS GGC Authorising Engineer. The Water Technical Group attendance /membership was not restricted to only these staff. On occasions when the practicalities of dosing the system were being discussed and operational assessments on impact and risk had to be considered, members of the clinical team joined the Group. Mr Peter Hoffman, Department of Health joined the group on occasions and Susanne Lee, external expert arranged by Teresa Inkster, attended the meeting. All members of the Group were asked to participate to ensure that a range of disciplines were involved in any decision making process around the water system at the QEUH.

e) Why was the WTG set up?

**A.** Explained above

f) What qualifications were required in order to be chair of WTG?

**A.** None were required or specified at this time. I did this in my role as Interim Director with technical experts advising.

g) Discuss focus of WTG – refer to specific WTG minutes and take the witness through these – what was the purpose – why was WTG required – what issues came to light as a result and what action was taken. What were the concerns of the WTG and how did this impact on patients? Refer to Estates Team Bundle, Bundle 12, Documents 127, 128, 129 and 130, from Page 922, to assist and confirm how these relate to issues before WTG.

**A.** The WTG was required as described in question 113

h) How did clinical staff and estates get along at these meetings?

**A.** The atmosphere was extremely difficult at times due to the pressure of the work, the scale of the problem being encountered and the lack of clarity on where potential sources of contamination were coming from in order to identify a solution .A lot of the work being covered was new to estates staff particularly around the microbiology of the system and the lack of familiarity with the organisms being discussed for which there was no guidance that could be referred to to support development of a strategy to address the problem technically. Continual press coverage and leaks to the press regarding the IMTs and the ongoing incident left the estates team feeling undervalued and being blamed for the incident. The volume of information being reviewed and gathered was huge for the teams alongside any other responsibilities staff had in relation to their wider remits. However, first and foremost on everyone's mind

was to find a solution to the issues being identified in the water system by the work the WTG were undertaking and to protect patient safety.

i) Refer to **IMT Bundle, Bundle 1, documents 39 onward, and any other IMTs as a result of WTG.** Go through and discuss issues – impact of patients – what was cause of these issues.

**A.** There were a number of actions investigated by the Water Technical Group which was a support group to the IMT but not a sub group of the IMT. The Water Technical Group consisted of a number of estates experts, external experts and internal estates and microbiology representatives. It met regularly and investigated all areas of the water infrastructure system which could potentially be contributing to contamination of the water system which may adversely impact on patients. This included deconstructing essential components of the water system such as taps, valves, sinks etc, reviewing temperature control records, incoming water quality and general use of sanitary products. A look back was also made on commissioning of the water system based on the documentation available to the group. These reviews enabled delivery of an action plan with tasks generated by the various pieces of technical work being undertaken. Some of the items identified could present infection control risks to patients. In reviewing the IMT notes for this it's my view that the detailed notes and reports produced for the Water Technical Group should have been shared with the IMT at the time to provide detail on work being undertaken. However, this was not the case and the work of the water technical group was not discussed in any level of detail at the IMT. There was also no space on the agenda on reflection for the Water Technical Group feedback. This could have been strengthened in the IMTs and perhaps assured clinicians that in fact there were personnel involved who did have the necessary experience in water safety management

j) Why was the work of the Water Technical Group not shared with the IMT? Why was space not made on n the agenda? Would it have been open to you or others to add it to the agenda? Dr Inkster has suggested in her oral evidence

to the inquiry during the hearings commencing 19 August 2024 that you as chair of the WTG might have come and report to the IMT.

**A.** In retrospect the Water Technical Group should have prepared formal reports on the work for the IMT. However, Teresa Inkster as Chair of the IMT was responsible for the agenda – water technical group update was never included in this. On occasions I was asked to provide updates on key issues but these were primarily around the time that a possible solution had been developed and the practical implications to the hospital of this. I felt there was no space in the IMTs for detailed discussion of the work of the Water Technical Group. The focus was on patient condition, service challenges, communication with parents, prescribing and so on. The IMTs were extremely stressful as a consequence of this

k) Refer to Estates Team Bundle, Bundle 12, Document 129, Page 926, why were NSS involved, guidance issued, actions taken.

**A.** The National Support Framework was invoked as part of the IMT. NSS participated in meetings and provided a professional opinion on topics being considered. National intelligence from NHS Scotland and the UK brought by HFS, in particular Mr Storrar, was very helpful in sharing his experience and industry case studies. Mr Storrar also was personally very supportive to members of the estates team who were struggling with the pressure of the situation and personal professional confidence crisis as a result of the constant demand for information and solutions from internal and external agencies as well as media scrutiny. The main focus of interacting with HFS was the review of all of the documentation submitted by Mr Powrie from his archive files which related to the building, design and commissioning of the water system as well as ongoing operational maintenance plans and actions. The analysis of this data by HFS which was reported to the WTG was exceptional helpful in identifying areas and components of risk which needed to be addressed and future actions taken on the water system.

l) Refer to Estates Team Bundle, Bundle 12, Document 131, Page 930, explain the background, your involvement, the purpose, guidance issued, actions taken.

**A.** The WTG engaged with a number of national water experts to obtain support and expertise on the complexities of water systems, outbreak management and technical solutions, Susanne Lee was one of the individuals engaged with. Her engagement was arranged by Teresa Inkster. Ms Lee attended site, came to a couple of meetings and produced this report. Teresa Inkster pulled together an outline action plan based on the input from Ms Lee. The WTG monitored progress until it was complete. There was no further interaction with Ms Lee. Apart from attending the WTG as described above Ms Lee did not respond to any queries or questions except via Teresa Inkster. My role as WTG Chair was to keep momentum going in the Group on the range of actions being generated

**Review of Issues Relating to Hospital Water Systems' Risk Assessment 26th September 2018**
**Refer to Estates Team Bundle, Bundle 12, Document 134, Page 943.**

112. You commissioned this report – what was the background to this.

**A.** I commissioned this report to ensure that there was an accurate picture via a risk assessment of the water system. This included ensuring that there was a current position on any outstanding risks highlighted from the 2015 and 2017 reports which were still outstanding. I wanted an up to date report for factual accuracy. The 2017 report had not been received by the Board from DMA Canyon until around April 2018, despite it being commenced in September 2017.The 2018 report had been commissioned before the 2017 report arrived.

