SCOTTISH HOSPITALS INQUIRY

Hearing Commencing 26 February 2024 – Bundle 9 – Documents relevant to NHS Assure

Table of Contents

1.	A32341688	Target Operating Model document for the Centre of Excellence	Page 4
2.	A43494369	Letter dated 27 May 2021 from Richard McCallum, Director of Health Finance and Governance to NHS Board Chief Executives and others	Page 70
3.	A43494372	Letter dated 6 February 2023 from Alan Morrison, Deputy Director of Health Infrastructure, Investment and PPE to NHS Board Chief Executives and others	Page 75
4.	A43409819	Typical Project Structure Chart	Page 76
5.	A43406006	Senior Management Organigram	Page 77
6.	A43406095	NHS Scotland Assure Organisational	Page 78
7.	A43406829	Project Procurement Journey and KSAR Process Interface Diagram	Page 90
8.	A43408125	ARHAI Operating Model Strategy	Page 91
9.	A43408629	NHS Scotland Assure Strategy 2023 – 2026	Page 97
10.	A43494371	KSAR Initial Agreement Workbook	Page 107
11.	A43494374	KSAR Outline Business Case Workbook	Page 120
12.	A43494373	KSAR Full Business Case Workbook	Page 151

13.	A43494368	KSAR Construction Workbook	Page 183
14.	A43494367	KSAR Commissioning Workbook	Page 213
15.	A43494370	KSAR Handover Workbook	Page 249
16.	A45944686	The template Environmental Matrix provided by NSS	Page 267

Quality in the Healthcare Built Environment (QHBE)

Target Operating Model

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Contents

- **Executive Summary** **3**
- **Chapter 1: Introduction and Context** **4**
- **Chapter 2: Model Overview – What is the QHBE?** **10**
- **Chapter 3: Detailed View of the Model** **23**
- **Chapter 4: Implementation** **46**
- **Chapter 5: Cost Model** **50**
- **Appendix** **53**
  - Appendix A: User Research Key Insights 54
  - Appendix B: User Journey 59
  - Appendix C: Compliance Model 65

Executive Summary

NHS National Services Scotland received a commission from the Scottish Government to support the creation of Quality in the Healthcare Built Environment (QHBE).

The following ambition was outlined in the 2019/2020 Programme for Government in response to recent issues and incidents identified in the built environment of the new hospitals reported at the Queen Elizabeth University Hospital (QEUH) and Royal Hospital for Children and Young People (RHCYP).

"To ensure patient safety we will create a new national body to strengthen infection prevention and control, including in the built environment. The body will have oversight for the design, construction and maintenance of major infrastructure developments within the NHS and also play a crucial policy and guidance role regarding incidents and outbreaks across health and social care."

The Scottish Approach to Service Design (SAtSD) was implemented to design the QHBE. The vision for the SAtSD is that the people of Scotland are supported and empowered to actively participate in the definition, design and delivery of their public services.

Through implementing this approach, the service users told us that there were wider issues across the system, and worked with us to design services which meet their needs.

The QHBE has been designed to improve the management of risk in the built environment across Scotland, providing greater confidence to stakeholders.

The QHBE will have five key functions which have been designed to align to the Healthcare Improvement Scotland Quality Management framework.

This model is enabled by establishing robust relationships across the system, having joint accountability alongside NHS Boards and will, for the first time, provide a structured forum that will enable construction professionals and clinical colleagues to work in an integrated manner to ensure that the healthcare built environment is safe, fit for purpose, cost effective and capable of delivering sustainable services over the long term.

The key functions will have a range of new services to support the management of risk in the built environment across Scotland. For some of the services, elements are already being delivered across the system, and where this is the case, enhancements will be made.

To provide assurance to the Scottish Government that current new builds and major refurbishment projects are being delivered in line with guidance, and are therefore fit for purpose and free from avoidable risk of harm, an interim Review Service will be established and will operate until the QHBE is implemented. To make this happen, detailed plans have already been developed to allow this service to operate throughout Year 0 (20/21).

The approach to implementation will also follow the SAtSD in which we will work with service users to design 'how' the QHBE should operate. The QHBE services will be implemented in a phased approach, allowing us to test and iterate the designs with users to make sure that the services are fit for purpose, and to ensure we manage the resource implications at national, regional and local levels to ensure the system is not overburdened.

Chapter 1: Introduction and Context

Balance of Components

To create a safe, effective, person-centred healthcare built environment we need to find a balance between the components of patient comfort and wellbeing, infection and other harm prevention, sustainability, cost and time.

There are a number of competing policies, and we need to get the balance right and keep people safe.

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Creating safe environments

The buildings we deliver healthcare in, and the environments in which healthcare delivery happens, play a large part in preventing and controlling the risk of transmission of infection and other harms.

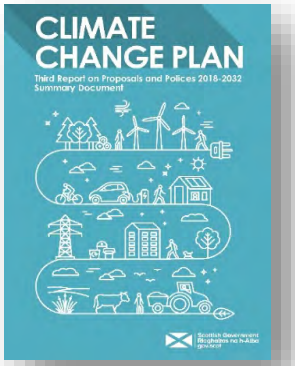
"Every system is perfectly designed to get the results it gets."
(Batalden)

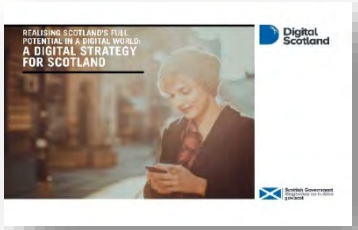
We need to create a system which is safe, resilient and not vulnerable to these risks; where these can be prevented. We also need to make sure our buildings are compliant with best available evidence in all aspects of safety, and that the system is designed and built to be safe at the point of initiation of services, and for ongoing maintenance.

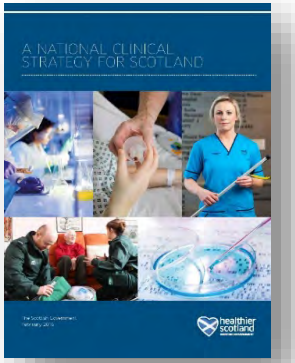
Strategic alignment

Connecting clinical strategy to a safe, effective and efficient healthcare environment.

Managing risk in the healthcare built environment sits in the context of other NHS and national policies. The QHBE needs to operate in this area to find new, efficient and different ways of working to ensure we meet the needs of policy, but also the needs of the healthcare built environment to keep patients safe.
For example, the Climate Change Plan says we should not build new, but when we do build, buildings should be energy efficient. Hospitals tend not to be energy efficient by nature and we have plans across Scotland to continue building, so we need to find a way to manage these competing policies.







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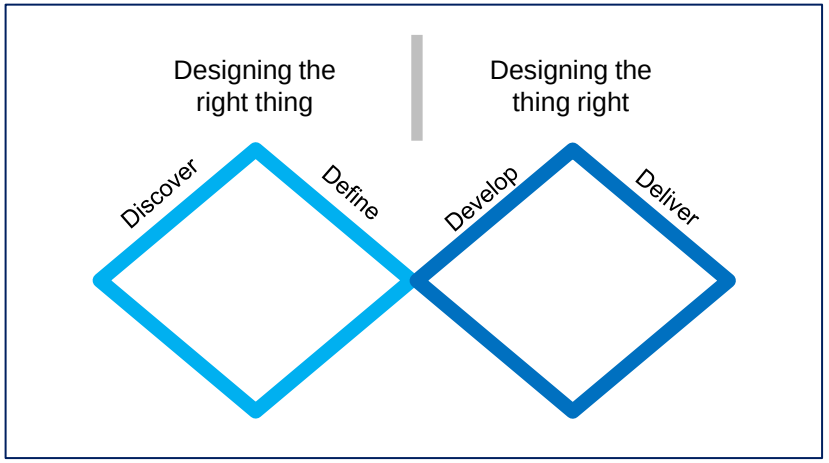
Approach

This design of the QHBE is being delivered in accordance with the Scottish Approach to Service Design, a framework to guide how we design user-centred public services developed by the Scottish Government.

The Scottish Approach to Service Design (SAtSD) is that service users are supported and empowered to actively participate in the definition, design and delivery of services. As the QHBE will be a service-to-service model, the users will primarily be staff working within healthcare at a local, regional and national level across Scotland.

The SAtSD approach aims to ensure that we don't just design services in the right way, but that we design the right services. The approach has a set of founding principles:

1. We explore and define the problem before we design the solution.
2. We design service journeys around people and not around how the public sector is organised.
3. We seek users' participation in our projects from day one.
4. We use inclusive and accessible research and design methods so users can participate fully and meaningfully.
5. We use the core set of tools and methods of the Scottish Approach to Service Design.
6. We share and reuse user research insights, service patterns, and components wherever possible.
7. We contribute to continually building the Scottish Approach to Service Design methods, tools, and community.



The Design Council's Double Diamond model is a visual diagram, above, that outlines the design stages. It shows the importance of taking time to understand the problem before designing solutions.

Each diamond shape illustrates the process of creating or exploring many possible ideas before refining these to the best idea.

The first diamond does this to confirm the problem, and the second to design the solution.

The SAtSD is an iterative approach to developing services, keeping users involved throughout; as such, as a project develops, designers may go through the double diamond several times.

Who we spoke to

To really understand the challenges of managing risk in the healthcare built environment we need to understand what people are already doing across the system locally, regionally and nationally, the contexts of the roles they perform, and how the QHBE could support them in their roles.

Who we spoke to

Stakeholder engagement activities and user research was undertaken with:

- Infection Control Nurses (ICN)
- Infection Control Managers (ICM)
- Scottish Association of Medical Directors (SAMD)
- Scottish Executive Nurse Directors (SEND)
- Scottish Engineering Technology Advisory Group (SETAG)
- Scottish Property Advisory Group (SPAG)
- HFS conference
- HPS ARHAI Group
- Scottish Facilitates Management Advisory Group (SFMAG)
- Board Chief Executives
- Regional Strategic Facilitates Group (RSFG)
- Directors of Finance
- Directors of Public Health
- Healthcare Associated Infection (HAI) Exec Leads
- 2 national events* (over 100 attendees at each event)

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* Some of the roles represented at national events

- Consultant Epidemiologist
- Director of Capital Planning and Projects
- Infection Control Manager
- Head of IPC
- Head of Estates
- Engineering and Systems Lead
- Director of Facilities & Infrastructure
- Senior Technical Advisor, Decontamination Services
- Consultant Infectious Diseases and Medical Microbiology
- GP Assistant Director
- Head of Decontamination and Incident Reporting Investigation Centre
- Head of Commercial Property Department
- Head of Commercial Contracts Department
- Maintenance Manager
- External Supplier
- Deputy Chief Executive
- Head of Quality of Care
- Staff representative
- Lead HAI Scribe Advisor
- Deputy Director of Evidence
- Director of PSSD
- Estates & Asset Management Advisor
- Honorary Research Associate and Specialty Registrar
- Infection Control Nurse
- Senior General Manager
- Head of Operations - Hard FM
- Head of Programmes
- Capital Projects Manager
- HAI Executive Lead
- Assistant Director of Estates and Property
- Medical Director
- Head of Domestic & Support Services
- Assistant Director of Clinical Support Services

Roles/groups represented on the Programme Board

- ICM Representative
- ICN Representative
- ICD Representative
- Clinical Director
- SFMAG Representative
- SPAG Representative
- SETAG Representative
- HPS Associate Director
- HPS ARHAI Operational Lead
- HPS ARHAI Clinical Lead
- HFS Property and Capital Planning Representative
- HFS Director
- HFS Mechanical and Engineering Representative
- Strategic Facilities Group Representative
- Scottish Government Sponsor Representatives
- NSS Director of Nursing
- Staff Side Representative
- NSS Director of Finance

Our Research

The user research sought to understand users' experiences, pain points of managing risk in the healthcare built environment, and what they want and need from the QHBE.

Key Themes:
Data from user research activity was synthesised and aggregated into 14 themes:

- Future design
- Culture
- Creating an environment of collaborative knowledge
- Creating a team of interdisciplinary experts
- Skills and training
- Having experts available at the right points in the processes. i.e. IPC, Estates and Executives
- National and local
- Procurement
- Guidance
- Change control
- Governance
- Ongoing maintenance
- Design
- Functions of QHBE

Key Principles:

Three key principles for our design which are based on user research are:

- Connecting national to local
- Accessing expertise
- Collaborating across the system

The full summary of user research key insights can be found at Appendix A.

Chapter 2: Model Overview – What is the QHBE?

Vision and purpose

The QHBE will improve the management of risk in the healthcare built environment across Scotland, providing greater confidence to stakeholders.

Vision

To be an internationally recognised national centre for reducing risks in the healthcare built environment and ensuring they are safe*, fit for purpose, cost effective and capable of delivering sustainable services over the long term.

**Safe means free from avoidable harm including infection, burns and electrocution, ligature and medical gases intoxication.*

Scope

It is the intention that the QHBE and its functions will be for all NHS health and care environments where healthcare is delivered, and will cover the full lifecycle of a build, from strategic assessment through to building operations and ongoing maintenance to decommissioning. The QHBE will consider all types of risk as it relates to the built environment.

The QHBE will not:

- Address or seek to change legal responsibilities of NHS Boards or primary legislation.
- Create a Central Building Division as NHS Boards need to remain accountable for their projects and current estate. By creating a Central Building Division we would just move the accountability from boards to a central function, and this would require legal changes.
- Address non NHS Healthcare environments e.g. private dental practices.
- Develop an inspection function. We recognise the synergy with the inspectorate and will connect and underpin inspections through the provision of intelligence and subject matter expertise.

What's new?

Current State

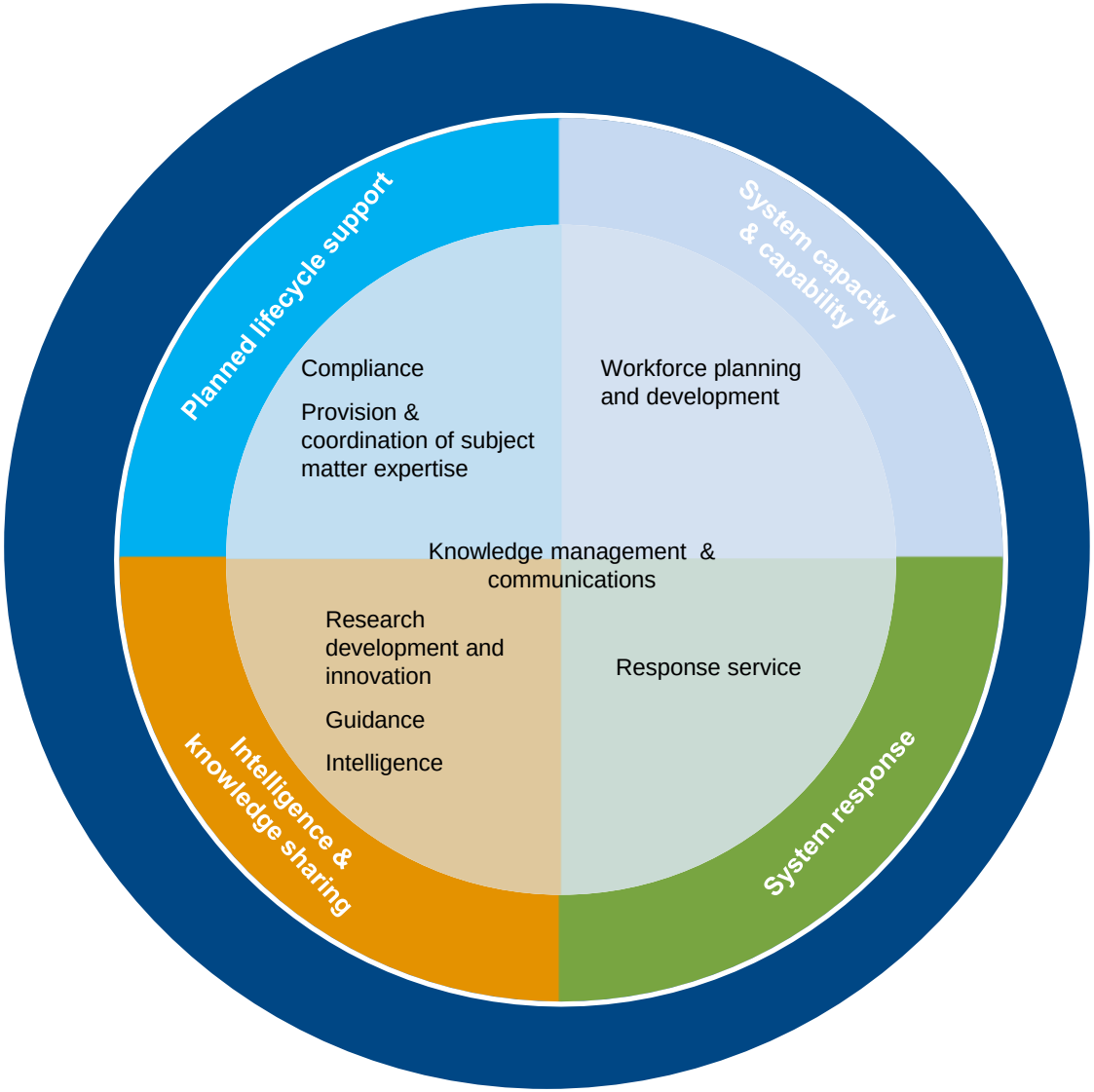
- **Boards sign off** documents for builds and major refurbishments at key stages in the lifecycle
- Boards access **voluntary** support from HFS and HPS
- Expert **Advice** from HFS and HPS
- **No environmental laboratory advice**/guidance
- Currently, there is **no built environment input** to HIS Inspections
- **Silos** in research in single academic disciplines and institutions
- Currently, there is **no national specialist workforce plan** for facilities and IPC
- **UK** priority guidance
- Currently there is an **inability to view a digital component** or area of a build to assess compliance
- **Silos** between professions

Future State

- QHBE **jointly sign off** documents on builds and major refurbishments at key stages in the lifecycle
- **Mandatory** involvement from the QHBE
- **Quality Management System (QMS)** for the healthcare built environment
- Expert advice to **environmental laboratory commissioning and testing**
- QHBE will work with HIS to develop and support new **inspection methodology**
- **Coordinated** research portfolio
- **National** specialist workforce plan and development
- **Scottish** priority guidance
- **Digital** twinning
- Provide a **structured forum** that will enable construction professionals and clinical colleagues to work in an integrated manner

Key functions

The QHBE Target Operating Model (TOM) will have five key functions in which there are a range of services to support the management of risk in the built environment across Scotland.



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Core Services

The key functions will have a range of services to support the management of risk in the built environment across Scotland. For some of the services, elements are already being delivered across the system, and where this is the case, enhancements will be made.

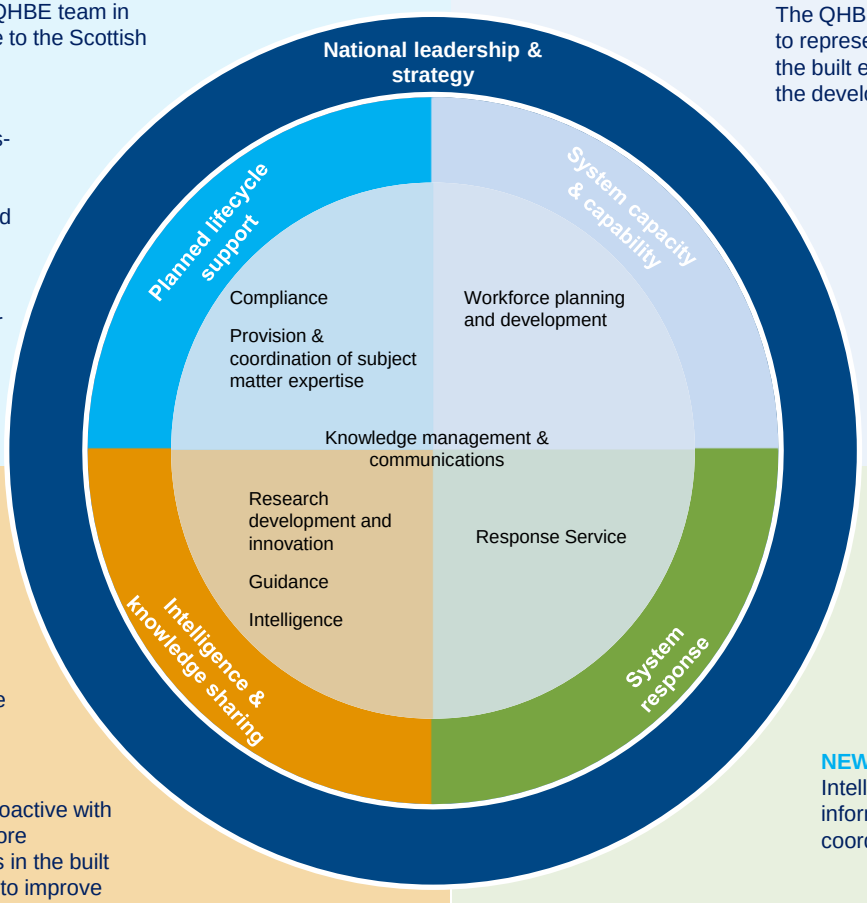
NEW: Compliance is a new service offering. Key Stage Assurance reviews will be undertaken by the QHBE team in collaboration with boards to provide assurance to the Scottish Government that guidance has been followed.

ENHANCED: Provision & coordination of SME support will provide guidance and hands-on support to boards to manage risks in the built environment. Providing staff to smaller boards with niche/specialist expertise (in limited supply). The QHBE will have visibility around where this support is most required and allocate resource accordingly.
The QHBE will connect boards to access other services across NSS and wider to better support them to manage risk in the built environment.

NEW: Research is a new service offering which will see the QHBE deliver a coordinated research portfolio to support the development of evidence-based guidance.

ENHANCED: The QHBE will have increased capability to develop and maintain **guidance** and **standards** by which compliance within the healthcare built environment is measured and assurance can be provided.

ENHANCED : Intelligence services will be proactive with enhanced analytics capabilities to provide a more preventative approach to better managing risks in the built environment. The QHBE will work with boards to improve the consistency and quality of data collected.



NEW: National leadership & strategy
The QHBE will have an overarching leadership role to represent NHS Scotland's work to manage risk in the built environment at a national level and influence the development of new policy.

NEW: Workforce planning and development: the QHBE will assess the workforce requirements across Scotland as it relates to the healthcare built environment, considering succession planning and implement plans to recruit and train staff to ensure there are the right skills in the right places across Scotland.

NEW: A Knowledge management and communications service will ensure research, intelligence and learning are more systematically shared to ensure the information is in the hands of those staff in boards who need it. The service will also support boards to undertake evaluations, and with external communications and stakeholder management when issues arise.

NEW: The Response Service will link with the Intelligence Service to identify and share information on issues identified by boards and coordinate a national response where required.

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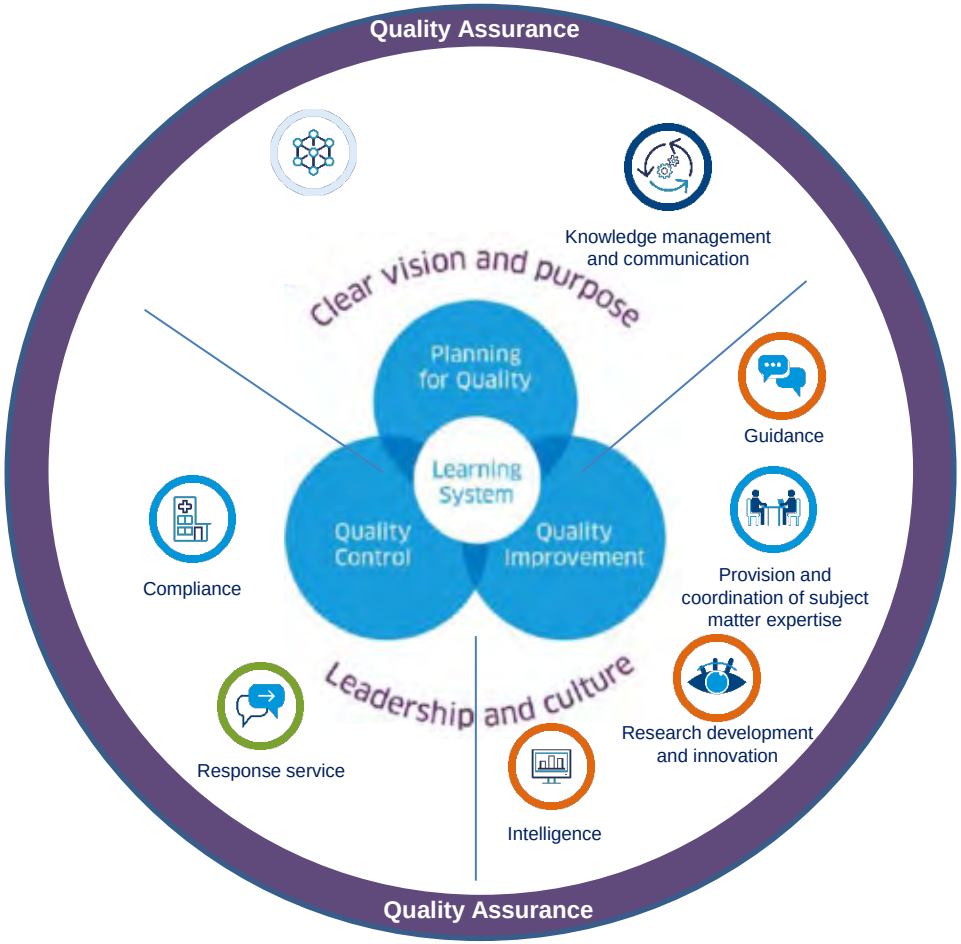
Framework for the model

The QHBE will adopt the Healthcare Improvement Scotland (HIS) Quality Management System.

Planning through the use of intelligence capabilities that enables a proactive and preventative approach to monitoring and managing risk.

Assurance and Control through collaborative working with Boards to ensure healthcare built environments are compliant with Guidance.



Improvement through research and the production of evidence based guidance. Enhanced capabilities and capacity and better deployment across the system.

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Governance and relationships

The QHBE will build robust relationships across the system and will have joint accountability along with NHS Boards for sign-off. QHBE will work with Healthcare Improvement Scotland to ensure its inspection function is integrated into the QHBE.

Relationship with NHS boards

The QHBE will work with NHS Boards to deliver its services, ensuring transparency and ongoing reciprocal discussion of issues as they arise. Each Report and remedial action plan will be jointly signed off by the QHBE and NHS Board, with the QHBE being jointly liable along with the NHS Board.

Relationship with Healthcare Improvement Scotland

Healthcare Improvement Scotland (HIS) will continue to undertake inspections of NHS Hospitals and services through the Healthcare Environment Inspectorate (HEI). Healthcare Improvement Scotland supports the principle of having a single inspectorate function and will work with the QHBE to develop this. A framework document between the two organisations will be developed to outline the relationship shown in the governance model on page 44. This will include:

- Sharing of intelligence.
- Accessing expertise to support inspections.

During Year 0, Healthcare Improvement Scotland will:

- Develop and, if possible, test a robust methodology.
- Agree the frequency of inspections.
- Review the resources to carry out the inspections.
- Devise a business case for the programme of work.
- Review whether their powers are sufficient or if they need extended (to include hospitals before they are occupied).

Relationship with Scottish Government

The QHBE will be accountable to the Scottish Government and, to ensure the QHBE can provide assurance to Scottish Government that the healthcare built environment is safe, fit for purpose, cost effective and capable of delivering sustainable services over the long term, the Scottish Government will ensure the QHBE is provided with the necessary mandate support and resources to enable it to define new ways of working to achieve this.

Levels of authority

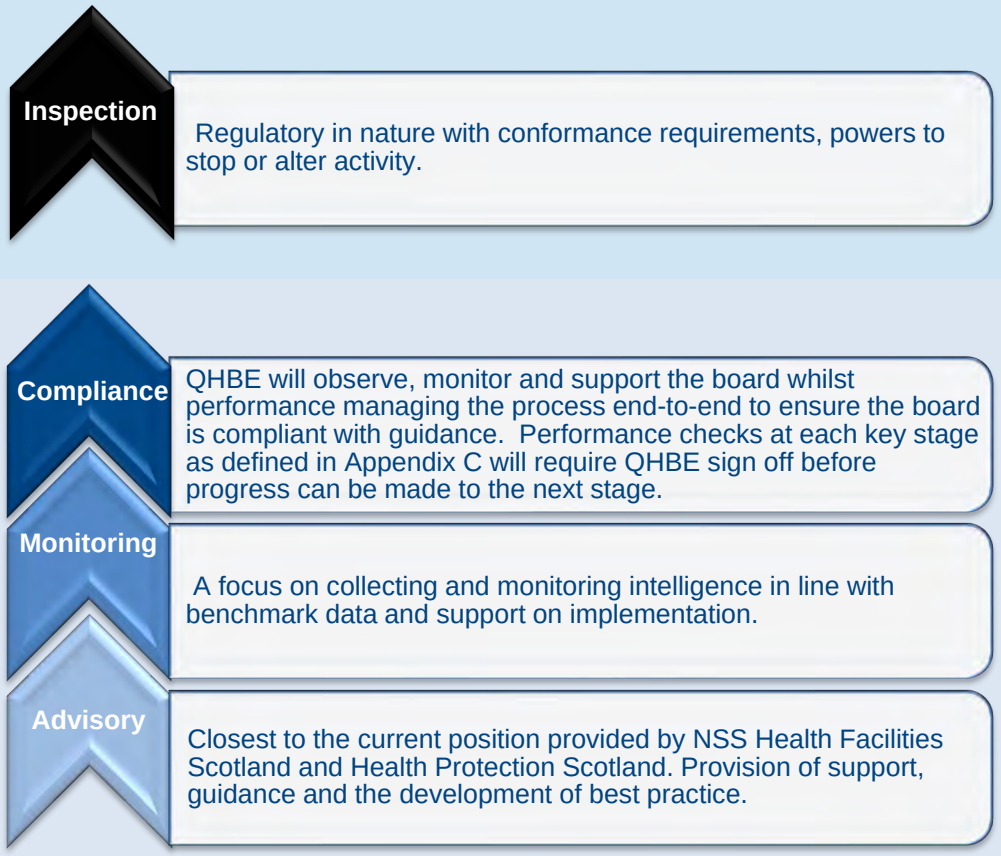
Four levels of authority have been considered, from the current 'advisory' level through to an increased responsibility for performance monitoring and management (compliance), and finally an inspection-based responsibility.

The QHBE will work to support HIS in their inspection role.

The QHBE will **not** operate in an inspection or enforcer capacity. This will continue to be carried out by organisations such as HIS and HSE.

The QHBE will operate in an advisory, assurance and compliance capacity, and will underpin inspection standards and processes.

This role will see the QHBE working jointly with boards throughout these 3 levels, with approval of reports and action plans.



Intelligence will be shared between the QHBE and bodies in the inspectorate/ enforcer capacity to ensure that inspections are risk based and proportionate.

Culture

The user research phase identified that getting the right culture and working relationship between boards and the QHBE was critical to enabling the successful delivery of QHBE services. The following attributes were highlighted:

Openness and transparency

- The QHBE should be transparent in its priorities and in the work that it undertakes.
- The QHBE should be open and approachable. Boards should feel they can 'phone a friend'.
- Boards need transparency around how the QHBE will work with Scottish Government.

Mutual respect

- There should be mutual respect between the QHBE and boards.
- The QHBE and boards should seek to build a listening culture, respecting each other's advice.

Safe space for honest conversations

- Boards should be able to have an honest conversation with the QHBE, which allows debate and without fear of potential ramifications.
- Boards should be approachable and willing to engage with the QHBE.

Trusting and supportive relationship

- The QHBE and boards need to be able to trust one another.
- The QHBE will support boards in the work they do, preventing boards from feeling scrutinised.
- The QHBE will jointly manage stakeholders and suppliers.
- The QHBE will help provide confidence to boards in what they are doing.
- The QHBE will provide a structured forum that will enable construction professionals and clinicians to work in an integrated manner.

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Impact: realistic view of risk

The QHBE will seek to improve the management of risk in the built environment across Scotland through increasing support to boards and the range of services on offer.

A realistic view of risk

Over the years, significant improvements have been made to reduce risk in the built environment, with infection rates down and improved health and safety standards. The need for the QHBE recognises that there is still more to be done to reduce risks in this area, however it is unrealistic to expect that the QHBE will be able to reduce or eliminate risk completely.

QHBE's role in the reduction and management of risk

Where risks remain, the QHBE will seek to improve the management of those risks and support boards to manage decision making processes and trade-offs between quality, cost and time.

The QHBE will have an interdisciplinary approach to the end-to-end risk management of the built environment process and cycle, regardless of funding models.

It will do this by:

- Implementing a truly interdisciplinary team approach involving microbiologists, infection prevention and control nurses, architects, planners, engineers, healthcare scientists, data managers and administrators.
- Being focussed on expertise from research, guidance, intelligence and specialist workforce development; connecting national expertise to local requirements.
- Ensuring the development of learned experience and knowledge moving from one project to the next.

Impact: benefits

Over time the QHBE will extend its capabilities to take an increasingly proactive and preventative approach, improving the identification of risks and the coordination of a response across the system to ensure:

Increased patient safety by reducing the risk of healthcare associated infections and other avoidable harms such as burns, electrocution, ligature injury, and medical gas intoxication.

Reduced costs in relation to building retrofit costs, delays to opening new hospitals and additional length of stay in hospital settings due to healthcare associated infections

Increased public confidence through the creation of a national body of expertise which will be a trusted independent voice. This will enhance confidence in how healthcare environments are built, refurbished and maintained, to minimise the risk to the public in relation to the wider built environment risk, but also in relation to how the risk of infection is managed across the healthcare environment.

Sustainability by ensuring more flexibility, adaptability and ‘future-proofing’ of infrastructure, and also finding innovative solutions to energy efficient hospital design.

Strengthened clinical outcome-focused relationships in the built environment through creating a whole system approach in healthcare; relationships will be strengthened nationally and locally.

International leadership with increased connections with expertise across other countries.

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Getting started - Year 0 (20/21)

To provide assurance to the Scottish Government that current new builds and major refurbishment projects are being delivered in line with guidance and are fit for purpose and free from avoidable risk of harm such as healthcare associated infections, burns, electrocution, ligature injury, medical gas intoxication, an interim Review Service will be established and will operate until the QHBE is implemented.

The Quality in the Healthcare Built Environment **Review Service** will operate as a shadow organisation from **1 April 2020 until 31 March 2021**, at which point the service will align with the newly defined Compliance Service.

The Review Service will focus on 6 priority systems: water, ventilation, drainage, electrical distribution (including medical locations), fire and medical gases, and will cover the below priority areas as set by the Scottish Government:

- Baird and ANCHOR.
- Golden Jubilee National Hospital – Phase 1.
- Golden Jubilee National Hospital – Phase 2.
- NHS Lothian Elective Programme.
- NHS Highland Elective Programme.
- Critical Care Units.
- All remaining Elective Care Centres.
- All other requests will be discussed and prioritised by Scottish Government.

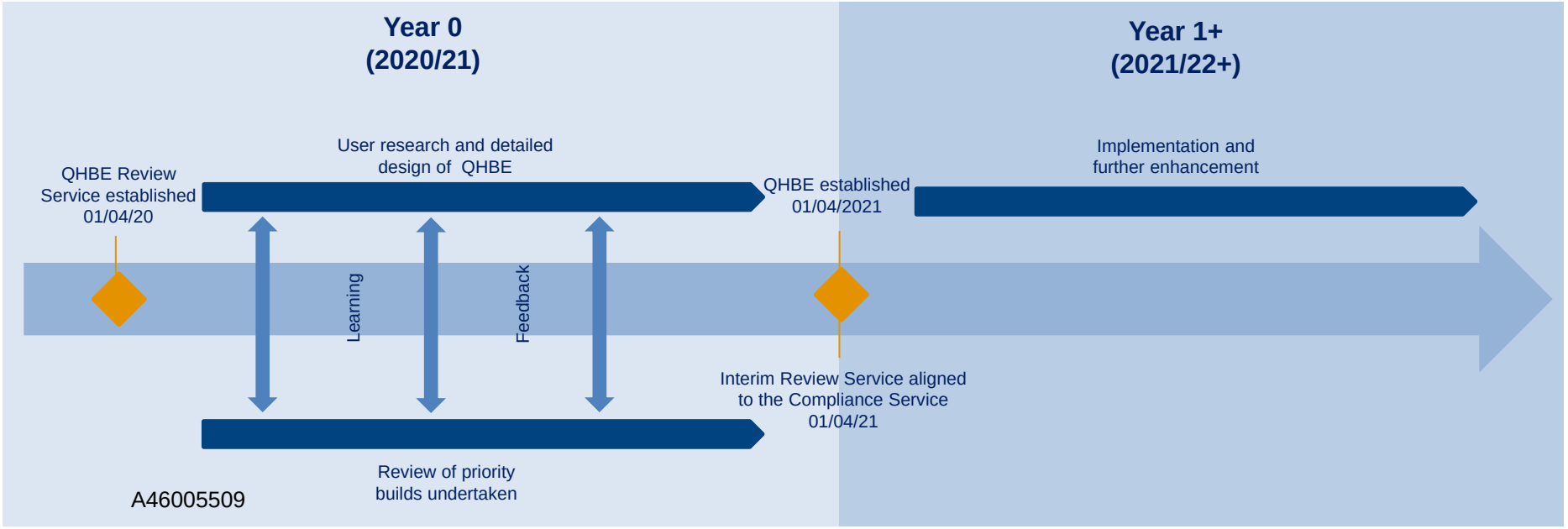
Timelines

To make this happen, detailed plans have already been developed to allow the Quality in the Healthcare Built Environment Review Service to operate throughout Year 0 (2020/21).

The Quality in the Healthcare Built Environment (QHBE) Review Service will operate as shadow organisation from 1 April 2020 until 31 March 2021, at which point the service will align with the newly defined Compliance Service. Throughout Year 0 the programme team will work with stakeholders across the system to develop and implement the detail for the QHBE in accordance with the Scottish Approach to Service Design.

A continuous feedback loop will be in place between the Review Service and the QHBE Programme Team to take on board any lessons being learnt throughout the review process and to build these into the service designs.

Once the QHBE is established on 1 April 2021, the QHBE will move into a phase of further enhancements and continuous improvement as per the service plan which is detailed within the full Implementation chapter.



Chapter 3: Detailed View of the Model

Developing the design

A target operating framework has been used to articulate how an organisation is arranged around the eight layers noted below, and how they function together to deliver the vision for the QHBE

Service users	Who will use the service?
Channels	How will your service users access and interact with the body?
Services	What services/functions will your body provide?
Data	What type of information is required to make effective decisions and offer insights?
Technology	What are the technology requirements to enable the body to operate effectively?
Capabilities and culture	What mix of skills and capabilities are required to deliver the model? What cultural principles are required to ensure its success?
Location	What estates requirements are there to provide the services?
Governance	What are the lines of accountability, decision making and managing performance?

Service users

As this model is service-to-service, the primary users will be NHS boards to which the QHBE will provide a range of services. Other users will receive a more limited number of services to support them in their roles and increase confidence across the system.

Primary users	Boards	Boards will be provided with all of the services delivered by the QHBE to support them to manage risk in the built environment. Some services will be provided equally across all boards e.g. sharing of research. Other services will be provided based on the needs of individual boards and levels of risk.
Primary users	Scottish Government	The Scottish Government will be provided with a quality management system to reduce risk. An aggregated view around the need for capital investment, projects in progress and how well risk is being managed within the built environment will be provided.
Secondary users	Other UK and international health systems	As Scotland leads the way in the management of risk in the built environment, the QHBE will seek to share its learning, expertise and intelligence across the UK and beyond.
Industry	Contractors	The QHBE will provide guidance and training frameworks outlining the expectations around the skills that contractors are required to have to undertake specific roles, as well as access to training materials.
Wider beneficiaries	Public and patients	The public are an indirect recipient of the service. The functions of the QHBE will provide assurance to the public and patients that the healthcare environment is safe and free from avoidable healthcare built environment harms.

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Channels

The QHBE will use existing channels to provide services. Over time the QHBE will improve the quality of its service channels in order to increase reach.

The ambition is that the QHBE will use innovative digital channels in order to deliver its services.

Initially the QHBE will provide services using the following existing channels:

- Microsoft Teams
- Websites/portals
- Email
- Phone
- Face-to-face

In order to manage demand and to ensure the service can deliver at scale and meet need across the system, the QHBE will need to promote more self service. In order to achieve this the QHBE will need to:

- Improve how to find and navigate the information.
- Improve how easy it is to understand and apply information.
- Harness new digital technologies to support the improvements above.

QHBE services (1/2)

The QHBE will provide the following eight services:

Compliance	Monitors compliance with guidance and supports boards to demonstrate compliance at key stages within the full lifecycle of an acute build, from procurement through to construction, building operations, maintenance and decommissioning, providing assurance to boards and the Scottish Government.
Research development and innovation	Researching and sharing best practice and changes in standards/models for the built environment across the world to inform guidance and capital projects.
Intelligence	Monitoring built environment risk factors, enabling informed and holistic decision making on future projects and maintenance requirements at local and national levels. Using predictive and integrated technologies and delivering improvements in data integrity to proactively identify potential problems.
Provision and coordination of subject matter expertise	Ensuring boards have the right staff/skills for projects, and assigned staff have access to national training and support to undertake their roles. Coordinating and deploying subject matter experts (SMEs) to support boards/regions to deliver building projects based on identified needs. Connecting boards to other NSS services such as CLO, Procurement and to the rest of the UK and beyond.

QHBE services (2/2)

The QHBE will provide the following eight services:

Guidance	To develop and maintain guidance to inform the design, build and maintenance of acute healthcare built environments to ensure that they are free from avoidable risk and infection.
Workforce planning and development	Provide a progressive, cohesive and integrated approach to specialist workforce education development for this multi-agency and multi-professional staff group (both internal and external to QHBE) in agreed partnership with NES and boards. Undertake strategic needs assessment and planning around the skills required across boards to manage risks in the healthcare environment and deliver actions to address immediate and anticipated workforce shortages.
Response service	To respond to issues in the built healthcare environment (e.g. RHCYP). Assess the risk against the current estate and projects, and mobilise a response.
Knowledge management and communications	Liaise with boards to collectively manage stakeholders and national level external communications. Share developments in research guidance and intelligence with boards, targeting specific boards where the updates are pertinent to existing projects. Support the routine and effective collation and appropriate dissemination of lessons learned across and outwith the QHBE. Deliver an alerts system to push key information and alerts into the system.