113. Why did you commission/order the report? What issues prompted the instruction of this report?

**A.** See 114

114. What concerns, if any, did you have about the water system?

**A.** I had concerns about the water system; there was an ongoing IMT examining patient infections and a Water Technical Group running to identify what actions were required to address potential contamination of the water system, where this may have come from and what could be done to address this as quickly as possible due to patient safety concerns. I was personally very concerned about the risk to other patients receiving care in the hospital, but particularly in Ward 2A and 2B.

115. When did these concerns arise? Was anyone else in estates concerned? Why?

**A.** My concerns arose around March 2018 when Mr Gallacher or Mr Powrie advised me that there was an IMT running at RHC regarding patient bacteraemia which may be directly linked to the water system which we had not been familiar with up until that point and which they felt was very serious. The IMTs had been running for a few months before this matter was escalated to me by them. No concerns were raised by the local management team.

116. What was the impact on patients?

**A.** Patients were being reported as being adversely impacted by infection which could emanate from the water system or the environment.

117. Did you flag/ raise your concerns with anyone?

**A.** Everyone was aware of the situation due to the IMT but I did advise the CEO that I had started attending these and was concerned about the situation when we met for our 1-1. I also expressed concern about the operational environment of the ward requiring improved controls from an infection control perspective with papers being pinned to walls, shared toys and play areas being in use, poor toy cleaning arrangements etc. which I had observed in a visit to the ward. I felt these needed to be addressed. This was addressed at ward level after my discussion with the CEO.

118. What happened in response to the report?

**A.** The 2018 report was worked through as an action plan and risks addressed and closed out via the WTG. This included any outstanding issues from the 2015/2017 reports contained in the 2018 report and the completion of a gap analysis being undertaken by Mr Gallacher of the three reports. Mr Gallacher then coordinated the close out of the actions from all three reports

119. Did you escalate any matters arising from this report? If so, to who, and if not, why not?

**A.** The report was discussed in the Water Technical Group and the Executive Water Group led by Mr Best which met frequently and was a route to escalate any issues as they arose.

120. What works, if any, were carried out in response to any findings in this report?

**A.** There were a number of works completed to address items on the report such as removal of any deadlegs identified, removal of flexi hoses, replacement of flexi hoses, modifications to valves, temperature control etc. All of the findings in the report were completed through time.

**Tap Water- Ward 3C – 2019**

121. What were the issues in relation to tap water?

**A.** I do not have any recollection of this

122. What was your understanding and involvement with these issues?

**A.** I do not have any recollection of this

123. What action was taken?

**A.** I do not have any recollection of this

124. How were matters resolved?

**A.** I do not have any recollection of this

**Ventilation - Commissioning and Validation**

125. Describe the commissioning and validation process in respect of the ventilation system in the QEUH/RHC.

**A.** I cannot; this was not my role

a) Who was this carried out by?

**A.** I assumed Multiplex with the Project Team oversight and witnessing – that is normal practice with capital projects

b) Who signed off?

**A.** Frances Wrath confirmed that all systems were commissioned and validated as per the ERs to Mr Walsh, Infection Control Manager, GGC

c) To what extent, if any, did infection control have input prior to sign off? Refer to Estates Team Bundle, Bundle 12, Document 22, Page 177.

**A.** I don't know – this email indicates that ICT were not directly involved or the request for information would not have been made

(i) If so, who?

**A.** I do not know. This would have been normal practice.

(ii) When should this have been done?

**A.** This should have occurred prior to building handover

(iii) Were you involved?

**A.** No, I was not involved

d) Were you aware of any concerns raised at any point about the ventilation system and its commissioning?

**A.** I was aware of concerns around the isolation rooms and ward 4B. The isolation room locations, ACH's and pressure regimes were unclear and there was a number of clinical teams including ICT trying to understand what facilities were in the hospital to address patient isolation requirements. The easiest way to do this is to ask for the commissioning, validation and specifications of the rooms. In relation to ward 4B I was aware that the adult BMT move from the BOC was directly impacted by the identification of a sub optimal built environment for patient care particularly around ACHs and pressure regimes. This was a project that had been coordinated by the Director of Estates & Facilities and the CEO with Multiplex as a variation to the contract. I was not involved in the specification, the build or the commissioning and validation of the unit before patients moved. Mr Powrie raised with me the concerns described in the email and I tried to address this by contacting Multiplex and discussing it with Mr Loudon. As seen in the email Multiplex still maintained that ward 4B was fit for purpose and fully commissioned. In the case of the isolation rooms Multiplex confirmed that appropriate testing had not occurred and that this would be addressed.

e) Had you had sight of the commission and validation documentation prior to handover in 2015?

**A.** No, I did not this was not my role

(i) If not, who would have had sight of this commission and validation documentation?

**A.** Multiplex, Peter Moir, Frances Wrath from the Project Team

f) How important is SHTM guidance in relation to ventilation?

**A.** The SHTMs are the basis of the design of ventilation systems in healthcare, these are best practice guidance and provide minimum standards expected in healthcare

g) Was the QEUH/ RHC ventilation system SHTM compliant at the date of handover – if not, what was outstanding? Who was responsible to ensure that the ventilation system complied with SHTM?

**A.** I don't know. The Project Team were responsible for providing a compliant building and infrastructure

h) Refer Estates Team Bundle, Bundle 12, Documents 34, 34.1, 34.2, Page 244:

i) Can you explain the content of this email

**A**. I am forwarding an email to the Director of Regional Services and Dr Peters, received from Mr Powrie, containing Multiplex commissioning documentation and a list of isolation rooms. I don't remember the detail of this or how this came about, however, ward 4B was a ward that had been upgraded to accommodate the Adult BMT patients from GGH BOC after handover of the building.

ii) Please see the documents attached to the email – what are these documents and have you seen them before?

**A.** I don't recall specifically seeing these today but, if I posted on the email with this as an attachment, then I did see them. This is a copy of commissioning documentation of the ventilation and a list of the isolation rooms in the hospital.

iii) What does this relate to?

**A.** The isolation rooms in QEUH/RHC with Commissioning information

iv) Why was Professor Williams asking for this information?

**A.** Based on the email trail due to concerns raised about the built environment for patient care of Adult BMT patients.

v) When did Professor Williams ask for this information?

**A**. I don't know when it was first asked for

vii) When was this information provided to Professor Williams?

**A.** I don't know but assume the attachments went with the email as they are referred to in the body of the email.

i) Discuss the concerns about Ward 4B. Refer Estate Team Bundle, Bundle 12, Document 30, Page 234 - What was the purpose of the SBAR?
Refer to Estates Team Bundle, Bundle 12, Documents 30, 31, 32, from Page 234, to assist with your answer.

**A.** The SBAR described the clinicians concerns in regard of the environment that Adult BMT patients were being asked to be nursed in after being assured that commissioning, validation and quality of the environment was of a high specification. The SBAR was highlighting risks to the patient safety if they remained in this location and that the BOC BMT Unit was a safer environment in the clinicians' view.

j) How does commissioning differ to validation?

**A.** Commissioning tests the system components to ensure it is working as designed and specified. Validation measures that the system delivers in the environment the design specification as claimed.

k) Was there a validation document to accompany this for handover?

**A.** I don't know

l) Was it not within your remit to seek assurance that validation had been carried out?

**A.** I should have specifically requested written confirmation from the Project Team that this had occurred. At the time I wrongly assumed it had occurred due to verbal updates from Ian Powrie and David Loudon.

m) What is the purpose of Commissioning and Validation (C&V)?

**A.** To ensure that there are safe systems in place which protect patient safety at all times linked to the built environment.

n) What are the consequences of it not being carried out? What concerns did you have, if any, that the QEUH/RHC had not been signed off without C&V?

**A.** There is a potential patient safety risk if it is not completed. I did not have concerns before handover as I was advised that commissioning and validation had occurred for all systems.

o) What concerns, if any, would you have if there were no C&V of the ventilation system?

**A.** That patient safety is compromised especially around microbiological contamination which can result in serious harm. The use of the areas should not have proceeded without the validation for specific groups of patients with infection

p) Why would no C&V of the ventilation system give rise to these specific concerns?

**A.** You cannot guarantee air flow in the area and there is a risk of stagnating air building up a heavier and heavier bio burden and microbiological load which can cause harm to the patient especially if patients are high risk.

126. What testing and maintenance protocols and regimes were in place?

**A.** I don’t know

127. Refer to Estates Team Bundle, Bundle 12, Document 47, Page 329:
This states that air permeability tests were not carried out to 36 isolation rooms:

a) Were you aware of this? Should you have been aware? If you were not aware, who would have been aware?

**A.** No .This was not my role .I should have been advised if the Project Team were aware of this before handover as we should not have opened the hospital without this being completed due to the patient safety risks.

b) What was the consequence of this?

**A.** Potential patient exposure to infection related organisms

c) Why did handover take place in these circumstances?

**A.** I do not know

d) What happened following this report?

**A.** The rooms were upgraded as a separate capital project by the NHS Estates Team. These were not completed until 2018. Mr Loudon and the Capital Team led on this upgrade.

e) What concerns, if any, did the contents of the report give you? Why did the report give rise to these specific concerns?

**A.** I began to doubt everything I was being told about the hospital and felt that the hospital should not have been handed over from this point.

Have regard to the following emails when considering your answers to the above: Estates Team Bundle, Bundle 12, Document 64, Page 498, Document 67, Page 515 and Document 68, Page 521.

128. What concerns, if any, did you have about the ventilation system at the point of patient migration to QEUH?

**A.** None, although I was concerned when the HEPA filters were not fitted but assumed this had been an oversight and, after commissioning & validation, the filters had been removed ahead of patient occupation due to some contamination issue or for an operational issue by Multiplex and this was an oversight logistically.

129. Where was the documentation for C&V stored at that time?

**A.** I don't know – with the Project Team

130. Have you seen the ventilation system validation documentation as at handover (Jan 2015)?

**A.** No this was not my role

a) If yes – who carried this out, who signed off, who authorised?

**A.** N/A

b) If no – should you not have sought this? Who is responsible for ensuring it is in place? Who should have chased this up? Would this not be part of ID remit?

**A.** No – The Project Director should have ensured this was in place and signed off by the ICD before any patients were transferred to the QEUH.

131. Where would the paperwork have been stored/ Who would have been responsible for it?

**A.** With the Project Team

132. If validation was not in place at handover, how did the hospital open? Who would have had the authority to allow the hospital to open without validation in place?

**A.** I don't know. The hospital should not have been opened to patients without validation. Only the CEO would have had the authority to make that decision but I doubt any CEO would make that decision if they were aware that a critical

system validation had not been completed due to the risks associated with patient safety.

133. Were you asked by microbiologists or Infection Control to provide information regarding the ventilation system and validation? Who was supposed to provide this information? If it was not provided, why not? What action was taken to ensure that information was provided – if it was not, what was done to escalate this? Who was responsible for providing this information?

**A**. I do not recall being directly asked for these. However, contained within the witness packs is an email I am copied into where Mr Peter Moir is asked by Dr Inkster for copies of the ventilation validation results. I respond asking that Mr Moir supplies these as failure to do so would result in a PR nightmare - meaning that these should be readily available and if not so they were required immediately. The adverse impact of not doing so would result in a loss of confidence in a new build hospital by staff, patients and the public. I did not follow up on this email and don't recall seeing anymore regarding this matter. I therefore assumed it had been addressed. If directly requested from me I would have directed them to Mr Williams or Mr Loudon in respect of the QEUH or Mr Powrie as Head of Maintenance. I don't personally have access to this data and need to sign post anyone looking for ventilation or water results to the appropriate Head of Maintenance.

a) To what extent, if any, does the ventilation system now comply with SHTM guidance?

**A.** I can't answer this

134. What documentation have you seen to confirm this?

**A.** N/A

135. What work was carried out before GGC took occupation?

**A.** I do not know

**Ventilation system - general**

136. What testing and maintenance protocols and regimes were in place? Refer to Estates Bundle, Bundle 12, Document 62, Page 448.

**A.** This is a commissioning document, not as described – there is no reference to protocols, testing etc contained within it

137. What concerns, if any, do you have relating to the ventilation? What concerns, if any, do you have relating to the water temperature? What concerns, if any, do you have relating to the movement within the water system? Refer to Estates Bundle, Bundle 12, Document 123, Page 916.