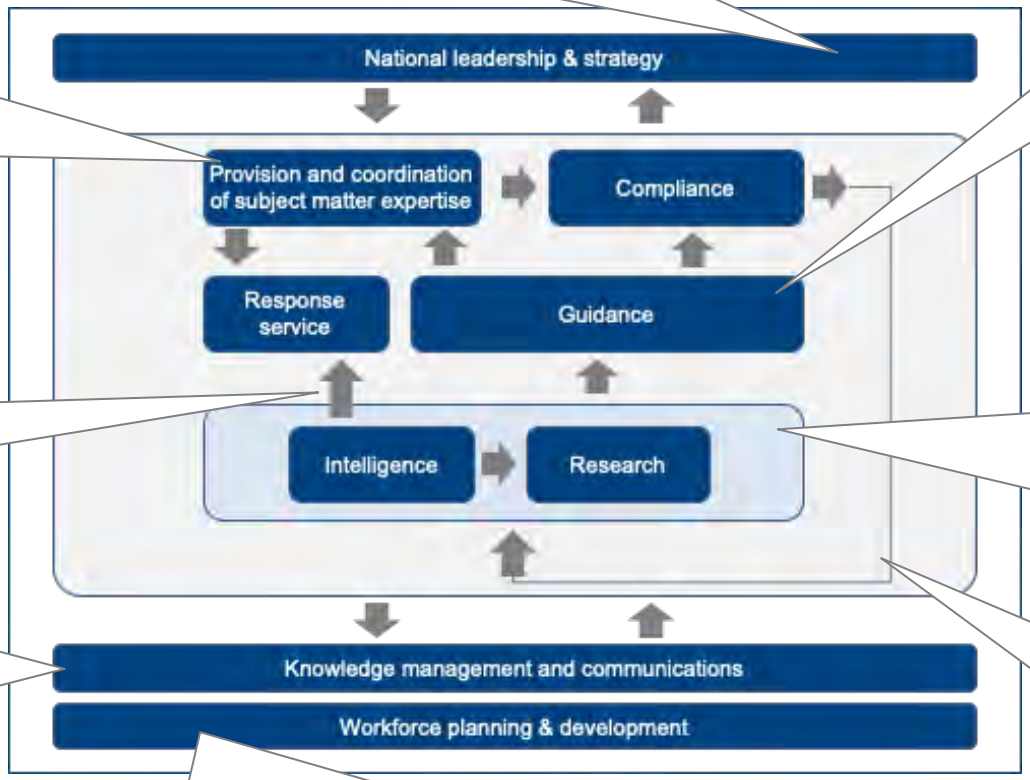
Relationship between QHBE services

The QHBE services are designed to enable each other to provide a holistic approach to managing risk in the built environment. The below image shows the primary relationships between the services.

Subject matter expertise (SME) will support the boards across the building lifecycle, offering support at varying levels from remote signposting to more practical hands-on support. SME will play a role in delivering the Compliance Service, Response Service, and will support the development of guidance.

National leadership & strategy
The QHBE will have an overarching leadership role to represent NHS Scotland's work to manage risk in the built environment at a national level, and to influence the development of new policy.

Guidance informed by system learning
Information gathered from intelligence, evaluation and research will shape new national evidence-based guidance on managing risk in the built environment.



Proactive response
The Intelligence Service will look at patterns of information to proactively identify where the Response Service is required.

Research for service improvement
Priority research topics will be informed by learning from evaluation activities facilitated by the QHBE, and intelligence on risk in the built environment gathered from across the health system. This information will also inform research activity for further analysis and learning.

Sharing knowledge across the system
The QHBE will cascade information, including research, intelligence and learning, across NHS Scotland to help inform the management of risk in the built environment at a local, regional and national level. This service will also play a role at an international level.

Improving compliance
Learning from compliance activity during the building lifecycle, from planning to construction and running the building, will provide intelligence and learning that will benefit the whole health system.

Maintaining the right skills
Through workforce planning and development, the QHBE can improve the recruitment and retention of staff, and increase the skills and confidence of those working in managing risks to the built environment.

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Compliance

Service description

Monitor compliance with guidance, and support boards to demonstrate assurance at key stages within the full lifecycle of an acute build, from procurement through to construction, building operations, maintenance and decommissioning, providing assurance to boards and the Scottish Government through collaborative working between construction professionals and clinicians. To share findings relating to the building and any learnings across the systems with key stakeholders. To provide self-assurance tools for use at regional/local levels.

In Scope

- Compliance with guidance activity will initially focus on water, ventilation, drainage, fire, electrical and medical gases as they relate to the built environment, and infection prevention. This will be delivered through Key Stage Authorisation Reviews.
- Compliance against the full building lifecycle from inception to demolition.
- To escalate and de-escalate identified risks in accordance with the governance model.

Out of scope

- Inspectorate function.
- Taking responsibility away from boards for compliance (remaining in accordance with current legal responsibilities of boards).

Service set up & phasing

Year 0
- Develop compliance monitoring workbooks.
- Design and development of KSAR processes.
- Undertake reviews in accordance with the programme outlined in the NSS Healthcare Built Environment Review Service.
- Develop compliance monitoring programme for year 1.
- Scope the ongoing resource requirements for the service and across the system.
- Commence recruitment of staff for the service.

Year 1
- Deliver Year 1 compliance monitoring programme for prioritised new builds and major refurbishments.
- Develop compliance monitoring programme for existing estate.
- Commence compliance monitoring programme for existing estate.

Year 2
- Ongoing delivery of compliance monitoring programme.
- Review the scope of compliance monitoring in relation to installation areas.

Year 3+
- Review whether there will be a need to broaden the scope to other installation areas in the future.

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The compliance model can be found at Appendix C

Capabilities required

- Professionally qualified subject matter experts relating to the building safety infrastructure and infection prevention and control e.g. engineers, clerk of works, infection prevention control and epidemiology.
- Up-to-date and in-depth knowledge of latest guidance, standards and regulations, and experience of delivery in the health care sector.
- Ability to interpret technical and clinical plans and terminology.
- Ability to challenge, communicate and influence.

Outcomes

- Boards and the Scottish Government have increased information and assurance around management of risks of the built healthcare environment.
- Support for builds to deliver within agreed timescales, reduced costs associated with incidents and retrofits.
- Publicly available reports providing assurance of compliance with national guidance to ensure safe environments.
- Increase patient safety and public confidence.

Research development and innovation

Service description

Research and share best practice and changes in standards/models for the built environment across the world to inform guidance and capital projects. This service will identify and prioritise research areas, coordinate research activities in Scotland and connect internationally, commission/tender research, disseminate research, and ensure other QHBE services (e.g. compliance, guidance, assurance) respond to the findings.

In Scope

- Develop an HBE research portfolio for Scotland and monitor progress.
- Coordinate research activities in Scotland across partners organisations.
- Prioritise and coordinate research fund bidding and seek additional funding sources.
- Cascade learning through the development and maintenance of a research network website.

Out of scope

- Duplication of pervious research work.
- Research that has not been identified as a priority.

Service set-up & phasing

Year 0

- Develop a research plan including identifying topics and approaches to commissioning.
- Engage the Scottish Government to explore future consortium possibilities.
- Identify funding.
- Recruit new staff.

Years 1 & 2

- Develop a research strategy and define detailed research priorities.
- Engage with researchers and those in front-line settings to ensure the development of practical and usable interventions.
- Establish consortium and work with Chief Scientist Office (CSO) to select projects to progress.
- Commence priority research.

Year 3+

- Establish a research network scholarship fund.
- Organise and host a research conference.
- Engage with the public and relevant patient groups to inform the development and implementation of research in Scotland.

Capabilities required

- Administration and facilitation roles.
- Research leads.
- Consultant and subject matter experts.
- Commissioning and contracting.
- Strategy development.

Outcomes

- A research strategy with priority areas of research.
- Money is spent in areas where it is most needed and likely to have the most impact.
- There is a methodology, direction and transparency for future research.
- Evidence is available to inform other QHBE services e.g. guidance. Increased knowledge within the boards and internationally around managing risk.
- Scotland is recognised internationally as an expert in managing risk in the built environment.

Intelligence

NHS National Services Scotland

Service description

Monitor built environment risk factors, enabling informed and holistic decision making at local and national levels, on future projects and maintenance requirements. The service will harness predictive and integrated technologies, and deliver improvements in data integrity to proactively identify potential problems. Support the establishment and delivery of appropriate laboratory services to monitor risks in the built healthcare environment (at new build and live stages).

In scope

- Development of data strategies to prioritise what data is collected and how it is used.
- Analysis and interpretation of data.
- Identifying and improving the collection, processing and sharing of data, including support to boards.
- Engaging with other NHS data services to share intelligence and expertise.
- To develop the analytics capability of the QHBE, including adopting new technologies and embedding data-driven decision making.
- To develop and implement monitoring processes within this service.

Out of scope

- Intelligence not related to the HBE.

Service set up & phasing

Year 0

- Undertake a gap analysis of the current intelligence processes and data sources, and develop a programme of improvements.
- Identify staffing requirements and recruit staff for the service.
- Commissioning of appropriate laboratory services to monitor risks in the built healthcare environment at the new build stage.
- Develop monitoring processes to inform decision-making.
- Specification of extant estate.

Year 1

- Deliver improvements in functionality and application to address known weaknesses and risks with existing systems and data.
- Establish the core intelligence infrastructure and core data set of service activities (including benchmarks).
- Develop a strategy to increase the QHBE's maturity around the use of data, to drive improvements in the management of risk in the built environment.
- Implement monitoring processes at local and national levels.

Year 2

- Implement the strategy, including adoption of new technology, to improve predictive and proactive service delivery.
- Embed data-driven decision making throughout the QHBE.

Year 3+

- Deliver a dynamic, integrated intelligence landscape that supports data-driven decision making to reduce risk in a healthcare built environment.

Capabilities required

- System/technical programme management (Data standards, IG, GDPR, information security, data protection).
- Business/Data Analyst – to provide support to boards in understanding their data and sharing the learning outcomes.
- Subject matter expertise to support the interpretation and contextualisation of data.
- Training to improve usage of existing systems.
- Expertise in data systems, digital innovation and future technologies.

Outcomes

- Improved quality of data available around risk in the healthcare built environment.
- Stakeholders have an improved understanding of the levels of risk across the system.
- QHBE services are provided based on intelligence around levels of risk.
- Improvements in the ability for the QHBE to predict issues and proactively respond.
- Improved data-driven decision making across the system to manage risk within the built environment.
- Robust monitoring in place to enable informed decision making.

Provision and coordination of SME

Service description

Ensure Boards have access to staff with appropriate skills for projects, and assigned staff have the time, training and support to undertake their role by gathering information from boards and the Compliance Service. Coordinating and deploying subject matter experts (SMEs) to support boards/regions to deliver building projects and ongoing risk management through the built environment lifecycle based on identified needs, and to provide expert advice on the interpretation of laboratory results and support management of incidents and outbreaks. Facilitate boards' access to other NSS services such as CLO, Procurement and to other services across the UK and beyond.

In scope

- To advise boards on how to support their staff in their role delivering new builds/major refurbishments projects e.g. signposting to training for staff, connecting with peers and providing direct advice.
- To provide advice and guidance to boards/staff on managing risk in the built environment e.g. technical support, guidance interpretation, laboratory results (remotely and face-to-face).
- To deploy QHBE staff on projects.
- To hold a pool of subject matter experts (SMEs), in particular those skills which are in short supply to ensure their expertise is shared across the country.
- To identify opportunities to share resource between boards/regions e.g. secondments.
- To provide advice and guidance to boards in relation to environmental laboratory guidance and interpretation of results.

Out of scope

- This service does not focus on buildings and projects that are not acute healthcare.
- Responsibility for filling skills gaps in boards.
- Delivery of training.
- Monitoring whether defined NHS board roles and responsibilities are being carried out effectively (compliance).

Service set up & phasing

Year 0

- Undertake a gap analysis around demand for and availability of SME support, including SMEs on boards.
- Continue to deploy and enhance, as appropriate, existing pools of staff to address immediate gaps.
- Recruit SMEs to the service.
- Plan the deployment of SMEs in Year 1.
- Engage NSS services and explore approaches to respond to identified needs.

Year 1

- Develop business systems and processes to deliver remote SME input to maximise reach with resource limitations.
- Develop processes to schedule and deploy SMEs to boards.
- Gather information from compliance activity around support requirements for boards.
- Shape the development of training programmes to increase skills of healthcare professionals to deliver building projects.
- Develop ways of working and processes between the QHBE and other services across NSS. Develop information and processes to improve the signposting of boards to existing support by the guidance service.
- Engage with the NSS service and boards to identify needs and improvements.

Year 2+

- Improve mechanisms to coordinate and provide SME support.
- Develop new approaches to share staff in boards and in the QHBE across the system.
- Develop ways of working and processes between the QHBE and services across the UK and beyond.

Capabilities required

- Scheduling and co-ordination of resources.
- Establishment and running of business systems and processes to deliver remote SME input to maximise reach with resource limitations.
- Professionally qualified SMEs relating to building safety infrastructure and infection prevention and control e.g. engineers, clerk of works, infection prevention control and epidemiology.
- Up-to-date and in-depth knowledge of latest guidance, standards and regulations, and experience of delivery in the health care sector.
- Ability to interpret technical and clinical plans and terminology.
- Ability to communicate, challenge and influence.

Outcomes

- Boards have access to specialist advice to improve the management of risk in the built environment.
- Boards' staff supported and upskilled to better perform their roles.
- Experience and expertise is better shared between boards/regions.
- Limited pools of expertise are effectively shared across the system.

Guidance

Service description

To develop and maintain guidance to inform the design, build and maintenance of healthcare built environments, including environmental laboratory guidance to ensure that they are free from avoidable risk. This includes the standards by which compliance within the healthcare built environment is measured and assurance can be provided.

In scope

The following activities are focused on guidance for acute hospitals:

- Identify the need for and prioritisation of new guidance and standards, considering new developments from other organisations and countries.
- Coordinate guidance development.
- Create new guidance and update existing guidance.
- Disseminate guidance to service users.
- Develop guidance implementation tools/QI.
- Support the identification of new research requirements.

Out of scope

- Specific Guidance for healthcare environments out of scope for the QHBE e.g. care homes and outdoor nurseries.

Service set up & phasing

Year 0

- Undertake a gap analysis around guidance that requires to be developed/updated.
- Schedule the programme of guidance development and identify required resources.
- Scope when and how guidance should be applied i.e. assessment of when guidance can be retrospective.

Year 1

- Recruit additional staff in HFS to update guidance.
- Commence delivery of the guidance development programme.
- Commence integration of guidance capabilities from ARHAI and HFS.

Year 2

- Continue delivery of the guidance development programme.
- Assess long term resource requirements around the delivery of this service.

Year 3+

- Potential to explore increasing scope of service beyond acute healthcare settings.

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Capabilities required

- Input from subject matter experts (SMEs) to shape the guidance.
- Microbiological, estates, and infection control expertise to develop guidance and provide expert advice on the interpretation of laboratory results, and support management of incidents and outbreaks.
- SMEs to support with interpretation, advising on test requirements and input into guidance documents.
- Co-ordination to oversee incoming queries and responses.
- Data management.
- Scientists.

Outcomes

- Evidence-based and up-to-date guidance to inform safe practice and delivery during all stages of a building's lifecycle.
- User-friendly digital guidance portal to ensure easy access to guidance for all those who need it (this would need to be aligned with any digital developments for the QHBE as a whole).
- Improved communication to users (as part of the QHBE's wider communications function).

Workforce Planning and Development

Service description

Provide a progressive, cohesive and integrated approach to specialist workforce education development for this multi-agency and multi-professional staff group (both internal and external to QHBE) in agreed partnership with NES and boards. This will include understanding needs across the system, developing training frameworks and supporting staff to access educational interventions either provided by the service or through signposting to provision elsewhere. Support planning around the skills required across the system to manage risks in the healthcare environment, and deliver actions to address immediate and anticipated workforce shortages.

In scope

- Undertaking training needs assessments.
- Developing and implementing a national learning and development strategy to include the needs of boards' staff, contractors and QHBE staff.
- Developing and maintaining a learning and development framework.
- Developing educational interventions, including career development opportunities and educational resources.
- Delivering educational interventions (directly or commissioned) and signposting to the other resources outwith the QHBE.
- Develop and deploy strategies to improve the recruitment and retention of staff including: succession planning, career pathways, and market analysis.

Out of scope

- Responsibility for the take-up of learning by boards and contractors.
- Providing specialist education service.
- Educational governance arrangements outwith the QHBE.
- Meeting the training needs of all staff working on capital projects.
- Workforce planning relating to non-acute healthcare settings.
- Workforce planning for non NHS staff.
- Responsibility for the boards' resource gaps.
- Responsibility for workforce planning within boards.

Service set up & phasing

Year 0

- Develop a business case to ensure adequate resources are available to further progress this work in Tranche 2.
- Put SLA in place with NES.
- Develop a learning and development framework.
- Review the workforce education development requirements.
- Develop learning and development strategy, and identify priority workforce education requirements.
- Train Year 1 compliance team.
- Identify future resource requirements for the service.
- Links to the GJNH training academy.
- Undertake a strategic needs assessment.
- Review of workforce across the system and identification of current and anticipated skills gaps.
- Undertake market analysis around rates of pay and benefits packages for staff.
- Develop a strategy to address current and anticipated workforce gaps.

Year 1

- Implement learning and development strategy.
- Delivery of educational interventions (prioritised cohorts).
- Develop strategies around succession planning, such as developing career pathways.
- Develop approaches to sharing experienced staff across the system.
- Develop recruitment and retention strategies, including flexible retirement plans.
- Work with the SME service to develop approaches to address identified gaps through the deployment of SMEs and to inform the future staffing requirements of the SME service.

Year 2

- Review education requirements and update learning and development strategy and framework.
- Ongoing delivery of educational interventions.
- Undertake annual workforce gap analysis.
- Update and deploy strategies to effectively manage recruitment and retention of the workforce.

Year 3+

- Ensuring lessons learned from QHBE workstreams are reviewed, and necessary actions implemented as required.
- Ongoing review and refresh of learning and development framework as required to reflect a progressive and agile approach to this workstream.

Capabilities required

- Education development specialists.
- SMEs to input to content.
- Gathering and reviewing information and market analysis.
- Workforce planning and strategy development.
- Recruitment and retention approaches.
- Career pathway development.
- HR policies and procedure.
- Apprentice/graduate scheme planning and running.

Outcomes

- A knowledgeable, skilled, confident and sustainable workforce able to positively contribute to the management risks in the healthcare built environment.
- Contractors have increased understanding of the healthcare built environment to improve project/service delivery.
- NHS Scotland has increased visibility of workforce needs.
- Robust strategy to effectively manage workforce planning, recruitment and retention.

Response service

Service description

To respond to identified risks in the built healthcare environment (e.g. building cladding problems post Grenfell, and infection prevention and control). Assess the risk against the current estate and projects, and mobilise a response. The service is reactive to information from within NHS Scotland e.g. intelligence, and incidents or issues identified outwith Scotland. This service may be hands-on delivery and/or coordination of a response.
Response to national incidents, alerts and coordinate required response across Scotland.

In scope

- The Response Service with focus on the 6 risk areas: water, ventilation, drainage, fire, electrical and medical gases.
- Provide a guidance and coordinating role to ensure boards respond appropriately.
- Providing hands-on support to boards to support them to plan and deliver a response, where deemed necessary.
- Providing updates on the risk levels to stakeholders, and tracking progress with the response.

Out of scope

- Responsibility for built environment risks will remain with the boards.
- The QHBE will not be a reactive service for all issues. There will be clearly defined thresholds for when national support is provided.
- The service will not provide hands-on support in all eventualities, but instead play a coordinating role to ensure boards respond appropriately.

Service set up & phasing

Year 0

- Develop the risk management framework to identify the thresholds for intervention of the Response Service.
- Develop protocols and pathways for the Response Service, including joint working with ARHAI.
- Develop a flexible resource model for the Response Service that harnesses capabilities within the QHBE and across the system.
- Identify capabilities/staff across the system which the service could draw upon, invite them to be part of the response network, and identify protocols, training and communications requirements.
- Develop mechanisms to measure the demand for and impact of the Response Service.

Year 1

- Embed service system and processes.
- Establish response network and put in place processes, communication mechanisms and regular training/support.

Year 2+

- Working with the Intelligence Service to better identify and predict issues requiring a response.

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Capabilities required

- Professionally qualified SMEs relating to building safety infrastructure and infection prevention and control e.g. engineers, clerk of works, infection prevention control and epidemiology.
- Up-to-date and in-depth knowledge of latest guidance, standards and regulations, and experience of delivery in the health care sector.
- Ability to interpret technical and clinical plans and terminology.
- Ability to develop suitable response strategies to reduce risk.

Outcomes

- NHS Scotland has the capacity, capability and processes to respond to immediate significant risks in the built environment.
- Immediate responses are proficiently delivered where risks have been identified.

Knowledge management & comms

Service description

Liaise with boards to collectively manage stakeholders and national level external communications. Share developments in research, guidance and intelligence with boards, targeting specific boards where the updates are pertinent to existing projects. Support the routine and effective collation, and appropriate dissemination of lessons learned across and outwith the QHBE. Support boards to undertake evaluation activity and share learnings. The QHBE will review evaluation outputs, collate lessons learned and disseminate. Key lessons which require an immediate response will be shared with relevant stakeholders via an alerts system.

In scope

- To support boards to manage senior stakeholders where risks to the built environment of national significance have been identified and/or to manage expectations around the delivery of new projects to ensure they can be delivered to a safe standard.
- To co-ordinate a response to significant national issues across boards and the Scottish Government.
- To develop appropriate channels to cascade different types of information (intelligence, new guidance, research, alerts) to stakeholders.
- To manage channels to cascade information, including monitoring impact and making improvements.
- Identifying when evaluation activity should be undertaken and by whom.
- Provide self-assessment tools and templates to enable health boards to undertake evaluation exercises.
- Conduct evaluation exercises on behalf of health boards.
- Review evaluation findings, share learning and provide recommendations based upon lessons learned from other QHBE.

Service set up & phasing

Year 1

- To develop the parameters, framework and processes for stakeholder management.
- Develop a channel and communications strategy for the cascading of information.
- Commission digital services to develop new/enhance existing online channels.
- Put in place processes between other QHBE services (compliance, guidance, evaluation, research) to cascade their information.
- To identify at what stages in a building's lifecycle evaluation should be undertaken, and by whom, and develop the evaluation frameworks.
- To ensure post contract reviews are being undertaken by boards, and provide support as necessary.
- To undertake evaluation exercises aligned to the Interim Review Service and collate and share findings.
- To oversee boards' evaluation activities, providing support and guidance as required.
- To iterate evaluation frameworks to improve processes and impact.

Year 2+

- Embed and continuously improve stakeholder management functions and information sharing mechanisms and, improve reach and impact.
- Enhance capabilities of digital channels and improve performance.
- Review and update channel and communications strategy based on stakeholder feedback.

Out of scope

- The QHBE will not provide communication outwith the remit and services of the QHBE.
- The QHBE will not replace boards' own communications functions and responsibility for this.
- This service will not provide digital development capabilities, but instead commission them to deliver online channels for sharing information.
- QHBE undertaking all evaluation activity.
- Take post contract review responsibility away from health boards.

Capabilities required

- Co-ordination skills.
- Senior stakeholder management.
- Channel and communications strategy development and delivery.
- Ability to operate information sharing processes.
- Experience in undertaking evaluation relating to the built environment.
- Developing evaluation frameworks and tools, and providing training and guidance to stakeholders in their application.
- Subject matter expertise (for technical lessons learned).
- Analytical skills to review evaluation reports and assimilate findings suitable for the needs of readers.
- Professional facilitators.

Outcomes

- Information (guidance, learning, best practice, intelligence) is in the hands of those who need it and communicated in a way that meets their needs.
- Boards are better equipped and have increased confidence in undertaking evaluation exercises.
- Evaluation exercises are open and transparent and produce meaningful, transferable insights.
- Stakeholders are better informed of learnings across the systems and understand how they need to respond.
- Lessons learned gathered through evaluation processes are used to improve processes, guidance, research etc. to better manage risk in the healthcare built environment.

Cultural enablers

As outlined above (page 18), getting the right culture is essential to forming effective working relationships at all levels. The following enablers have been identified to develop the identified cultural attributes:

A shared vision	Boards and the QHBE have the common goal of a safe and effective environment at the heart of all they do, which will help galvanise a collaborative and supportive approach across the system.
Integrated collaborative teams	The QHBE and boards should seek to take a collaborative approach to their work, working in partnership to manage risks in the built environment. At a service delivery level this may include integrated multi-disciplinary teams with staff from the QHBE, boards and contractors.
Defined roles and responsibilities	There needs to be clearly defined roles and responsibilities to help teams to work together and understand how services will be delivered: at a macro level to understand boards and the QHBE's roles in managing risk in the built environment across the system; and at an operational level so there is an understanding of who does what.
Clear lines of accountability	Governance and escalations mechanisms are clearly defined and support the roles and responsibilities that have been defined. This will create a sense of accountability and ensure there is consistency of approach and understanding of where responsibilities lie.
Shared language	Boards and the QHBE need to have a shared language around the work that they do to manage risks in the built environment. This will help demystify processes, governance, roles and responsibilities.
Tools and methods to support collaboration and learning	To facilitate a culture of collaborative working, the QHBE will deploy a number of tools which promote a continuous cycle of learning and improvement (e.g. training, events, case studies, sharing lessons learned, QI) to make it easy for people to do the right thing and know what the right thing is to do. Patient and public voices also need to inform learning and improvement.

Capabilities

The capability groups noted below are the core capabilities required within the QHBE itself. The have been categorised against which QHBE functions they will support.

Subject matter experts

These people are technical experts in infection and the build environment risks which includes expertise across the risk areas. Due to their level and type of knowledge and experience, it is likely that these people are in relatively short supply across Scotland.

Capability connectors

Capability connectors have a breadth of knowledge around managing risk in the built environment and can analyse a wide range of technical information. They are more generalist than SMEs and can operate across a number of the risk areas and QHBE functions. They play a key role in bridging between specialties.

Strategic planning & coordination

These people can look at the system as a whole and help understand and communicate need for future projects, progress in current projects, and levels of risk in the system. They may also coordinate service delivery and deployment of resources.

Knowledge sharing

These people are skilled in gathering and presenting research, intelligence and evaluation findings in a way that is useful to users. They will know which channels are the most suitable for cascading input to ensure that insights are taken on board.

Relationship management

This capability develops effective working relationships with senior stakeholders at a local and national level to facilitate the delivery of the QHBE functions. They are confident communicators and have strong persuading and influencing skills.

Data management & analytics

These people are skilled in processing data to provide insight to drive decision making. They can provide advice and practical support to boards on using systems and processes to improve the quality of data collected.

Key: QHBE function

Planned lifecycle support

System capacity & capability

Intelligence & knowledge sharing

System response

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Data

The QHBE will drive improvements in the use of data to manage risks in the built environment, with increasing emphasis on predictive analytics to provide support for a proactive and preventative approach to managing risk.

Short to medium term focus

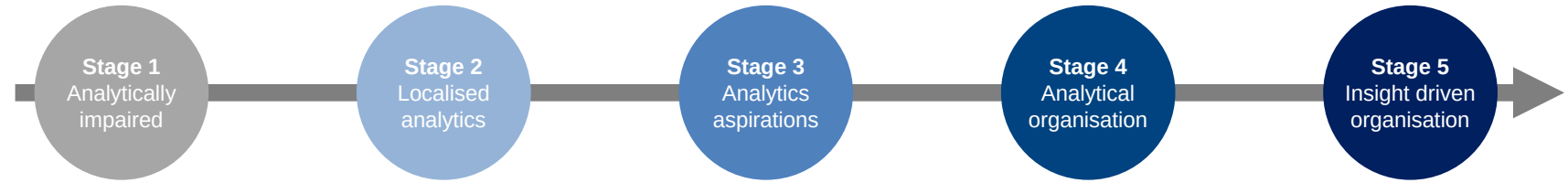
The QHBE will have key role in the collection and management of data in order to understand levels of risk in the built environment, identify patterns, and share intelligence across the system. Key activities include:

- Setting the national standards around requirements for how boards should supply data to the QHBE, and quality assure this.
- Supporting boards to adopt consistent data collection systems and promote consistency in practice to maximise their capabilities.
- Planning and delivering projects around the implementation of new systems and processes to improve building risk management.

Future vision

The longer term vision is for the QHBE to have a core analytics capability to enable insight driven decision making. Operationally this will enable the QHBE to provide predicative analytics to improve the early identification and management of risk in the built environment.

The journey to becoming an intelligence-driven organisation has 5 different stages of analytics maturity:



Aware of analytics, but little or no infrastructure and poorly defined analytics strategy.

Adopting analytics, building capability, and articulating an analytics strategy in silos.

Expanding ad-hoc analytics capabilities beyond silos and in the mainstream organisational functions.

Industrialisation analytics to aggregate and combine data from broad sources into meaningful content and new ideas.

Transforming analytics to streamline decision making across all organistion functions.

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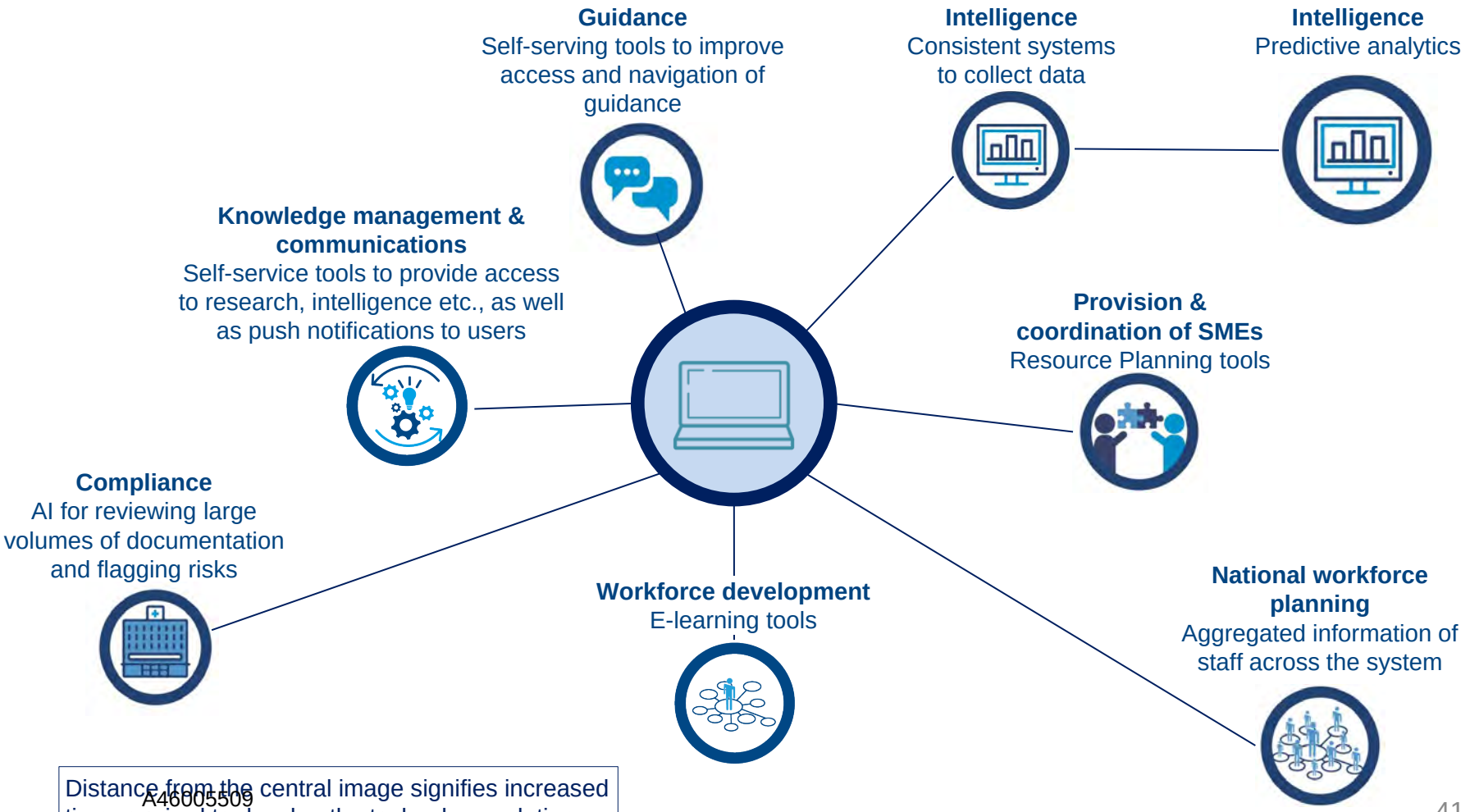
Technology

The QHBE in the immediate term will make use of existing technology, ensuring it is consistently used across the health system. As the different services develop new technology requirements may emerge. Some potential examples are highlighted below.



Distance from the central image signifies increased time required to develop the technology solution.

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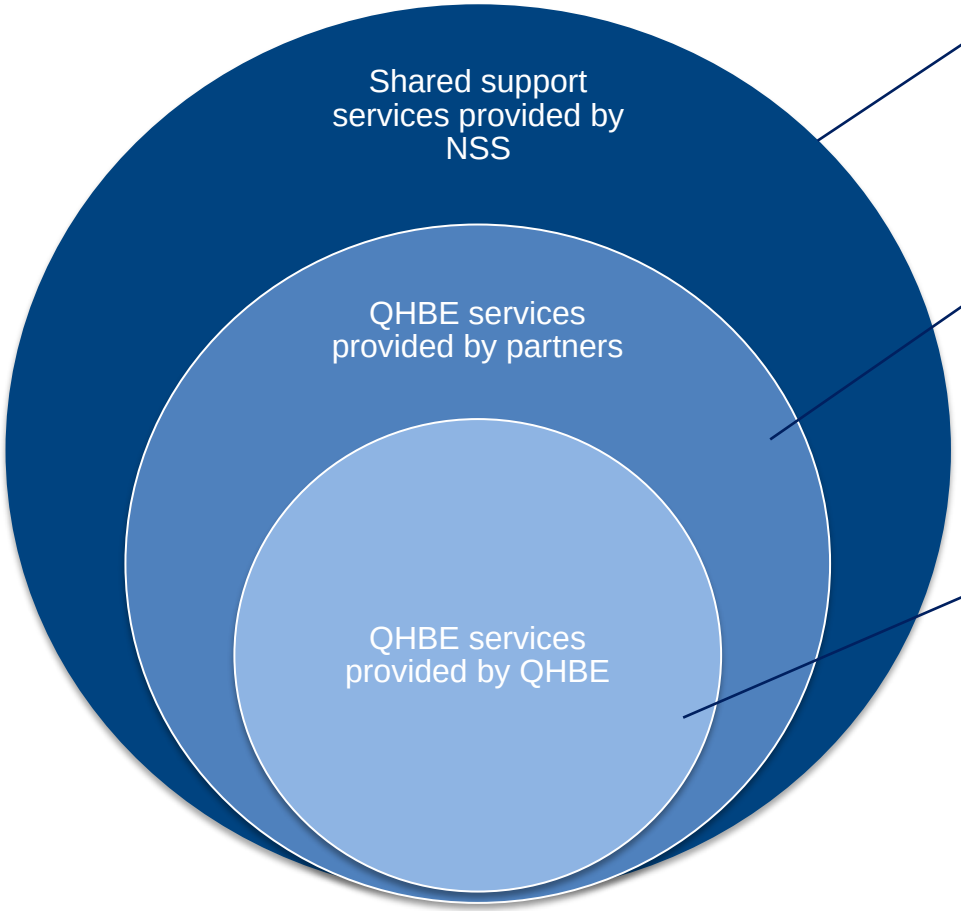
How services are provided

Services will be provided within the QHBE itself and by partner organisations, and as such the QHBE will not need all capabilities within the body.



The QHBE will need a number of shared support services such as HR, Finance and IT to provide the back-office support.

The QHBE will work in partnership with NES and other organisations, both within NHS Scotland and externally, to deliver services on its behalf.

The QHBE will directly provide a number of the services itself and will need to employ the staff necessary to do so, e.g. a pool of subject matter experts to provide support to boards.

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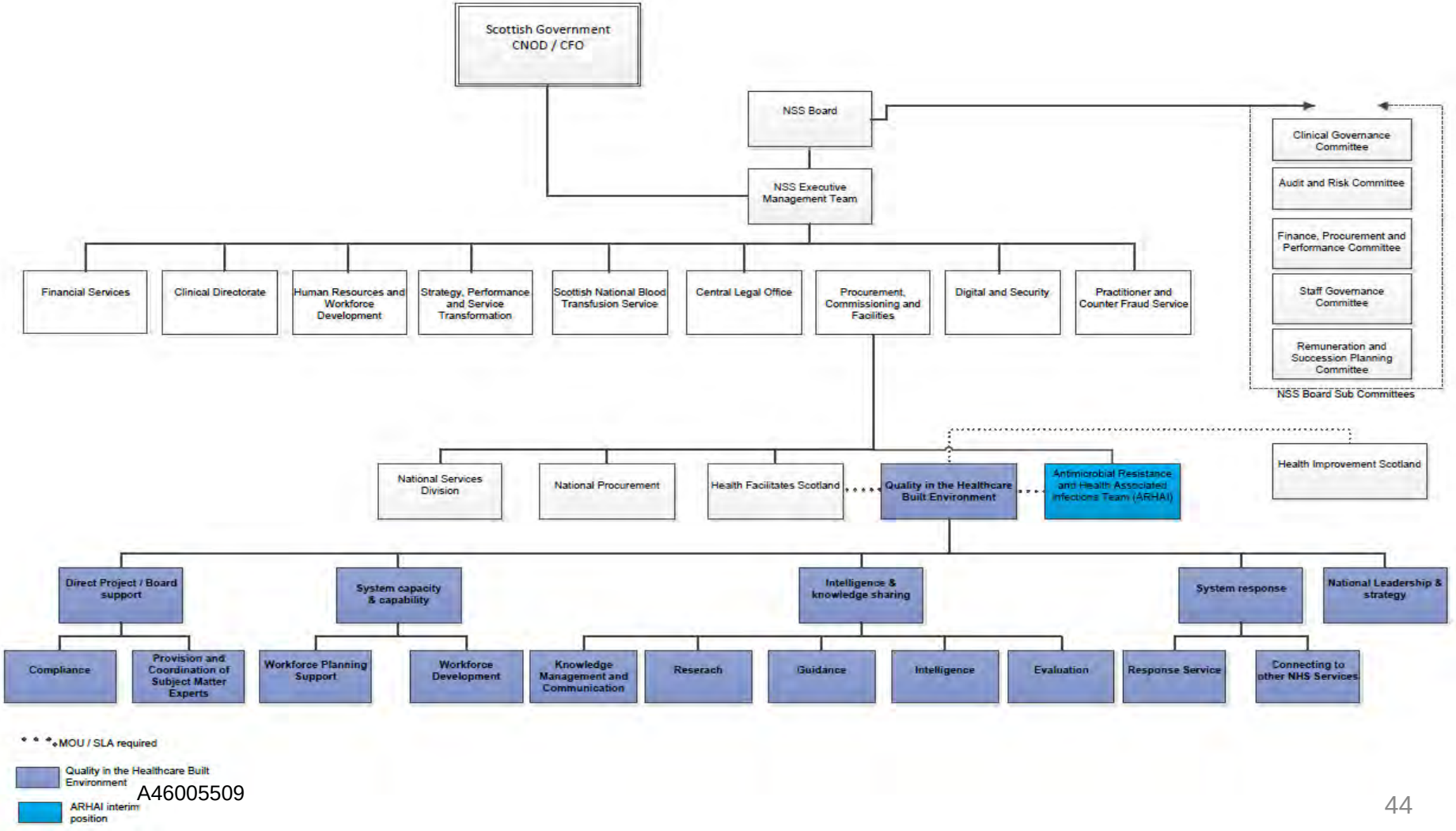
Location

There are a number of assumptions that have been made around the location requirements of the QHBE and the delivery of its services.

- The QHBE will deliver services across the whole of Scotland at **national, regional and local** levels. The type and amount of the support will vary depending on the differing needs at these levels.
- It is assumed that the QHBE will utilise existing locations and estates and there will not be requirements for new accommodation to be sought.
- There will be a geographic spread of the workforce akin to the current state, and the workforce will be enabled to continue to work flexibly across the country.
- Technology will be harnessed where barriers to engaging with the QHBE exist due to geographic spread.

Governance

The governance model will work within existing legislative arrangements, but needs to enable risk to be effectively managed across the system whilst recognising the need for an open and collaborative culture.



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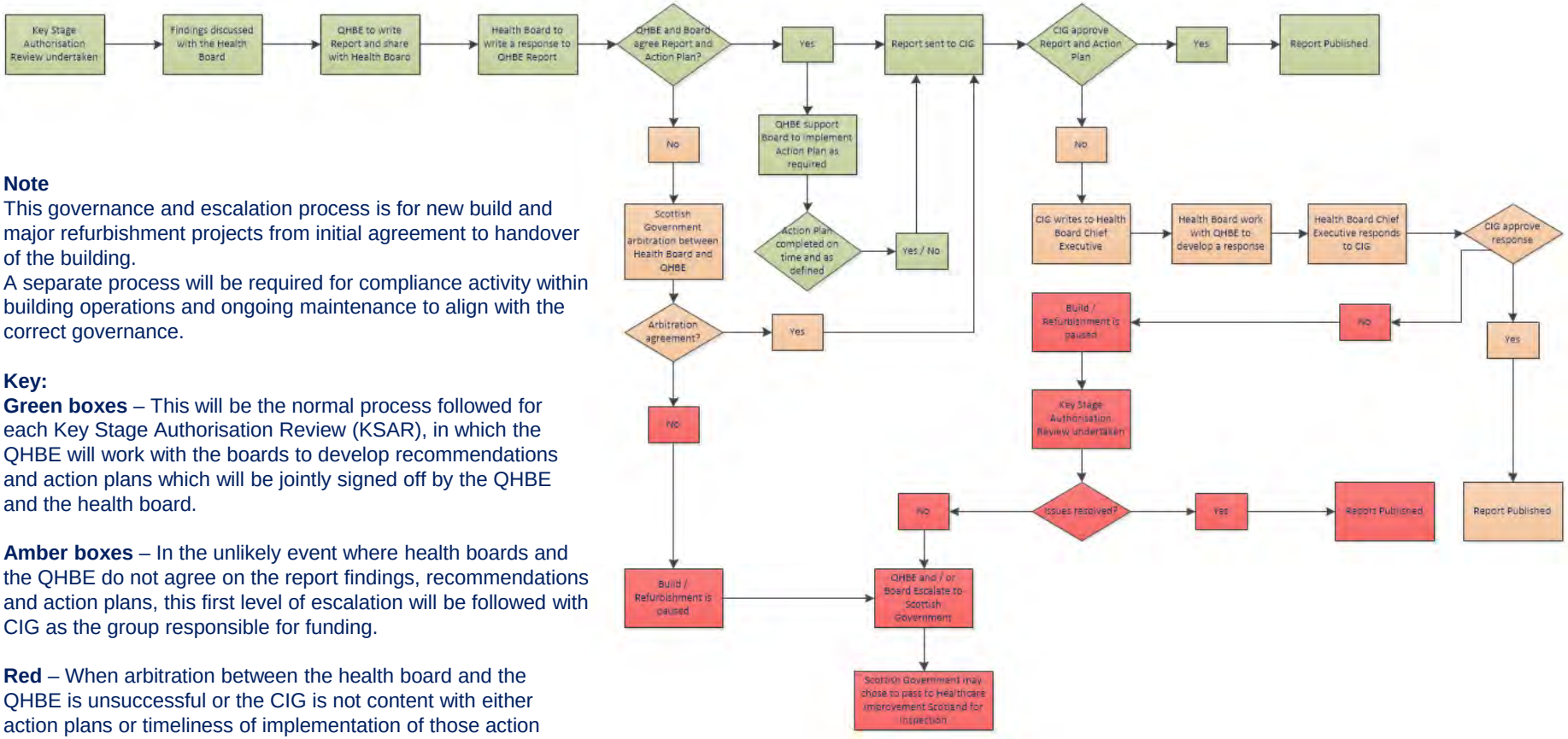
Compliance governance

The compliance governance model has been designed to support NHS Boards to progress through the KSAR process. In the event that this is unsuccessful, an escalation process has been developed.