**A.** I was concerned about ventilation in the hospital due to the lack of filters being fitted at handover and the lack of understanding of the relevance of sharing data and documentation that was flagged in ward 2A –refer estates bundle document 35 and 37 .In this correspondence I was flagging to the Project Team that commissioning and validation information needed to be shared to allow the hospital to operate .If the areas identified as isolation areas did not meet the national standards which could be evidenced the hospital should not have been operational .I did not have access to the commissioning and validation data for water or ventilation to be able to provide it to the clinical teams .When I returned from sick leave in August 2017 and saw at that stage the request for information from the whistle-blowers, I could not understand why clear answers were not being provided on the commissioning and validation data to inform clinical decision making . When the CEO asked me during a 1-1 meeting around March 2018 when I became the Interim Director in 2018 what my biggest concern was, my response was the QEUH/RHC Ventilation as I did not feel that we had responded fully to the whistleblowing complaint[s] and I felt we needed to establish if the ventilation was compliant with national standards or not. This led to the appointment of an estates expert to come in to review the ventilation in the hospital in around August 2018. Water movement in the hospital post-

handover and prior to patient migration was a concern which was addressed by the employment of agency staff on nightshift managed by Soft FM to flush all of the water outlets on site

138. Was it possible to incorporate a comprehensive ventilation system into the QEUH/RHC?

**A.** It should have been however I was advised by Mr Powrie and Mr Gallacher that ventilation air change rates had been sacrificed to achieve BREAM excellent and that the Board had derogated Ventilation standards as a result. Operational Estates & Facilities were never consulted on this or advised of this until after handover to my knowledge.

139. Describe any ward/area specific ventilation systems used?

**A.** I cannot, this is not my technical background

140. What are your thoughts about these ventilation systems that were used?

**A.** N/A

141. Refer to Estates Bundle, Bundle 12, Document 136, Page 950. Explain the concerns regarding latent defects and actions taken.

**A.** This was a list of items which had been identified as potentially not meeting national guidance or standards for the ventilation systems in the hospital. GGC were trying to address this via the latent defect contractual process and to obtain more detailed design information. I was not by this stage involved in taking this forward.

**Specific events in relation to ventilation system**

142. Can witness recall any specific events in relation to ventilation?

For example:

a) In 2015 prior to patient migration there were checks to the ventilation in Ward 2A in particular, with there being issues in relation to breaches around the trunking, ceiling lights etc with the extract grills not being compliant with SHPN

**A.** I recall visiting ward 2A with Mr Powrie on one occasion when he showed me how the ceilings were not compliant with national standards in the area, particularly the light fittings and trunking not being sealed. He advised me that he would coordinate with the Project Team the sealing of all of the rooms affected. Mr Loudon and Mr Powrie personally dealt with wards 2A/2B

b) Lack of HEPA filters and general concerns ward 2A/B refer to Estates Bundle, Bundle 12, Documents 35 and 37, from Pages 263 and 275. Detail how the issues managed, what was your responsibility, outcome.

**A.** I was copied into an email trail between clinicians, Project Team and Estates and Facilities staff. Much of my role as Interim Director was about facilitating things – in an attempt to facilitate the requested information from the Project Team to inform the clinical team I requested this was shared at that time. I was trying to emphasise that, if this data was not produced, the hospital would require to withdraw care provision from these areas. If this was the case this would result in scrutiny from a range of sources which would have a negative impact on patient care, public perception and the Board and NHS Scotland's reputation. I did not understand why the information was not handed over upon request. I left the Project Team to conclude this. In relation to ward 4B correspondence, I was copied into an email chain between Multiplex, Estates and the Project Team, from which it was clear to me that Mr Powrie was trying to ensure that Multiplex complied with national guidance. The technical advisor was not responding as I had expected in terms of tone and content, however, it had become clear by this stage that Ian Powrie had not been treated well by the Project Team, Multiplex or the Technical Advisors during his secondment and that, when he provided input, he appeared to be dismissed or ignored on many occasions .In an effort to support him I wanted it to be clear to the Project Team, Multiplex and the Technical Advisors that the national guidance required to be fully complied with and that the Boards Authorising Engineer for

Ventilation needed to be involved in signing off the wards' compliance. This was the extent of my involvement in this.

c) Refer again to Estates Bundle, Bundle 12, Document 35, Page 263, what specific concern could result in a 'PR nightmare'? Why was it described as a 'PR nightmare'?

**A.** In my opinion, if the evidence could not be provided and supplied to the clinical teams on commissioning and validation, the hospital should not have been in operation. This was the newest, largest hospital in Europe at that time into which patients had transferred. If patients should not have been in the hospital, this would have resulted in an intense level of negative scrutiny and a loss of reputation and public trust for the Board and the NHS as a whole. I could not understand why the information requested was not being simply provided, that is why I said this would be PR nightmare.

d) Dr Brenda Gibson refer to Estates Team Bundle, Bundle 12, Document 18, Page 144.

**A.** Refer response 145 b

e) Air permeability tests not carried out refer to Estates Team Bundle, Bundle 12, Document 47, Page 325 - Capita NEC3 Supervisor's Report (No 53) - dated September 2015.

**A.** I had no involvement in this and did not have access to the NEC3 Supervisors reports

f) Issues with rooms 18 & 19 Ward 2A Estates Team Bundle, Bundle 12, Documents 67 and 68, Page 515.

**A.** I do not remember this happening. As can be seen from the email trail, effectively air was being lost from high risk areas in ward 2A. This is an example of the ongoing operational issues faced by the estates and clinical teams post-handover. These invariably fell to Mr Powrie in particular to liaise with the clinical teams and try to effect solutions with the Project Team. The impact of

such failures could impact directly patient safety and ultimately the continued provision of clinical services from the area. The escalation process appears to have been followed in this case with Mr Loudon and the Project Team being directly involved .

g) Dr Christine Peters raised issues with the air change rates in Ward 2A.

**A.** The email trail contained in these documents indicates there were significant issues with the ventilation in the area at this time and that solutions were being developed to address these. Mr Loudon led on this work. I was not directly involved in this at the time.

h) Issues detailed in Estates Team Bundle, Bundle 12, Documents 94, 95 and 96, from Page 780.

**A.** I was not involved in this

i) Issues detailed in Estates Team Bundle, Bundle 12, Document 104, Page 813.

**A.** I have never seen this document

j) Any other issues/ incidents not mentioned above.

In providing your answer please tell us:

a) What was the issue?

b) The impact on the hospital (include wards/areas) and its patients (if applicable)

c) Who was involved?

d) What was the escalation process?

e) Were any external organisations approached to support and advise?

f) What was the advice?

g) Was there opposing advice and by whom?

h) What remedial action was decided on and who made the decision?

i) Was the issue resolved – consider any ongoing aftercare/support/monitoring?

j) Any ongoing concerns witness had herself or others advised her of?

k) Was there any documentation referenced during or created after the event. For example, an incident report?

l) Did anyone sign off to say the work had been completed and issue resolved/area safe?
Write your answers in the relevant answer boxes above.

**A.** I am sorry I do not remember

**Ward 4B**

143. Works carried out, why, your involvement and when. Use the below to assist and detail and issues you were aware of in respect of Ward 4B, your involvement and any remedial works – works done and why.

**A.** My involvement was only being copied into some emails, especially when Mr Hunter was involved. Mr Loudon led and managed the ward 4B upgrade personally with Multiplex, Mr Powrie and Mr Hunter. I was not directly involved at this time. A prestart meeting for Capital Projects is normal procedure. It allows all parties impacted by the Project – usually IPCT, Clinical Team and Estates & Facilities a final opportunity to review the scope of works, timelines and work plans associated with completing the work

Refer to the following when answering:

a) Estates Team Bundle, Bundle 12, Document 71, Page 537
b) Estates Team Bundle, Bundle 12, Document 72, Page 637
c) Estates Team Bundle, Bundle 12, Document 97, Page 788
d) Estates Team Bundle, Bundle 12, Document 115, Page 878 - why was there ‘pre-start’ meeting – what was the issue with this?

144. Involvement and knowledge to HAI SCRIBE – what was this and what was the issue – refer Estates Team Bundle, Bundle 12, Documents 117 and 118, from Page 890.

**A.** I was copied in for information to these emails – I had no direct involvement in the Project at this stage. This was led by Mr Loudon with Mr Powrie and Mr Hunter directly.

**Decision to close wards 2A/B and move to 6A and 4B**

145. Discuss the issues surrounding and leading up to the decant of patients from Ward 2A in 2018.

a) What was the lead up and background to this refer to Estates Team Bundle, Bundle 12, Document 133, Page 938?

**A.** The decision to decant Ward 2A was pursued by the clinical team. They felt that the environment was not safe for patients. This resulted in discussions occurring within the clinical team management structure up to Director level and the production of an SBAR around the risk associated with providing patient care in the area. I never saw this document and was not involved in its collation. It was however referred to in the Ward 2A IMT, which is how I was aware of it. There were significant works required in ward 2A in respect of the water system (replacement pipework, sanitary fixtures etc) which the clinical team felt could not be completed whilst the patients were still in the ward due to the levels of dust that would be generated. A decant also provided the opportunity for a detailed review of all patient areas including validation of BMT rooms , minor aesthetic works ,sealing of joints etc )By the time this decision was taken it was also clear to the estates team that decanting the ward would provide opportunity to review the ventilation due to the access provided by patients not being in the area.

b) What was your involvement.

**A.** I attended 6 ward 2A IMTs with Estates & Facilities colleagues. My role was to ensure the estates and facilities teams met the timelines and work instructions issued by the IMT. I did not agree the scope of works for ward 6A; this was completed by others. The completion of work in ward 6A was also overseen by others. I was concerned that there seemed to be a consensus that moving the patients from ward 2A to ward 6A would provide a safer built environment for the patients. I raised my concerns as I wanted to ensure that it was clear that ward 6A was serviced by the same water system as ward 2A, therefore any

contamination would be replicated in this environment. I also wanted it to be known that the ventilation specification in ward 6A was the same as ward 2A for the same reasons. I felt my comments were dismissed and a course of action had already been determined by key individuals in the IMT that would not be moved from. I never saw a clinical risk assessment for the move but was aware that a patient pathway assessment had been completed – I have never seen this either. It was after my comments in this respect that I stopped being notified of when the IMTs were occurring and from this date only attended a meeting on 5/10/2018 and 26/10/2018. I felt dismissed for making the comments

c) What risk assessment and additional measures were put in place to ensure patient safety?

**A.** I do not know I have never seen them

d) What concerns, if any, did you have about where the patient cohort was being moved to? If so, why did you have these concerns? IMT Bundle, Bundle 1, Document 39, Page 169, you flagged concerns, were these ever followed up? Did you escalate these concerns? With the benefit of hindsight, what steps could have been taken to progress this matter further?

**A.** Refer responses above

e) Discuss and detail the works done to Ward 2A/B what was required to be done and why, what has been done and when the work was completed. Please include details of your involvement. Reference IMT Bundle, Bundle 1, to assist.

**A.** There were a number of agreed works to be completed in ward 2A regarding the water system including replacement of all of the sanitary ware in the unit, new taps, new pipework. New spigots etc. This was taken forward after the decant to ward 6A at which time I was no longer involved so cannot advise what work was finalised.

f) Any other relevant information.

**A.** N/A

146. Discuss the issues surrounding the ward 2A patients when in occupation of ward 6A. In particular, views you may have in respect of:

a) Chilled beams;

b) Gram Negative Bacteraemia

c) Water filters

d) Ventilation

e) issues/ testing/ escalation/ response/ IMTs/SBARs impact on patients

f) Patient communication

g) Internal escalation - HAIIT scoring

h) External escalation

**A.** I was no longer involved

**Reports prepared by Innovated Design Solutions October 2018**

148. Refer to Bundle 6 – Miscellaneous Documents – Documents 33 and 34, from Page 656.

These documents are feasibility studies regarding increasing ventilation air change rates within Wards 2A and 2B by Innovated Design Solutions.

a) Who commissioned these reports?

**A.** I think I did after this being suggested by Mr Powrie and Mr Gallacher that an independent 3rd party detailed review would be useful to identify potential risks and what could be done about them

b) What was the background to these reports begin commissioned?

**A.** Ongoing concerns in respect of ventilation in the hospital generally and in particular ward 2A

c) Why were these reports commissioned? What issues prompted the instruction of these reports?

**A.** The IMTs and reviews of documentation as part of the WTG

d) What concerns, if any, did you have regarding the ventilation system in Ward 2A?

**A.** That, despite being advised that the ventilation in the area had been addressed by the Project Team at handover, as time had progressed since handover there were still concerns that the ventilation in the hospital was not up to standard .By this stage I had little confidence in the information I had seen in correspondence from the technical advisors ,Multiplex and the Project Team and Director which was always defensive and contradicted anyone else's viewpoint about interpretation of guidance

e) When did these concerns arise? Was anyone else in estates concerned? Why?

**A.** Yes, Mr Powrie and Mr Gallacher were concerned. Mr Gallacher suggested that a review and feasibility study should be completed in ward 2A due to the information that had come to light in respect of the move into ward 2A at handover in connection with the ventilation .It was also being informally considered if ventilation may have played a part in patient safety concerns .I agreed that we should complete all investigations possible in the area to resolve patient safety concerns

f) What was the impact on patients?