Note
This governance and escalation process is for new build and major refurbishment projects from initial agreement to handover of the building.
A separate process will be required for compliance activity within building operations and ongoing maintenance to align with the correct governance.

Key:
Green boxes – This will be the normal process followed for each Key Stage Authorisation Review (KSAR), in which the QHBE will work with the boards to develop recommendations and action plans which will be jointly signed off by the QHBE and the health board.

Amber boxes – In the unlikely event where health boards and the QHBE do not agree on the report findings, recommendations and action plans, this first level of escalation will be followed with CIG as the group responsible for funding.

Red – When arbitration between the health board and the QHBE is unsuccessful or the CIG is not content with either action plans or timeliness of implementation of those action plans, the second level of escalation will be followed. This will see escalation to the Scottish Government which may choose to ask Healthcare Improvement Scotland to initiate inspection activity.

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Chapter 4: Implementation

Approach to implementation

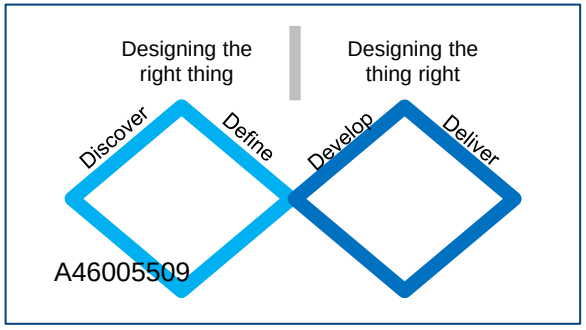
We will continue to deliver the next phase of the project in accordance with the Scottish Approach to Service Design, working with users throughout.

Detailed design

Throughout the process of developing this TOM, we worked with users to ensure we were **'*designing the right thing*'.** The next step will see us continue to work with a range of stakeholders across the system to ensure we are **'*designing the thing right*'.**

We will develop a number of different mechanisms to engage users, including working groups and events to develop the detailed design for the QHBE and plan the most appropriate approach to implementation. Drawing on the SAtSD principle of reusing user research insights wherever possible, we will utilise the intelligence gathered during research in this phase.

The continuous feedback loop will be in place between the Review Service and the QHBE Programme Team to take on board any lessons being learnt throughout the review process to build these into the QHBE design.



Implementation

Elements of the QHBE services will be implemented in a phased approach, allowing us to test and iterate the designs, but also to manage the resource implications at national, regional and local levels to ensure the system is not overburdened.

In **Year 0** the QHBE Review Service will run, whilst further service design activity is carried out for the eight core services.

Year 1 of the QHBE will focus on delivering the elements of all eight services that are considered the most important by the service users through Year 0 user research.

Year 2 will see the development and enhancement of services using an iterative approach, driven by user requirements.

In **Year 3** we will enter into an ongoing cycle of continuous improvement for the QHBE services. During this period we will also work with service users to assess the requirement for scaling the QHBE services to deliver outwith the acute setting.

Year 0 (20/21)	Year 1 (21/22)	Year 2 (22/23)	Year 3+
• Initial Review Service operating • Discovery activity and user engagement to design and develop options of how the QHBE services could be delivered	• Elements of all eight core services delivered	• Development and enhancement of all eight core services	• Continuous improvement of current services and assessment on scaling outwith the Acute setting

NHS National Services

Service	Year 0 (20/21)	Year 1 (21/22)	Year 2 and Year 3 (2022 - 2024)
Compliance	KSAR Workbooks developed Staffing Model scoped and Recruitment commenced Interim review service delivered Design KSAR Process Y1 Compliance Programme developed	Y1 Compliance Programme delivered Compliance Programme for Existing Estate developed Compliance Programme for Existing Estate commenced	Ongoing delivery of the Compliance Programmes Scope of the Compliance Service reviewed
Research Development and Innovation	Research Plan for commissioning developed Staffing Model scoped and recruitment commenced Research Consortium options explored	Research Strategy and Research Priorities developed Research Consortium established	Priority Research commenced Engagement with the public and relevant patient groups to inform development of Research Research Network Scholarship Fund established Research Conference hosted
Intelligence	Gap Analysis of current intelligence processes and data sources Staffing Model scoped and recruitment commenced Monitoring Processes developed Programme of improvements developed Specification of Extant Estate Appropriate laboratory services to monitor risks commissioned	Improvements to functionality and applications delivered Data Strategy developed Core intelligence Infrastructure and core data set of services established Monitoring Processes Implemented	Strategy and adoption of new technology implemented Data driven decision making embedded Dynamic integrated intelligence landscape delivered
Provision and Coordination of Subject Matter Expertise (SME)	Gap Analysis on demand for and availability of SME support including SMEs in Boards Staffing Model scoped and recruitment commenced Continue to deploy and enhance as appropriate, existing pools of staff to address immediate gaps	Information from Compliance Service used to inform support requirements Systems and processes to deliver remote SME input developed Training and Education Programmes informed from learning's Processes to schedule and deploy SMEs to HB's developed Y2 Plan developed	Mechanisms to coordinate and provide SME support improved
Guidance	Gap Analysis around guidance which needs to be developed Assessment on when and how guidance is applied completed Programme of guidance development scheduled	Staffing Model scoped and recruitment commenced Y2 Plan developed Initial guidance development programme delivered Guidance capabilities integrated	Full Guidance development programme delivered Scope reviewed to assess the service beyond acute

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NHS National Services Scotland

Service	Year 0 (20/21)	Year 1 (21/22)	Year 2 and Year 3 (2022 - 2024)
Workforce Planning and Development	Review of workforce system wide and identification of current and anticipated skills gaps Strategy developed to address current and anticipated workforce gaps Market analysis around rates of pay and benefits packages for staff completed Business Case developed Learning and development framework developed Y1 Compliance Team trained SLA with NES Learning and Development Strategy developed Workforce education and training requirements reviewed Linked to GJNH Training Academy established	Approaches to inform the future staffing requirements of the Provision and Coordination of SME service developed Succession planning and career pathways strategies developed Recruitment and Retention strategy developed Learning and Development strategy implemented Educational Interventions delivered to priority cohorts	Strategies updated and deployed to effectively manage recruitment and retention of the workforce Annual workforce gap analysis completed Annual workforce gap analysis completed Educational interventions delivered Educational requirements reviewed On-going review and refresh of Leaning and Development strategy and framework Learning and Development strategy and framework updated
Response Service	Risk management framework and thresholds developed for intervention Flexible resource model developed to harness capabilities across the system Mechanisms developed to measure demand Protocols and pathways developed Cross system capabilities identified and invited to be part of the network	Service system and processes embedded Response network established with processes, communication, training and support	Intelligence used to identify and predict issues which require a response
Knowledge Management and Communications	Parameters of service defined Channel and communication strategy developed Cross QHBE Services communication processes for sharing information Discovery activity on how the QHBE should communicate and engage Digital Services commissioned to develop new / enhance old channels Ensure Post Contract Reviews are being undertaken by HB's Evaluation stages confirmed Staffing Model scoped and recruitment commenced Y1 Evaluation Programme developed	Stakeholder Management function and information sharing mechanisms embedded Digital channels enhanced and performance improved Communications strategy updated based on feedback Embed and improve evaluation and learning sharing service Evaluation framework updated from learning's	Continuous improvement of service

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Chapter 5: Cost Model

Implementation Costs

The programme brief included an estimate for implementation and operating costs for Year 0 (20/21) at £6.369M. This was based on the original scope and assumption that it would be up and running from 1 April 2020.
The costs associated with delivery of the QHBE Review Service and implementation of the QHBE for Year 0 (20/21) has been revised down to £4.204M

Estimated Financial Costs – Revenue - FY 20/21		
Description	**Original**	**Revised**
Tranche 2 of the Programme: implementation of the programme blueprint with partners		
Programme management resources	£370,200	£410,000
Support (communication materials, events and engagement activities)	£15,000	£30,000
Branding and service launch activities	£TBC	£50,000
Compliance team resourcing	£3,720,000	£1,500,000
Increase in core HFS & ARHAI services	£664,000	£664,000
Travel & support	£100,000	£50,000
Provision for IT investment	£500,000	£500,000
Provision for training & research	£500,000	£250,000
External consultancy (unique compliance services)	£500,000	£750,000
Totals	**£6,369,200**	**£4,204,000**

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Operational Costs

Operating costs for the services detailed within this TOM will be defined following additional discovery and design work with service users in Year 0 (20/21). Design and enhancement to these services will be business case led.
The operational cost model will also take into account the financial impact on the QHBE in relation to the national ARHAI service, once a decision has been made on where the national service should sit.

It is anticipated that the operational costs will be no less that the c£6m estimate defined within the programme brief and noted below, which will be revised based on the discovery activity in Y0.

Description	Annualised costs
Compliance team resourcing	£3,720,000
Increase in core HFS & ARHAI services	£664,000
Travel & support	£100,000
Provision for IT investment	£500,000
Provision for training & research	£500,000
External consultancy (unique compliance services)	£500,000
Totals	**£5,984,000**

Appendix

Appendix A
User Research – Key Insights

User Research – Key Insights

Theme	Insights
Future design	• The QHBE needs to plan how it will integrate additional risk in its future design i.e. IT and increased patient complexity. • Patient-centred buildings, quality environment is a safe environment. • In the future more facilities will be shared with other public and private sector organisations, as such the QHBE will need to work with other partners. • Whilst the current focus is on acute buildings, if the QHBE focuses on other health buildings, then the model may need to adapted to reflect the complex landscape of building provision.
Culture	• Culture of pressure to open hospitals on time. • Project confidentiality affects who and how people are involved. • People are not willing to hear dissenting voices. Not all voices round the table for a project are equal. • Prioritisation of capital builds is often politically not need driven. • Risk appetite, safe against sterile. • Boards are not able to hold contracts to account due to workaround ramifications. • People see it as a risky area to work in, which impacts their ability to decide whether to participate.
Creating an environment of collaborative knowledge	• Lessons should be learned throughout projects, not at the end. • Learning from other sectors. • Increased sharing between boards. • Requirement for an independent function as facilitator. • Address the tension of sharing and the potential backlash of sharing problems.

User Research – Key Insights

Theme	Insights
Creating a team of interdisciplinary experts	• Central resource of experts which is shared across Scotland. Smaller Boards in particular may need this, where there isn't scale to warrant dedicated roles. • People in a bridging role who can facilitate between experts. • Neither boards nor contractors have each others' skill sets.
Skills and training	• Account for the variety and depth of technical knowledge. • Skills not always in the system. • A lot of these skills are likely to disappear due to retirement. Knowledge/skills retention is needed. • Upskilling those who participate in the process in order to be an 'intelligent client'.
Having experts available at the right points in the processes. i.e. IPC, Estates and Executives, facilities management	• Greater emphasis on involvement in the earlier stages of the process, i.e. design, construction and commissioning. • Staff need capacity to contribute to projects, not an addition to the day job. This is more challenging for smaller boards where staff have broader roles. • There should be greater sharing of skills within regions. • When facilities management is outsourced, suppliers or potential suppliers have a greater opportunity to input.
National and local	• Creating added value relationships between the body and local boards.
Procurement	• Current procurement processes are not fit for purpose. • Boards do not have ability to check what contractors are delivering. • Responsibilities and liabilities need to be reviewed. • Boards do not have the legal right to have control over the day-to-day activities of the build.

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User Research – Key Insights

Theme	Insights
Guidance	• Guidance needs more ‘teeth’. • Guidance needs to be clarified and when it’s applicable in full or where appropriate. • There needs to be support on how to translate guidance in practice. • People are getting advice and guidance from people, not documents. • Looking to achieve international best practice.
Change control	• Compound impact of multiple change control on projects results in a building or feature that may not be fit for purpose. Decision makers can’t don’t know the implications until it’s too late. • Facilities management is expected to absorb the ongoing financial impact of change control. • Challenges managing trade-offs in change control whilst maintaining quality outcomes. Too many trade offs result in additional costs to fix things after the building is complete. Fixing derogation decisions after the building is complete is expensive to facilities management. • Evidence base for assurance in change control e.g. like-for-like or better substitution (derogation), and recording decisions and reasons for decisions. • Not all the right people are involved in the process of change control.
Governance	• Legal accountability remains with boards. • Improve boards’ ability to govern their projects. • Clarify responsibility.
Ongoing maintenance	• Design needs to factor in the whole lifecycle of the build, including soft and hard facilities management, ongoing running costs and how the building will be decommissioned.

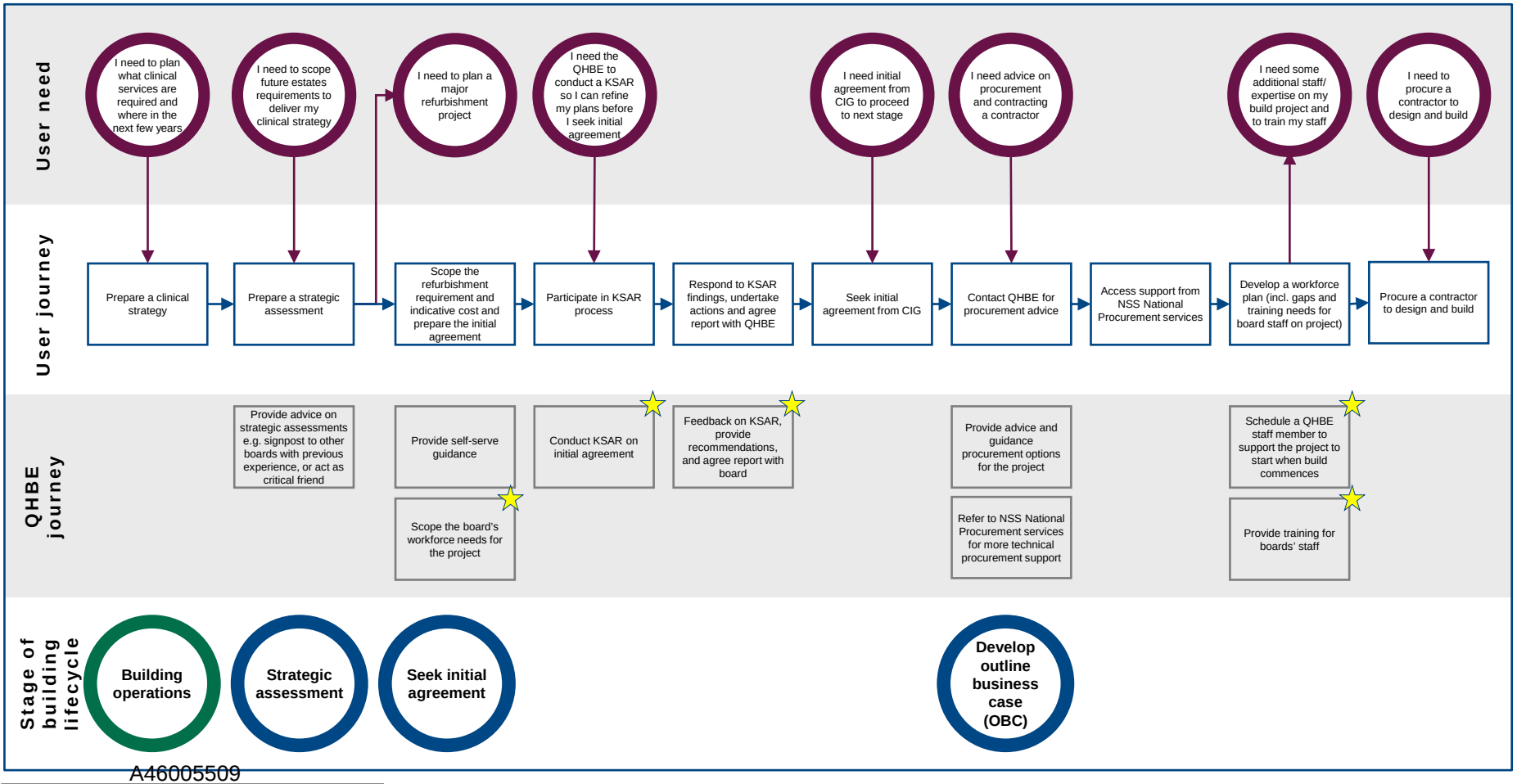
User Research – Key Insights

Theme	Insights
Design	• Process of design needs more engagement from SMEs. • Need to provide assurance on design from QHBE. • Design for patient pathways. • Design for function over form. • Design for staff wellbeing. • Design as patient-centred. • Facilities management should be a core part of design.
Functions of QHBE	• Support with evaluation. • Assurance including oversight of derogation audit trail. • Coordinating support of expertise. • National resource. • Supporting key stages of build. • Managing the existing estates and the risks of aging estates. • Advice on land law use.

Appendix B
User Journey

User Journey

The journey below is an example of the type of experience a board may have using QHBE services when undertaking a major refurbishment. This is just one situation and doesn't cover every potential scenario.



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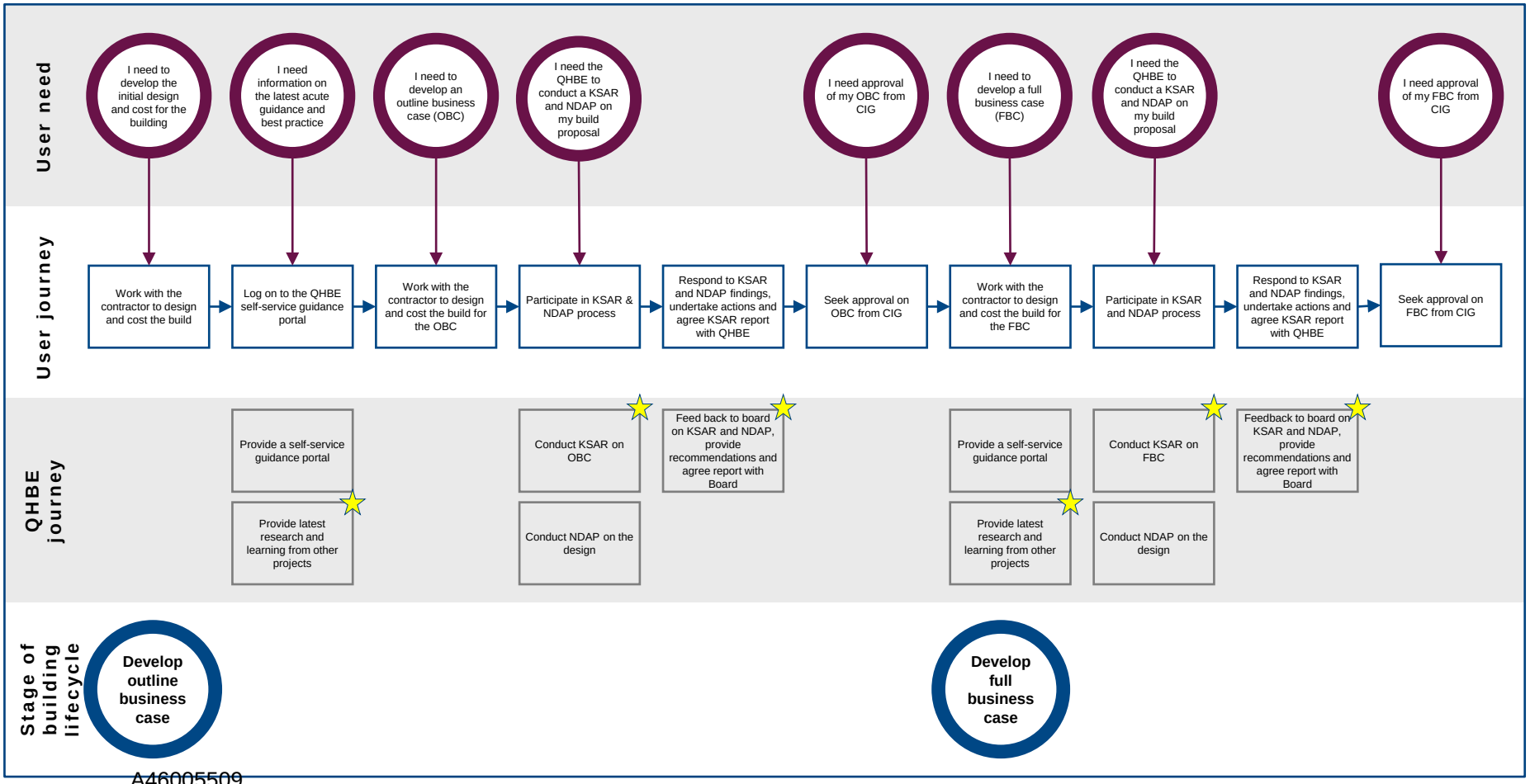
Key: ★ New national service or process

User Journey

User journey continued from previous slide



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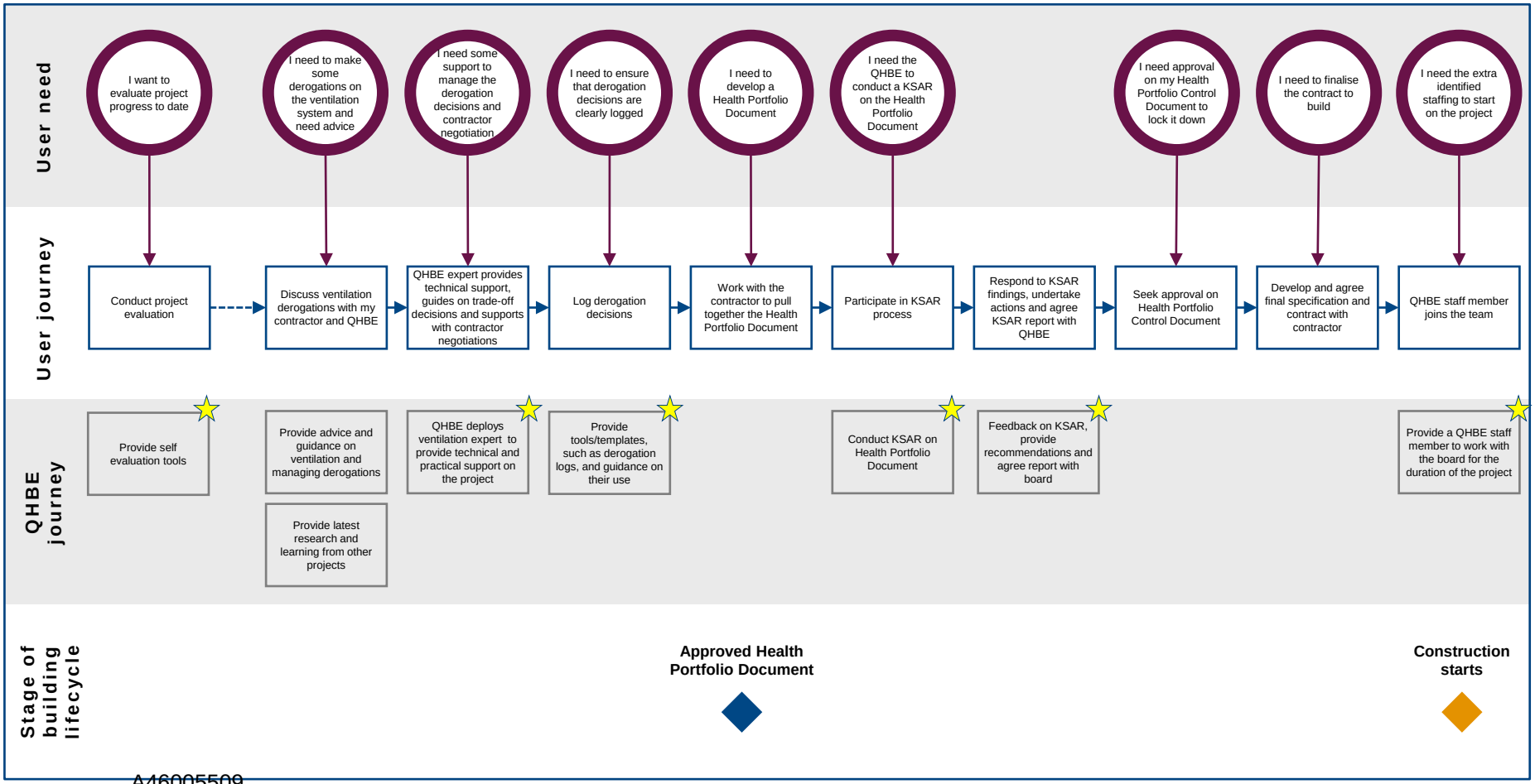
Key: ☆ New national service or process

User Journey

User journey continued from previous slide



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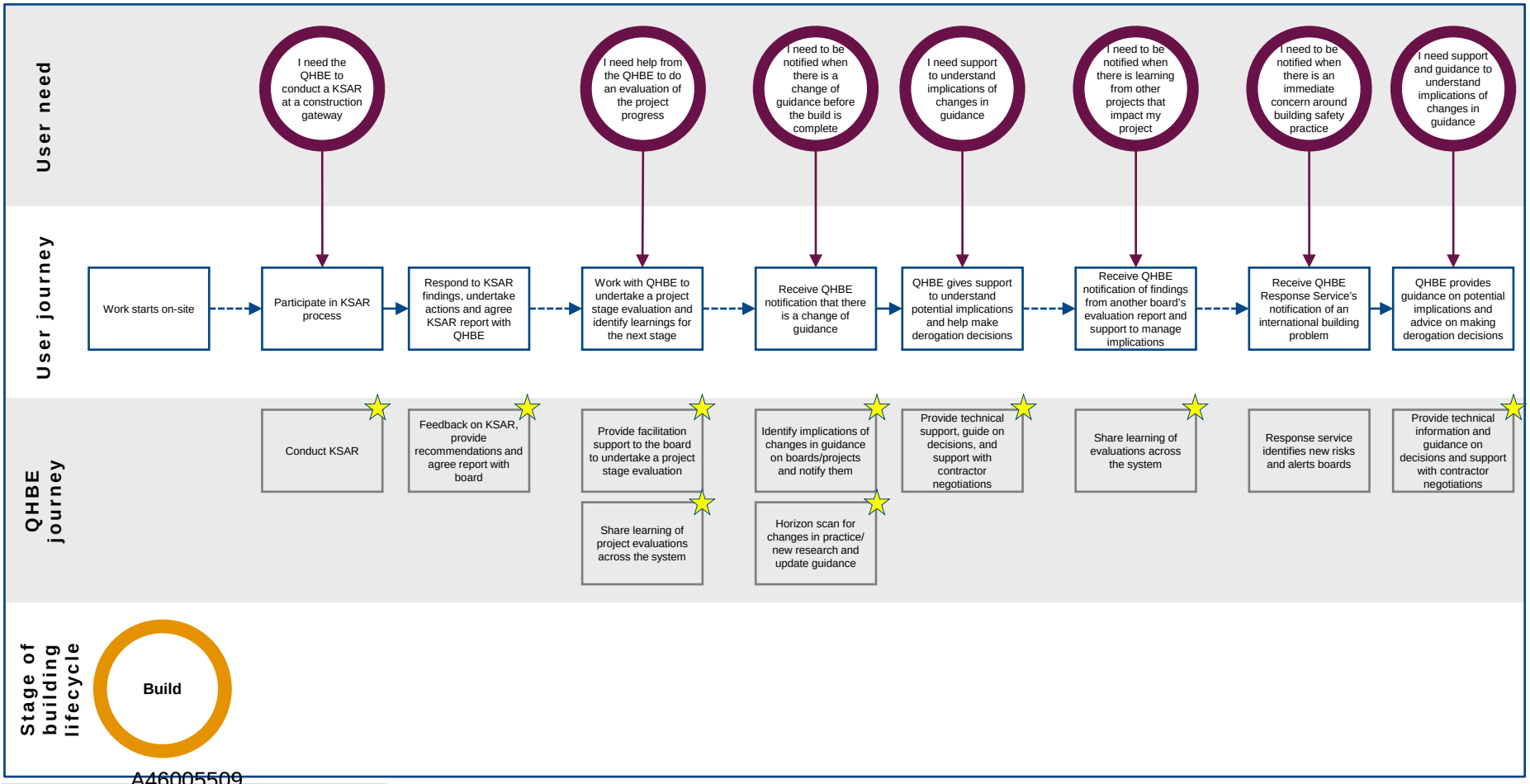
Key: ☆ New national service or process

User journey

User journey continued from previous slide



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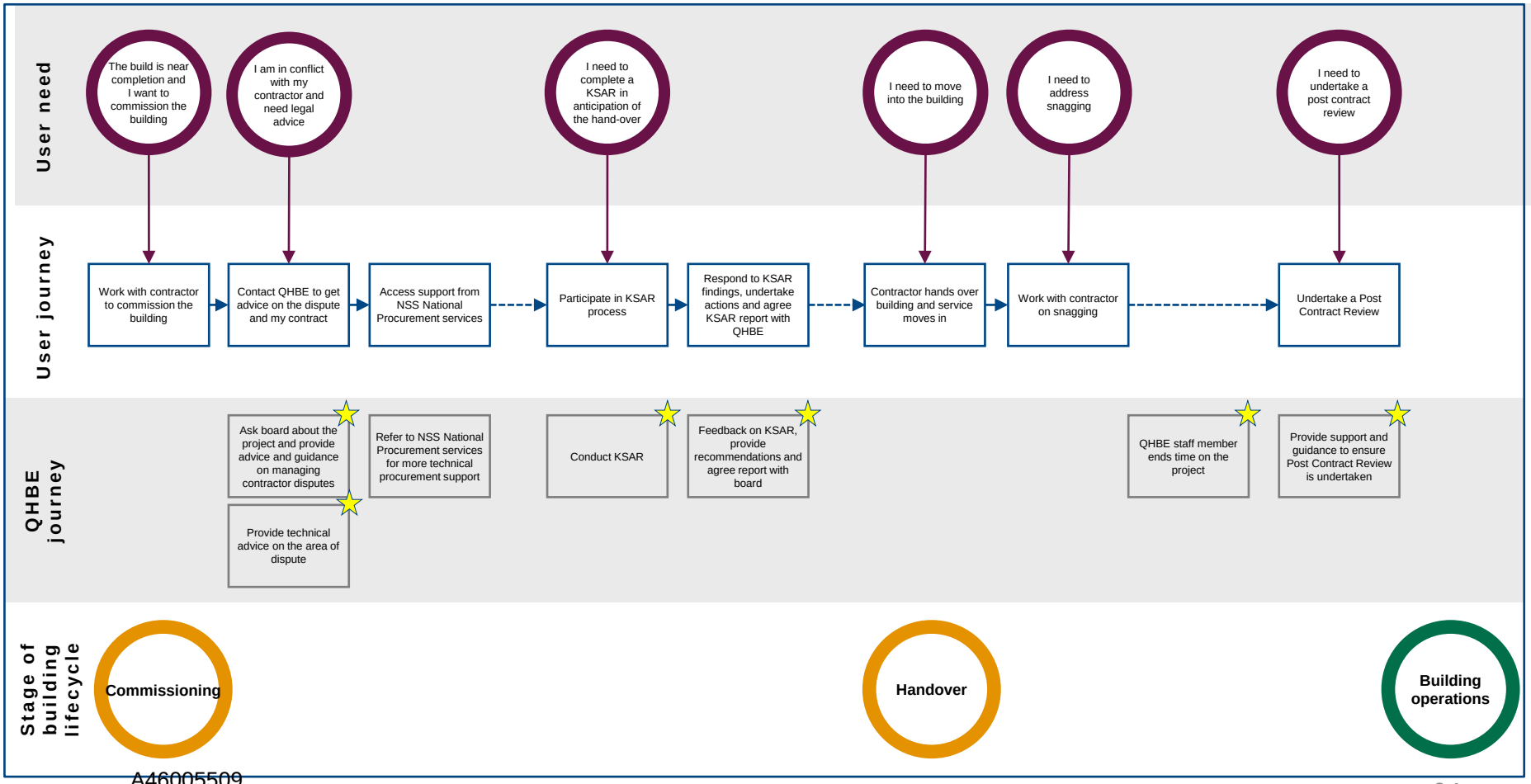
Key: ☆ New national service or process

User journey

User journey continued from previous slide



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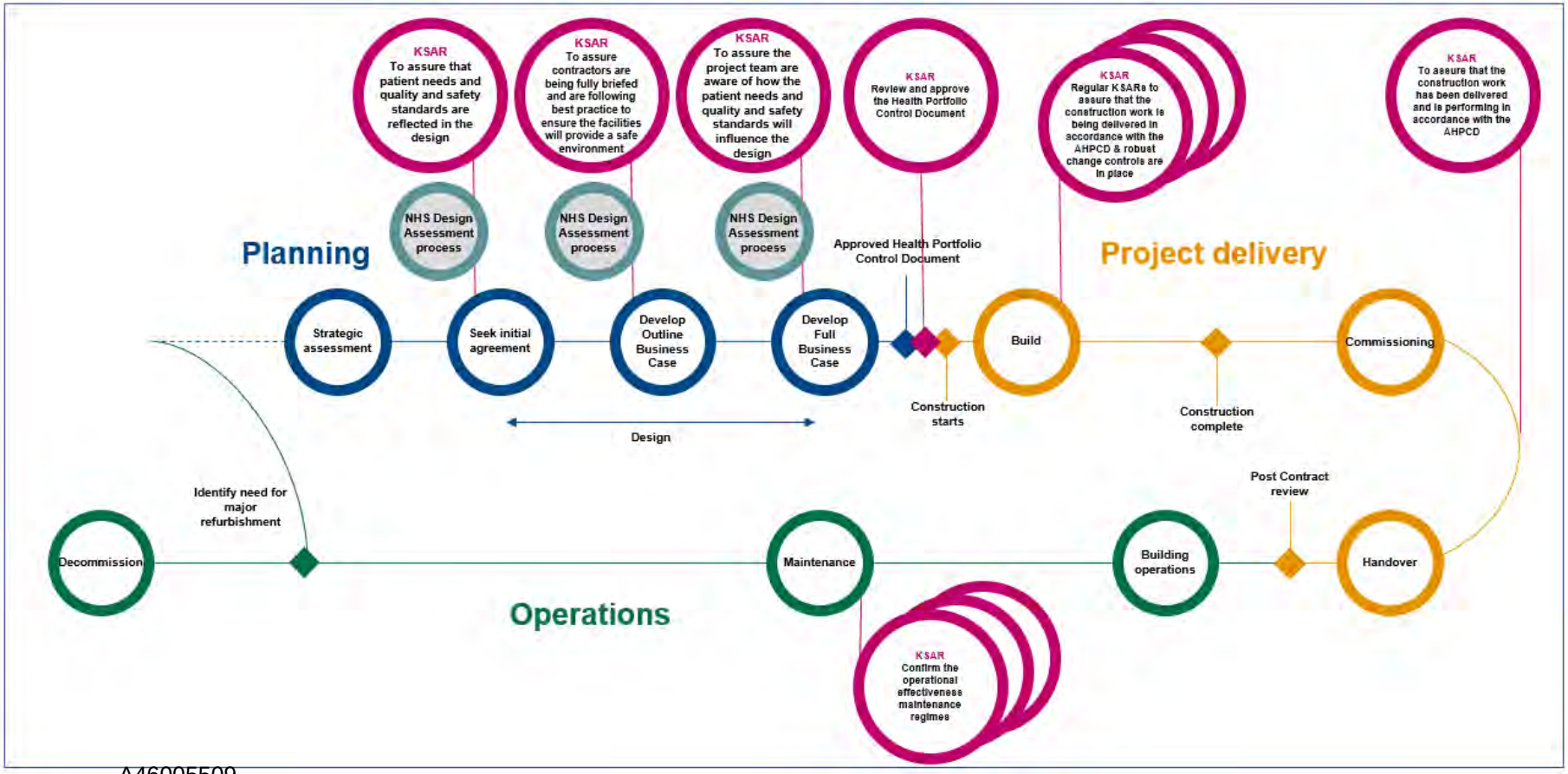
Key: ☆ New national service or process

Appendix C
Compliance Model

Compliance model

The diagram below outlines the QHBE compliance model. Key Stage Authorisation Reviews (depicted by pink circles) are new components of the QHBE Compliance



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Health Finance, Corporate Governance and Value Directorate
Richard McCallum, Director

[redacted]

Chief Nursing Officer Directorate
Professor Amanda Croft, Chief Nursing Officer

[redacted]

Scottish Government
Riaghaltas na h-Alba
gov.scot

DL(2021) 14
27 May 2021

Dear Colleague

NHS SCOTLAND ASSURE: QUALITY IN THE HEALTHCARE ENVIRONMENT

On 1 June 2021, a new service, NHS Scotland Assure, is launching as part of services delivered by NHS National Services Scotland (NSS).

NHS Scotland Assure has been co-designed with users to deliver a co-ordinated approach to the improvement of risk management in new builds and refurbishment projects across NHS Scotland. The new service will underpin a transformation in our approach to minimising risk in our healthcare buildings and environments, protecting patients from the risk of infection and supporting better outcomes for patients in Scotland.

NHS Scotland Assure, via NSS, is accountable to the Scottish Government, and will provide assurance that the Healthcare Built Environment is safe, fit for purpose, cost effective and capable of delivering sustainable services over the long term. Its relationship with the Scottish Government will be with both the Health Finance, Corporate Governance and Value Directorate and the Chief Nursing Officer's Directorate.

From the 1 June 2021, all NHS Board projects that require review and approval from the NHS Capital Investment Group (CIG), will need to engage with NHS Scotland Assure to undertake key stage assurance reviews (KSARs). Approval from the CIG will only follow once the KSAR has been satisfactorily completed. The KSARs have been designed to provide assurance to the Scottish Government that guidance has been followed. The Scottish Government may also commission NHS Scotland Assure to undertake reviews on other healthcare built environment projects. This does not change accountability for the projects; NHS Boards remain accountable for their delivery. NHS Scotland Assure will be accountable for the services it provides that support delivery of the projects.

Addresses

For action
NHS Board Chief Executives
NHS Directors of Finance
NHS Nursing Directors
Directors of Estates and Facilities

For information
NHS Board Chairs

Enquiries to:
Alan Morrison
Deputy Director Health
[redacted]
[redacted]
[redacted]

Using the Scottish Approach to Service Design, NSS has designed NHS Scotland Assure as a multi-disciplinary team, with subject matter experts in the fields of infection prevention and control, medical microbiology, specialist engineering, science, hard and soft facilities and building management. NHS Scotland Assure will have close working relations with Healthcare Improvement Scotland (HIS), National Education Scotland (NES) and Public Health Scotland (PHS), recognising their areas of expertise. It will further develop its connections to other UK and international bodies and services as it develops.

It will undertake a leadership role supporting NHS Boards while they deliver oversight for the design, construction, and maintenance of major infrastructure developments within the NHS. As a quality management system for the healthcare built environment, NHS Scotland Assure will strengthen infection prevention and control and play a crucial guidance role regarding incidents and outbreaks across health and social care.

Due to the impact of the pandemic, the service is launching with a phased approach. At 1 June 2021, the service will launch with its first phase of design completed. The second phase of service design will continue throughout 2021-22 and will see further enhancements developed through the year.

For further information, please contact [redacted]

Your sincerely,

[redacted]

Richard McCallum
Director of Health Finance and Governance

[redacted]

Professor Amanda Croft
Chief Nursing Officer

Appendix

NHS Scotland Assure: Quality in the Healthcare Environment

Background

NHS National Services Scotland was commissioned by Scottish Government to design and implement a new approach to improve the quality of our healthcare environment. This was outlined in the 2019/2020 Programme for Government in response to issues identified in the built environment of new hospitals in Scotland.

"To ensure patient safety we will create a new national body to strengthen infection prevention and control, including in the built environment. The body will have oversight for the design, construction and maintenance of major infrastructure developments within the NHS and also play a crucial policy and guidance role regarding incidents and outbreaks across health and social care."

NHS Scotland Assure has been formed to promote confidence that the NHS estate is safe and of high quality.

Scope

Arrangements for quality in the healthcare built environment are changing in Scotland. NHS Scotland Assure and its functions are for all NHS health and care environments, and cover the full lifecycle of a build. Infection prevention and other infrastructure harm prevention measures will be designed at the very outset of the planning, design and construction stages of a healthcare facility and maintained thereafter. NHS Scotland Assure will consider risks as they relate to the built environment.

Aims and objectives

Using the Scottish Approach to Service Design and involving service users through the process, NHS Scotland Assure has been designed to improve the management of risk in the built environment across Scotland, providing greater confidence to stakeholders.

The buildings and environment we deliver healthcare in play a large part in preventing and controlling the risk of transmission of infection and other harms. It's essential our buildings are safe, resilient and not vulnerable to these risks; where these can be prevented. NHS Scotland Assure will work collaboratively with NHS Boards to make sure our buildings are compliant with best available evidence in all aspects of safety, and systems are designed and built to be safe at the point of initiation of services.

Quality Management System Approach

NHS Scotland Assure adopts the Healthcare Improvement Scotland (HIS) Quality Management System and will deliver Quality Assurance for risk management in the built environment through:

- **Planning** - Intelligence capabilities enabling a preventative approach to managing risk.
- **Assurance and Control** - Collaborative working with Health Boards to ensure they are compliant with Guidance.
- **Improvement** - Research and the production of evidence based guidance.

Key functions

Consisting of five key functions, NHS Scotland Assure is designed to align to the Healthcare Improvement Scotland Quality Management framework.

- National leadership and strategy
- Planned lifecycle support
- System capacity and capability
- Intelligence and knowledge sharing
- System response

With an overarching leadership role, NHS Scotland Assure represents NHS Scotland's work to manage risk in the built environment at a national level and influence the development of new policy.

Governance

Alongside building robust relationships across the system, NHS Scotland Assure and NHS Boards will jointly sign off key stage assurance reviews (KSARs) at relevant stages of projects. NHS Boards are required to engage with NHS Scotland Assure in this process.

Healthcare Improvement Scotland (HIS) will continue inspections of NHS Hospitals and services through the Healthcare Environment Inspectorate (HEI). NHS Scotland Assure will work with HIS to ensure inspections carried out by the HEI are supported by relevant expertise.

NHS Scotland Assure will form a strategic partnership with National Education Scotland to deliver the workforce education development service and will collaborate with PHS to share intelligence and expertise.

NHS Scotland Assure is accountable to the Scottish Government. Through shared commitment to transparency and accountability, assurance will be provided that the healthcare built environment is compliant with the best available evidence in all aspects of safety, is fit for purpose, cost effective and capable of delivering sustainable services over the long term.

NHS Scotland Assure will provide a structured forum that will enable construction, facilities professionals and clinical colleagues to work in an integrated manner to ensure that the healthcare built environment is safe, fit for purpose, cost effective and capable of delivering sustainable services over the long term.

By reducing risk in the healthcare-built environment to the lowest possible level through enhanced and new services, NHS Scotland Assure will unite stakeholder groups across sectors to minimise risk and improve quality across NHS Scotland's estate, increasing patient safety.

Services

NHS Scotland Assure consists of eight new services, supporting the management of risk in healthcare builds across Scotland. For some services, elements are already delivered across the system, and where this is the case, enhancements will be made.

Due to the impact of the pandemic, the service is launching with a phased approach. At 1st June 2021, the service will launch with its first phase of design completed. The second design phase throughout 2021/22 will see further development of the service
.
Please see our website for the latest information about these services.

Contact Us

[redacted]

Health Finance, Corporate Governance and Value Directorate
Alan Morrison, Deputy Director of Health Infrastructure, Investment and PPE

Scottish Government
Riaghaltas na h-Alba
gov.scot

[redacted]

Dear Colleague

NHSSCOTLAND ASSURE: KEY STAGE ASSURANCE REVIEWS (KSAR) – COMMISSIONING AND HANDOVER

On the 27th May 2021, DL (2021) 14: NHS SCOTLAND ASSURE: QUALITY IN THE HEALTHCARE ENVIRONMENT announced that NHS Scotland Assure and the Key Stage Assurance Review (KSAR) process was being launched.

That DL informed all Health Boards that any business case going through the NHS Capital Investment Group for review would require the project to complete a satisfactory KSAR before Scottish Government approval would be granted.

This DL covers the commissioning, completion, and handover part of the process and notifies you that all building projects going through a KSAR, should not open to patients or the public until you receive a 'supported status' from NHS Scotland Assure.

Project teams should liaise with their NHS Scotland Assure KSAR team to ensure that their capital projects are completed satisfactorily to ensure that supported status is achieved. Any additional actions / conditions included within the KSAR 'supported status' report for Commissioning and Handover must also be completed within agreed deadlines. Non-compliance with these requirements will deem the new facility as not appropriate for public / patient occupation.

When a supported status has been achieved, and the local NHS Board is content for the building to open, the Senior Responsible Officer should send a copy of the report to the Chair of the NHS Capital Investment Group for information [redacted]

Yours sincerely

[redacted]

Alan Morrison
Deputy Director of Health Infrastructure, Investment and PPE

DL (2023) 03

6th February 2023

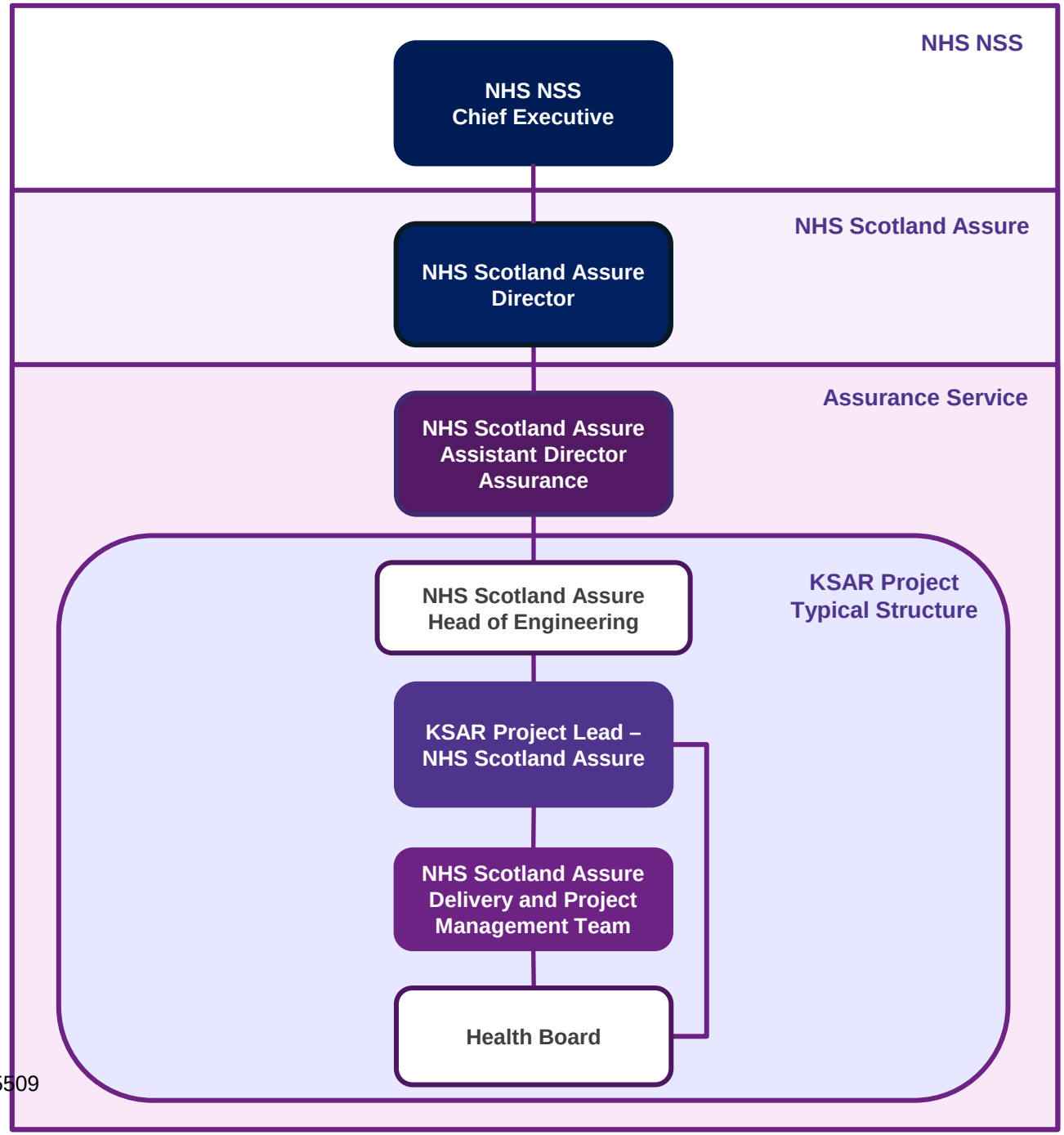
Addresses:

For action
NHS Board Chief Executives
NHS Directors of Finance
NHS Nursing Directors
Directors of Estates and Facilities

For information
NHS Board Chairs

Enquiries to:

Alan Morrison
Deputy Director Health
[redacted]


NHS NSS
NHS NSS
Chief Executive
NHS Scotland Assure
NHS Scotland Assure
Director
Assurance Service
NHS Scotland Assure
Assistant Director
Assurance
KSAR Project
Typical Structure
NHS Scotland Assure
Head of Engineering
KSAR Project Lead –
NHS Scotland Assure
NHS Scotland Assure
Delivery and Project
Management Team
Health Board

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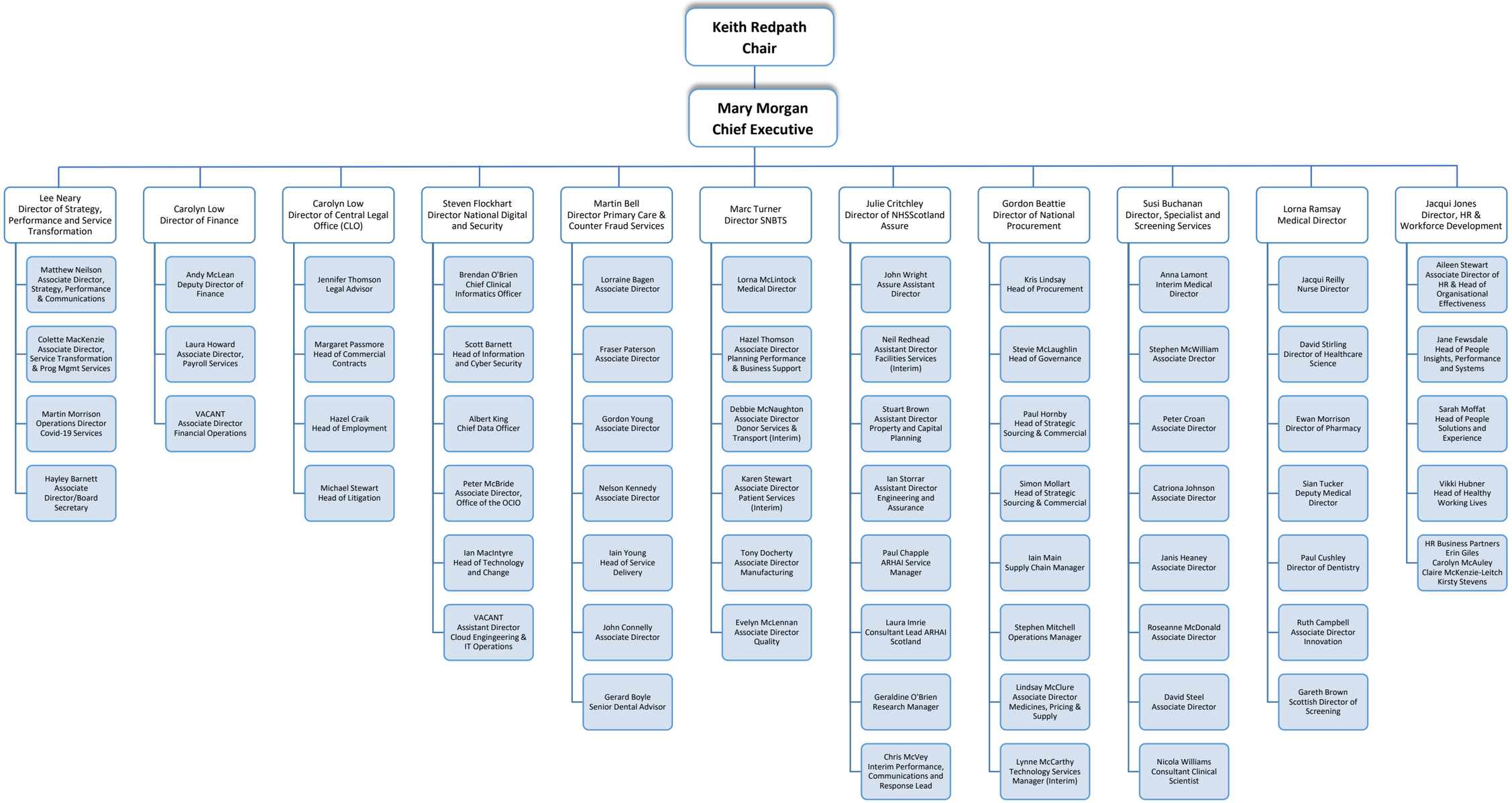
Keith Redpath
Chair
Mary Morgan
Chief Executive
Lee Neary
Director of Strategy, Performance and Service Transformation
Matthew Neilson
Associate Director, Strategy, Performance & Communications
Colette MacKenzie
Associate Director, Service Transformation & Prog Mgmt Services
Martin Morrison
Operations Director
Covid-19 Services
Hayley Barnett
Associate Director/Board Secretary
Carolyn Low
Director of Finance
Andy McLean
Deputy Director of Finance
Laura Howard
Associate Director, Payroll Services
VACANT
Associate Director
Financial Operations
Carolyn Low
Director of Central Legal Office (CLO)
Jennifer Thomson
Legal Advisor
Margaret Passmore
Head of Commercial Contracts
Hazel Craik
Head of Employment
Michael Stewart
Head of Litigation
Steven Flockhart
Director National Digital and Security
Brendan O'Brien
Chief Clinical Informatics Officer
Scott Barnett
Head of Information and Cyber Security
Albert King
Chief Data Officer
Peter McBride
Associate Director, Office of the OCIO
Ian MacIntyre
Head of Technology and Change
VACANT
Assistant Director
Cloud Engingeering & IT Operations
Martin Bell
Director Primary Care & Counter Fraud Services
Lorraine Bagen
Associate Director
Fraser Paterson
Associate Director
Gordon Young
Associate Director
Nelson Kennedy
Associate Director
Iain Young
Head of Service Delivery
John Connelly
Associate Director
Gerard Boyle
Senior Dental Advisor
Marc Turner
Director SNBTS
Lorna McLintock
Medical Director
Hazel Thomson
Associate Director
Planning Performance & Business Support
Debbie McNaughton
Associate Director
Donor Services & Transport (Interim)
Karen Stewart
Associate Director
Patient Services (Interim)
Tony Docherty
Associate Director
Manufacturing
Evelyn McLennan
Associate Director
Quality
Julie Critchley
Director of NHSScotland Assure
John Wright
Assure Assistant Director
Neil Redhead
Assistant Director
Facilities Services (Interim)
Stuart Brown
Assistant Director
Property and Capital Planning
Ian Storrar
Assistant Director
Engineering and Assurance
Paul Chapple
ARHAI Service Manager
Laura Imrie
Consultant Lead ARHAI Scotland
Geraldine O'Brien
Research Manager
Chris McVey
Interim Performance, Communications and Response Lead
Gordon Beattie
Director of National Procurement
Kris Lindsay
Head of Procurement
Stevie McLaughlin
Head of Governance
Paul Hornby
Head of Strategic Sourcing & Commercial
Simon Mollart
Head of Strategic Sourcing & Commercial
Iain Main
Supply Chain Manager
Stephen Mitchell
Operations Manager
Lindsay McClure
Associate Director
Medicines, Pricing & Supply
Lynne McCarthy
Technology Services Manager (Interim)
Susi Buchanan
Director, Specialist and Screening Services
Anna Lamont
Interim Medical Director
Stephen McWilliam
Associate Director
Peter Croan
Associate Director
Catriona Johnson
Associate Director
Janis Heaney
Associate Director
Roseanne McDonald
Associate Director
David Steel
Associate Director
Nicola Williams
Consultant Clinical Scientist
Lorna Ramsay
Medical Director
Jacqui Reilly
Nurse Director
David Stirling
Director of Healthcare Science
Ewan Morrison
Director of Pharmacy
Sian Tucker
Deputy Medical Director
Paul Cushley
Director of Dentistry
Ruth Campbell
Associate Director
Innovation
Gareth Brown
Scottish Director of Screening
Jacqui Jones
Director, HR & Workforce Development
Aileen Stewart
Associate Director of HR & Head of Organisational Effectiveness
Jane Fewsdale
Head of People Insights, Performance and Systems
Sarah Moffat
Head of People Solutions and Experience
Vikki Hubner
Head of Healthy Working Lives
HR Business Partners
Erin Giles
Carolyn McAuley
Claire McKenzie-Leitch
Kirsty Stevens

NHSScotland Assure Directorate Organisation Chart

Contents

Page 2	**NHSScotland Assure Senior Management Team**
Page 3	**Property & Capital Planning**
Page 4	**Facilities Services 1**
Page 5	**Facilities Services 2**
Page 6	**Facilities Services 3**
Page 7	**Research, Sustainability and Engineering**
Page 8	**NHSScotland Assure Programme Team**
Page 9 10 & 11	**ARHAI**
Page 12	**Fleet**

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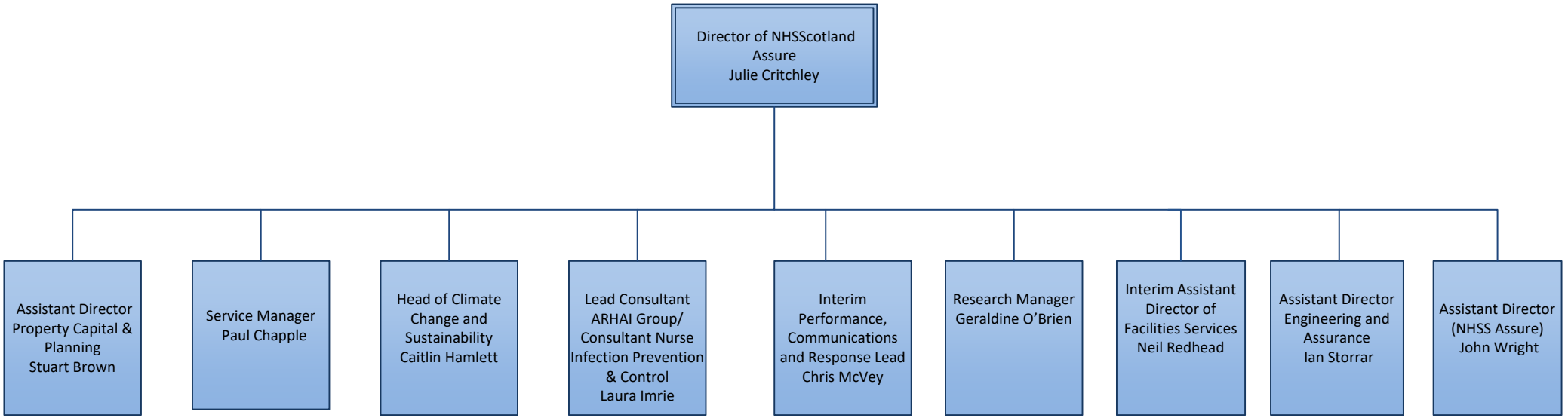
NHSScotland Assure Senior Management Team



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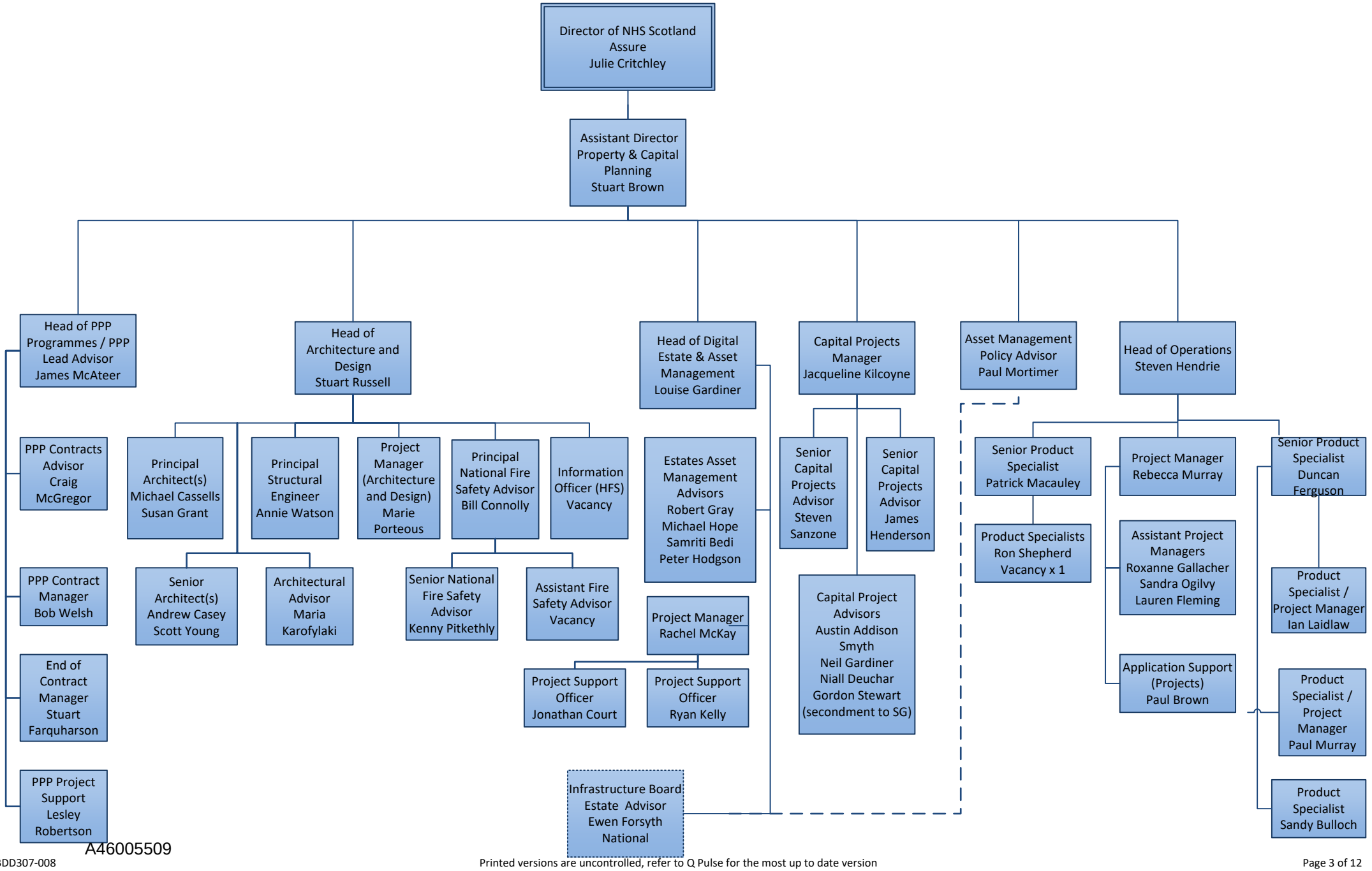

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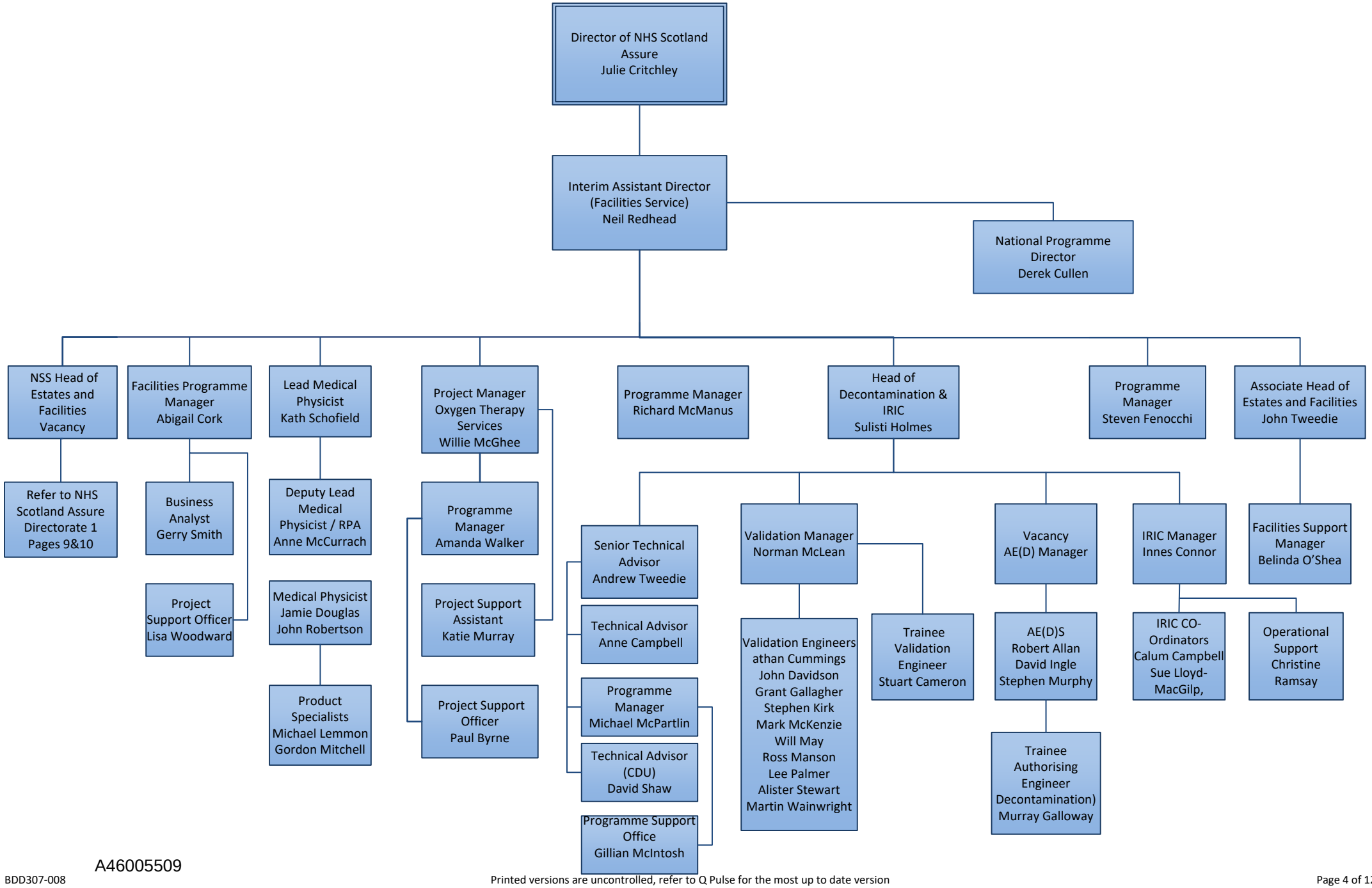
Facilities Services 1



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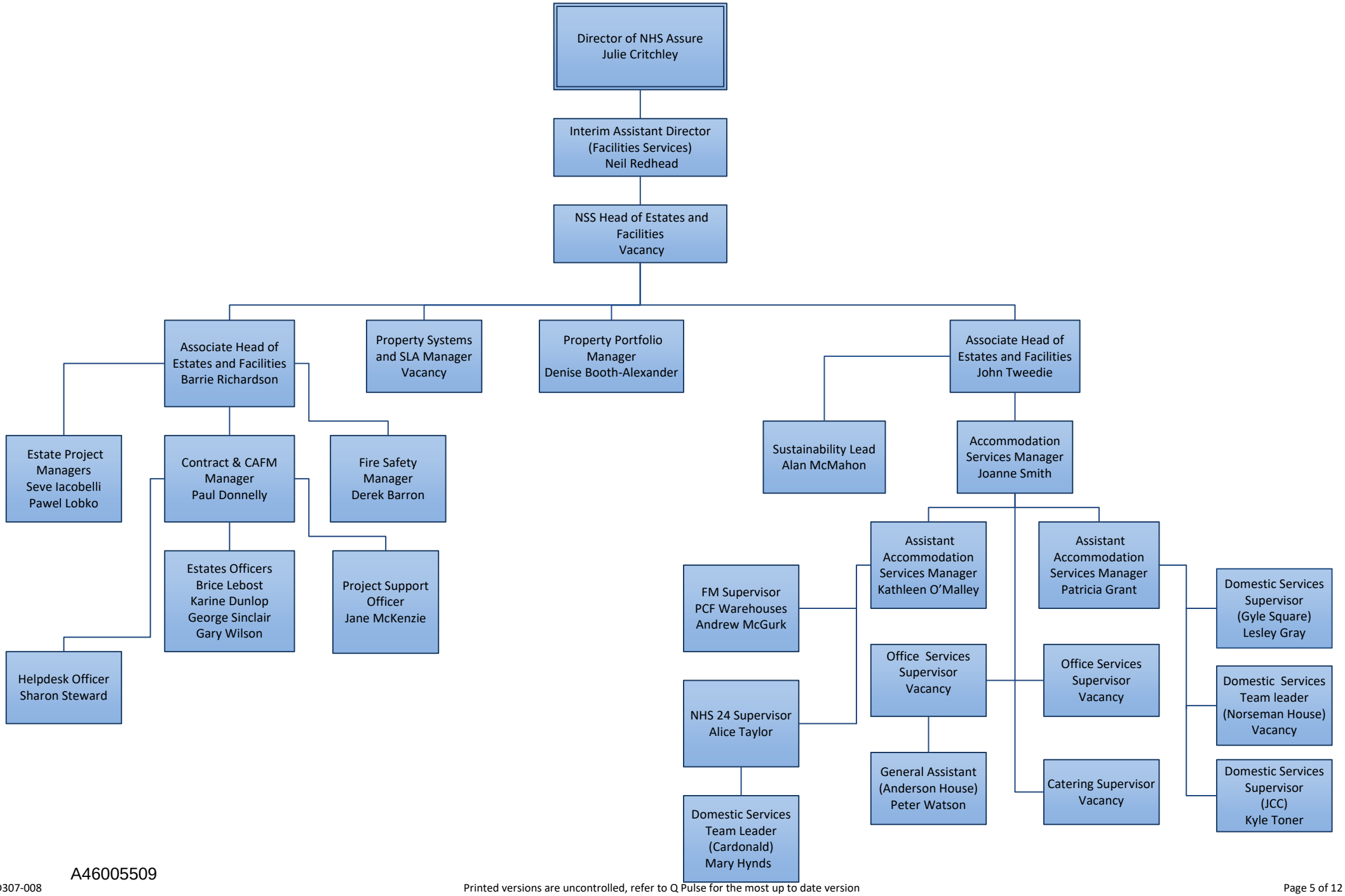

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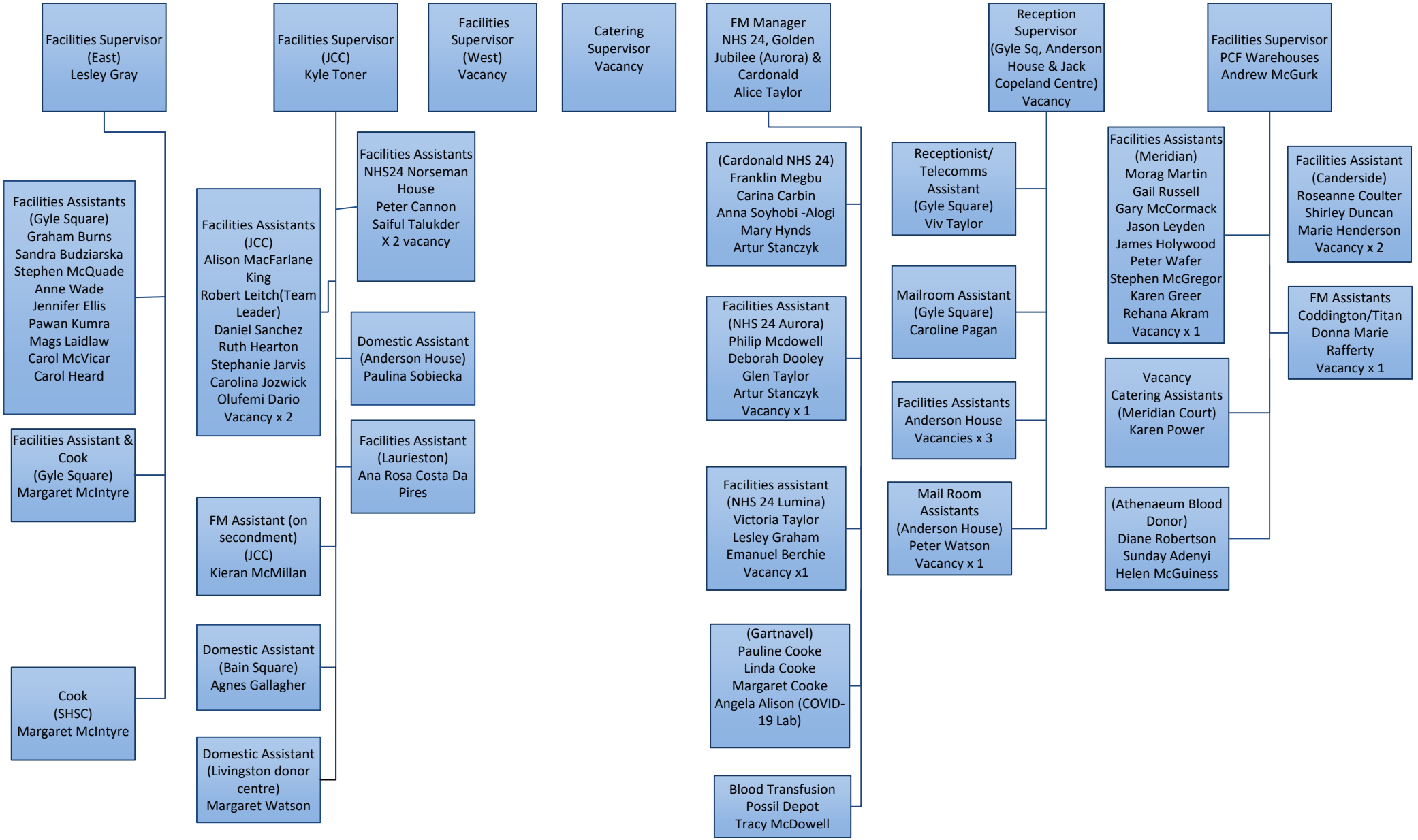

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Research, Sustainability & Engineering

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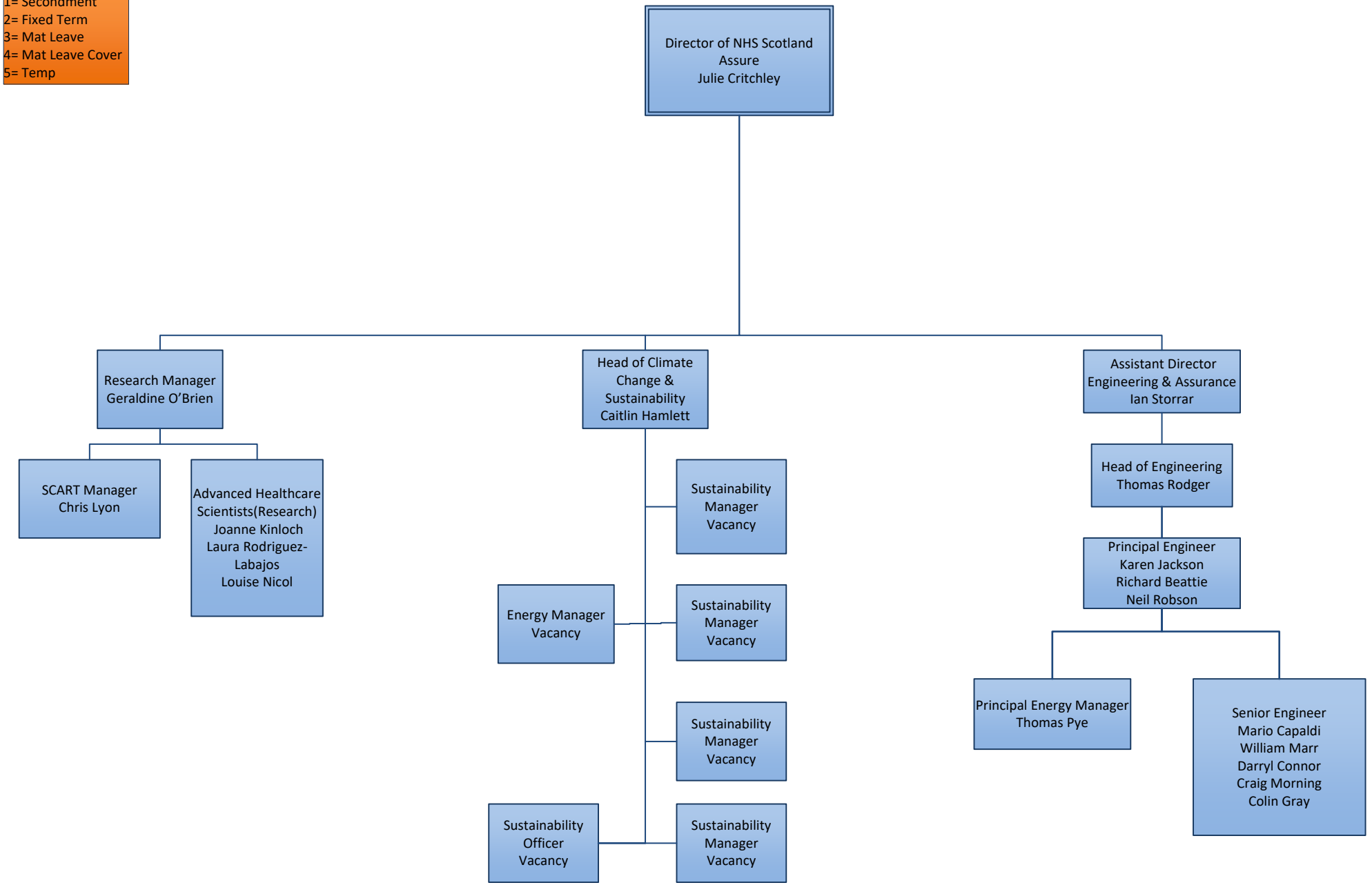
2= Fixed Term
3= Mat Leave
4= Mat Leave Cover
5= Temp



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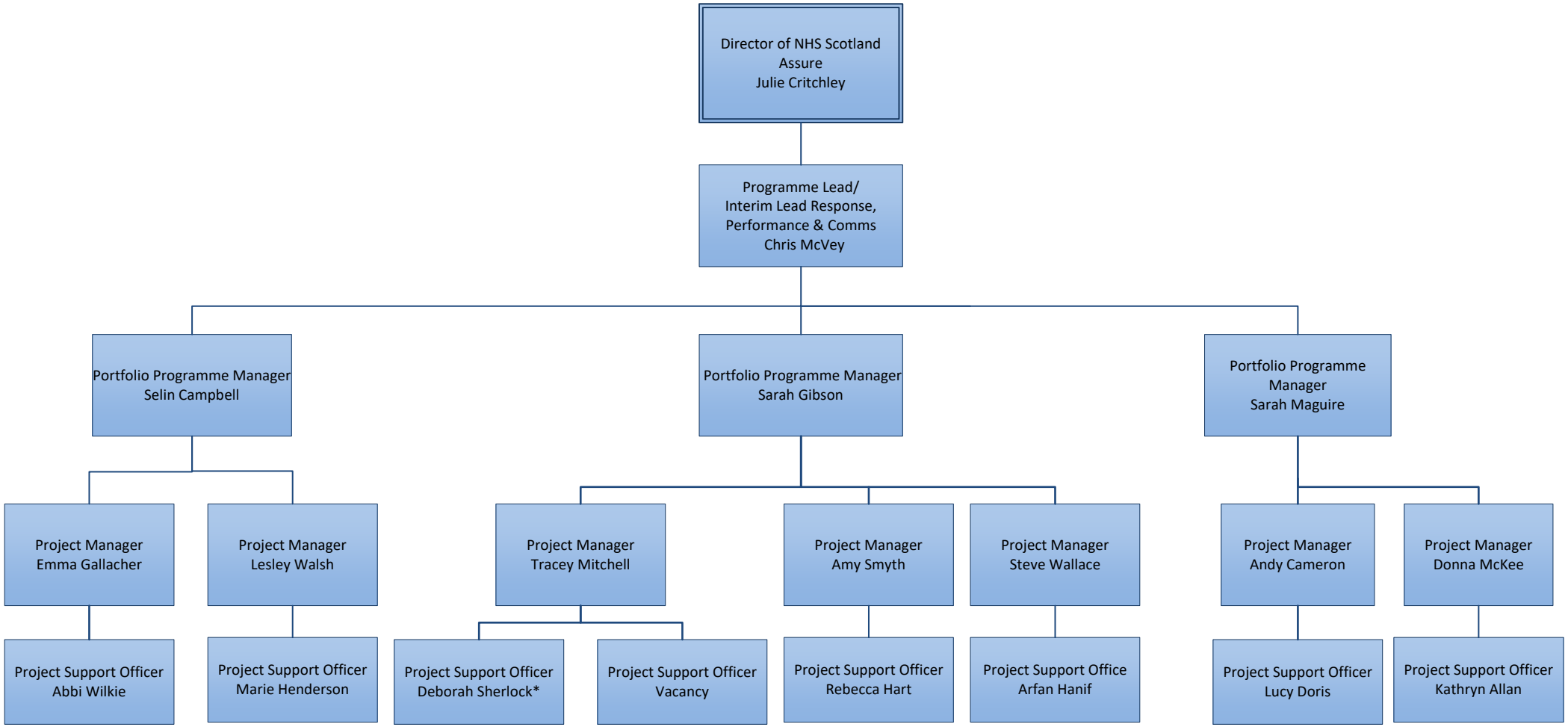
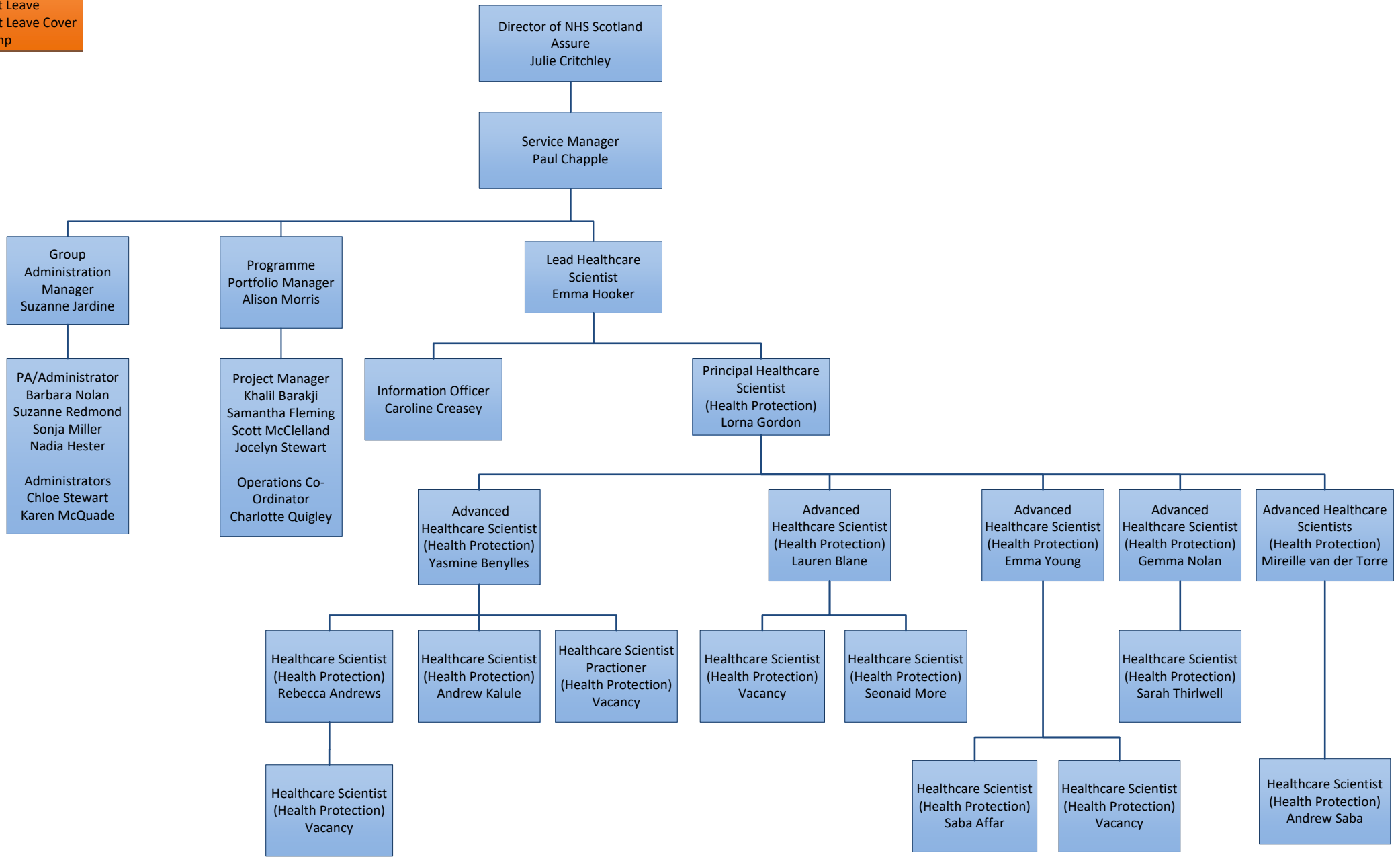
NHSScotland Assure Programme Team