**A.** The potential impact on patients was an infection risk

g) Did you flag/ raise your concerns with anyone?

**A.** These were discussed in the IMT and I had already raised my concerns about ventilation directly with the CEO and engaged an estates professional to start to review ventilation

h) What concerns, if any, did you have regarding the ventilation system in Ward 2B?

**A.** That the specification may not be right for immune compromised patients

i) When did these concerns arise? Was anyone else in estates concerned? Why?

**A.** As the IMTs progressed and patient pathways became clear

j) What was the impact on patients?

**A.** Potential infection risk

k) Did you flag/ raise your concerns with anyone?

**A.** The Chief Executive and the Chief Operating Officer were aware of these concerns and the appointment of a 3rd party consultant to complete the work

l) What happened in response to these reports?

**A.** Mr Tom Steele took over the leadership of ventilation and these reports. I had no involvement in the project except to attend [redacted] meetings when scope of works to address the issues was being worked on initially.

m) Did you escalate any matters arising from these reports? If so, to who, and if not, why not?

**A.** No I no longer had involvement.

n) What works, if any, were carried out in response to any findings in these reports?

**A.** I don't know.

**Cryptococcus**

Refer to the Cryptococcus Bundle, Bundle 9 to assist.

149. Recall your understanding of the Cryptococcus infections in 2018:

a) What is Cryptococcus?

**A.** Cryptococcus is a is a fungal infection which normally comes from exposure to aerosolised pigeon droppings/faeces. Patients who are immunocompromised are potentially at higher risk than the normal well population.

b) Had you seen/ heard of Cryptococcus in a healthcare setting prior to QEUH.

**A.** I had heard of the risks of Cryptococcus over the years due to the high level of pigeons which inhabit Glasgow but particularly at the QEUH. The former Southern General Hospital had always had a significant pigeon population which exceeded levels seen in other areas of GGC.

c) What were the issues with Cryptococcus at QEUH? When did you first become aware of these issues? What happened in response to these issues?

**A.** I became aware of this at QEUH via an IMT when two patients were identified as having Cryptococcus, which one of my colleagues advised me was running (I cannot remember who advised me).

d) Discuss your involvement at the Cryptococcus Sub-Group Meetings - actions taken, internal escalation: HPS involvement.

**A.** I only attended one meeting on 14th February 2019 when Tom Steele, Director of Estates and Facilities could not attend.

e) What, if any, external reporting occurred?

**A.** I was not involved in this

f) PAGs/ IMTs/ AICC and BICC involvement.

**A.** I don’t know I was not involved

g) What steps were taken in response/ precautions put in place?

**A.** I was aware of measures being taken through discussion within the senior manager’s meetings of Estates & Facilities e.g. plant room checks, cleaning, pest control measures such as netting. These were also rolled out across other sites within the Board.

h) Did you read John Hood's report?

**A.** I don't remember the report being shared with me. I had not been involved in the discussions therefore I do not recall seeing the report. I also had no involvement in Estates by this time either in my role.

i) When did you read John Hood's report?

**A.** N/A

j) What observations, if any, did you make after reading John Hood's report? What actions were taken following the John Hood report?

**A.** I don't have any I don't remember being issued with a copy of the report.

k) What else could have been done? How could matters have been handled differently? What concerns, if any, did you have about how matters were dealt with?

**A.** N/A

**Staffing and working environment**

150. What were the staffing levels like in estates at the point of handover? Where did the staff come from – were they mainly transferred from old site?

**A.** Staffing levels were low at the point of handover. Some staff decided to retire and some staff left shortly after handover. Staff came primarily from the sites which were closing supplemented by some recruitment- particularly for the 24/7 shift system and the estates management compliment. Many staff were new to estates in GGC and all staff were new to the new QEUH/RHC. There was no site or system familiarisation due to the creation of a new team for estates and facilities occurring after the project led sessions occurred. The team had never worked together. At handover there were also significant challenges in trying to

decommission the existing buildings from which staff came, technically and in maintaining them, until patients physically transferred to QEUH/RHC.

151. Concerns if any about staffing following handover – were staffing levels appropriate to manage workload? Refer to Bundle 8, Document 40, Page 206.

**A.** Staffing levels were not appropriate to handle workload following handover. In 2014, an Estates Maintenance Strategy had been developed by the Head of Maintenance, Mr Powrie, and the Project Director/Estates & Facilities Director Designate Mr Loudon. This document described the intent of the maintenance strategy and the indicative budgets required to deliver this compared to the FBC calculations. This report (Bundle 8, Document 38, Page 172) clearly identifies that the assumptions made exclude any non-routine maintenance /including major services, HAI related matters as they arise, management structure to implement and extraordinary breakdowns. It identifies that budgets were reduced for staffing and supplies (12% or £0.448m for staff and £1.2m for supplies = 59%) to match FBC cost predictions. It identified that this could probably be managed in the first two years due to the defect and liability period and the assumption that in the first two years or so there would be no significant issues or levels of breakdown. This was not the case at handover. Immediately from the first day of handover the Estates Maintenance Team were not resourced to address the volume and type of work they were expected to pick up on an ongoing basis. It also became apparent that support to address many of the issues needed to come from the Estates team rather than the project team as demonstrated by the number of contractors on site who needed to be managed. At the time the staff who were there worked as hard and quickly as they could to make the opening of the hospital and patient migration achievable. Workload was handled on a daily basis by dynamic operational risk management amongst the team.

152. Was appropriate training in place for new and existing staff on using new systems and working within the QEUH? How did you ensure that new and current staff were appropriately trained? Refer to Estates Team Bundle, Bundle

12, Document 5, Page 57 - what was this and what was the training like? How did this assist you and staff with working at QEUH – was it equipment focus, asset focused please describe.

**A**. At the time I was not fully aware of how poor the training provided was .This became apparent to me when working on documents for the Water Technical Group to try to gain a better understanding culturally of where the estates team was and what had happened to contribute to the ongoing challenges on site .I was aware at the time that sessions were being arranged and that staff could not be released from the sites for the training as staff still had their current base hospital duties and responsibilities to complete which made it nearly impossible to release staff to be trained . The document referred to is a signing in sheet for chilled water training – I later discovered most of the training provided was not practical training or system familiarisation. Most of the training was power point presentations and in this case that is what the training consisted of. Concerns were raised with me that we could not get staff to the sessions and keep the rest of the Health Board hospitals operational if staff were pulled from their bases. I agreed with Mr Powrie, Mr Gallacher, Ms Connelly and Mr Hunter that we would arrange further practical training from the system providers at the point of transfer of staff to allow the training to be completed and system familiarisation.

a) You advise that you were '*aware at the time that sessions were being arranged and that staff could not be released from the sites for the training as staff still had their current base hospital duties and responsibilities to complete which made it nearly impossible to release staff to be trained .'* What action, if any, did you take at the time to address this?