* Temporary Contract

ARHAI - 1

1= Secondment
2= Fixed Term
3= Mat Leave
4= Mat Leave Cover
5= Temp



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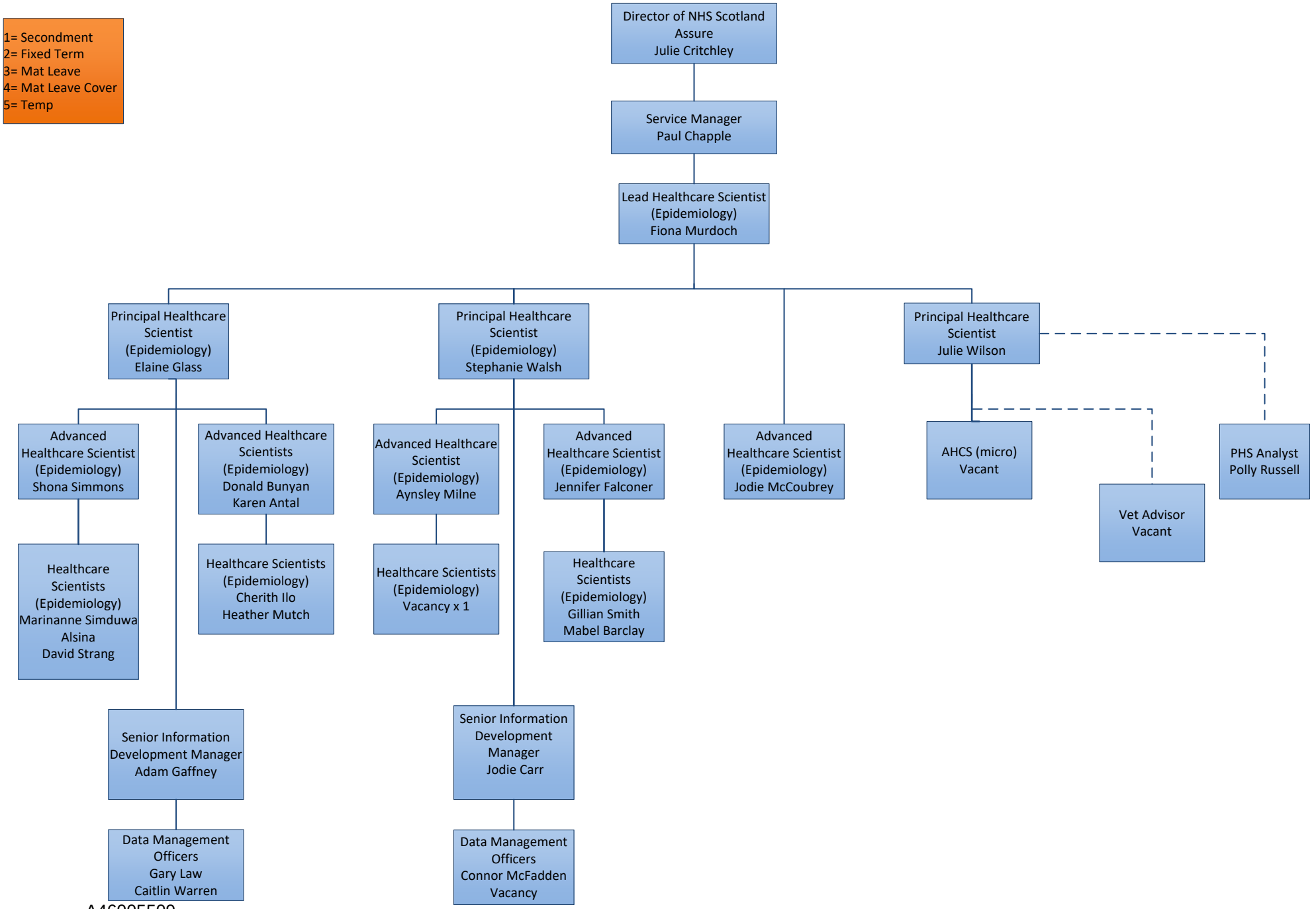
ARHAI - 2

1= Secondment
2= Fixed Term
3= Mat Leave
4= Mat Leave Cover
5= Temp



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ARHAI - 3

1= Secondment
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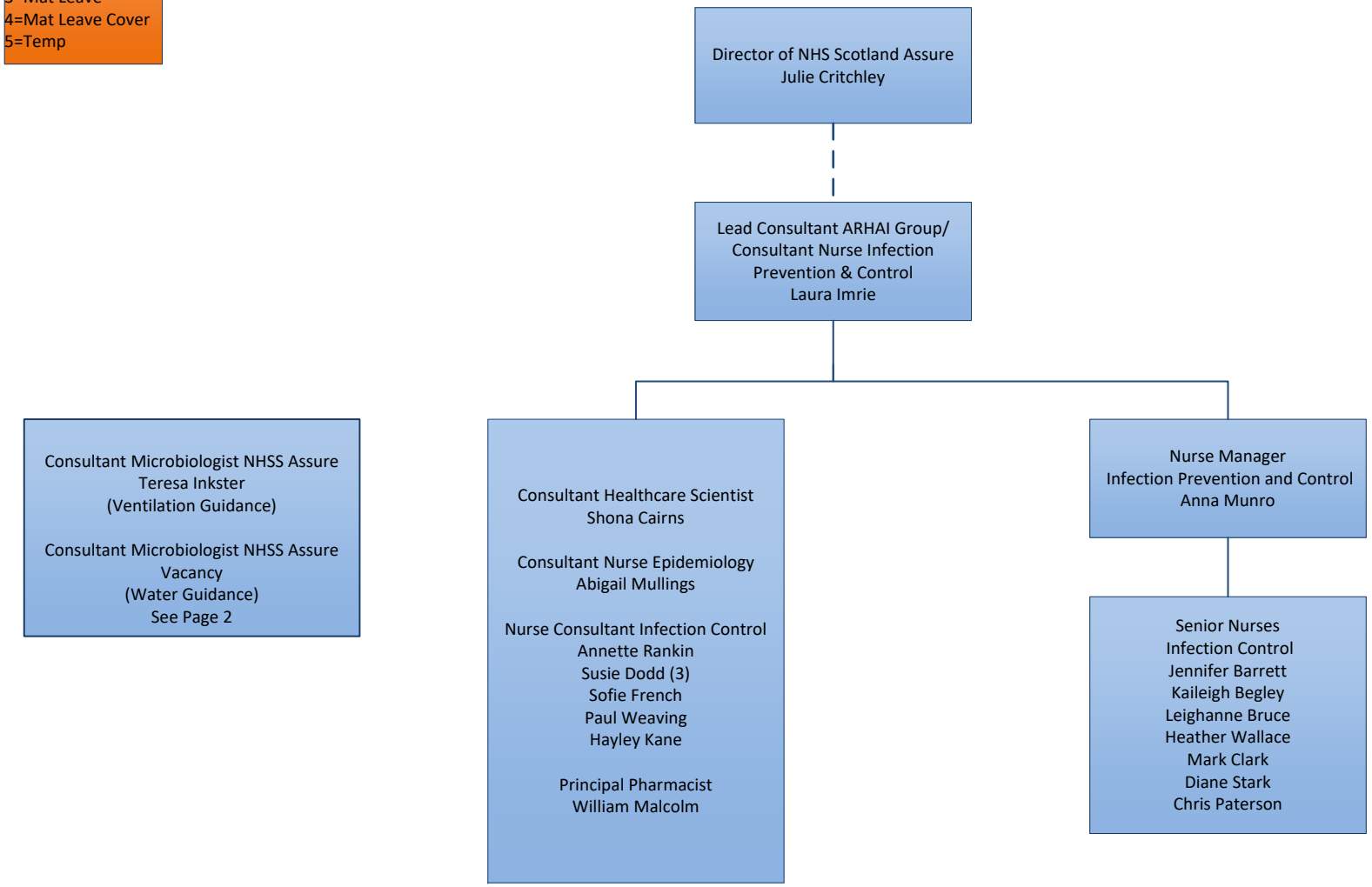
3=Mat Leave
4=Mat Leave Cover
5=Temp



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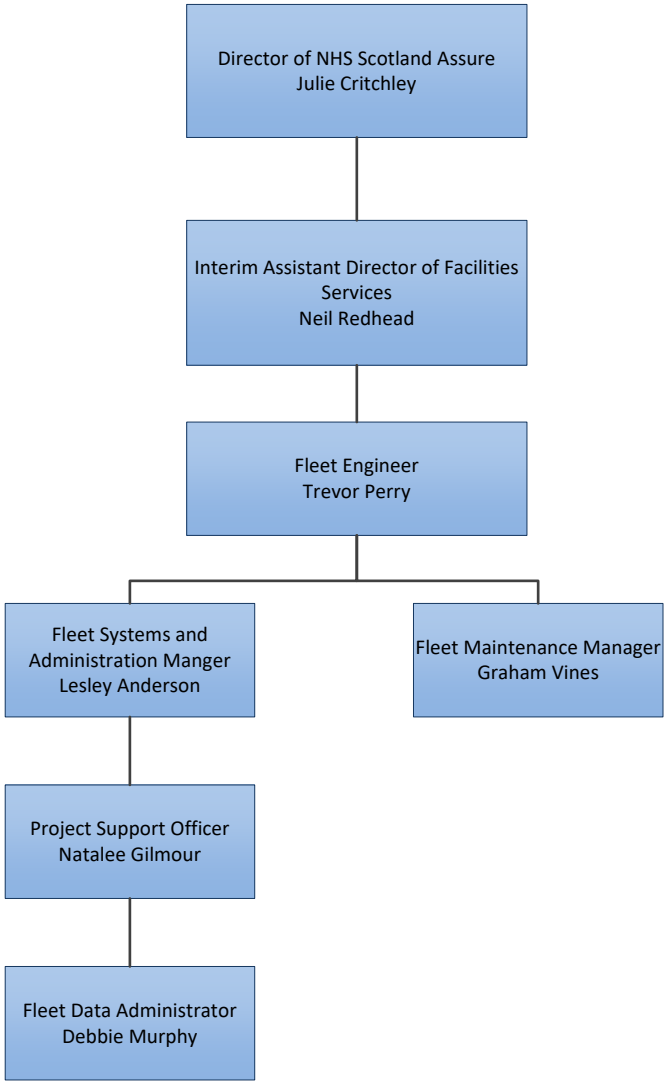
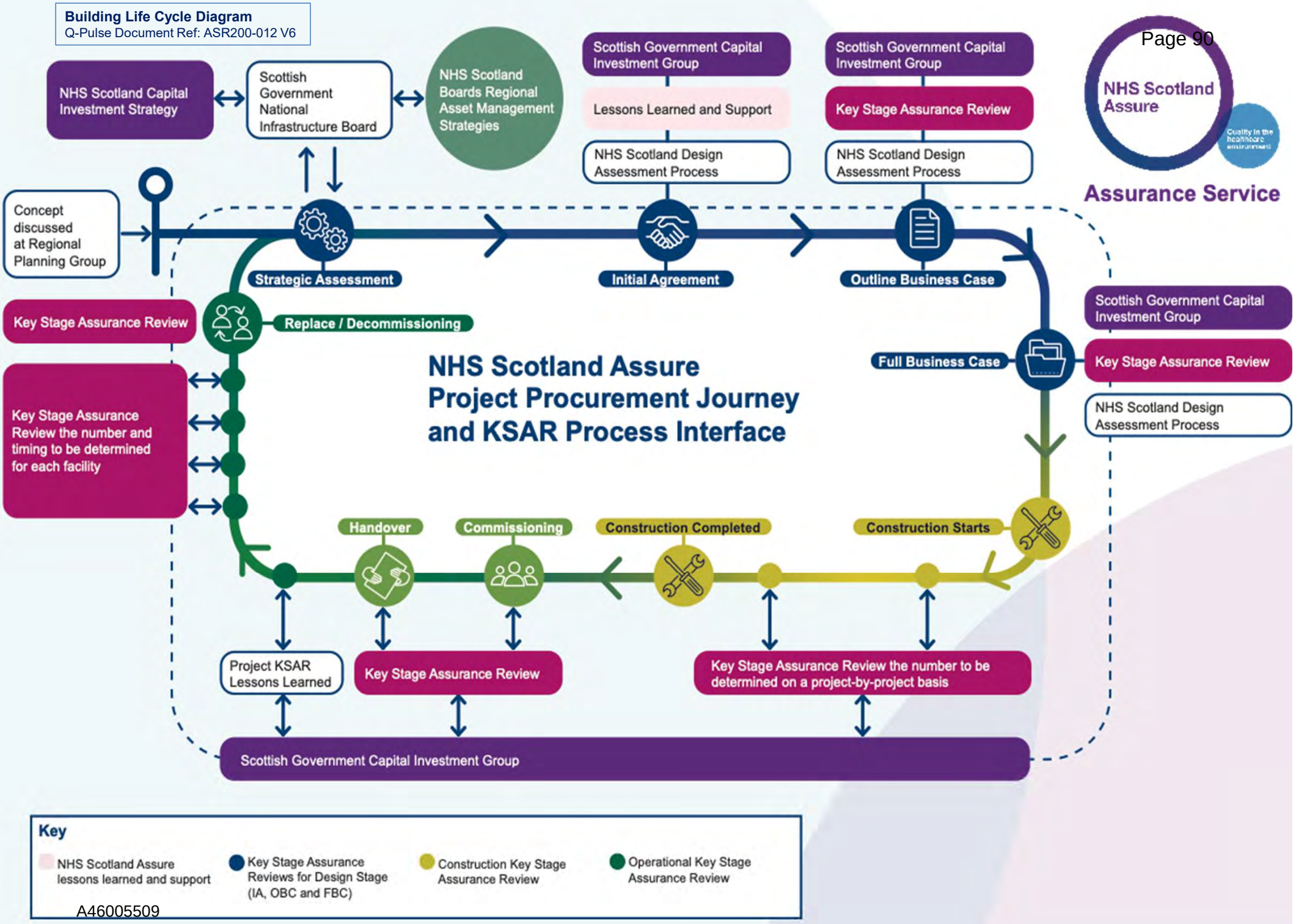

Director of NHS Scotland Assure
Julie Critchley
Interim Assistant Director of Facilities Services
Neil Redhead
Fleet Engineer
Trevor Perry
Fleet Systems and Administration Manger
Lesley Anderson
Fleet Maintenance Manager
Graham Vines
Project Support Officer
Natalee Gilmour
Fleet Data Administrator
Debbie Murphy


NHS Scotland Capital Investment Strategy
Scottish Government National Infrastructure Board
NHS Scotland Boards Regional Asset Management Strategies
Scottish Government Capital Investment Group
Lessons Learned and Support
NHS Scotland Design Assessment Process
Scottish Government Capital Investment Group
Key Stage Assurance Review
NHS Scotland Design Assessment Process
NHS Scotland Assure
Assurance Service
Concept discussed at Regional Planning Group
Strategic Assessment
Initial Agreement
Outline Business Case
Key Stage Assurance Review
Replace / Decommissioning
Scottish Government Capital Investment Group
Key Stage Assurance Review
NHS Scotland Design Assessment Process
Full Business Case
NHS Scotland Assure Project Procurement Journey and KSAR Process Interface
Key Stage Assurance Review the number and timing to be determined for each facility
Handover
Commissioning
Construction Completed
Construction Starts
Project KSAR Lessons Learned
Key Stage Assurance Review
Key Stage Assurance Review the number to be determined on a project-by-project basis
Scottish Government Capital Investment Group
Key
NHS Scotland Assure lessons learned and support
Key Stage Assurance Reviews for Design Stage (IA, OBC and FBC)
Construction Key Stage Assurance Review
Operational Key Stage Assurance Review

ARHAI Scotland

Antimicrobial Resistance and Healthcare Associated Infection

NHS National Services Scotland

ARHAI Scotland's operating model and strategy

FY 22/23-24/25

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Introduction

Antimicrobial Resistance & Healthcare Associated Infection (ARHAI) Scotland is a clinical service providing national expertise for infection, prevention and control (IPC), antimicrobial resistance (AMR) and healthcare associated infection (HAI) for Scotland.

ARHAI Scotland, along with Health Facilities Scotland (HFS), is part of NHS Scotland Assure. NHS Scotland Assure sits within the Procurement, Commissioning and Facilities Strategic Business Unit of NHS National Services Scotland (NSS).

This operating model and strategy positions how ARHAI Scotland operates and strives to improve over the coming years.

Vision

ARHAI Scotland's vision is;

> **"To enable Scotland to have a world leading approach to reducing the burden of infection and antimicrobial resistance (AMR)."**

Mission

ARHAI Scotland's overall mission is to improve the health and wellbeing of the population by reducing the burden of infection and antimicrobial resistance within Scottish care settings.

We will do this by establishing a robust evidence base for practice and building mechanisms for monitoring key priority areas, connecting with the wider health and social care and public health system and collaborating with key delivery partners including NHS Boards, care providers and other national bodies as commissioned by the Scottish Government.

Purpose

ARHAI Scotland coordinates the national programmes for IPC and AMR, supports local NHS Boards, other national bodies and stakeholders in the implementation and delivery of these key priority programmes to reduce the overall burden of infection and antimicrobial resistance in line with nationally agreed priorities.

Role

ARHAI Scotland provides expert intelligence, support, advice, evidence based guidance, clinical assurance and clinical leadership to local and national government, health and care professionals, the general public and other national bodies with the aim of protecting the people of Scotland from the burden of infection and antimicrobial resistance.

As the national organisation responsible for IPC and AMR, ARHAI Scotland will liaise with other UK countries and international counterparts in the delivery and development of these national priority programmes.

Ways of Working

As a National Service, ARHAI Scotland is commissioned via the Scottish Government. We work closely with the Chief Nursing Officer Directorate (CNOD), advising and contributing to policy as required, linking our strategy and work with the needs, priorities and policy of Scottish Government.

ARHAI Scotland consists of a number of clinically led, multidisciplinary teams that incorporate both clinical and non-clinical roles. These teams work together to deliver ARHAI Scotland's functions and six national priority programmes of work that strive to deliver our strategic priorities.

ARHAI Scotland's programmes are governed appropriately through a comprehensive governance structure. This governance structure incorporates risk and issue management and includes multi-stakeholder input at key stages.

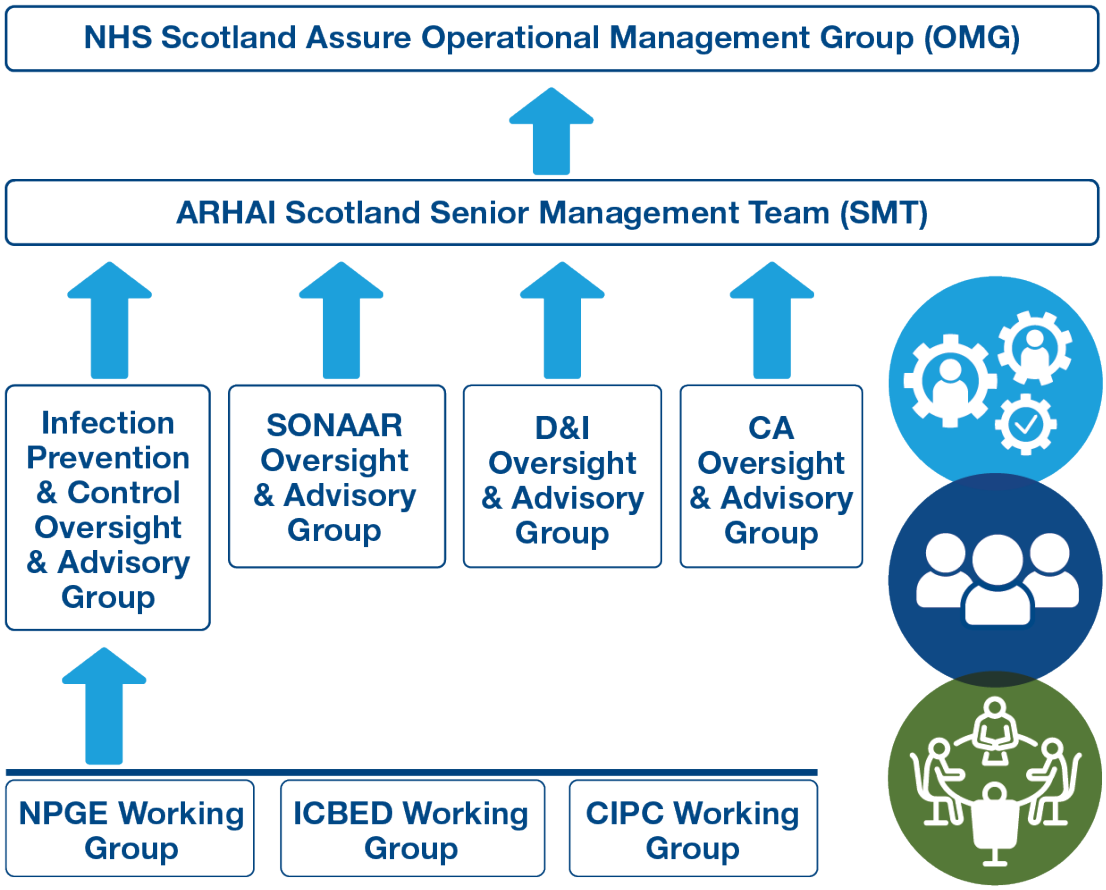
ARHAI Scotland Governance Structure

Level 3 Description
-ARHAI Scotland, HFS, NHS S Assure Services governance
-Risk approval. Esculated risks and issues reported

Level 2 Description
-Internal & CNOD
-Programme governance
-Assess, review & mitigate risk

Level 1 Description
-Internal programme reps & external stakeholders
-Providing oversight & advisory role for the 6 priority programmes
-Risk may be raised & described at these meetings

IPC Working Groups Description
-Internal & External stakeholders
-Expert opinion/support to consult, develop and test evidence-based context specific materials



ARHAI Scotland's six priority programmes of work:

CA - Clinical Assurance
CIPC - Community Infection Prevention and Control
D&I - Data and Intelligence
ICBED - Infection Control in the Built Environment and Decontamination
NPGE - National Policies, Guidance and Evidence
SONAAR - Scottish One Health Antimicrobial Use and Antimicrobial Resistance

ARHAI Scotland's Functions

The work of ARHAI Scotland is underpinned by delivering a wide range of functions, working with stakeholders across health and care and beyond to fulfil these functions.

ARHAI Scotland's functions are:

- surveillance and monitoring of infections and antimicrobial resistance to assess their impact on health
- clinical assurance to reduce risk in the built healthcare environment
- co-ordination of national infection prevention and control and antimicrobial programmes
- expert IPC/AMR advice and horizon scanning
- effective preparation and response to HAI outbreaks and incidents
- supporting the ongoing development of a confident, knowledgeable and competent IPC workforce in collaboration with NHS Education for Scotland
- enabling good professional practice
- research and innovation to provide evidence for action
- develop and maintain national evidence-based IPC guidance for Scotland

ARHAI Scotland Strategic Priorities

ARHAI Scotland also looks to continually develop and improve and strives to realise its vision:

"To enable Scotland to have a world leading approach to reducing the burden of infection and antimicrobial resistance (AMR)." by working towards a number of high level, multi-year strategic priorities:

- to provide expert, tailored national leadership to stakeholders in response to outbreaks and incidents, enabling and informing local capability and development of epidemiological intelligence, underpinned by available evidence;
- to drive forward smart and efficient data collection across Scotland, maximising the use of new technologies;
- to contribute to the ARHAI Scotland research agenda by identifying and addressing gaps in practice by leading, producing and commissioning quality HAI, AMR and IPC related research;
- to use new and innovative tools and techniques to present knowledge and information to local stakeholders that will inform action and empower staff to reduce the burden of infection and AMR and optimise the use of antimicrobials;
- to provide a gold-standard single point of resource for evidence based IPC guidance and support for local implementation;
- to support the development of an enhanced workforce that provides national level expertise on ARHAI, providing subject matter expertise to support the Scottish Government IPC workforce development strategy;
- to provide IPC clinical input and guidance ensuring IPC is embedded in all stages in the healthcare build lifecycle, with the aim of reducing infection risks in the healthcare built environment.

These strategic priorities are delivered via our six priority programmes of work and each programme has its own vision, set of long term aims and annual objectives to move towards the overall ARHAI strategic priorities. ARHAI Scotland publishes an **annual report** and this report details the work being done across ARHAI Scotland to deliver these strategic priorities.

NHS Scotland Assure
Quality in the healthcare environment

NHS National Services Scotland

NHS Scotland Assure Strategy

2023 - 2026

A46005509

Contents

Introduction 3

Our core themes 4

Our strategic objectives 5

Collaboration and engagement 7

Our services 8

How to engage with us 10

Introduction

Our vision – the future we will create

To be the recognised national technical and clinical leaders in the healthcare environment for NHS Scotland.

Our purpose – how we will shape the future

To provide expertise and evidence-based advice that contributes to reducing risk, delivering a sustainable healthcare service, and improving the healthcare experience for Scotland.

Our role

NHS Scotland Assure has been designed with users to deliver a coordinated approach to the improvement of risk management and quality in the healthcare environment across NHS Scotland.

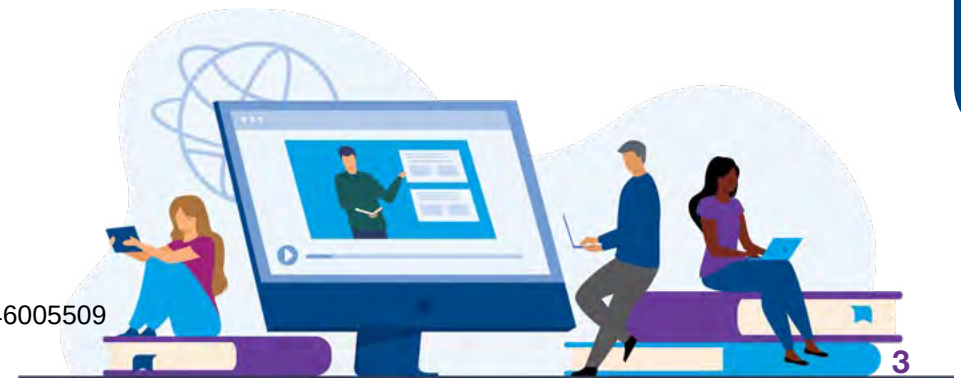
We underpin a transformation in the approach to promoting excellence, protecting patients from the risk of infection, and supporting better outcomes for the population.

We provide clinical and technical expertise to minimise risk and improve quality, practice and sustainability in the healthcare environment.

Established in 2021, NHS Scotland Assure has introduced new, and where appropriate enhanced existing services. We encompass services provided by Antimicrobial Resistance and Healthcare Associated Infection (ARHAI) Scotland and Health Facilities Scotland.

Our approach

Our strategic objectives and core themes inform our service delivery. We will continuously improve how we deliver our services. We will focus on quality to ensure our services are safe, efficient, effective and facilitate best practice. We will further integrate our services by collaborating with our stakeholders to ensure we meet their needs.



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Our core themes

We will focus on five core themes over the next three years:

National leadership and strategy – we will have an overarching leadership role in NHS Scotland's work to manage environmental and clinical Infection Prevention and Control risk in the built environment, and we will influence the development of new policy.

Planned life cycle support – we will collaborate with health boards to ensure the best healthcare environment and services for patients and staff.

Capacity and capability – we will support the development of workforce requirements across Scotland as it relates to the healthcare environment. We will collaborate in the national drive to develop a sustainable, skilled workforce.

Response – as well as our planned activities, we will work with stakeholders to respond to specific emerging issues or risks.

Intelligence and knowledge sharing - We will deliver a coordinated research portfolio to support the development of evidence-based guidance. We will coordinate national data sets and use this intelligence to support improved outcomes and decision making for the benefit of NHS Scotland.

Our strategic objectives

Service excellence

To deliver service excellence we will:

- support the delivery of a safer healthcare environment across multiple disciplines, ensuring that infection prevention and control is embedded in all stages of the healthcare build lifecycle
- use data and intelligence to inform stakeholders, empower staff and enable health boards to identify, monitor and manage built environment risk factors
- provide health boards with clear and streamlined services by aligning and integrating our service offerings and underpinning them with digital solutions
- identify and address gaps in practice by leading, producing, and commissioning quality research, guidance, and advice
- provide tailored national leadership and expertise in response to outbreaks and incidents, enabling and informing local capability and developing epidemiological and evidence-based intelligence.

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Climate Sustainability

To deliver climate sustainability we will:

- embed climate sustainability in everything that we do. For more information read the NSS Environmental and Sustainability strategy.
- support NHS Scotland boards to reduce their greenhouse gas emissions and impact on the environment, adapt to climate change and better contribute to the UN Sustainable Development goals
- support NHS Scotland in its ambition to become a net zero and environmentally sustainable healthcare service as described in the NHS Scotland Strategy on Climate Emergency and Sustainability. For more information read the NHS Scotland strategy.
- provide expertise and advice to stakeholders, including evidence-based guidance for net zero healthcare environment.

Workforce sustainability

To deliver workforce sustainability we will:

- have a diverse, knowledgeable and skilled workforce
- work with stakeholders to create a sustainable and resilient workforce model by developing in-house, competent, qualified subject matter experts that meets their identified needs
- work with stakeholders to establish career pathways across multidisciplinary teams, and provide appropriate pathways for professional development
- support the development of NHS Scotland's workforce in collaboration with NHS Education for Scotland (NES), to ensure staff have the appropriate skills and knowledge for their role.

Financial sustainability

To deliver financial sustainability we will:

- deliver services in a financially sustainable way, using opportunities to work collaboratively
- support NHS Scotland to develop a financially sustainable healthcare environment
- develop a financial plan that supports improvement, innovation and collaboration
- build clear structures that reduce waste while increasing resilience
- put in place a National Services Scotland (NSS) wide asset register with clear lifecycle plans
- use innovative tools and techniques to present knowledge and information to stakeholders that will aid financially sustainable decision making.

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Collaboration and engagement

Collaboration is at the heart of our services. We do this through stakeholder networks and look for opportunities for new engagement.

We work with health boards, other public sector organisations, academia and the private sector to deliver our strategic objectives. We are committed to open and transparent working relationships with our stakeholders in line with NHS Scotland values. We recognise how important a supportive environment is to deliver services successfully.

NHS Scotland Assure is commissioned by the Scottish Government. We work closely with the Chief Nursing Officer and Health Finance Directorates. We advise on and contribute to policy as required. Our strategy is informed by the needs, priorities, and policy of Scottish Government.

NHS Scotland Assure has processes in place to respond to and prioritise requests from stakeholders. This ensures that new work is transparently managed in line with our capacity and aligned to our strategy.

Our services

Engineering and Assurance

We provide comprehensive, proactive and reactive engineering services to assist health boards gain assurance that their engineering services are safe for patients and staff. Our goal is to support health boards to reduce risks in the healthcare environment underpinned by industry-leading guidance, robust processes and procedures.

Research, Innovation and Intelligence

Research and innovation

The guidance and advice we produce helps ensure that patients, their carers, and those delivering healthcare are in an environment which is safe, effective and person centred. Research plays a pivotal part in supporting this as it ensures that guidance and advice are based on best practice and best evidence.

Intelligence

We support health boards to identify, monitor and manage their healthcare environment risks. Our data and intelligence supports informed decision-making and risk management.

Workforce Development

NHS Scotland has a diverse workforce in the healthcare environment with many experts in their field. In partnership with NHS Education for Scotland (NES) we provide opportunities for staff to develop their interdisciplinary awareness and knowledge. For more information read the NES Healthcare environment resources.

This supports an integrated workforce with the knowledge and skills needed to reduce risk and improve safety and quality in the healthcare environment.

ARHAI Scotland

We provide expert intelligence, support, advice, evidence based guidance, clinical assurance and clinical leadership to local and national government, health and care professionals, the public and other national bodies. Our aim is to protect the people of Scotland from the burden of infection and antimicrobial resistance (AMR). As the national organisation responsible for IPC and AMR, we liaise with other UK countries and international counterparts to develop and deliver Scotland's IPC and AMR programmes of work.

Find out more about ARHAI Scotland at www.nss.nhs.scot/media/3401/arhai-scotlands-operating-model-strategy.pdf

Facilities

We provide national support services for health boards including support and guidance for service improvement and innovation in healthcare facilities services. We support the planning of health board decontamination services and commission the national home oxygen service for patients. Our medical physics service supports the Scottish Breast Screening Programme with safety advice and training.

We support NHS National Services Scotland with all aspects of property management. This is to ensure the safety and compliance of our buildings and workspaces, delivering an environmentally sustainable and effective working environment for all our staff.

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Property and Capital Planning

We provide expert services covering the full range of property and capital planning activity. For capital build projects, we provide a range of construction and professional services frameworks, an advisory service, a design assessment and assurance service, and an end-to-end equipping service. For the existing estate, we provide a range of systems and processes, advice and guidance, and national survey programmes. We also provide a response service to significant building failure events. The Digital Estate service aims to improve the performance, effectiveness and efficiency of the existing NHS Scotland estate by adopting digital technologies. We also support health boards with operational Public Private Partnership, Non-Profit Distribution and Hub contracts.

These services improve quality, reduce risk, encourage shared learning, and provide a consistent best practice approach to property and capital planning.

For more information read the NHS Scotland Assure case study - NHS Scotland Assure Information Management System (AIMS) and the NHS Scotland Assure case study - equipping Badenoch and Strathspey Community Hospital.

Climate change, Sustainability and Environment

We provide advice and guidance to Scottish Government and health boards to support NHS Scotland's climate and environmental sustainability commitments.

How to engage with us

Find out more about us:

NHS Scotland Assure - nss.nhs.scot/browse/nhs-scotland-assure

ARHAI Scotland - Antimicrobial Resistance and Healthcare Associated Infection | National Services Scotland (nhs.scot)

Health Facilities - Health facilities | National Services Scotland (nhs.scot)

Email: [redacted]

Ask us a question via our enquiry form:

https://www.nss.nhs.scot/nhs-scotland-assure/contact-assure/contact-nhs-scotland-assure

If you work in an NHS Scotland board, sign up to our Learning Network: https://forms.office.com/r/jhhSiqfS0j

NHS Scotland Assure
Quality in the healthcare environment

NHS National Services Scotland

Key Stage Assurance Review Workbook

Initial Agreement

June 2021

Version 1.0

Contents

Contents **2**

1. About this workbook **3**
Figure 1: Construction Procurement Journey 3
Using this workbook 4

2. Key Stage Assurance Review **5**
Introduction to NHS Scotland Assure - Assurance Service 5
The KSAR process 6
Value of the KSAR Process 6
KSAR as part of the overall assurance framework 7
KSAR and NHS Scotland Design Assessment Process (NDAP) relationship 7
Sustainability 8
Initial Agreement KSAR 9

3. Assessment of Delivery Approach **11**

4. References **12**
KSAR Master Glossary 12

5. Bibliography **13**

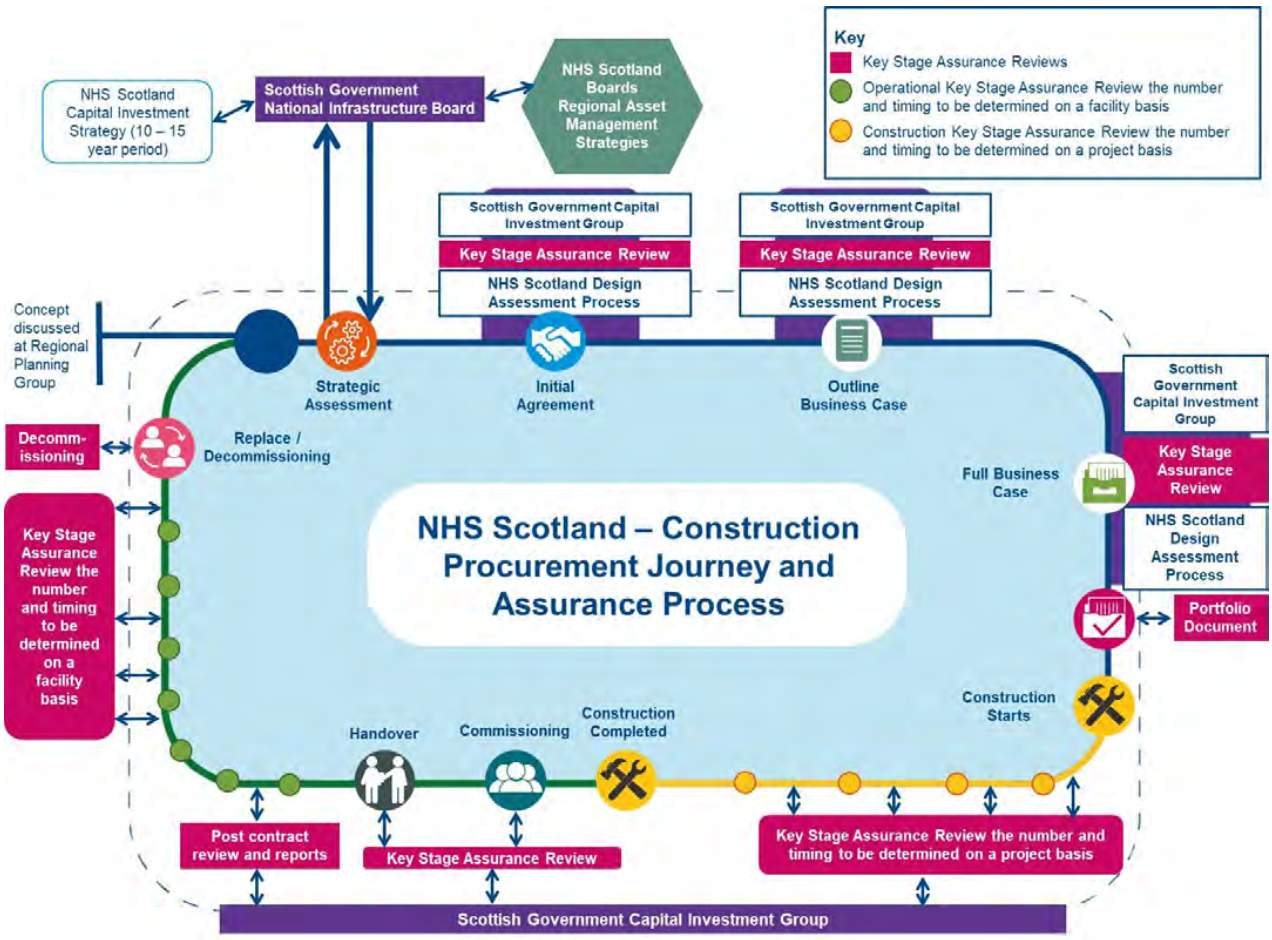
1. About this workbook

This workbook supports the Initial Agreement Key Stage Assurance Review (KSAR), delivered by NHS Scotland Assure Assurance service.

Further information about the NHS Scotland Assure Assurance service and KSAR process is provided in Section 2.

Figure 1. shows how the Initial Agreement stage in the procurement and construction journey commences following strategic assessment. The timing and frequency of KSARs during this stage will vary dependent upon the facility. Specific workbooks also have been developed for further stages within this journey.

Figure 1: Construction Procurement Journey



KSARs are of a process ensuring facilities and the teams using them are able to deliver the standards required to provide the best and safest outcomes for patients, staff and visitors in the built environment.

KSARs deliver an independent peer review. NSS staff outside the project use their experience and expertise to examine the progress and likelihood of successful delivery, with a particular emphasis on the safety of the patients, staff and visitors using the facility.

It is vital to receive feedback on the following elements of health facilities - Infection Prevention and Control (IPC), water, ventilation, electrical, plumbing, medical gases installations and fire. This ensures they are designed, installed and functioning from

initial commissioning of a new facility and throughout its lifetime. Health Boards are required to have appropriate governance in place at all stages of the construction procurement journey.

The KSAR workbook provides a transparent, structured framework for all clinical specialisms, facilities and operational management professionals to assess and manage a health care build or refurbishment. Allowing facilities to align with current standards as the assurance reviews are taking place, as well as aligning changes for patient cohort.

Using this workbook

The review at the Initial Agreement stage investigates the approach of the initial design and how the appropriate level of patient and user needs will influence the development of the design. The purpose of the KSAR at Initial Agreement stage is to confirm there is a good understanding of who will be using the proposed facility, and the project team consider how appropriate quality and safety standards will influence the design. It looks to provide assurance that the project can proceed to the Outline Business Case.

The workbook is predominantly intended to be used by NHS Scotland Assure KSAR review teams, Health Boards are encouraged to use its content to support their own projects. It provides guidance on the review structure and areas of investigation to be addressed by the review team and should be regarded as indicative and not prescriptive.

The review team will consider whether any emerging findings require additional topics to be addressed. If so, evidence relating to these areas, regarding the safety of the patients, staff and visitors, should be provided.

2. Key Stage Assurance Review

Introduction to NHS Scotland Assure - Assurance Service

Good management effective control of projects is an essential element to the successful delivery and maintenance of healthcare facilities across NHS Scotland estates.

The initial delivery of the NHS Scotland Assure - Assurance Service will focus upon new builds and major refurbishments in the acute estate, submitted to the Scottish Government Capital Investment Group (CIG). In addition, a number of projects identified as being complex, primarily due to the needs of patients utilising the facilities, will be reviewed by this service. Whilst not an exhaustive list, these projects will cover oncology, maternity, theatre and critical care units, no matter of their financial value.

The NHS Scotland Assure - Assurance Service will deliver KSARs, designed to provide independent assurance to Scottish Government Health and Social Care Directorates (SGHSCD's).

It will assess if Health Boards Project Management teams (inclusive of clinicians, appointed construction consultants, and contractors) are briefed and following best practice procedures in the provision of facilities. We will review if projects are compliant in all aspects of safety, if specific engineering systems are designed, installed and commissioned, and for ongoing safety maintenance including IPC.

The KSAR process is applicable regardless of procurement route chosen.

The KSAR process

The KSAR process examines projects at key points in their lifecycle. It does not remove any legal or contractual obligations from the NHS Health Board, their designers or contractors. It provides assurance to progress successfully to the next review point and the process will be mandated for projects requiring CIG approval. KSARs focus on the assessment of the delivery approach, and will work with the Health Board's project team to ensure there is comprehensive understanding of the patient cohorts utilising the facility. KSARs also ensure relevant guidance is fully implemented and any technical derogations have been fully reasoned, transparently discussed, the implications understood, recorded and signed off by the Health Board and their advisors.

With a focus on construction elements where previous reviews have demonstrated potential patient safety concerns, KSARs will concentrate on water; ventilation, electrical, plumbing, medical gases installations, fire, and associated IPC guidance. If further issues are raised with the review team, they will fully incorporate those issues into the reporting process.

Value of the KSAR Process

Key Stage Assurance Reviews (KSARs) deliver an independent peer review. NSS staff outside the Health Board's project use their experience and expertise to examine the progress and likelihood of successful delivery, with a particular emphasis on the safety of the patients, staff and visitors using the facility. KSARs provide an external perspective and provide a challenge to the robustness of the Health Board's brief, plans and processes.

This includes work delivered by construction consultants, employed either directly or through construction contractors, and the work being delivered by the primary contractor, their sub-contractors and specialist suppliers.

The KSAR provides an independent report and action plan, which is shared with the Health Board to ensure:

- Appropriate skills and experience are deployed on the project by the Health Board, consultants, primary contractor and all sub-contractors.
- The clinicians and wider stakeholders covered by the project fully understand the project status, aims and the issues involved.
- Appropriate management structures put in place to ensure appropriate infection prevention and control measures are designed into the project to reduce the risk of transmission of infectious agent.
- There is assurance the project can progress to the next stage of development or implementation with particular emphasis on the safety of the patients, staff and visitors utilising the facility.
- Provision of advice and guidance to programme and project teams by fellow Practitioners.

The KSAR report and the Health Board's response and action plan is submitted to CIG along with a recommendation from the NHS Scotland Assure - Assurance

Service regarding the projects' progression to the next stage of the construction procurement journey.

KSAR as part of the overall assurance framework

Each NHS Health Board will be fully responsible for the delivery of all projects, and its own internal process and resources for carrying out internal reviews and audits of its activities. The KSAR is seen as a complementary independent review, and not as a replacement for the responsibilities of the Health Board.

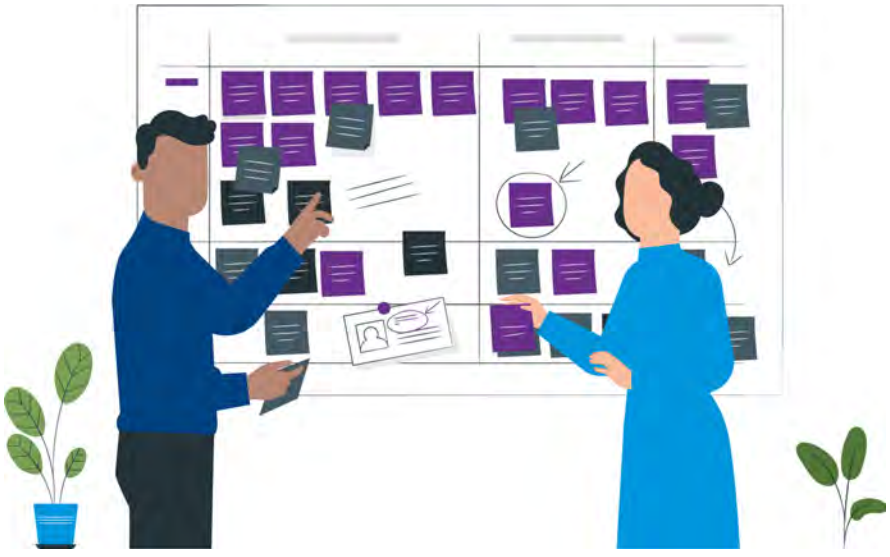
NHS Health Boards should have in place an effective framework to provide a suitable level of assurance for their programmes and projects. Health Boards are encouraged and expected to ensure adequate and timely coordination and sharing of information, including plans, between the various internal reviews and functions.

The KSAR process is not a substitute for a rigorous governance framework in the Board to manage key processes including business planning, investment appraisal, business case management, risk management and service and contract management.

KSAR and NHS Scotland Design Assessment Process (NDAP) relationship

The Scottish Government's ambition for NHS Scotland's estate and the need for well-designed healthcare environments is articulated in the Policy on Design Quality for NHS Scotland. Good design in the built environment encompasses a wide range of inter-related factors such as, sustainability, engineering, architecture, fire safety, energy, environment, decontamination, space utilisation, landscaping, security, technology, lighting, access for visitors and mobility impaired persons.

The NDAP process is overseen by Health Facilities Scotland and Architecture and Design Scotland and holistically considers all of the above. It sets the principles for the resolution of potential conflicts of statutory or mandatory compliance to ensure the specific facility provides; the best balance of the technical requirements, meets clinical needs and fulfils the conceptual aims of the policy on Design Quality. The NDAP process begins at the initial agreement stage of a project and provides advice through to the Full Business Case. There is no change to either SCIM or NDAP processes.



The Scottish Government is progressing policy to improve the safety of the healthcare environment in relation to the built environment risk. The Assurance Service delivered through NHS Scotland Assure is a response to this policy and the KSARs are integral to the compliance work. The aspiration is not to duplicate any of the work included in the NDAP process, but to provide assurance regarding the critical components highlighted throughout this workbook.

Integral to the KSARs will be a review of the balance between sustainability issues and patient safety.

The NDAP, working with Health Boards, will set the principles of the design solution, whereas the KSAR will provide a detailed technical review of the specifics of the design solution. Where possible the two reviews will be aligned to avoid duplication of work. For example, in instances where the NDAP has reviewed detail at a technical level, this will be used by the KSAR team rather than being separately requested and reviewed.

Sustainability

The review will provide assurance that the proposals for the project provide an effective balance in terms of patient, staff and visitors safety, whilst meeting required sustainability outcomes and complying with the guidance standards.

Initial Agreement KSAR

KSARs investigate the approach taken at design commencement, to confirm there is already a good understanding of the category of patient who will be using the proposed facility, and that the project team are aware of how their needs and expectations for appropriate quality and safety standards will influence the design of the accommodation.

The Initial Agreement KSAR will focus on how this understanding of patient needs and expectations have influenced the following critical components of design, particularly in relation to Infection Prevention and Control.

- Water systems
- Ventilation systems
- Plumbing and drainage
- Fire safety
- Electrical systems
- Medical gases
- Any other building or engineering component critical to the safety and welfare of a particular patient cohort (defined by the review team).

At all stages of design development, knowledge of compliance in design and implementation will need to encompass (not limited to) the following:

- NHS Scotland policy letters (DLs,CELs,CMOs)
- Scottish Health Planning Notes (SHPN)
- Scottish Health Facilities Notes (SHFN)
- Scottish Health Technical Memoranda (SHTM)
- Scottish Fire Practice Notes (SFPN)
- Health Building Notes (HBN)
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- UK construction industry bodies best practice or design guidance publications e.g. HSE, CIBSE, BRE, IHEEM, IET, BRE, BSRIA, sustainability, dementia and equality.
- Incident Reporting and Investigation Centre (IRIC) Alerts
- Relevant British Standards
- Other statutory requirements: Planning permission; Building Regulations compliance; Equality Act compliance; Health and Safety Executive (HSE) compliance; Construction (Design and Management) Regulations compliance; Fire Scotland Act.
- Other mandatory NHS Scotland use of:
  - Activity Data Base (ADB);
  - Achieving Excellence Design Evaluation Tool;
  - BREEAM Healthcare or equivalent (BRE environmental & sustainability tools);

  - Scottish Government BIM Policy (SPPN 1/2017; implementation of building information modelling within construction projects: March 2017);
  - The implementation of NHS Scotland Soft Landings (SL) guidance
- Confirm plans are in place for risk management and issue management and are shared with suppliers and delivery partners.
- Evaluation of actions taken to implement recommendations made in earlier assessment of deliverability.
- Confirm plans are in place for the requirements of the National Infection Prevention and Control Manual for Scotland are being incorporated in a manner to allow staff allocated to the role, to deliver services to patients.

The review teams will consist of experienced operational estates professionals and experienced Infection Prevention and Control clinicians. The team will work with the Board's Project Team, inclusive of their clinicians and their appointed consultants and contractor. Each review will result in a report being prepared for the Programme Director at the Board and a copy of the report will also be provided to Scottish Government Capital Investment Group.

An appendix is provided indicating the typical question set for Initial Agreement Stage, which the review team will use as the basis of KSAR evidence. The review team will amend this as necessary depending on the project and areas of particular interest. The Health Board, their designers and contractors should be aware that this information is expected and the design should effectively be completed at Initial Agreement at the time of the KSAR to ensure the accuracy of the report.

3. Assessment of Delivery Approach

No.	Areas to probe	Evidence expected
1.1	Service / clinical input into early design decisions based on knowledge of patient cohort.	• Recorded input taken from service lead(s) / clinician(s) about relevant patient cohort characteristics and their typical needs in terms of the accommodation's environment, safety and infection control standards. • Demonstrable expertise of service lead(s) / clinician(s) in providing this advice.
1.2	Health Board Project team understanding of needs of main users and patient cohorts of the proposed accommodation and how this will influence the design of critical building, engineering, and infection prevention and control quality and safety standards.	• List available of all stakeholders, service users and patient cohorts impacted by this project, plus the identification of any high risk groups and their specialist needs. • Recorded engagement on these designs issues having taken place between the project team and service lead(s) / clinician(s), infection prevention and control team, and other key stakeholders (e.g. the AEDET, NDAP or other design briefing workshops). • Details available of proposed service model, understanding of what the patient journey will be through the service, and records of expected patient throughput levels. • Details available of how service users / patient cohort needs and their expected use of the accommodation has influenced the initial design brief; including critical building, engineering and infection prevention and control quality and safety standards.
1.3	What is the Heath Board's formal process for derogations'?	• List of the relevant NHS and non-NHS guidance to be used and adopted (see previous section of workbook for examples of appropriate guidance) and how this is to be highlighted in the Board's Construction Requirements (BCR). • List of any proposed derogations from NHS or other guidance and / or list of known gaps in guidance that will need to be resolved in order to meet the needs of the patient / user cohort. • Knowledge of the role of infection prevention and control and microbiologist advisors to be used throughout the design stages, and details of the resource plan in place to ensure this advice will be available.

No.	Areas to probe	Evidence expected
1.4	Planned approach for managing the design process to ensure successful compliance with agreed and approved standards.	• The project governance arrangements and resource plan in place to ensure that the necessary decision making authority and technical expertise is available to take responsibility for and deliver the project as planned and agreed. • Gap analysis on expertise required specifically for the project and details of how gaps in expertise are to be filled. • Details of how compliance with the appropriate guidance, design brief and other standards will be agreed, signed off, monitored, reported against and if necessary escalated / adjudicated throughout the design, construction and commissioning stages. • Details of how all stakeholders' interests will be agreed, signed off, monitored, reported against and if necessary escalated / adjudicated throughout the design, construction and commissioning stages.
1.5	Conceptual approach on the procurement journey with initial plans on how the Board will provide assurance, particularly on the identified areas described earlier.	• Initial plans on how this requirement will be managed and how it fits with the project governance arrangements. • Initial plans to identify any gaps in the procurement approach that may require to be addressed. • Initial plans to indicate that the Health Boards selected procurement route will go through the Health Board's Governance channels. • Initial consideration on how the Infection Prevention and Control Procedures and management will fit with the conceptual procurement approach and initial thinking on how it will be managed.

4. References

KSAR Master Glossary

Available to download from NHS National Services Scotland website.

5. Bibliography

Scottish Property Advisory Group – Building Design and Construction: Report on Construction Quality Matters
John Donnelly, Chair BDAC

Dated: December 2020

NHS Scotland Assure
Quality in the healthcare environment

NHS National Services Scotland

Key Stage Assurance Review Workbook

Outline Business Case

June 2021

Version 1.0

A46005509

Contents

Contents **2**

1. About this workbook **3**
Figure 1: Construction Procurement Journey 3
Using this workbook 4

2. Key Stage Assurance Review **5**
Introduction to NHS Scotland Assure – Assurance Service 5
The KSAR Process 5
Value of the KSAR Process 5
The KSAR Process relationship with NHS Scotland Design Assessment Process (NDAP) 7
Sustainability 8
Outline Business Case (OBC) KSAR 8

3. Assessment of Delivery Approach **11**
Project Governance and General Arrangements 11
Water and Internal Plumbing / Drainage Systems 16
Ventilation 18
Electrical 21
Medical Gases 23
Fire 26
IPC Built Environment 29

4. Appendix ..... Error! Bookmark not defined.
KSAR Master Glossary ..... **Error! Bookmark not defined.**

5. Bibliography ..... Error! Bookmark not defined.

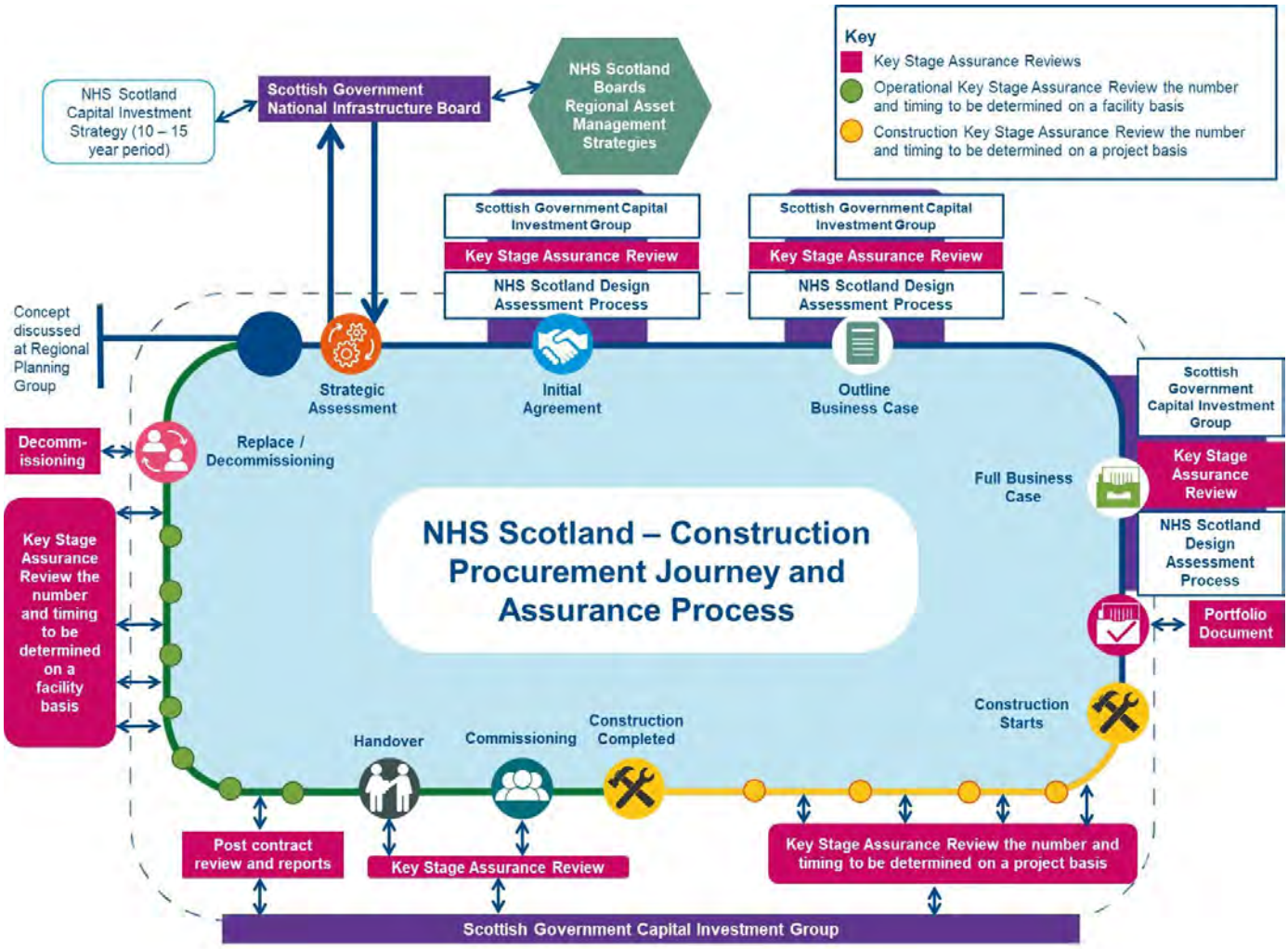
1. About this workbook

This workbook supports the Outline Business Case Key Stage Assurance Review (KSAR), delivered through the NHS Scotland Assure - Assurance Service.

Further information about the NHS Scotland Assure - Assurance Service and KSAR process is provided in section 2.

Figure 1. shows how the Outline Business Case stage in the procurement and construction journey commences following Initial Assessment. The timing and frequency of KSARs during this stage will vary dependent upon the facility. Specific workbooks have been developed for the other stages within this journey.

Figure 1: Construction Procurement Journey



KSARs are of a process ensuring facilities and the teams using them are able to deliver the standards required to provide the best and safest outcomes for patients, staff and visitors in the built environment.

KSARs deliver an independent peer review. NSS staff outside the project use their experience and expertise to examine the progress and likelihood of successful delivery, with a particular emphasis on the safety of the patients, staff and visitors using the facility.

It is vital to receive feedback on the following elements of health facilities - Infection Prevention and Control (IPC), water, ventilation, electrical, plumbing, medical gases

installations and fire. This ensures they are designed, installed and functioning from initial commissioning of a new facility and throughout its lifetime. Health Boards are required to have appropriate governance in place at all stages of the construction procurement journey.

The KSAR workbook provides a transparent, structured framework for all clinical specialisms, facilities and operational management professionals to assess and manage a health care build or refurbishment. Allowing facilities to align with current standards as the assurance reviews are taking place, as well as aligning changes for patient cohort.

Using this workbook

The review at Outline Business Case stage investigates the approach taken by the Health Board in the development of the design, and how the appropriate level of knowledge and awareness of patient and user needs will influence the development of the design.

The purpose of the KSAR at Outline Business Case stage is to confirm there is a good and comprehensive understanding of the category of patient who will use the proposed facility and that the project team consider how appropriate quality and safety standards will influence the design. It looks to provide assurance that the project can proceed to the Full Business Case.

This workbook is predominantly intended to be used by NHS Scotland Assure KSAR review teams, Health Boards are encouraged to use its content to support their own projects. It provides guidance on the review structure and areas of investigation to be addressed by the review team and should be regarded as indicative and not prescriptive.

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The KSAR process is applicable regardless of procurement route chosen.

The KSAR Process

The KSAR process examines projects at key points in their lifecycle. It does not remove any legal or contractual obligations from the NHS Health Board, their designers or contractors. It provides assurance to progress successfully to the next review point and the process will be mandated for projects requiring CIG approval. KSARs focus on the assessment of the delivery approach, and will work with the Health Board's project team to ensure there is comprehensive understanding of the patient cohorts utilising the facility. KSARs also ensure relevant guidance is fully implemented and any technical derogations have been fully reasoned, transparently discussed, the implications understood, recorded and signed off by the Health Board and their advisors.

With a focus on construction elements where previous reviews have demonstrated potential patient safety concerns, KSARs will concentrate on water; ventilation, electrical, plumbing, medical gases installations, fire, and associated IPC guidance. If further issues are raised with the review team, they will fully incorporate those issues into the reporting process.

Value of the KSAR Process

Key Stage Assurance Reviews (KSARs) deliver an independent peer review. NSS staff outside the Health Board's project use their experience and expertise to examine the progress and likelihood of successful delivery, with a particular emphasis on the safety of the patients, staff and visitors using the facility. KSARs provide an external perspective and provide a challenge to the robustness of the Health Board's brief, plans and processes.

This includes work delivered by construction consultants, employed either directly or through construction contractors, and the work being delivered by the primary contractor, their sub-contractors and specialist suppliers.

The KSAR provides an independent report and action plan, which is shared with the Health Board to ensure:

- Appropriate skills and experience are deployed on the project by the Health Board, consultants, primary contractor and all sub-contractors.
- The clinicians and wider stakeholders covered by the project fully understand the project status, aims and the issues involved.
- Appropriate management structures put in place to ensure appropriate infection prevention and control measures are designed into the project to reduce the risk of transmission of infectious agent.
- There is assurance the project can progress to the next stage of development or implementation with particular emphasis on the safety of the patients, staff and visitors utilising the facility.
- Provision of advice and guidance to programme and project teams by fellow Practitioners.

The KSAR report and the Health Board's response and action plan is submitted to CIG along with a recommendation from the NHS Scotland Assure - Assurance Service regarding the projects' progression to the next stage of the construction procurement journey.

KSAR as part of the overall assurance framework

Each NHS Health Board will be fully responsible for the delivery of all projects, and its own internal process and resources for carrying out internal reviews and audits of its activities. The KSAR is seen as a complementary independent review, and not as a replacement for the responsibilities of the Health Board.

NHS Health Boards should have in place an effective framework to provide a suitable level of assurance for their programmes and projects. Health Boards are encouraged and expected to ensure adequate and timely coordination and sharing of information, including plans, between the various internal reviews and functions.

The KSAR process is not a substitute for a rigorous governance framework in the Board to manage key processes including business planning, investment appraisal, business case management, risk management and service and contract management.

The KSAR Process relationship with NHS Scotland Design Assessment Process (NDAP)

The Scottish Government's ambition for NHS Scotland's estate and the need for well-designed healthcare environments is articulated in the Policy on Design Quality for NHS Scotland. Good design in the built environment encompasses a wide range of inter-related factors such as, sustainability, engineering, architecture, fire safety, energy, environment, decontamination, space utilisation, landscaping, security, technology, lighting, access for visitors and mobility impaired persons.

The NDAP process is overseen by Health Facilities Scotland and Architecture and Design Scotland and holistically considers all of the above. It sets the principles for the resolution of potential conflicts of statutory or mandatory compliance to ensure the specific facility provides; the best balance of the technical requirements, meets clinical needs and fulfils the conceptual aims of the policy on Design Quality. The NDAP process begins at the initial agreement stage of a project and provides advice through to the Full Business Case. There is no change to either SCIM or NDAP processes.

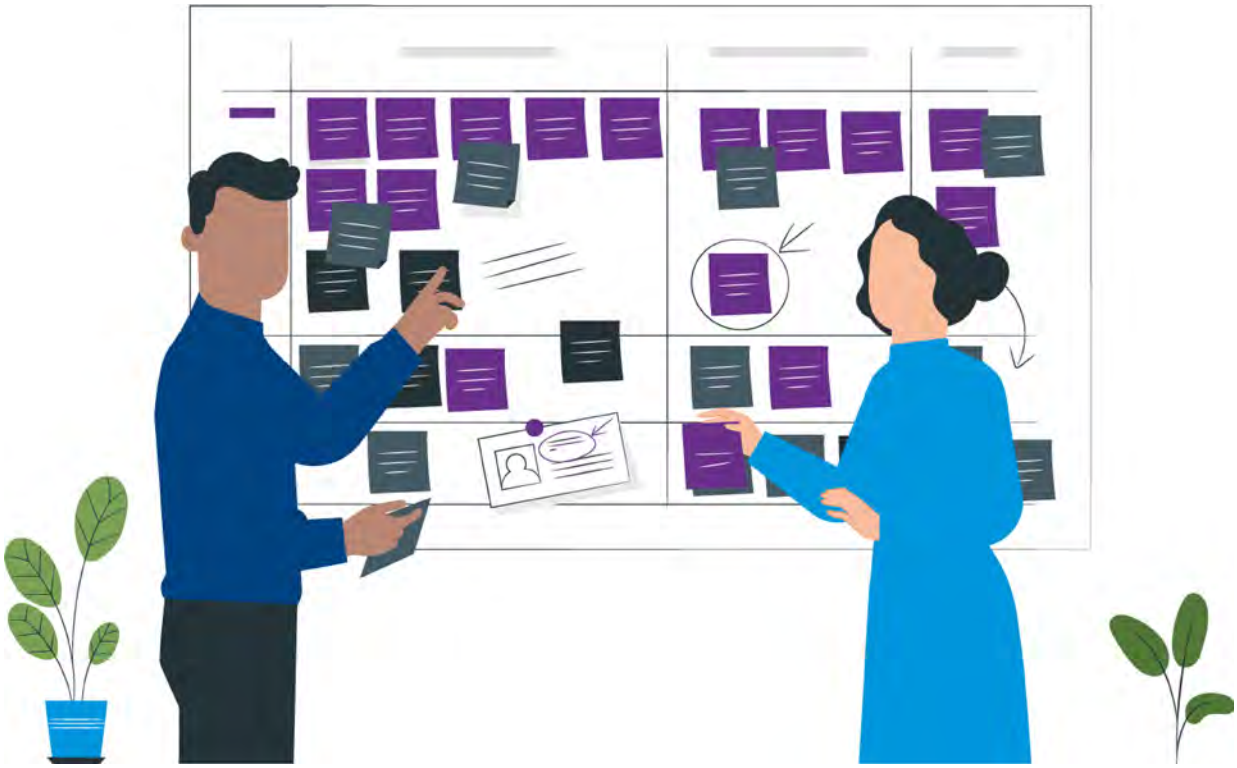
The Scottish Government is progressing policy to improve the safety of the healthcare environment in relation to the built environment risk. The Assurance Service delivered through NHS Scotland Assure is a response to this policy and the KSARs are integral to the compliance work. The aspiration is not to duplicate any of the work included in the NDAP process, but to provide assurance regarding the critical components highlighted throughout this workbook.

Integral to the KSARs will be a review of the balance between sustainability issues and patient safety.

The NDAP, working with Health Boards, will set the principles of the design solution, whereas the KSAR will provide a detailed technical review of the specifics of the design solution. Where possible the two reviews will be aligned to avoid duplication of work. For example, in instances where the NDAP has reviewed detail at a technical level, this will be used by the KSAR team rather than being separately requested and reviewed.

Sustainability

The review will provide assurance that the proposals for the project provide an effective balance in terms of patient, staff and visitors safety, whilst meeting required sustainability outcomes and complying with the guidance standards.



Outline Business Case (OBC) KSAR

This review investigates the approach taken by the Health Board in the development of the design, to confirm that there is a good and comprehensive understanding of the category of patient utilising the proposed facility, and that the project team are aware of how their needs and expectations for appropriate quality and safety standards will influence the design of the accommodation. It looks to provide assurance that the project can proceed to the Full Business Case.

The OBC KSAR will focus on how this understanding of patient needs and expectations have influenced the following critical components of design, particularly in relation to Infection Prevention and Control.

- Water systems
- Ventilation systems
- Plumbing and drainage
- Fire safety
- Electrical systems
- Medical gases
- Any other building or engineering component critical to the safety and welfare of a particular patient cohort (defined by the review team).

At all stages of design development, knowledge of compliance in design and implementation will need to encompass (not limited to) the following:

- NHS Scotland policy letters (DLs,CELs,CMOs)
- Scottish Health Planning Notes (SHPN)
- Scottish Health Facilities Notes (SHFN)
- Scottish Health Technical Memoranda (SHTM)
- Scottish Fire Practice Notes (SFPN)
- Health Building Notes (HBN)
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- Health Facilities Notes (HFN)
- UK construction industry bodies best practice or design guidance publications e.g. HSE, CIBSE, BRE, IHEEM, IET, BRE, BSRIA, sustainability, dementia and equality.
- Incident Reporting and Investigation Centre (IRIC) Alerts
- Relevant British Standards
- Other statutory requirements: Planning permission; Building Regulations compliance; Equality Act compliance; Health and Safety Executive (HSE) compliance; Construction (Design and Management) Regulations compliance; Fire Scotland Act.
- Other mandatory NHS Scotland use of:
  - Activity Data Base (ADB);
  - Achieving Excellence Design Evaluation Tool;
  - BREEAM Healthcare or equivalent (BRE environmental & sustainability tools);
  - Scottish Government BIM Policy (SPPN 1/2017; implementation of building information modelling within construction projects: March 2017);
  - The implementation of NHS Scotland Soft Landings (SL) guidance
- Confirm there are plans in place for risk management, issue management and these plans are being shared with suppliers and delivery partners.
- Evaluation of actions taken to implement recommendations made in earlier assessment of deliverability.
- Confirm there are plans in place to ensure the requirements of the NHS Scotland National Infection Prevention and Control Manual for Scotland are being incorporated which will allow the staff allocated to the role to deliver the services to the patients.

The review teams consist of experienced operational estates professionals and experienced Infection Control clinicians. The team will work with the Health Board's Project Team, inclusive of their clinicians and their appointed facility management consultants and contractor. Each review will result in a report being prepared for the Programme Director at the Board and a copy of the report will also be provided to Scottish Government Capital Investment Group

An appendix is provided which indicates the typical question set for OBC which the review Team will use as the basis of evidence finding for the KSAR. The review team will amend this as necessary depending on the project and areas of particular interest. The Health Board, their designers and contractors should be aware that this is the information which will be expected and the design should effectively be completed at OBC at the time of the KSAR to ensure the accuracy of the report.

3. Assessment of Delivery Approach

The review at Outline Business Case stage will need to demonstrate an awareness and knowledge of how the above will be used to influence the initial design.

Project Governance and General Arrangements

No.	Areas to probe	Evidence expected
1.1	Evaluation of changes detailed from previous KSAR.	• Assessment of any substantive changes in highlighted areas from previous review stage and all actions have been implemented.
1.2	Verification that CIG recommendations have been implemented with respect to prescribed in scope areas.	• Review of the implementation of all CIG recommendations. Evaluation of any deviation from previous submissions or reviews.
1.3	Has cross-referencing with NDAP and AEDET recommendations been implemented?	• An assessment if there is full compliance with the applicable recommendations and actions from the preceding step.
1.4	Does the Health Board continue to demonstrate service / clinical input into design decisions based on a current and comprehensive knowledge of patient cohorts?	• Recorded and updated input taken from service lead(s) / clinician(s) about relevant patient cohort characteristics and their typical needs in terms of the accommodation's environment, safety and infection control standards. • Demonstrable expertise of service lead(s) / clinician(s) in providing this advice.
1.5	Project team demonstrates a unified and recorded understanding of needs of main users and patient cohorts of the proposed accommodation and how this will influence the design of critical building, engineering and infection prevention and control quality and safety standards.	• Updated and current list available of all stakeholders, service users and patient cohorts impacted by this project, plus the identification of any high risk groups and their specialist needs. • Updated and recorded engagement on these designs issues having taken place between the project team and service lead(s) / clinician(s), infection control team, and other key stakeholders (e.g. Estates, Medical

No.	Areas to probe	Evidence expected
		Physics, IPC, the AEDET, NDAP or other design briefing workshops). • Details available of how service users / patient cohort needs and their expected use of the accommodation are influencing the design brief; including critical building, engineering and infection prevention and control quality and safety standards.
1.6	Planned approach towards determining the necessary standards for this accommodation.	• Updated and current list of the relevant NHS and non-NHS guidance that is being used and adopted (see previous section of workbook OBC KSAR (Page 9) for examples of appropriate guidance). • Updated and current list of all proposed derogations from NHS guidance with a detailed technical narrative on each derogation and / or list of known gaps in guidance that will need to be resolved in order to meet the needs of the patient / user cohort. • Knowledge of the role of infection prevention and control and microbiologist advisors to be used throughout the design stages, and details of the resource plan in place to ensure this advice will be available.
1.7	How does the Health Board demonstrate that there is an effective infection prevention and control management structure in place and how does it relate to the development of the project? How does the Board demonstrate leadership and commitment to infection prevention and control to ensure a culture of continuous quality improvement throughout the organisation, and that there is an effective IPC structure in place and how does it relate to the design development?	• Evidence IPC and clinical teams have been integrated into all decisions regarding any derogations through the design process and are satisfied this will not impact on patient safety such as, specific sign off, supporting meeting minutes, risk assessments, risk registers relating to IPC with evidence of escalation through the agreed NHS board governance process.

No.	Areas to probe	Evidence expected
1.8	Integration with Authority Policies and Operation. How does the Health Board demonstrate implementation of evidence based infection prevention and control measures?	• The Health Board can demonstrate the current version of the National Infection Prevention and Control Manual has been adopted by the organisation and all staff are aware of how and where to access this (ask staff). • IPC are fully embedded in the project team and the OBC programme taking cognisance of any actual or perceived risks identified provided.
1.9	The Health Boards Infection Control Strategy	• Assessment of the Health Boards approach to all IPC related matters in relation to the development of the design, HAISCRIBE etc. • IPCT annual programme of work.
1.10	The Health Boards Monitoring and Records	• Evidence that the Health Board integrating this project with wider IPC requirements within the context of the OBC. For example, evidence that the proposals for equipping incorporate IPC requirements?
1.11	Planned approach for managing the design process to ensure successful compliance with agreed and approved standards.	• The project governance arrangements and resource plan in place to ensure that the necessary decision making authority and technical expertise is available to take responsibility for and deliver the project as planned and agreed. • Details of how gaps in expertise are being filled. • Details of how compliance with the appropriate guidance, design brief and other standards are being agreed, signed off, monitored, reported against and if necessary escalated / adjudicated throughout the design, construction and commissioning stages. • Details of how all stakeholders' interests are being agreed, signed off, monitored, reported against and if necessary escalated / adjudicated

No.	Areas to probe	Evidence expected
		throughout the design, construction and commissioning stages.
1.12	The Health Boards approach on the procurement journey, with evidence of the plans on how the Health Board will provide assurance, particularly emphasis on the critical system identified earlier.	• Evidence on how Infection Prevention and Control are involved with the conceptual procurement approach to the design stage and future plans for project. • Plans to identify any gaps in the procurement approach that may require to be addressed. • Evidence on how the Infection Control procedures and management will fit with the conceptual procurement approach and initial thinking on how it will be managed. • Evidence of a detailed procurement strategy report. • Evidence that the Health Boards selected procurement route has gone through the Health Board's Governance channels.
1.13	The Health Boards approach on those areas of design that the procurement route has provided identification as possibly being Contractors Designed Portions (CDP's).	• Evidence that the Health Board integrating this project with wider IPC requirements within the context of the OBC. For example, evidence that the proposals for equipping incorporate IPC requirements? • Evidence that the procurement of the lead designer will encompass these areas in their oversight and sign off of the complete design. • Evidence that a clear demarcation of design responsibility is being developed.
1.14	Evaluation of the Health Boards commissioning plan.	• Evidence that the Health Board has recorded plans that are comprehensive and adequate to address the needs of the project and that they are fully resourced.
1.15	Evaluation of the Health Boards duty holder matrix.	• Evidence that the Health Board have a fully recorded matrix of the required roles and responsibilities and have a

No.	Areas to probe	Evidence expected
		clear governance structure that is fully resourced together with plans in place for the implementation. • Evidence that Health Boards have appropriate number of competent, qualified staff to carry out specific duties throughout the life cycle of the project e.g., IPC, Engineers, Estates staff etc. The number of competent, qualified staff will depend on the type and size of the Build Project.

Water and Internal Plumbing / Drainage Systems

No.	Areas to probe	Evidence expected
2.1	Has the Health Board completed competency checks on the water and drainage consultant designers?	• Recorded evidence that the design team are experienced and have a comprehensive knowledge of the relevant design standards. • Where anyone does not have a record of extensive health care experience what recorded plans are to be put in place by the Consultant Designers? • Recorded evidence that input from the Health Boards Authorising Engineer for Water (AE(W)) has been requested.
2.2	How does the Health Board ensure that water services are designed in a fashion which will retain space for minor additions and modifications to services in the future?	• Evidence that the engineers are presented their co-ordination drawings (BIM model), with space for future flexibility identified, to the Board. • Evidence that the design consultant has considered and agreed with the Board, space for future flexibility in the service installations. • Evidence that the designers have presented each of the main service runs plus plant rooms to the Board's FM team, to highlight space for future flexibility. • Evidence that the Health Board has agreed a strategy (percentage) for spare capacity and a documented allowance to be incorporated into the design. • Are plant/tank rooms, IPS sections, horizontal distribution runs and risers appropriately sized for the equipment being installed and facilitate safe adequate maintenance.

No.	Areas to probe	Evidence expected
2.3	How does the Health Board assure itself that all variations / derogations which may be required to water systems are investigated and agreed by all parties before they are incorporated in the design?	• Evidence that the each variation / derogation has a detailed technical analysis and has been referred to the Board and agreed with their water management group, clinical, Estates, infection prevention and control and FM teams.
2.4	Water Management Strategy	• Assessment of Health Board proposed water management strategy and how this relates to the proposed specification, guidance and project requirements • What involvement has there been from the water management group?
2.5	Water Governance Arrangements	• Has the Health Board commenced its water governance planning and recorded how it will ensure appropriate numbers of trained staff (AP and CP) and AE(W) will be appointed, is there an established project water management group that ensures the water management strategy is adhered to for the Board, and is it clear how this project will interface with this existing group? • Evidence that the Health Boards AE(W) have been involved with and reviewed the design proposals to date.

Ventilation

No.	Areas to probe	Evidence expected
3.1	Has the Health Board completed competency checks on the ventilation consultant designers?	• Recorded evidence that the design team are experienced and have a comprehensive knowledge of the relevant design standards. • Where anyone does not have a record of extensive health care experience what recorded plans are to be put in place by the Consultant Designers? • Recorded evidence that input from the Health Boards Authorising Engineer for Ventilation (AE(V)) has been requested.
3.2	How does the Health Board ensure that ventilation services are designed in a fashion which will retain space for minor additions and modifications to services in the future and there is an appropriate plant access strategy?	• Evidence that the engineers are presented their co-ordination drawings (BIM model), with space for future flexibility identified, to the Health Board. • Evidence that the design consultant has considered and agreed with the Health Board, space for future flexibility in the service installations. • Evidence that the designers have presented each of the main service runs plus plant rooms to the Board's FM team, to highlight space for future flexibility. • Evidence that the Health Board has agreed a strategy (percentage) for spare capacity and a documented allowance to be incorporated into the design. • Are plant/tank rooms, IPS sections, horizontal distribution runs and risers appropriately sized for the equipment being installed and facilitate safe adequate maintenance? • Evidence that a plant access strategy for the entire ventilation system has been provided to ensure safe, adequate access, including access for cleaning.

No.	Areas to probe	Evidence expected
3.3	How does the Health Board assure itself that all variations / derogations which may be required to the ventilation systems are investigated and agreed by all parties before they are incorporated in the design?	• Evidence that the each variation / derogation has a detailed technical analysis and has been referred to the Board and agreed with their ventilation safety group, clinical, Estates, infection prevention and control and FM teams.
3.4	Does the Health Board have a strategy for ventilation (for rooms where this is permitted within the SHTM/SHPN guidance)?	• Evidence of environmental matrix. • Evidence that the dynamic thermal modelling confirms what the design must include (e.g. structure, solar shading / protection, orientation, equipment optimisation, etc.) to ensure that room temperatures comply with SHTM guidance, in naturally ventilated rooms. • Floor plans with associated plant locations highlighted plus simple schematic of strategy. • This must also identify the air intake and exhaust strategy/locations.
3.5	Is there evidence of stakeholder input to ventilation strategies?	• Addition to or supplement to the Environmental Matrix which confirms the following, on a room by room basis: • a) the type of ventilation (to SHTM 03-01) b) patient group and/or function related to the space. • c) name of the Consultant, Clinical Lead or Department Lead who has agreed to the room requirements. • d) name of the Infection Prevention and Control Doctor or equivalent who has agreed to the room requirements. • e) name of the Infection Prevention and Control Nurse who has agreed to the room requirements. • f) name of the Estates / FM team representative who has agreed to the room requirements. • g) name of the NHS Project Manager who has agreed to the room requirements.

No.	Areas to probe	Evidence expected
		• h) name of the Decontamination Manager who has agreed to the room requirements (where this is part of the project).
3.6	Is there evidence of the Health Board developing Ventilation Commissioning Proposals?	• Evaluation of the suitability of the proposed plans in the context of the OBC, are these sufficient do the meet the requirements of the project, guidance and the design of the system?
3.7	Has the Health Board started developing its ventilation governance arrangements?	• Is the Heath Board considering how it will ensure appropriate numbers of trained staff (AP and CP) and AE(V) for the project? • Evidence that the Health Boards AE(V) have been involved with and reviewed the design proposals to date.

Electrical

No.	Areas to probe	Evidence expected
4.1	Has the Health Board completed competency checks on the electrical consultant designers?	• Recorded evidence that the design team are experienced and have a comprehensive knowledge of the relevant design standards. • Where anyone does not have a record of extensive health care experience what recorded plans are to be put in place by the consultant designers? • Recorded evidence that input from the Health Boards Authorising Engineer for Electrical (AE(E)) has been requested.
4.2	How does the Health Board ensure that electrical services are being designed in a fashion which will provide ease of access for future maintenance and which will retain space for minor additions and modifications to services in the future?	• Evidence that the designers have presented their co-ordination drawings (BIM model) to the Board. • Evidence that the designers have presented each of the main service runs plus plant rooms to the Board's FM team. • Evidence that the Health Board has agreed a strategy (percentage) for spare capacity and a documented allowance to be incorporated into the design. • Are sub stations, switch rooms, distribution board cupboards, horizontal distribution runs and risers appropriately sized for the equipment being installed and facilitate safe, adequate maintenance?
4.3	How does the Health Board assure itself that all variations / derogations which may be required to electrical systems are investigated and agreed by all parties before they are instigated?	• Evidence that the each variation / derogation has a detailed technical analysis and has been referred to the Health Board and agreed with their electrical safety group, clinical, Estates, infection prevention and control and FM teams.