**A**. I discussed this with Karen Connolly, Commissioning Manager and Billy Hunter General Manager, South and Ian Powrie how we could address this moving forward. We agreed that sessions could be coordinated for staff moving forward with system suppliers that would provide this at times which suited staffing work profiles

b) Did you raise this as a concern with Mr Loudon? If so, what action did he take in response? If not, why not? Did you escalate this further?

**A.** I did not discuss this directly with David Loudon. However, Karen Connolly was directly involved and the Project Team as a consequence they were aware of the poor attendance levels. I did not formally escalate this

c) You '*agreed with Mr Powrie, Mr Gallacher, Ms Connelly and Mr Hunter that we would arrange further practical training from the system providers at the point of transfer of staff to allow the training to be completed and system familiarisation.'* Please confirm when this training took place. Were you satisfied that staff prior to patient migration became sufficiently trained and familiar with the system?

**A.** Training continued after opening the hospital. I cannot confirm exactly when and what training occurred. This was left for Ian Powrie and Billy Hunter to coordinate at local level. They both advised that training had been arranged and would continue with system suppliers as needed.

153. Who was responsible for providing staffing? Who was responsible for ensuring staffing was maintained- at sufficient levels?

**A.** The whole management team was responsible for this at various levels. However, even if the staffing levels had been at the budget set by the Board (not impacted by long term sick/retirements/annual leave etc), the circumstances at handover would still have meant there was inadequate levels of staff to complete the volume and complexity of work required due to the number of system failures.

a) At the time, with whom did you raise these system failures? If you did not raise these matters, why not?

**A.** David Loudon was aware of the system failures due to the overlap with the Project Team defect period and he was aware of the staff resource issue as was the Chief Executive

154. Did you ever raise concern regarding staffing levels?

**A.** On several occasions the whole management team expressed concern verbally to Mr Loudon.

a) What follow up action if any, did you take with Mr Loudon? Did you escalate it beyond Mr Loudon?

**A.** I never escalated beyond David Loudon any subject I didn't feel I could as the Chief Executive and the Corporate Management Team were aware of the issues at the QEUH and the staffing resource position

155. What was the working environment like when QEUH opened – work life balance/ workplace culture? What issues, if any, did you have? If so, what concerns did you raise? Who did you raise these concerns with?

**A.** The culture in estates & facilities when the hospital opened was that managers worked excessive hours on a consistent basis to keep up with workload. This often would be 10-14 hours a day and sometimes working weekends as well .There was no work life balance for many of us on the team .In 2013 ,routinely in order to deal with our day jobs and the planning involved in the new hospital we had to start working many more hours than we had historically (these had always been in excess of our contracted hours in any case) .This frequently led

to 50 -60 hour weeks in the workplace and in some cases work being completed at home over and above this .As the opening approached, 60 hour weeks became the norm during the handover period and for several years after handover many of us worked 14-16 hour days and on occasion 6 or 7 days per week .In order to keep up with the Board's expectations of us as a team the only way to do this was by working longer days and working harder .This was extremely stressful ,exhausting and impacted many of our families . This was the expected culture at the time in the Board as senior managers you were expected to work as many hours as it took to complete the tasks required of you and to provide any information required of you at any time of day or night. There was no one to raise this with as a concern. In my view this was the culture in the Board at the time. When I had a period of long term sick leave due to work related stress I requested a compressed working week to try to limit the number of hours I could physically work while in work – at the same time I expressed concerns for my colleagues that this was now the norm. I was advised compressed weeks were not appropriate for senior managers who required to be in the workplace 5 days a week and that the workload was not going to change in the foreseeable future at the QEUH/RHC.

156. Who was on site to manage and assist with carrying out works relating to equipment? How did this assist your workload in estates? To what extent, if any, was there a reliance on commercial third parties such as Multiplex when it came to staffing levels?

**A.** Multiplex contractors on site dealt with snagging, defects, warranty issues. They did not pick up on any of the ongoing operational issues or day to day demands. The local estates team required with all jobs raised by the building users to identify if the issue was a defect /snagging issue and report this as well as trying to maintain services using paper systems with no comprehensive asset list or tagging provided to develop a robust CAFM. Commercial third party providers were used by the Estates Team to supplement staffing levels when required. It would have been impossible to keep the hospital operational without using external contractors.

157. Generally – discuss the workplace environment and culture – What concerns, if any, did you have?

**A.** It was all I knew. I had never worked in any other organisation than NHS GGC since I left school. Over the years and as I achieved promotion more was expected of me in terms of pace of work, availability outside work hours and volume of work. This changed over the period from 2010 when the organisational change occurred to create a single Health Board. As the roles became bigger for posts the ability to manage detail and volume of information became extremely challenging. In my case this detrimentally impacted my health both on the short term and still to this day

158. Describe the handover process – did it run smoothly or not? What concerns, if any, did you have in the run up to handover? What matters did you feel went to plan and what, if any, matters, had not gone to plan?

**A.** The handover was not smooth. The only thing that went to plan was patient migration dates were complied with. The HR transition of staff went well which was a very complex piece of organisational change impacting hundreds of estates and facilities staff. The range of issues described throughout this questionnaire demonstrate that it did not go to plan and that the estates and facilities teams were persistently under pressure due to the failings of the building and the contractual arrangements.

159. NHS GGC took handover from Multiplex earlier than initially contracted for – what did you think about this. Why did it happen? Was the early handover appropriate in the circumstances? Please explain why it was appropriate or not.

**A.** This was not something I was involved in. I was advised that handover would be earlier than anticipated at the same time as everyone in the Board. I do not know why handover occurred early however in the circumstances I do feel that the time constraints of an early handover may have been a major contributory factor to the range of issues then encountered. More time could have been spent addressing the issues found at handover before occupation by patients.

160. In 2019 a Stephanie Dancer began working as a microbiologist at QEUH:

a) Had you ever worked with Stephanie Dancer previously?