No.	Areas to probe	Evidence expected
4.4	Has the Health Board assured itself of availability of adequate supply from the local utility infrastructure?	• Confirmation from the Regional Electricity Company as to how the supply will be provided from their network and if single or dual supplies are being made available.
4.5	Evidence of provisions for emergency supplies during loss of the utility incoming supply.	• Floor plans with standby generator locations highlighted plus simple schematic of strategy. • Capacity of generators • UPS provision
4.6	Is there a strategy for locating substations?	• Floor plans with substation locations highlighted plus simple schematic.
4.7	Is there a strategy for locating switchrooms?	• Floor plans with switchroom locations highlighted plus simple schematic
4.8	Is there a strategy for locating Medical IT distribution equipment?	• Floor plans with Medical IT board locations highlighted plus simple schematic of strategy. • Compliance with BS7671 section 710 • Compliance with SHTM 06-01
4.9	Is there a strategy for distribution?	• Floor plans with containment distribution routing (horizontal and vertical).
4.10	Is there evidence of the Health Board developing electrical commissioning proposals?	• Evaluation of the suitability of the proposed plans in the context of the OBC, are these sufficient do the meet the requirements of the project, guidance and the design of the system?
4.11	Has the Heath Board starting on its early thinking for the electrical governance arrangements for the operational phase?	• Is the Health Board considering how it will ensure appropriate numbers of trained staff (AP(HV), AP(LV), CP(HV), CP(LV), AE(HV) and AE(LV) for the project, inclusive of third party providers? • Evidence that the Health Boards AE(E) have been involved with and reviewed the design proposals to date.

Medical Gases

No.	Areas to probe	Evidence expected
5.1	Has the Health Board completed competency checks on the medical gases consultant designers?	• Recorded evidence that the design team are experienced and have a comprehensive knowledge of the relevant design standards. • Where anyone does not have a record of extensive health care experience what recorded plans are to be put in place by the Consultant Designers? • Recorded evidence that input from the Health Boards Authorising Engineer for Medical Gases (AE(MG)) has been requested.
5.2	How does the Health Board assure itself that all variations / derogations' which may be required to medical gas systems are being investigated and agreed by all parties before they are instigated?	• Evidence that the each variation / derogation has a detailed technical analysis and has been referred to the Board and agreed with their medical gas management group, clinical, Estates, infection prevention and control and FM teams.
5.3	How does the Health Board ensure that medical gas services are designed in a fashion which will provide ease of access for future maintenance and which will retain space for minor additions and modifications to services in the future?	• Evidence that the designers have presented their co-ordination drawings (BIM model) to the Board. • Evidence that the designer has presented each of the main service runs to the Board's FM team.
5.4	Is there evidence of the Health Board developing medical gases commissioning proposals?	• Evaluation of the suitability of the proposed plans in the context of the OBC, are these sufficient do the meet the requirements of the project, guidance and the design of the system?
5.5	Has the Health Board started developing its medical gases governance arrangements for the operational phase?	• Is the Health Board considering how it will ensure appropriate numbers of trained staff (AP and CP) and AE(V) for the project?

No.	Areas to probe	Evidence expected
		• Evidence that the Health Boards AE(MG) have been involved with and reviewed the design proposals to date.
5.6	Is there recorded evidence of a strategy for bulk gas and bottle gas storage?	• Floor plans with cylinder locations highlighted • Site plan with VIE location(s) • Simple schematic • Confirmation that the medical gas strategy is adequate. • Floor plans with pipework distribution routing and manifold locations.
5.7	Is there recorded evidence of a strategy for medical gas plant?	• Description of medical; gas requirements signed off by clinical colleagues. • Floor plans with pipework distribution (horizontal and vertical) routing. • Details of all medical gas plant areas ensuring safe and adequate access.

No.	Areas to probe	Evidence expected
6.1	Has the Health Board completed competency checks on the Fire Engineering consultant designers?	• Recorded evidence that the design team are experienced and have a comprehensive knowledge of the relevant design standards. • Where anyone does not have a record of extensive health care experience what recorded plans are to be put in place by the Consultant Designers? • Recorded evidence that input from the Health Boards Fire Advisors has been requested.
6.2	Has a written fire strategy been completed and does it provide evidence, where there is a variance from statutory and mandatory guidance, that an equivalent level of safety has been achieved by alternative means?	• Is there documented evidence that fire suppression systems have been considered for life safety and property protection? • Is progressive horizontal evacuation available for all patient areas that continuously moves away from the fire area? • Does the design considerations of the fire and detection system provide L1 coverage including voids? • Does the design provide for a compliant emergency lighting system? • Are free swing arm self-closers fitted to all leafs of doors serving sleeping accommodation? • Have escape lifts been considered for the evacuation of patients and others with mobility issues? • Are multi sensor fire detectors installed to reduce the occurrence of unwanted fire alarm signals? • Are there adequate storage facilities to ensure escape routes are not used for this purpose? • Are measures in place to provide safe charging of electrical and personal electronic equipment? • Have fire hazard rooms been designated based on fire load? • Where there is a mechanical ventilation system - have all compartments, sub-

No.	Areas to probe	Evidence expected
		compartments and corridors serving sleeping accommodation been designed to be fitted with fire and smoke dampers?
6.3	How does the Health Board assure itself that all variations / derogations which may be required to fire systems are investigated and agreed by all parties before they are instigated?	• Evidence that the each variation / derogation and any fire engineering proposals are being referred to the Board and agreed with their fire safety group, clinical, engineering, infection prevention and control and FM teams.
6.4	How does the Health Board assure itself that all fire dampers and fire/smoke dampers are designed to allow for inspection, resetting and maintenance?	• Evidence that the designers have presented their co-ordination drawings (BIM model) to the Board. • Evidence that the designers have presented each of the fire dampers and smoke / fire dampers to the Board's FM team. • Safe and adequate access has been allocated on both sides of all fire dampers for maintenance.
6.5	How does the Health Board assure itself that any fire rated ductwork is correctly installed?	• Evidence that the system is certificated and that the installation follows the installation details which were used for the certification. • Written confirmation from the design consultant.
6.6	How does the Health Board assure itself that any smoke control and/or clearance systems are fit for purpose?	• Evidence that the smoke system is being designed by an accredited Fire Engineer. • Evidence that Building Control are being consulted. • Confirmation from the Building Services Design Consultant that the operating sequence for the smoke system has been discussed regarding being integrated into the control of other building systems.

No.	Areas to probe	Evidence expected
6.7	Evidence that the Health Board is ensuring fire safety input into the design process together with early design decision-making.	• Input from Fire lead(s) and HFS / SFRS on fire safety into site / option selection. Documents e.g. option appraisal report, fire strategy report, meeting minutes. • Demonstrable and appropriate engagement and expertise of relevant Fire lead(s). Signed off documents, e.g. reports, role profiles, minutes. • Evidence that the Health Boards Fire Advisor have been involved with and reviewed the design proposals to date.
6.8	Has the Health Board started the development of the fire system outline commissioning proposals?	• Has the Health Board designed appropriate trained staff and appointed a fire officer for the project, is there an established firer management group that will ensure the fire management strategy is adhered to?

No.	Areas to probe	Evidence expected
7.1	How does the Health Board demonstrate that there is an effective infection prevention and control management structure in place? How does the Board demonstrate leadership and commitment to infection prevention and control to ensure a culture of continuous quality improvement throughout the organisation and that there is an effective IPC structure in place; inputting into the design process?	• The Health Board provides evidence that there is an IPC Management Structure with the necessary. expertise and leadership skills to support the design work. • The Health Board provides evidence that there is an IPC Management Team with the necessary expertise and leadership skills to support the project. • Executive board reports or minutes. Risk registers or equivalent, Minutes from operational and governance groups, (and action points). • Structure of infection prevention and control team (IPCT) and qualifications held, previous experience supporting new build projects. • Evidence IPC and clinical teams have been involved with any derogation through the design process and are satisfied this will not impact on patient safety. This can be meeting minutes, risk assessments, and risk registers. There is IPC evidence of escalation through the agreed NHS board governance process. • Evidence the Executive board member assigned to lead on IPCT has been kept informed of IPC risks identified and associated with the project this can be demonstrated by the board. • Evidence that fixtures fitting and equipment have not been proposed for the project that would represent an IPC risk.
7.2	How does the Health Board demonstrate implementation of evidence based infection prevention and control measures during the design process?	• The Board evidences that: • The Health Board can demonstrate the current version of the National Infection Prevention and Control Manual has been adopted by the organisation and all staff are aware of how and where to access this and it is being referred to during the design process.

No.	Areas to probe	Evidence expected
		• IPC work programme and planned IPC audit programme for new building taking cognisance of any actual or perceived risks identified.
7.3	How does the Health Board assure itself that the designers have a proper understanding of the infection prevention and control procedures and processes required?	• The Health Board evidences that: • All relevant staff within the designers organisation are provided with clear guidance on roles and responsibilities in relation to infection prevention and control. • The contractors organisation will provide evidence of education in relation to infection prevention in the built environment for all staff involved in the project.
7.4	How does the Health Board assure itself that equipment being proposed meets the required IPC standards?	• The IPC Team are involved and IPC advice followed in all procurement decisions for new equipment prior to purchase. IPCT are satisfied that all equipment purchased can be decontaminated safely in line with National Decontamination Guidance, NIPCM and manufacturers' instructions.

4. References

KSAR Master Glossary

Available to download from NHS National Services Scotland website.

5. Bibliography

Scottish Property Advisory Group – Building Design and Construction: Report on Construction Quality Matters
John Donnelly, Chair BDAC
Dated: December 2020

NHS Scotland Assure
Quality in the healthcare environment

NHS National Services Scotland

Key Stage Assurance Review Workbook

Full Business Case

June 2021

Version 1.0

Contents

Contents **2**

1. About this workbook **3**
Figure 1: Construction Procurement Journey 3
Using this workbook 4

2. Key Stage Assurance Review **5**
Introduction to NHS Scotland Assure – Assurance Service 5
The KSAR Process 6
Value of the KSAR Process 6
KSAR as part of the overall assurance framework 7
The KSAR Process relationship with NHS Scotland Design Assessment Process (NDAP) 8
Sustainability 8
Full Business Case (FBC) KSAR 9

3. Assessment of Delivery Approach **11**
Project Governance and General Arrangements 11
Water and Internal Plumbing / Drainage Systems 15
Ventilation 17
Electrical 21
Medical Gases 23
IPC Built Environment 29

4. References **32**
KSAR Master Glossary 32

5. Bibliography **32**

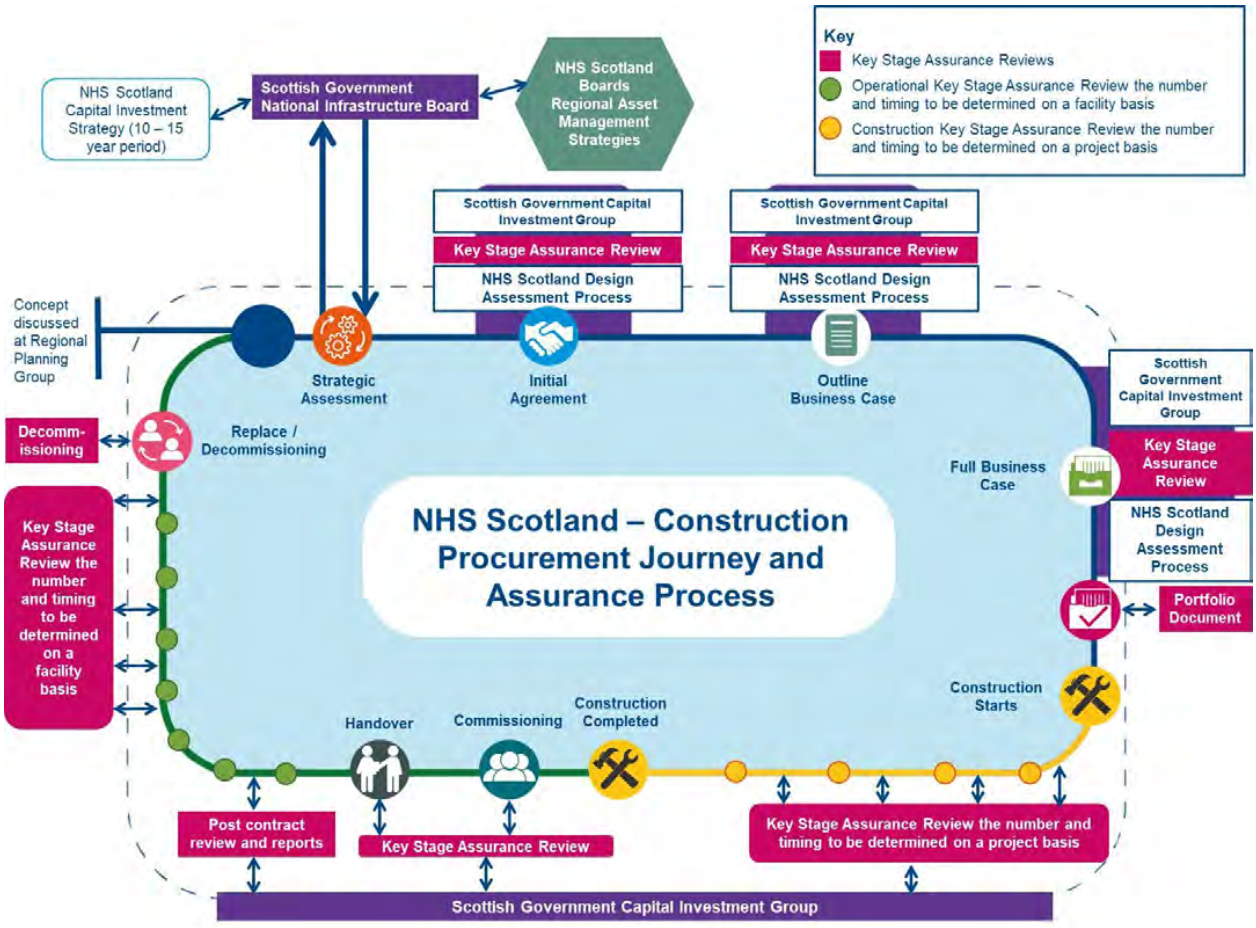
1. About this workbook

This workbook supports the Full Business Case Key Stage Assurance Review (KSAR), delivered by the NHS Scotland Assure Assurance service.

Further information about the NHS Scotland Assure Assurance service and KSAR process is provided in section 2.

Figure 1. shows how the Full Business Case stage in the procurement and construction journey commences following the Outline Buisness Case. The timing and frequency of KSARs during this stage will vary dependent upon the facility. Specific workbooks have been developed for the other stages within this journey.

Figure 1: Construction Procurement Journey



KSARs are of a process ensuring facilities and the teams using them are able to deliver the standards required to provide the best and safest outcomes for patients, staff and visitors in the built environment.

KSARs deliver an independent peer review. NSS staff outside the project use their experience and expertise to examine the progress and likelihood of successful delivery, with a particular emphasis on the safety of the patients, staff and visitors using the facility.

It is vital to receive feedback on the following elements of health facilities - Infection Prevention and Control (IPC), water, ventilation, electrical, plumbing, medical gases installations and fire. This ensures they are designed, installed and functioning from

initial commissioning of a new facility and throughout its lifetime. Health Boards are required to have appropriate governance in place at all stages of the construction procurement journey.

The KSAR workbook provides a transparent, structured framework for all clinical specialisms, facilities and operational management professionals to assess and manage a health care build or refurbishment. Allowing facilities to align with current standards as the assurance reviews are taking place, as well as aligning changes for patient cohort.

Using this workbook

The review at Full Business Case stage investigates the approach taken by the Health Board in the development of the design, and how the appropriate level of knowledge and awareness of patient and user needs will influence the development of the design.

The purpose of the KSAR at Full Business Case stage is to confirm there is a good and comprehensive understanding of the category of patient who will use the proposed facility and that the project team consider how appropriate quality and safety standards will influence the design. It looks to provide assurance that the project can proceed to the Construction phase.

Additionally, the KSAR at Full Business Case will carry out an appropriate level of checking of the design calculations and solutions adopted. This level of checking will be set by the Review Team following their initial discussions on site.

The workbook is predominantly intended to be used by NHS Scotland Assure KSAR review teams, Health Boards are encouraged to use its content to support their own projects. It provides guidance on the review structure and areas of investigation to be addressed by the review team and should be regarded as indicative and not prescriptive.

The review team will consider whether any emerging findings require additional topics to be addressed. If so, evidence relating to these areas, regarding the safety of the patients, staff and visitors, should be provided.

2. Key Stage Assurance Review

Introduction to NHS Scotland Assure – Assurance Service

Good management effective control of projects is an essential element to the successful delivery and maintenance of healthcare facilities across NHS Scotland estates.

The initial delivery of the NHS Scotland Assure - Assurance Service will focus upon new builds and major refurbishments in the acute estate, submitted to the Scottish Government Capital Investment Group (CIG). In addition, a number of projects identified as being complex, primarily due to the needs of patients utilising the facilities, will be reviewed by this service. Whilst not an exhaustive list, these projects will cover oncology, maternity, theatre and critical care units, no matter of their financial value.

The NHS Scotland Assure - Assurance Service will deliver KSARs, designed to provide independent assurance to Scottish Government Health and Social Care Directorates (SGHSCD's).

It will assess if Health Boards Project Management teams (inclusive of clinicians, appointed construction consultants, and contractors) are briefed and following best practice procedures in the provision of facilities. We will review if projects are compliant in all aspects of safety, if specific engineering systems are designed, installed and commissioned, and for ongoing safety maintenance including IPC.

The KSAR process is applicable regardless of procurement route chosen.

The KSAR Process

The KSAR process examines projects at key points in their lifecycle. It does not remove any legal or contractual obligations from the NHS Health Board, their designers or contractors. It provides assurance to progress successfully to the next review point and the process will be mandated for projects requiring CIG approval. KSARs focus on the assessment of the delivery approach, and will work with the Health Board's project team to ensure there is comprehensive understanding of the patient cohorts utilising the facility. KSARs also ensure relevant guidance is fully implemented and any technical derogations have been fully reasoned, transparently discussed, the implications understood, recorded and signed off by the Health Board and their advisors.

With a focus on construction elements where previous reviews have demonstrated potential patient safety concerns, KSARs will concentrate on water; ventilation, electrical, plumbing, medical gases installations, fire, and associated IPC guidance. If further issues are raised with the review team, they will fully incorporate those issues into the reporting process.

Value of the KSAR Process

Key Stage Assurance Reviews (KSARs) deliver an independent peer review. NSS staff outside the Health Board's project use their experience and expertise to examine the progress and likelihood of successful delivery, with a particular emphasis on the safety of the patients, staff and visitors using the facility. KSARs provide an external perspective and provide a challenge to the robustness of the Health Board's brief, plans and processes.

This includes work delivered by construction consultants, employed either directly or through construction contractors, and the work being delivered by the primary contractor, their sub-contractors and specialist suppliers.

The KSAR provides an independent report and action plan, which is shared with the Health Board to ensure:

- Appropriate skills and experience are deployed on the project by the Health Board, consultants, primary contractor and all sub-contractors.
- The clinicians and wider stakeholders covered by the project fully understand the project status, aims and the issues involved.
- Appropriate management structures put in place to ensure appropriate infection prevention and control measures are designed into the project to reduce the risk of transmission of infectious agent.
- There is assurance the project can progress to the next stage of development or implementation with particular emphasis on the safety of the patients, staff and visitors utilising the facility.
- Provision of advice and guidance to programme and project teams by fellow Practitioners.

The KSAR report and the Health Board's response and action plan is submitted to CIG along with a recommendation from the NHS Scotland Assure - Assurance Service regarding the projects' progression to the next stage of the construction procurement journey.

KSAR as part of the overall assurance framework

Each NHS Health Board will be fully responsible for the delivery of all projects, and its own internal process and resources for carrying out internal reviews and audits of its activities. The KSAR is seen as a complementary independent review, and not as a replacement for the responsibilities of the Health Board.

NHS Health Boards should have in place an effective framework to provide a suitable level of assurance for their programmes and projects. Health Boards are encouraged and expected to ensure adequate and timely coordination and sharing of information, including plans, between the various internal reviews and functions.

The KSAR process is not a substitute for a rigorous governance framework in the Board to manage key processes including business planning, investment appraisal, business case management, risk management and service and contract management.

The KSAR Process relationship with NHS Scotland Design Assessment Process (NDAP)

The Scottish Government's ambition for NHS Scotland's estate and the need for well-designed healthcare environments is articulated in the Policy on Design Quality for NHS Scotland. Good design in the built environment encompasses a wide range of inter-related factors such as, sustainability, engineering, architecture, fire safety, energy, environment, decontamination, space utilisation, landscaping, security, technology, lighting, access for visitors and mobility impaired persons.

The NDAP process is overseen by Health Facilities Scotland and Architecture and Design Scotland and holistically considers all of the above. It sets the principles for the resolution of potential conflicts of statutory or mandatory compliance to ensure the specific facility provides; the best balance of the technical requirements, meets clinical needs and fulfils the conceptual aims of the policy on Design Quality. The NDAP process begins at the initial agreement stage of a project and provides advice through to the Full Business Case. There is no change to either SCIM or NDAP processes.

The Scottish Government is progressing policy to improve the safety of the healthcare environment in relation to the built environment risk. The Assurance Service delivered through NHS Scotland Assure is a response to this policy and the KSARs are integral to the compliance work. The aspiration is not to duplicate any of the work included in the NDAP process, but to provide assurance regarding the critical components highlighted throughout this workbook.

Integral to the KSARs will be a review of the balance between sustainability issues and patient safety.

The NDAP, working with Health Boards, will set the principles of the design solution, whereas the KSAR will provide a detailed technical review of the specifics of the design solution. Where possible the two reviews will be aligned to avoid duplication of work. For example, in instances where the NDAP has reviewed detail at a technical level, this will be used by the KSAR team rather than being separately requested and reviewed.

Sustainability

The review will provide assurance that the proposals for the project provide an effective balance in terms of patient, staff and visitors safety, whilst meeting required sustainability outcomes and complying with the guidance standards.

Full Business Case (FBC) KSAR

This review investigates the approach taken by the Health Board in the development of the design, to confirm that there is a good and comprehensive understanding of the category of patient utilising the proposed facility, and that the project team are aware of how their needs and expectations for appropriate quality and safety standards will influence the design of the accommodation. It looks to provide assurance that the project can proceed to the Construction phase.

The FBC KSAR will focus on understanding how patient needs and expectations have influenced the following critical components of design, particularly in relation to Infection Prevention and Control.

- Water systems
- Ventilation systems
- Plumbing and drainage
- Fire safety
- Electrical systems
- Medical gases
- Any other building or engineering component critical to the safety and welfare of a particular patient cohort (defined by the review team).

At all stages of design development, knowledge of compliance in design and implementation will need to encompass (but is not limited to) the following:

- NHS Scotland policy letters (DLs,CELs,CMOs)
- Scottish Health Planning Notes (SHPN)
- Scottish Health Facilities Notes (SHFN)
- Scottish Health Technical Memoranda (SHTM)
- Scottish Fire Practice Notes (SFPN)
- Health Building Notes (HBN)
- Health Technical Memoranda (HTM)
- Health Facilities Notes (HFN)
- Incident Reporting and Investigation Centre (IRIC) Alerts
- Relevant British Standards
- UK construction industry bodies best practice or design guidance publications e.g. HSE, CIBSE, BRE, IHEEM, IET, BRE, BSRIA, sustainability, dementia and equality.
- Incident Reporting and Investigation Centre (IRIC) Alerts
- Relevant British Standards
- Other statutory requirements: Planning permission; Building Regulations compliance; Equality Act compliance; Health and Safety Executive (HSE)

compliance; Construction (Design and Management) Regulations compliance. Fire Scotland Act.

- Other mandatory NHS Scotland use of
  - Activity Data Base (ADB);
  - Achieving Excellence Design Evaluation Tool;
  - BREEAM Healthcare or equivalent (BRE environmental & sustainability tools);
  - Scottish Government BIM Policy (SPPN 1/2017; implementation of building information modelling within construction projects: March 2017).
- The implementation of NHS Scotland Soft Landings (SL) guidance.
- Confirm that there are plans in place for risk management, issue management and that these plans are being shared with suppliers and delivery partners.
- Evaluation of actions taken to implement recommendations made in earlier assessment of deliverability.
- Confirm there are plans in place to ensure the requirements of the NHS Scotland National Infection Prevention and Control Manual for Scotland are being incorporated into the development in a manner which will allow the staff allocated to the role to deliver the services to the patients.

Additionally, the FBC KSAR will carry out an appropriate level of checking of the design calculations and solutions adopted. This level of checking will be set by the review team following their initial discussions on site. One impact of this work may be that the review will take longer than the initial programme, dependant on the conclusions / findings from this in-depth assessment of the design.

The review teams consist of experienced operational estates professionals and experienced Infection Control clinicians. The team will work with the Health Board's Project Team, inclusive of their clinicians and their appointed facility management consultants and contractor. Each review will result in a report being prepared for the Programme Director at the Board and a copy of the report will also be provided to Scottish Government Capital Investment Group

An appendix is provided which indicates the typical question set for OBC which the review Team will use as the basis of evidence finding for the KSAR. The review team will amend this as necessary depending on the project and areas of particular interest. The Health Board, their designers and contractors should be aware that this is the information which will be expected and the design should effectively be completed at OBC at the time of the KSAR to ensure the accuracy of the report.

3. Assessment of Delivery Approach

The review at Full Business Case stage needs to demonstrate an awareness and knowledge of how the above will be used to influence the initial design.

Project Governance and General Arrangements

No.	Areas to probe	Evidence expected
1.1	Evaluation of changes detailed from previous KSAR.	• Assessment of any substantive changes in highlighted areas from previous review stage and all actions have been implemented.
1.2	Verification that CIG recommendations have been implemented with respect to prescribed in scope areas.	• Review of the implementation of all CIG recommendations. Evaluation of any deviation from previous submissions or reviews.
1.3	Has cross-referencing with NDAP and AEDET recommendations been implemented?	• An assessment if there is full compliance with the applicable recommendations and actions from the preceding step.
1.4	Does the Health Board continue to demonstrate service / clinical input into design decisions based on a current and comprehensive knowledge of patient cohorts?	• Recorded and updated input taken from service lead(s) / clinician(s) about relevant patient cohort characteristics and their typical needs in terms of the accommodation's environment, safety and infection control standards. • Demonstrable expertise of service lead(s) / clinician(s) in providing this advice.
1.5	Project team continues to demonstrate a unified and recorded understanding of needs of main users and patient cohorts of the proposed accommodation and how this has influenced the design of critical building, engineering and infection prevention and control quality and safety standards.	• Updated and current list available of all stakeholders, service users and patient cohorts impacted by this project, plus the identification of any high risk groups and their specialist needs. • Updated and recorded engagement on these designs issues having taken place between the project team and service lead(s) / clinician(s), infection prevention and control team, and other key stakeholders (e.g. Estates, Medical Physics, IPC, the AEDET, NDAP or other design briefing workshops).

No.	Areas to probe	Evidence expected
		• Details available of how service users / patient cohort needs and their expected use of the accommodation are influencing the design brief; including critical building, engineering and infection prevention and control quality and safety standards.
1.6	Planned approach towards determining the necessary standards for this accommodation.	• Updated and current list of the relevant NHS and non-NHS guidance that is being used and adopted (see previous section of workbook FBC KSAR (Page 9) for examples of appropriate guidance). • Updated and current list of all proposed derogations from NHS guidance with a detailed technical narrative on each derogation and/or list of known gaps in guidance that will need to be resolved in order to meet the needs of the patient / user cohort. • Knowledge of the role of infection prevention and control advisors (IPCN and ICD) to be used throughout the final design stages, and details of the resource plan in place to ensure continuity into the construction phase.
1.7	How does the Health Board demonstrate that there is an effective infection prevention and control management structure in place and how does it relate to the development of the project? How does the Health Board demonstrate leadership and commitment to infection prevention and control to ensure a culture of continuous quality improvement throughout the organisation and that there is an effective IPC structure in place and how does it relate to the design development?	• Evidence IPC and clinical teams have been integrated into all decisions regarding any derogations through the design process and are satisfied this will not impact on patient safety such as, specific sign off, supporting meeting minutes, risk assessments, risk registers relating to IPC with evidence of escalation through the agreed NHS board governance process.

No.	Areas to probe	Evidence expected
1.8	Integration with Authority Policies and Operation How does the Board demonstrate implementation of evidence based infection prevention and control measures?	• The Health Board can demonstrate the current version of the National Infection Prevention and Control Manual has been adopted by the organisation and all staff are aware of how and where to access this. (Ask staff) • IPC are fully embedded in the project team and the FBC programme taking cognisance of any actual or perceived risks identified provided.
1.9	The Health Boards Infection Prevention and Control Strategy	• Assessment of the Health Boards approach to all IPC related matters in relation to the development of the design, HAISCRIBE etc.
1.10	The Health Boards Monitoring and Records	• Evidence that the Health Board integrating this project with wider IPC requirements within the context of the FBC. For example, evidence that the proposals for equipping incorporate IPC requirements?
1.11	Planned approach for managing the design process to ensure successful compliance with agreed and approved standards	• The project governance arrangements and resource plan in place to ensure that the necessary decision making authority and technical expertise is available to take responsibility for and deliver the project as planned and agreed. • Details of how gaps in expertise are being filled. • Details of how compliance with the appropriate guidance, design brief and other standards are being agreed, signed off, monitored, reported against and if necessary escalated / adjudicated throughout the design, construction and commissioning stages. • Details of how all stakeholders' interests are being agreed, signed off, monitored, reported against and if necessary escalated / adjudicated throughout the design, construction and commissioning stages.

No.	Areas to probe	Evidence expected
1.12	The Health Boards approach on the procurement journey with evidence of the plans on how the Board will provide assurance, particularly emphasis on the critical system identified earlier.	• Evidence on how this requirement is being managed and how it fits with the project governance arrangements • Plans to identify any gaps in the procurement approach that may require to be addressed. • Evidence on how Infection Prevention and Control are involved with the conceptual procurement approach to the design stage and future plans for project. • Evidence that the Health Boards selected procurement route has gone through the Board's Governance channels.
1.13	The Health Boards approach on those areas of design that the procurement route has provided identification as possibly being Contractors Designed Portions (CDP's).	• Evidence that the procurement of the lead designer will encompass these areas in their oversight and sign off of the complete design. • Evidence that a clear demarcation of design responsibility is being developed.
1.14	Evaluation of the Health Boards commissioning plan.	• Evidence that the Health Board has recorded plans that are comprehensive and adequate to address the needs of the project and that they are fully resourced.
1.15	Evaluation of the Health Boards duty holder matrix.	• Evidence that the Health Board have a fully recorded matrix of the required roles and responsibilities and have a clear governance structure that is fully resourced together with plans in place for the implementation. • Evidence that Health Boards have appropriate number of competent, qualified staff to carry out specific duties throughout the life cycle of the project e.g., IPC, Engineers, Estates staff etc. The number of competent, qualified staff will depend on the type and size of the Build Project.

No.	Areas to probe	Evidence expected
2.1	Has the Health Board completed competency checks on the water and drainage consultant designers?	• Recorded evidence that the design team are experienced and have a comprehensive knowledge of the relevant design standards. • Where anyone does not have a record of extensive health care experience what recorded plans are to be put in place by the Consultant Designers? • Recorded evidence that input from the Health Authorising Engineer for Water (AE(W)) has been requested. • Evidence that all contractors and sub-contractor competency checks have been completed and signed off.
2.2	How does the Health Board ensure that water services are designed in a fashion which will retain space for minor additions and modifications to services in the future?	• Evidence that the engineers are presented their co-ordination drawings (BIM model), with space for future flexibility identified, to the Board. • Evidence that the Design Consultant has considered and agreed with the Board, space for future flexibility in the service installations. • Evidence that the designers have presented each of the main service runs plus plant rooms to the Board's FM team, to highlight space for future flexibility. • Evidence that the Board has agreed a strategy (percentage) for spare capacity and a documented allowance to be incorporated into the design. • Are plant/tank rooms, IPS sections, horizontal distribution runs and risers appropriately sized for the equipment being installed and facilitate safe adequate maintenance.
2.3	How does the Health Board assure itself that all variations / derogations which may be required to water systems are	• Evidence that the each variation / derogation has a detailed technical analysis and has been referred to the Board and agreed with their water management group clinical,

No.	Areas to probe	Evidence expected
	investigated and agreed by all parties before they are incorporated in the design?	engineering, Estates, infection prevention and control and FM teams.
2.4	Water Management Strategy	• Assessment of Board proposed water management strategy and how this relates to the specification, guidance and project requirements. • What involvement has there been from the water management group?
2.5	Water governance arrangements	• Has the Board commenced its planning and recorded how it will ensure appropriate numbers of trained staff (AP and CP) and AE(W) will be appointed, is there an established project water management group that ensures the water management strategy is adhered to for the Board and is it clear how this project will interface with this existing group?

2.6	Evidence that the Health Board is developing commissioning proposals.	• Evaluation of the suitability of the proposed plans in the context of the FBC, are these sufficient to meet the requirements of the project, guidance and the design of the system.
		• Evidence that the design has considered the commissioning of the water system including:
		  ○ Safe storage of materials
		  ○ Agreed type of chemical (to avoid warranty and corrosion issues)
		  ○ Adequate time scale
		  ○ Competency checks on all contractors
		  ○ Water sampling scope
		• Water sampling test results and approval process.

2.7	Evaluation of the Health Boards planned preventative maintenance (PPM) proposals.	• Has the Health Board commenced its planning and recorded the PPM requirements and approach to ensure appropriate levels of maintenance, comprehensive statutory compliance

No.	Areas to probe	Evidence expected
		and robust management processes, including: ○ Adequate numbers of staff ○ Water management PPM including all outlets, TMT & TMV, plumbing and drainage systems, etc.?

Ventilation

No.	Areas to probe	Evidence expected
3.1	Has the Health Board completed competency checks on the ventilation consultant designers?	• Recorded evidence that the design team are experienced and have a comprehensive knowledge of the relevant design standards. • Where anyone does not have a record of extensive health care experience what recorded plans are to be put in place by the Consultant Designers? • Recorded evidence that input from the Health Boards Authorising Engineer for Ventilation (AE(V)) has been requested. • Evidence that all contractors and sub-contractor competency checks have been completed and signed off.
3.2	How does the Health Board ensure that ventilation services are designed in a fashion which will retain space for minor additions and modifications to services in the future and there is an appropriate plant access strategy?	• Evidence that the design engineers have presented their co-ordination drawings (BIM model), with space for future flexibility identified, to the Board. • Evidence that the design consultant has considered and agreed with the Board, space for future flexibility in the service installations. • Evidence that the design engineers have presented each of the main service runs plus plant rooms to the Board's Estates team and / or FM team, to highlight space for future flexibility. • Evidence that the ventilation solution has been agreed with clinical and IPC colleagues. • Evidence that the Board has agreed a strategy (percentage) for spare capacity and a documented allowance to be incorporated into the design. • Are plant rooms, horizontal distribution runs and risers appropriately sized for the equipment being installed and facilitate safe adequate maintenance? • Evidence that a plant access strategy for the entire ventilation system has been provided to ensure safe, adequate access, including access for cleaning.

No.	Areas to probe	Evidence expected
3.3	How does the Health Board assure itself that all variations / derogations which may be required to the ventilation systems are investigated and agreed by all parties before they are incorporated in the design?	• Evidence that the each variation / derogation has a detailed technical analysis and has been referred to the Board and agreed with their ventilation safety group, clinical, engineering, Estates, infection control and FM teams.
3.4	Does the Health Board have a strategy for ventilation (for rooms where this is permitted within the SHTM/SHPN guidance)?	• Evidence of agreed environmental matrix. • Evidence that the Dynamic thermal modelling confirms what the design must include (e.g. structure, solar shading/protection, orientation, equipment optimisation, etc.) to ensure that room temperatures comply with SHTM guidance, in naturally ventilated rooms. • Floor plans with associated plant locations highlighted plus simple schematic of strategy. This must also identify the air intake and exhaust strategy / locations.
3.5	Is there evidence of stakeholder input to ventilation strategies?	• Addition to or supplement to the Environmental Matrix which confirms the following, on a room by room basis: • a) the type of ventilation (to SHTM 03-01) b) patient group and / or function related to the space. • c) name of the Consultant, Clinical Lead or Department Lead who has agreed to the room requirements. • d) name of the Infection Prevention and Control Doctor or equivalent who has agreed to the room requirements. • e) name of the Infection Prevention and Control Nurse who has agreed to the room requirements. • f) name of the Estates / FM team representative who has agreed to the room requirements. • g) name of the NHS Project Manager who has agreed to the room requirements.

No.	Areas to probe	Evidence expected
		• h) name of the Decontamination Manager who has agreed to the room requirements (where this is part of the project).
3.6	Is there evidence of the Health Board developing Ventilation Commissioning Proposals?	• Evaluation of the suitability of the proposed plans in the context of the FBC, are these sufficient do the meet the requirements of the project, guidance and the design of the system? • What plans have been made for independent validation of the ventilation systems? • What plans have been made for independent verification of the ventilation system? • What plant and ductwork cleaning has been specified? • What safe adequate access has been allowed for access to dampers?
3.7	Has the Health Board started developing its ventilation governance arrangements?	• Has the Health Board commenced its planning and recorded how it will ensure appropriate numbers of trained staff (AP and CP) staff and appointment of AE(V) for the project and is it clear how this project will interface with the Health Boards existing arrangements for management of the ventilation installations?
3.8	Evaluation of the Health Boards planned preventative maintenance (PPM) proposals.	• Has the Health Board commenced its planning and recorded the PPM requirements and approach to ensure appropriate levels of maintenance, comprehensive statutory compliance and robust management processes?

No.	Areas to probe	Evidence expected
4.1	Has the Health Board completed competency checks on the electrical consultant designers?	• Recorded evidence that the design team are experienced and have a comprehensive knowledge of the relevant design standards. • Where anyone does not have a record of extensive health care experience what recorded plans are to be put in place by the Consultant Designers? • Recorded evidence that input from the Health Boards Authorising Engineer for Electrical (AE(E)) has been requested. • Evidence that all contractors and sub-contractor competency checks have been completed and signed off.
4.2	How does the Health Board ensure that electrical services are being designed in a fashion which will provide ease of access for future maintenance and which will retain space for minor additions and modifications to services in the future?	• Evidence that the designers have presented their co-ordination drawings (BIM model) to the Board. • Evidence that the designers have presented each of the main service runs plus plant rooms to the Health Board's FM team. • Evidence that the Board has agreed a strategy (percentage) for spare capacity and a documented allowance has been incorporated into the design. • Are sub stations, switch rooms, distribution board cupboards, horizontal distribution runs and risers appropriately sized for the equipment being installed and facilitate safe, adequate maintenance.
4.3	How does the Health Board assure itself that all variations / derogations which may be required to electrical systems are investigated and agreed by all parties before they are instigated?	• Evidence that the each variation / derogation has a detailed technical analysis and has been referred to the Board and agreed with their electrical safety group, clinical, Estates, infection prevention and control and FM teams.
4.4	Has the Health Board assured itself of	• Confirmation from the Regional Electricity Company as to how the supply will be

No.	Areas to probe	Evidence expected
	availability of adequate supply from the local utility infrastructure?	provided from their network and if single or dual supplies are being made available. • What is the Health Board's resilience strategy for the electrical infrastructure (including dual supplies, renewables, generators, UPS, etc.)?
4.5	Evidence of provisions for emergency supplies during loss of the utility incoming supply.	• Floor plans with standby generator locations highlighted plus simple schematic.
4.6	Is there a strategy for locating substations?	• Floor plans with substation locations highlighted plus simple schematic of strategy.
4.7	Is there a strategy for locating switchrooms?	• Floor plans with switchroom locations highlighted plus simple schematic.
4.8	Is there a strategy for locating Medical IT distribution equipment?	• Floor plans with Medical IT board locations highlighted plus simple schematic. • Compliance with BS7671 section 710 • Compliance with SHTM 06-01
4.9	Is there a strategy for distribution?	• Floor plans with containment distribution routing (horizontal and vertical).
4.10	Is there evidence of the Health Board developing electrical commissioning proposals?	• Evaluation of the suitability of the proposed plans in the context of the FBC, are these sufficient do the meet the requirements of the project, guidance and the design of the system? • Has sufficient time been allocated for a full commissioning program?
4.11	Has the Health Board starting on its early thinking for the electrical governance arrangements for the operational phase?	• Has the Health Board commenced its planning and recorded how it will ensure appropriate trained staff and appointment of AE for the project and is it clear how this project will interface with the Health Board existing arrangements for management of the electrical installations, inclusive of third party providers?

No.	Areas to probe	Evidence expected
4.12	Evaluation of the Health Boards planned preventative maintenance (PPM) proposals.	• Has the Health Board commenced its planning and recorded the PPM requirements and approach to ensure appropriate levels of maintenance, comprehensive statutory compliance and robust management processes, inclusive of third party providers?

Medical Gases

No.	Areas to probe	Evidence expected
5.1	Has the Health Board completed competency checks on the medical gases consultant designers?	• Recorded evidence that the design team are experienced and have a comprehensive knowledge of the relevant design standards. • Where anyone does not have a record of extensive health care experience what recorded plans are to be put in place by the consultant designers? • Recorded evidence that input from the Health Boards Authorising Engineer for Medical Gases (AE(MG)) has been requested. • Evidence that all contractors and sub-contractor competency checks have been completed and signed off.
5.2	How does the Health Board assure itself that all variations / derogations' which may be required to medical gas systems are being investigated and agreed by all parties before they are instigated?	• Evidence that the each variation / derogation has a detailed technical analysis and has been referred to the Board and agreed with their medical gases management group, clinical, Estates, infection control and FM teams.
5.3	How does the Health Board ensure that medical gas services are designed in a fashion which will provide ease of access for future maintenance and which will retain space for minor additions and modifications to services in the future?	• Evidence that the designers have presented their co-ordination drawings (BIM model) to the Board. • Evidence that the designer has presented each of the main service runs to the Board's FM team.
5.4	Is there evidence of the Health Board developing medical gases commissioning proposals?	• Evaluation of the suitability of the proposed plans in the context of the FBC are these sufficient do the meet the requirements of the project, guidance and the design of the system?

No.	Areas to probe	Evidence expected
5.5	Has the Health Board started developing its medical gases governance arrangements for the operational phase?	• Is the Health Board considering how it will ensure appropriate numbers of trained staff (AP and CP) and AE(V) for the project? And is it clear how this project will interface with the Board existing arrangements for management of the medical gases installations?
5.6	Is there recorded evidence of a strategy for bulk gas and bottle gas storage?	• Floor plans with vacuum insulated evaporator (VIE) locations highlighted plus simple schematic of strategy. • Confirmation that the medical gas strategy is adequate. • Floor plans with pipework distribution routing and manifold locations.
5.7	Evaluation of the Health Boards planned preventative maintenance (PPM) proposals	• Has the Health Board commenced its planning and recorded the PPM requirements and approach to ensure appropriate levels of maintenance, comprehensive statutory compliance and robust management processes?