**A.** Yes, in the late 1990's/early 2000's.

b) Describe your working relationship with her at QEUH

**A.** I did not work directly with Dr Dancer at the QEUH. My understanding was she was working as a locum supporting Microbiology.

c) Did you ever raise any concerns regarding QEUH with her? If so, what?

**A.** No, I did not raise concerns directly with her. I do recall speaking to her whilst waiting for Dr Inkster, in a social manner. I probably did say that there had been numerous issues at the QEUH/RHC since it opened and that I had raised this when I came back from sick leave. About 10 days later an FOI was received asking for copies of documentation exchanged between myself and SG/HFS/Senior Managers on concerns at the QEUH/RHC.

161 Is there anything further that you want to add that you feel could be of assistance to the Inquiry?

**A**. The estates team in particular worked as hard as they could and as many hours as they could to maintain services. They were not recompensed for this by the Board and the Working Time Regulations were routinely breached by managers in particular. The estates team's sole focus was on providing a functional hospital for patients which was safe. The situation they were faced with was untenable; the hospital had multiple serious defects which directly impacted safe clinical care which were repeatedly dismissed by the Project Team, Technical Advisors and Multiplex. The estates staff were made to feel that their opinions were worthless and, at best, that they were incompetent in the interpretation of guidance. The water incident itself was a new fast moving, rapidly evolving situation of which none of us had any experience and for which there was no guidance. Inadequate resources and training issues/competency of staff are still the number 1 risk identified in NHS Scotland by the Scottish

Engineers Technical Advisory Group in their risk register .It is my hope that this public inquiry changes the built environment standards and resourcing required to maintain and manage effectively health care buildings and that the role the built environment plays in safe patient care is acknowledged professionally by clinical and management teams in the NHS on an equal footing with clinicians.

162. In being responsible for the operational delivery of estates and facilities within NHS GGC, what responsibility, if any, did you have to ensure that the QEUH/RHC site was fully operational for the delivery of estates and facilities?

**A.** Post-handover of the building this would normally have been my responsibility. However, in the case of the Project due to the two-year defect period and my understanding of my role at that time as Interim Director it was my view that Estates mobilisation and site readiness was the responsibility of David Loudon and Ian Powrie.

163. How, if at all, did this extent to ensuring that commissioning and validation of the ventilation and water system had been carried out?

**A**. It did extend to these areas however based on previous experience of capital projects and my understanding of my role at that time I believed this was the responsibility of the Project Team.

164. In respect of commissioning and validation please confirm the following:

a) Describe your role in the lead up to commissioning. What action, if any, did you take to ensure that the wards within RHC and the QEUH met the guidance requirements of SHTM.

**A**. I had no direct role in the lead up to commissioning. I believed it was the responsibility of the Project Team and in particular David Loudon as the incoming Director of Estates & Facilities to ensure that all guidance including SHTMs was complied with. I was never asked by the Project Team to take such a role

b) Describe what commissioning of the water and ventilation system took place prior to handover, and your involvement, if any.

**A.** I had no involvement in these.

165. Who was responsible for ensuring that commissioning of the water and ventilation system was carried out, and who signed off that it had been carried out? What role, if any, did NHS GGC have in respect of ensuring that commissioning of the water and ventilation system had been carried out, and who was responsible from NHS GGC for ensuring this had been done? What concerns, if any, did you have regarding commissioning and validation being carried out prior to handover?

**A.** The Project Team and David Loudon were responsible for commissioning the systems. NHSGGC through the Project Team should have ensured that the systems were fully commissioned and that documentation was available to demonstrate this against national standards. I had no concerns as I expected the Project Team to do this as there were very experience capital and technical managers in the team (Peter Moir and Frances Wrath)

a) The Inquiry understands that NHS GCC decided to forgo the requirement to have an independent commissioning engineer. Who made this decision? What was the impact, if any, of this decision? In hindsight, do you think that it was the correct decision?

**A.** I do not know who made this decision. An independent commissioning manager would have been a direct resource to focus on commissioning systems in accordance with healthcare requirements including ensuring relevant documentation was in place. I feel in hindsight that this role and clerk of works inputs (at a higher level than provided) would have improved the visibility of potential risks and provided the ability to address these as they were occurring

b) The Inquiry understand that no validation was carried out in respect of the ventilation system. When did you become aware of this? How did handover

come to be accepted without the ventilation system being validated? Who was responsible for this and who signed off on this?

**A.** I learned of this in Spring/Summer 2022. Handover of the hospital should not have been accepted without this in my view. The Project Team were responsible for this as part of the project. I do not know who specifically signed off on this as I never had any discussions on the terms of the contract at any time with the Project Team

c) Professor Craig Williams has given evidence to the Inquiry during the hearings commencing 20 August 2024 that the Project Team provided him with assurances that validation was carried out and had been done appropriately. How were the Project Team able to make these assurances given that validation had not be carried out in respect of the ventilation system?

**A.** They couldn't and shouldn't. I too believed this position when advised by David Loudon that the systems were all ready for handover

**Declaration**

I believe that the facts stated in this witness statement are true. I understand that proceedings for contempt of court may be brought against anyone who makes, or causes to be made, a false statement in a document verified by a statement of truth without an honest belief in its truth.

The witness was provided the following Scottish Hospital Inquiry documents for reference when they completed their questionnaire statement.

**Appendix A**

**A43255563** - Scottish Hospitals Inquiry - Hearing Commencing 12 June 2023 - Bundle 1 - Incident Management Team Meeting Minutes (IMT Minutes)(External Version)

**A42959603** - Scottish Hospitals Inquiry - Bundle of Documents for the Oral Hearing Commencing 12 June 2023 - Bundle 4 - NHS Greater Glasgow and Clyde: Situation, Background, Assessment, Recommendation (SBAR) Documentation

**A43293438** - Scottish Hospitals Inquiry - Hearing Commencing 12 June 2023 - Bundle 6 - Miscellaneous documents (External Version)

**A43941023** - Scottish Hospitals Inquiry - Bundle of documents for the Oral hearing Commencing 12 June 2023 - Bundle 8 - Supplementary Documents

**A47069198** - Scottish Hospitals Inquiry - Hearing Commencing 19 August 2024 - Bundle 12 - Estates Communications (External Version)

**A47175206** - Scottish Hospitals Inquiry - Hearing Commencing 19 August 2024 - Bundle 9 - QEUH Cryptococcus Sub-Group Minutes (External Version)


**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**

**Witness Statements – Volume 1**
**Week Commencing 12 May 2025**

A52832909