No.	Areas to probe	Evidence expected
6.1	Has the Health Board completed competency checks on the Fire Engineering consultant designers?	• Recorded evidence that the design team are experienced and have a comprehensive knowledge of the relevant design standards applicable to healthcare premises. • Recorded evidence that input from the Health Boards Fire Advisors has been requested. • Evidence that all contractors and sub-contractor competency checks have been completed and signed off.
6.2	Has a written fire strategy been completed and does it provide evidence, where there is a variance from statutory and mandatory guidance, that an equivalent level of safety has been achieved by alternative means?	• Is there documented evidence that fire suppression systems have been considered for life safety and property protection? • Is progressive horizontal evacuation available for all patient areas that continuously moves away from the fire area? • Does the design considerations of the fire and detection system, for in-patient facilities, provide L1 coverage including voids? • Does the design provide for a compliant emergency lighting system? • Are free swing arm self-closers fitted to all leafs of doors serving sleeping accommodation? • Have escape lifts been considered for the evacuation of patients and others with mobility issues? • Are multi sensor fire detectors installed to reduce the occurrence of unwanted fire alarm signals? • Are there adequate storage facilities to ensure escape routes are not used for this purpose? • Are measures in place to provide safe charging of electrical and personal electronic equipment? • In addition to the prescribed list in the Building Standards Technical Handbook have fire hazard rooms been designated based on fire load? • Where there is a mechanical ventilation system - have all compartments, sub-compartments and corridors serving sleeping

No.	Areas to probe	Evidence expected
		accommodation been designed to be fitted with fire and smoke dampers?
6.3	How does the Health Board assure itself that all variations / derogations which may be required to fire systems are investigated and agreed by all parties before they are instigated?	• Evidence that the each variation / derogation and any fire engineering proposals are being referred to the Board and agreed with their fire safety advisors, NDAP group, clinical, engineering, Infection Prevention and Control, FM teams and regulatory authorities.
6.4	How does the Health Board assure itself that all fire dampers and fire/smoke dampers are designed to allow for inspection, resetting and maintenance?	• Safe and adequate access has been allocated on both sides of all fire dampers for maintenance.
6.5	How does the Health Board assure itself that any smoke control and/or clearance systems are fit for purpose?	• Evidence that the smoke system is being designed by an accredited Fire Engineer. • Evidence that Building Control are being consulted. • Confirmation that the Health Boards fire advisors and NDAP team are satisfied with the design proposal.
6.6	Has the Health Board started the development of the fire system outline commissioning proposals?	• Is there an established fire management group that will ensure the fire strategy is adhered to?
6.7	Has the Health Board started its early thinking for the Fire Safety arrangements for the operational phase?	• Has the Health Board commenced its planning and recorded how it will ensure appropriate trained staff and appointment of Fire Officers for the project in the operational phase and is it clear how this project will interface with the

No.	Areas to probe	Evidence expected
		Health Boards existing arrangements for management of the Fire Safety?

No.	Areas to probe	Evidence expected
7.1	How does the Health Board demonstrate that there is an effective infection prevention and control management structure in place? How does the Board demonstrate leadership and commitment to infection prevention and control to ensure a culture of continuous quality improvement throughout the organisation and that there is an effective IPC structure in place; inputting into the design process?	• The Health Board provides evidence that there is an IPC Management Structure with the necessary expertise and leadership skills to support the design work ○ The Health Board provides evidence that there is an IPC Management Team with the necessary expertise and leadership skills to support the project. ○ Executive board reports or minutes. Risk registers or equivalent, Minutes from operational and governance groups, (and action points). ○ Structure of infection prevention and control team (IPCT) and qualifications held, previous experience supporting new build projects. ○ Evidence IPC and clinical teams have been involved with any derogation through the design process and are satisfied this will not impact on patient safety. This can be meeting minutes, risk assessments, and risk registers. There is IPC evidence of escalation through the agreed NHS board governance process. ○ Evidence the Executive Board Member assigned to lead on IPCT has been kept informed of IPC risks identified and associated with the project this can be demonstrated by the board. ○ Evidence that fixtures fitting and equipment have not been proposed for the project that would represent an identified IPC risk. ○ Evidence that all contractors and sub-contractor competency checks have been completed and signed off.
7.2	How does the Health Board demonstrate implementation of evidence based infection prevention and control	• The Health Board provides evidence ○ The board can demonstrate the current version of the National Infection Prevention and Control Manual has been adopted by the organisation and all staff are aware of how and where to access this

No.	Areas to probe	Evidence expected
	measures during the design process?	and it is being referred to during the design process. ○ The board can demonstrate IPC advisors have been included within the design phase and development of HAISCRIBE.
7.3	How does the Health Board assure itself that the designers have a proper understanding of the infection prevention and control procedures required?	• The Health Board evidences that: ○ All relevant staff within the designers' organisation are provided with clear guidance on roles and responsibilities in relation to infection prevention and control. ○ The contractors' organisation will provide evidence of education in relation to infection prevention in the built environment for all staff involved in the project.
7.4	How does the Health Board assure itself that equipment being proposed meets the required IPC standards?	• The IPC Team are involved and IPC advice followed in all procurement decisions for new equipment prior to purchase. IPCT are satisfied that all equipment purchased can be decontaminated safely in line with National Guidance and manufacturers' instructions.
7.5	Evaluation of the Health Boards planned preventative maintenance (PPM) proposals for equipment issues and the Built Environment in relation to IPC issues.	• Has the Health Board considered how they will undertake assessment of and report cleanliness of the proposed facility and equipment within the healthcare environment, this is inclusive of planned programmes of maintenance? • Does the Health Board plan to seek feedback from patients, staff and visitors for their views? • Is it clear how the work for this project will interface with the Health Board existing arrangements for management of the IPC in the Built Environment in the wider estate?

4. References

KSAR Master Glossary

Available to download from NHS National Services Scotland website.

5. Bibliography

Scottish Property Advisory Group – Building Design and Construction: Report on Construction Quality Matters
John Donnelly, Chair BDAC
Dated: December 2020

NHS Scotland Assure
Quality in the healthcare environment

NHS National Services Scotland

Key Stage Assurance Review Workbook

Construction

June 2021

Version 1.0

A46005509

Contents

Contents **2**

1. About this workbook **3**
Using this workbook 4

2. Key Stage Assurance Review **5**
Introduction to NHS Scotland Assure – Assurance Service 5
Value of the KSAR Process 6
KSAR as part of the overall assurance framework 7
The KSAR Process relationship with NHS Scotland Design Assessment Process (NDAP) 7
Sustainability 8
Construction KSAR 9

3. Assessment of Delivery Approach **11**
General approach to the Governance of Quality on the Project 11
Water and Plumbing / Drainage Systems 14
Ventilation 17
Electrical 20
Medical Gases 23
Fire 25
IPC Built Environment 28

4. References **30**
KSAR Master Glossary 30

5. Bibliography **30**

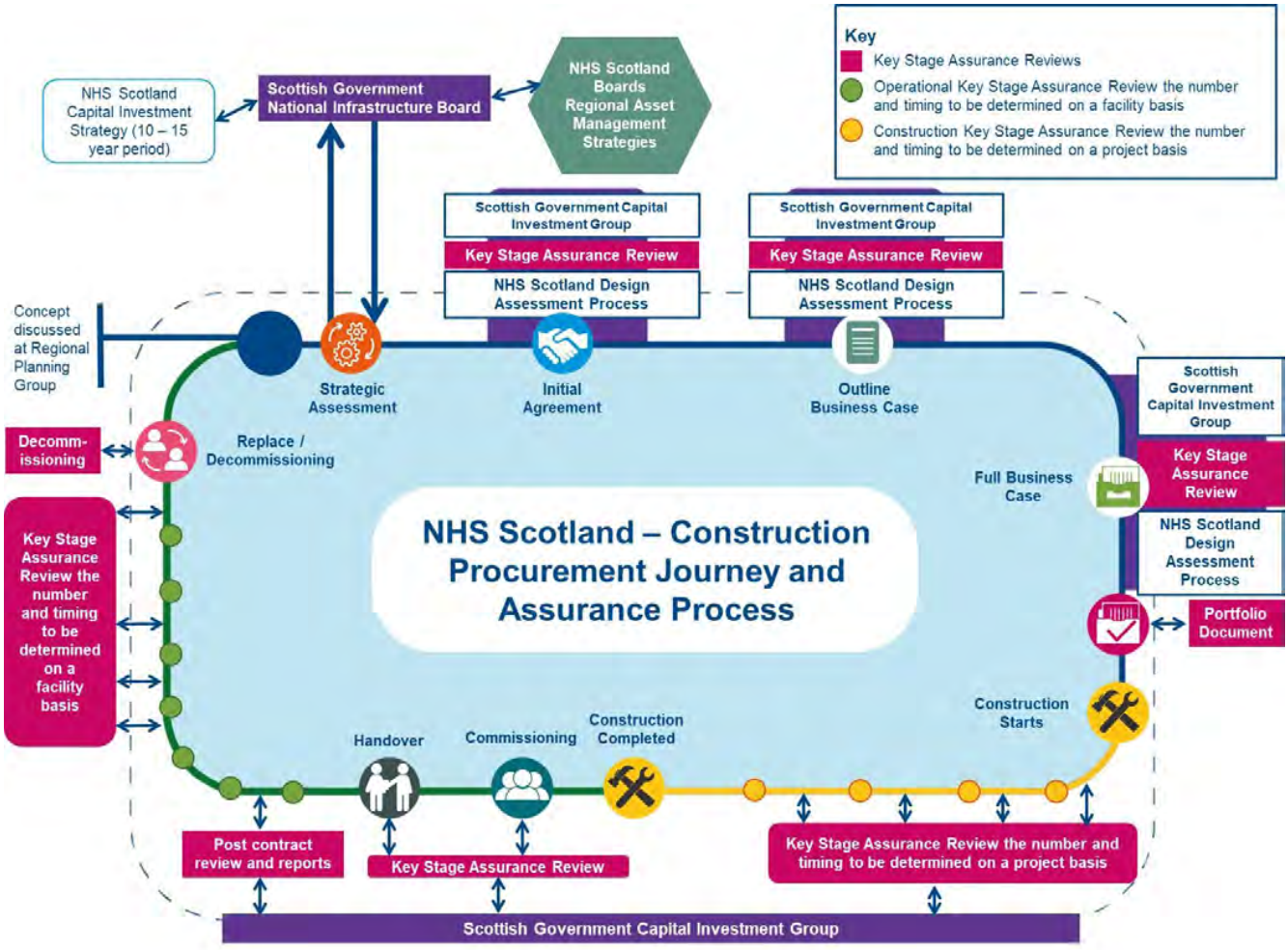
1. About this workbook

This workbook supports the Construction Key Stage Assurance Review (KSAR), delivered by the NHS Scotland Assure Assurance service.

Further information about the NHS Scotland Assure Assurance service and KSAR process is provided in section 2.

Figure 1. shows how the Construction stage in the procurement and construction journey commences following the Full Business Case. The timing and frequency of KSARs during this stage will vary dependent upon the facility. Specific workbooks have been developed for the other stages within this journey.

Figure 1: Construction Procurement Journey



KSARs are of a process ensuring facilities and the teams using them are able to deliver the standards required to provide the best and safest outcomes for patients, staff and visitors in the built environment.

KSARs deliver an independent peer review. NSS staff outside the project use their experience and expertise to examine the progress and likelihood of successful delivery, with a particular emphasis on the safety of the patients, staff and visitors using the facility.

It is vital to receive feedback on the following elements of health facilities - Infection Prevention and Control (IPC), water, ventilation, electrical, plumbing, medical gases installations and fire. This ensures they are designed, installed and functioning from

initial commissioning of a new facility and throughout its lifetime. Health Boards are required to have appropriate governance in place at all stages of the construction procurement journey.

The KSAR workbook provides a transparent, structured framework for all clinical specialisms, facilities and operational management professionals to assess and manage a health care build or refurbishment. Allowing facilities to align with current standards as the assurance reviews are taking place, as well as aligning changes for patient cohort.

Using this workbook

The review investigates at various points during the Build / Construction Stage of the construction of the facility. The timing and number of Build / Construction Reviews will be determined during the design process and by agreement of the NHS Assessment Team and the Client Board.

The workbook is predominantly intended to be used by NHS Scotland Assure KSAR review teams, Health Boards are encouraged to use its content to support their own projects.

This workbook is predominantly intended to be used by NHS Scotland Assure KSAR review teams, Health Boards are encouraged to use its content to support their own projects. It provides guidance on the review structure and areas of investigation to be addressed by the review team and should be regarded as indicative and not prescriptive.

The review team will consider whether any emerging findings require additional topics to be addressed. If so, evidence relating to these areas, regarding the safety of the patients, staff and visitors should be provided.

2. Key Stage Assurance Review

Introduction to NHS Scotland Assure – Assurance Service

Good management effective control of projects is an essential element to the successful delivery and maintenance of healthcare facilities across NHS Scotland estates.

The initial delivery of the NHS Scotland Assure - Assurance Service will focus upon new builds and major refurbishments in the acute estate, submitted to the Scottish Government Capital Investment Group (CIG). In addition, a number of projects identified as being complex, primarily due to the needs of patients utilising the facilities, will be reviewed by this service. Whilst not an exhaustive list, these projects will cover oncology, maternity, theatre and critical care units, no matter of their financial value.

The NHS Scotland Assure - Assurance Service will deliver KSARs, designed to provide independent assurance to Scottish Government Health and Social Care Directorates (SGHSCD's).

It will assess if Health Boards Project Management teams (inclusive of clinicians, appointed construction consultants, and contractors) are briefed and following best practice procedures in the provision of facilities. We will review if projects are compliant in all aspects of safety, if specific engineering systems are designed, installed and commissioned, and for ongoing safety maintenance including IPC.

The KSAR process is applicable regardless of procurement route chosen

The KSAR Process

The KSAR process examines projects at key points in their lifecycle. It does not remove any legal or contractual obligations from the NHS Health Board, their designers or contractors. It provides assurance to progress successfully to the next review point and the process will be mandated for projects requiring CIG approval. KSARs focus on the assessment of the delivery approach, and will work with the Health Board's project team to ensure there is comprehensive understanding of the patient cohorts utilising the facility. KSARs also ensure relevant guidance is fully implemented and any technical derogations have been fully reasoned, transparently

discussed, the implications understood, recorded and signed off by the Health Board and their advisors.

With a focus on construction elements where previous reviews have demonstrated potential patient safety concerns, KSARs will concentrate on water; ventilation, electrical, plumbing, medical gases installations, fire, and associated IPC guidance. If further issues are raised with the review team, they will fully incorporate those issues into the reporting process.

Value of the KSAR Process

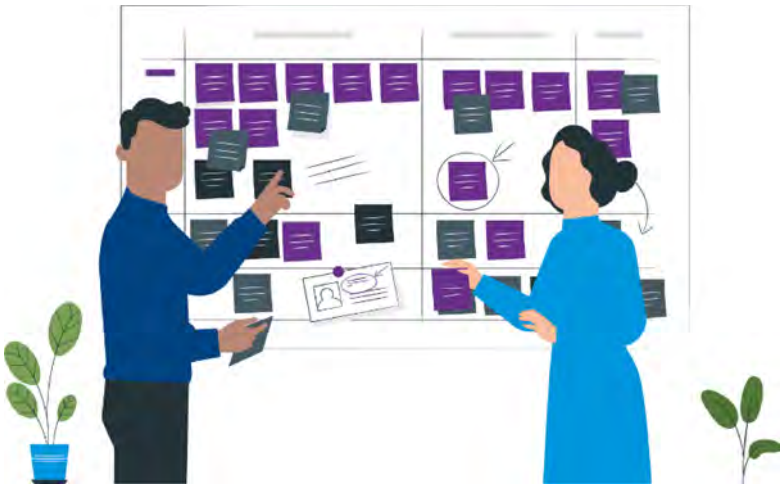
Key Stage Assurance Reviews (KSARs) deliver an independent peer review. NSS staff outside the Health Board's project use their experience and expertise to examine the progress and likelihood of successful delivery, with a particular emphasis on the safety of the patients, staff and visitors using the facility. KSARs provide an external perspective and provide a challenge to the robustness of the Health Board's brief, plans and processes.

This includes work delivered by construction consultants, employed either directly or through construction contractors, and the work being delivered by the primary contractor, their sub-contractors and specialist suppliers.

The KSAR provides an independent report and action plan, which is shared with the Health Board to ensure:

- Appropriate skills and experience are deployed on the project by the Health Board, consultants, primary contractor and all sub-contractors.
- The clinicians and wider stakeholders covered by the project fully understand the project status, aims and the issues involved.
- Appropriate management structures put in place to ensure appropriate infection prevention and control measures are designed into the project to reduce the risk of transmission of infectious agent.
- There is assurance the project can progress to the next stage of development or implementation with particular emphasis on the safety of the patients, staff and visitors utilising the facility.
- Provision of advice and guidance to programme and project teams by fellow Practitioners.

The KSAR report and the Health Board's response and action plan is submitted to CIG along with a recommendation from the NHS Scotland Assure - Assurance Service regarding the projects' progression to the next stage of the construction procurement journey.



KSAR as part of the overall assurance framework

Each NHS Health Board will be fully responsible for the delivery of all projects, and its own internal process and resources for carrying out internal reviews and audits of its activities. The KSAR is seen as a complementary independent review, and not as a replacement for the responsibilities of the Health Board.

NHS Health Boards should have in place an effective framework to provide a suitable level of assurance for their programmes and projects. Health Boards are encouraged and expected to ensure adequate and timely coordination and sharing of information, including plans, between the various internal reviews and functions.

The KSAR process is not a substitute for a rigorous governance framework in the Board to manage key processes including business planning, investment appraisal, business case management, risk management and service and contract management.

The KSAR Process relationship with NHS Scotland Design Assessment Process (NDAP)

The Scottish Government's ambition for NHS Scotland's estate and the need for well-designed healthcare environments is articulated in the Policy on Design Quality for NHS Scotland. Good design in the built environment encompasses a wide range of inter-related factors such as, sustainability, engineering, architecture, fire safety, energy, environment, decontamination, space utilisation, landscaping, security, technology, lighting, access for visitors and mobility impaired persons.

The NDAP process is overseen by Health Facilities Scotland and Architecture and Design Scotland and holistically considers all of the above. It sets the principles for the resolution of potential conflicts of statutory or mandatory compliance to ensure the specific facility provides; the best balance of the technical requirements, meets clinical needs and fulfils the conceptual aims of the policy on Design Quality. The NDAP process begins at the initial agreement stage of a project and provides advice through to the Full Business Case. There is no change to either SCIM or NDAP processes.

The Scottish Government is progressing policy to improve the safety of the healthcare environment in relation to the built environment risk. The Assurance Service delivered through NHS Scotland Assure is a response to this policy and the KSARs are integral to the compliance work. The aspiration is not to duplicate any of the work included in the NDAP process, but to provide assurance regarding the critical components highlighted throughout this workbook.

Integral to the KSARs will be a review of the balance between sustainability issues and patient safety.

The NDAP, working with Health Boards, will set the principles of the design solution, whereas the KSAR will provide a detailed technical review of the specifics of the design solution. Where possible the two reviews will be aligned to avoid duplication of work. For example, in instances where the NDAP has reviewed detail at a technical level, this will be used by the KSAR team rather than being separately requested and reviewed.

Sustainability

The review will provide assurance that the proposals for the project provide an effective balance in terms of patient, staff and visitors safety, whilst meeting required sustainability outcomes and complying with the guidance standards.

Construction KSAR

KSAR reviews are designed to provide independent assessment to Scottish Government Health and Social Care Directorates (SGHSCD's) so that:

- The construction phase is fully defined, and effectively utilises national guidance and construction techniques required to deliver a building which comply with relevant national guidelines and meet the needs of patients who will be using the facility.
- The construction and commissioning teams are skilled in the necessary construction methods and understand the required outcomes.
- The facility complies with:
    - NHS Scotland current guidance; e.g. NHS Scotland policy letters
    - Scottish Health Planning Notes (SHPN)
    - Scottish Health Facilities Notes (SHFN)
    - Scottish Health Technical Memoranda (SHTM)
    - Scottish Fire Practice Notes (SFPN)
    - Health Building Notes (HBN)
    - Health Technical Memoranda (HTM)
    - Health Facilities Notes (HFN)
    - UK construction industry bodies best practice or design guidance publications e.g. HSE, CIBSE, BRE, IHEEM, IET, BRE, BSRIA, sustainability, dementia and equality.
    - Incident Reporting and Investigation Centre (IRIC) Alerts
    - Relevant British Standards
    - Fire Safety

Also, including but not limited to:

- Other Statutory requirements: Planning permission; Building Regulations compliance; Equality Act compliance; Health and Safety Executive (HSE) compliance; Construction (Design and Management) Regulations compliance. Fire Scotland Act
- Other mandatory NHS Scotland requirements – use of:
- Activity Data Base (ADB);
- Achieving Excellence Design Evaluation Tool;
- BREEAM Healthcare or equivalent (BRE environmental & sustainability tools);
- Scottish Government BIM Policy (SPPN 1/2017; implementation of building information modelling within construction projects: March 2017).
- The implementation of NHS Scotland Soft Landings (SL) guidance.
- Confirm that there are plans in place for risk management, issue management and that these plans are being shared with suppliers and delivery partners.

- Evaluation of actions taken to implement recommendations made in earlier assessment of deliverability.

- There are plans in place for the requirements of the NHS Scotland National Infection Prevention and Control Manual for Scotland to be incorporated into the development in a manner to allow the staff allocated to the role to deliver the services to the patients.
- There are plans in place for risk management, issue management and these plans are being shared with suppliers and delivery partners.
- Action taken to implement recommendations made in earlier assessment of deliverability.

At this stage in the facility lifecycle the review will be site based. The review teams will consist of experienced operational estates professionals and experienced Infection Prevention Control clinicians. This team will work with the Health Board's project team, inclusive of their clinicians and their appointed consultants and contractor. Each review will result in a report being prepared for the Programme Director at the Health Board and a copy of the report will be provided to the Scottish Government Capital Investment Group.

The appendix is provided indicates the typical question set for Construction the review Team use as the basis of evidence finding for the KSAR. The review team amend this as necessary depending on the project and areas of particular interest. The Health Board, their designers and contractors should be aware this is the information expected and the design should effectively be completed at Construction at the time of the KSAR to ensure the accuracy of the report.

3. Assessment of Delivery Approach

General approach to the Governance of Quality on the Project

No.	Areas to probe	Evidence expected
1.1	Has suitable plans and documentation been put in place for the project to manage and monitor Quality Management and Assurance?	• Project Quality Plan. • Inspection and Test Plans. • Inspection and Test Schedule / Register.
1.2	Has suitable arrangements been implemented on the project for document control processes for Quality Assurance and Management?	• Process for ensuring latest drawings approved and used. • Processes for ensuring latest specification and details approved and used. • Approach to management of non-conformances. • Approach to change management control. • Document management recording and structure.
1.3	How has the Health Board approached Quality Assurance on the project to ensure processes and procedures are being adhered?	• Evidence of regular Quality Assurance audits / reports undertaken on the project.
1.4	How does the Health Board assure itself that Testing and Commissioning of services and systems have / are being developed and put in place to meet the project needs?	• Evidence of Testing and Commissioning monitoring / witness of tests. • Evidence of Testing and Commissioning review of results. • Evidence of Testing and Commissioning acceptance of results. • Testing and Commissioning programme. • Plans have / are being developed for collating information and documents. • Have additional checks (external parties) been carried out to review the Contractors T&C's proposed plans.
1.5	How does the Health Board assure itself that the management of defects have / are being developed and put in	• Systems and process for recording and management defects. • Process for the rectification and close out of defects prior to handover. • Plans have / are being developed for collating information and documents.

No.	Areas to probe	Evidence expected
	place to meet the project needs?	
1.6	How does the Health Board assure itself that the management of the Handover process have / are being developed and put in place to meet the project needs?	• Soft Landings process. • Plans have / are being developed for collating as installed information and documents.
1.7	How does the Health Board assure itself that the works are following the procedures as laid out in HAISCRIBE?	• Evidence that the Contractor in charge of the works has read, understood and signed the HAISCRIBE. • Evidence that Infection Control have carried out interim site inspections at points where setting out of the rooms are underway to pick up implications of any Contractor's onsite adjustments. • For works inside of or adjacent to healthcare spaces which are in use, evidence that a task specific HAISCRIBE has been produced and that compliance is monitored by the Board.
1.8	How does the Health Board continue to assure itself that the clinical needs of the facility are clearly understood by each section of the client organisation?	• Updated description of each department of the facility review process evidenced. • All specifications are being related back to the Portfolio Document (PD). • An updated and live Derogation document.
1.9	Are the Principal Designers regularly carrying out site inspections and providing reports to the Board and Principal Contractor?	• Regular (fortnightly) reports being provided to the clients' project management team, certifying installation is being provided in accordance with the CD. • Regular comment on each of the installing contractors' quality safety plan and work delivered. • If the Principal Designer is not employed to carry out site inspections, evidence that the Board has alternative, adequate means of design / construction quality control in place.

No.	Areas to probe	Evidence expected
1.10	The Health Boards approach on the procurement journey with evidence of the plans on how the Board will provide assurance, particularly emphasis on the critical system identified earlier.	• Evidence on how this requirement is being managed and how it fits with the project governance arrangements • Plans to identify any gaps in the procurement approach that may require to be addressed. • Evidence on how Infection Prevention and Control are involved with the procurement approach to future plans for project. • Evidence that the Health Boards selected procurement route has gone through the Board's Governance channels.
1.11	Evaluation of the Health Boards commissioning plan.	• Evidence that the Health Board has recorded plans that are comprehensive and adequate to address the needs of the project and that they are fully resourced. • Evidence that the Board has had all pre-commissioning checks audited and approved by an independent organisation.
1.12	Evaluation of the Health Boards duty holder matrix.	• Evidence that the Health Board have a fully recorded matrix of the required roles and responsibilities and have a clear governance structure that is fully resourced together with plans in place for the implementation. • Evidence that Health Boards have appropriate number of competent, qualified staff to carry out specific duties throughout the life cycle of the project e.g., IPC, Engineers, Estates staff etc. The number of competent, qualified staff will depend on the type and size of the Build Project.

Water and Plumbing / Drainage Systems

No.	Areas to probe	Evidence expected
2.1	How does the Health Board assure itself that all plumbers are trained to understand the needs (including special requirements) for the installation of water and plumbing/drainage systems in the healthcare environment?	• Evidence of a vetted list of site plumbers which confirms qualifications and healthcare experience. • Evidence that the site induction with respect to working on water and plumbing/drainage services has been developed, implemented and agreed with the Board. • Where anyone does not have previous healthcare experience, evidence should be provided of the relevant onsite training which was provided to them before they commence work on site. • Evidence that all contractors and sub-contractor competency checks have been completed and signed off.
2.2	How does the Health Board assure itself that the plumbing contracting company have the relevant experience to direct and manage their staff on the site for a healthcare environment?	• Evidence of similar, previous healthcare projects by the contractor. • Evidence of site management structure. • Evidence of HAI and SHPN 30 training.
2.3	How does the Health Board ensure that the water and plumbing / drainage systems are being installed to the correct standard and reflect the agreed design?	• Written and photographic, monthly evidence for the progress of work produced by a body which is independent of the contractor and which confirms compliance of the works to date.
2.4	How does the Health Board ensure that precautions are taken throughout the works to avoid open pipe ends for a period beyond the time needed to make a joint on that pipe end?	• Photographic and written evidence for the progress of work produced by a body which is independent of the contractor (on a monthly basis).
2.5	How does the Health Board ensure that water services are installed in a fashion which will provide ease of access for future maintenance?	• Evidence that the contractor has presented their co-ordination drawings (BIM model) to the Board. • Evidence that the contractor has presented their co-ordination drawings (BIM model) to

No.	Areas to probe	Evidence expected
		the design consultant and that they have agreed them for construction. • Evidence that the contractor has presented each of the main service runs plus plant rooms to the Board's FM team. • Evidence that the plant access strategy is being adhered too.
2.6	How does the Health Board ensure that water and plumbing / drainage services are installed in a fashion which will retain space for minor additions and modifications to services in the future?	• Evidence that the contractor has presented their co-ordination drawings (BIM model), with space for future flexibility identified, to the Board. • Evidence that the design consultant has considered and agreed with the Board, space for future flexibility in the service installations. • Evidence that the contractor has presented their co-ordination drawings (BIM model), with space for future flexibility identified, to the design consultant and that they have agreed them for construction. • Evidence that the contractor has presented each of the main service runs plus plant rooms to the Board's FM team, to highlight space for future flexibility. • Evidence that the Health Board has agreed a strategy (percentage) for spare capacity and a documented allowance to be incorporated into the design. • Are plant/tank rooms, IPS sections, horizontal distribution runs and risers appropriately sized for the equipment being installed and facilitate safe adequate maintenance?
2.7	How does the Health Board assure itself that all plumbers materials are stored on site in an environment which protects them from deterioration and from the entry of contaminants into the parts of the component which will be in contact with the water?	• Written, monthly evidence for the progress of work produced by a body which is independent of the contractor and which confirms inspection of the site storage of materials. • Photographic evidence of the site storage of materials produced by a body which is independent of the contractor (on a monthly basis).
2.8	How does the Health Board assure itself that all pre-commissioning	• Evidence that adequate pre-commissioning check sheets (SHTM 04-01

No.	Areas to probe	Evidence expected
	inspections are completed and recorded before commissioning can commence?	Part A) have been completed and signed off. • Evidence that the Health Board has had all pre-commissioning checks audited and approved by an independent organisation.
2.9	How does the Health Board assure itself that all variations which may be required to water and plumbing and drainage systems after tender are investigated and agreed by all parties before they are instigated?	Evidence that the each variation / derogation has a detailed technical analysis and has been referred to the Board and agreed with their water management group, clinical, Estates, infection control and FM teams.

Ventilation

No.	Areas to probe	Evidence expected
3.1	How does the Health Board assure itself that all duct and plant installers are trained to understand the needs (including special requirements) for the installation of ventilation systems in the healthcare environment?	• Evidence of a vetted list of duct and plant installers which confirms qualifications and healthcare experience. • Evidence that the site induction with respect to working on ducts and plant services has been developed, implemented and agreed with the Board. • Evidence that all contractors and sub-contractor competency checks have been completed and signed off.
3.2	How does the Health Board assure itself that the ventilation contracting company and their plant installers have the relevant experience to direct and manage their staff on the site for a healthcare environment?	• Evidence of similar, previous healthcare projects by the contractor. • Evidence of site management structure.
3.3	How does the Health Board ensure that the ventilation systems are being installed to the correct standard and reflect the agreed design?	• Written, monthly evidence for the progress of work (including photographs) produced by a body which is independent of the contractor and which confirms compliance of the works to date.
3.4	How does the Health Board ensure that precautions are taken throughout the works to avoid open duct or plant ends for a period beyond the time needed to make a joint on that duct / plant end?	• Photographic and written evidence for the progress of work produced by a body which is independent of the Contractor (on a monthly basis).
3.5	How does the Health Board ensure that ventilation services are installed in a fashion which will provide ease of access for future maintenance?	• Evidence that the Contractor has presented their co-ordination drawings (BIM model) to the Board. • Evidence that the Contractor has presented their co-ordination drawings (BIM model) to the Design Consultant and that they have agreed them for construction. • Evidence that the Contractor has presented each of the main service runs plus plant rooms to the Board's FM team.

No.	Areas to probe	Evidence expected
		• Safe and adequate access has been provided.
3.6	How does the Health Board ensure that ventilation services are installed in a fashion which will retain space for minor additions and modifications to services in the future?	• Evidence that the contractor has presented their co-ordination drawings (BIM model), with space for future flexibility identified, to the Board. • Evidence that the design consultant has considered and agreed with the Board, space for future flexibility in the service installations. • Evidence that the contractor has presented their co-ordination drawings (BIM model), with space for future flexibility identified, to the design consultant and that they have agreed them for construction. • Evidence that the contractor has presented each of the main service runs plus plant rooms to the Board's Estates team and / or, to highlight space for future flexibility. • Evidence that the ventilation solution has been agreed with clinical and IPC colleagues. • Evidence that the Board has agreed a strategy (percentage) for spare capacity and a documented allowance to be incorporated into the design. • Are plant rooms, horizontal distribution runs and risers appropriately sized for the equipment being installed and facilitate safe adequate maintenance?
3.7	How does the Health Board assure itself that all ventilation materials are stored on site in an environment which protects them from deterioration and from the entry of contaminants into the parts of the component which will be in contact with the air flow?	• Written and photographic, monthly evidence for the progress of work produced by a body which is independent of the contractor and which confirms inspection of the site storage of materials. • Photographic evidence of the site storage of materials produced by a body which is independent of the contractor (on a monthly basis).
3.8	How does the Health Board assure itself that all pre-commissioning inspections are completed and	• Evidence that adequate pre-commissioning check sheets (CIBSE, BSRIA) have been completed and signed off.

No.	Areas to probe	Evidence expected
	recorded before commissioning can commence?	• Evidence that the Board has had all pre-commissioning checks audited and approved by an independent organisation.
3.9	How does the Health Board assure itself that all variations which may be required to ventilation systems after tender are investigated and agreed by all parties before they are instigated?	• Evidence that the each variation / derogation has a detailed technical analysis and has been referred to the Board and agreed with their clinical, Estates, infection control and FM teams.

Electrical

No.	Areas to probe	Evidence expected
4.1	How does the Health Board assure itself that all electricians are trained to understand the needs (including special requirements) for the installation of electrical systems in the healthcare environment?	• Evidence of a vetted list of site electricians which confirms qualifications and healthcare experience. • Evidence that the site induction with respect to working on electrical services has been developed, implemented and agreed with the Board. • Evidence that all contractors and sub-contractor competency checks have been completed and signed off.
4.2	How does the Health Board assure itself that the electrical contracting company have the relevant experience to direct and manage their staff on the site for a healthcare environment?	• Evidence of similar, previous healthcare projects by the contractor. • Evidence of site management structure. • Electricians completed approved current BS 7671 training course. • Evidence that commissioning contractors have completed relevant test and commissioning courses. • Evidence of trained operatives (AP and CP) to SHTM 06-02.
4.3	How does the Health Board ensure that the electrical systems are being installed to the correct standard and reflect the agreed design?	• Written, monthly evidence for the progress of work produced by a body which is independent of the contractor and which confirms compliance of the works to date. • Photographic and written evidence for the progress of work produced by a body which is independent of the contractor (on a monthly basis).
4.4	How does the Health Board ensure that electrical services are installed in a fashion which will provide ease of access for future maintenance?	• Evidence that the contractor has presented their co-ordination drawings (BIM model) to the Health Board. • Evidence that the contractor has presented their co-ordination drawings (BIM model) to the design consultant and that they have agreed them for construction. • Evidence that the contractor has presented each of the main service runs plus plant rooms to the Health Board's FM team.
4.5	How does the Health Board ensure that electrical services are installed in a	• Evidence that the contractor has presented their co-ordination drawings

No.	Areas to probe	Evidence expected
	fashion which will retain space for minor additions and modifications to services in the future?	(BIM model), with space for future flexibility identified, to the Health Board. • Evidence that the design consultant has considered and agreed with the Health Board, space for future flexibility in the service installations. • Evidence that the contractor has presented their co-ordination drawings (BIM model), with space for future flexibility identified, to the design consultant and that they have agreed them for construction. • Evidence that the contractor has presented each of the main service runs plus plant rooms to the Health Board's FM team, to highlight space for future flexibility. • Evidence that the Health Board has agreed a strategy (percentage) for spare capacity and a documented allowance to be incorporated into the design. • Are sub stations, switch rooms, distribution board cupboards, horizontal distribution runs and risers appropriately sized for the equipment being installed and facilitate safe, adequate maintenance?
4.6	How does the Health Board assure itself that all electrical materials are stored on site in an environment which protects them from deterioration and from the entry of contaminants into the operational parts of the component?	• Written, monthly and photographic evidence for the progress of work produced by a body which is independent of the contractor and which confirms inspection of the site storage of materials. • Photographic evidence of the site storage of materials produced by a body which is independent of the contractor (on a monthly basis).
4.7	How does the Health Board assure itself that all pre-commissioning inspections are completed and recorded before commissioning can commence?	• Evidence that adequate pre-commissioning check sheets (e.g. SHTM 06-01 Part A, , BS7671, etc.) have been completed and signed off. • Evidence that the Health Board has had all pre-commissioning checks audited and approved by an independent organisation.
4.8	How does the Health Board assure itself that all	• Evidence that the each variation / derogation has a detailed technical

No.	Areas to probe	Evidence expected
	variations which may be required to electrical systems after tender are investigated and agreed by all parties before they are instigated?	analysis and has been referred to the Health Board and agreed with their clinical, Estates, infection control and FM teams.

No.	Areas to probe	Evidence expected
5.1	How does the Health Board assure itself that all medical gas installers are trained to understand the needs (including special requirements) for the installation of medical gas systems in the relevant healthcare environment?	• Evidence of a vetted list of site medical gas installers which confirms qualifications and healthcare experience. • Evidence that the site induction with respect to working on medical gas services has been developed, implemented and agreed with the Board. • Evidence that all contractors and sub-contractor competency checks have been completed and signed off.
5.2	How does the Health Board assure itself that the medical gas contracting company have the relevant experience to direct and manage their staff on the site for the relevant healthcare environment?	• Evidence of similar, previous healthcare projects by the contractor. • Evidence of site management structure. • AP and CP training to SHTM 02-01 for operatives.
5.3	How does the Health Board ensure that the medical gas systems are being installed to the correct standard and reflect the agreed design?	• Written and photographic, monthly evidence for the progress of work produced by a body which is independent of the contractor and which confirms compliance of the works to date.
5.4	How does the Health Board ensure that precautions are taken throughout the works to avoid open pipe ends for a period beyond the time needed to make a joint on that pipe end?	• Photographic and written evidence for the progress of work produced by a body which is independent of the contractor (on a monthly basis).
5.5	How does the Health Board ensure that medical gas services are installed in a fashion which will provide ease of access for future maintenance?	• Evidence that the contractor has presented their co-ordination drawings (BIM model) to the Board. • Evidence that the contractor has presented their co-ordination drawings (BIM model) to the design consultant and that they have agreed them for construction. • Evidence that the contractor has presented each of the main service runs plus plant rooms to the Health Board's FM team.

No.	Areas to probe	Evidence expected
5.6	How does the Health Board ensure that medical gas services are installed in a fashion which will retain space for minor additions and modifications to services in the future?	• Evidence that the contractor has presented their co-ordination drawings (BIM model), with space for future flexibility identified, to the Health Board. • Evidence that the design consultant has considered and agreed with the Board, space for future flexibility in the service installations. • Evidence that the contractor has presented their co-ordination drawings (BIM model), with space for future flexibility identified, to the design consultant and that they have agreed them for construction. • Evidence that the contractor has presented each of the main service runs plus plant rooms to the Health Board's FM team, to highlight space for future flexibility.
5.7	How does the Health Board assure itself that all medical gas materials are stored on site in an environment which protects them from deterioration and from the entry of contaminants into the parts of the component which will be in contact with the gas?	• Written, monthly evidence for the progress of work produced by a body which is independent of the contractor and which confirms inspection of the site storage of materials. • Photographic evidence of the site storage of materials produced by a body which is independent of the contractor (on a monthly basis).
5.8	How does the Health Board assure itself that all pre-commissioning inspections are completed and recorded before commissioning can commence?	• Evidence that adequate pre-commissioning check sheets (e.g. SHTM 02-01 Part A) have been completed and signed off. • Evidence that the Health Board has had all pre-commissioning checks audited and approved by an independent organisation.
5.9	How does the Health Board assure itself that all variations which may be required to medical gas systems after tender are investigated and agreed by all parties before they are instigated?	• Evidence that the each variation / derogation has a detailed technical analysis and has been referred to the Board and agreed with their medical gas management group, clinical, Estates, infection control and FM teams.

Fire

No.	Areas to probe	Evidence expected
6.1	How does the Health Board assure itself that all fire stopping specialists are trained to understand the needs (including special requirements) for the installation of fire stopping systems in the healthcare environment?	• Evidence of a vetted list of site fire stopping specialists which confirms qualifications and healthcare experience. • Evidence that the site induction with respect to working on fire stopping services has been developed, implemented and agreed with Board. • Evidence that all contractors and sub-contractor competency checks have been completed and signed off.
6.2	How does the Health Board assure itself that the fire stopping contracting company have the relevant experience to direct and manage their staff on the site for a healthcare environment?	• Evidence of similar, previous healthcare projects by the contractor. • Evidence of site management structure.
6.3	How does the Health Board ensure that the fire stopping systems are being installed to the correct standard and reflect the agreed design?	• Written, monthly evidence for the progress of work produced by a body which is independent of the contractor and which confirms compliance of the works to date.
6.4	How does the Health Board ensure that precautions are taken throughout the works to avoid openings in fire barriers to occupied spaces during the works?	• Written and photographic evidence for the progress of work produced by a body which is independent of the contractor (on a monthly basis).
6.5	How does the Health Board ensure that fire stopping systems are installed on ventilation, electrical, plumbing and drainage services where they penetrate fire barriers?	• Photographic and written evidence for the progress of work produced by a body which is independent of the contractor (on a monthly basis).
6.6	How does the Health Board ensure that fire stopping is installed in electrical containment (trunking / tray systems) systems where they penetrate fire barriers?	• Photographic and written evidence for the progress of work produced by a body which is independent of the contractor (on a monthly basis).

No.	Areas to probe	Evidence expected
6.7	How does the Health Board assure itself that all fire stopping materials are stored on site in an environment which protects them from deterioration?	• Written, monthly evidence for the progress of work produced by a body which is independent of the contractor and which confirms inspection of the site storage of materials. • Photographic evidence of the site storage of materials produced by a body which is independent of the contractor (on a monthly basis).
6.8	How does the Health Board assure itself that all fire detection and alarm systems are installed in the correct locations and are easily maintained?	• Written evidence for the progress of work produced by a body which is independent of the contractor (on a monthly basis). • Demonstration by the contractor that any detectors which are above 3m from floor level or in ceiling voids, to the Board's FM team, have suitable access for maintenance.
6.9	How does the Health Board assure itself that all variations which may be required to fire stopping systems after tender are investigated and agreed by all parties before they are instigated?	• Evidence that the each variation has been referred to the Health Board and agreed with their clinical, engineering, infection control and FM teams.
6.10	How does the Health Board assure itself that all fire dampers and fire/smoke dampers can be accessed for inspection, resetting and maintenance?	• Evidence that the contractor has presented their co-ordination drawings (BIM model) to the Health Board. • Evidence that the contractor has presented their co-ordination drawings (BIM model) to the design consultant and that they have • agreed them for construction. • Evidence that the contractor has presented each of the fire dampers and smoke / fire dampers to the Health Board's FM team.
6.11	How does the Health Board assure itself that any fire rated ductwork is correctly installed?	• Evidence that the system is certificated and that the installation follows the installation details which were used for the certification. • Written confirmation from the design consultant.

No.	Areas to probe	Evidence expected
6.12	How does the Health Board assure itself that any smoke control and / or clearance systems are fit for purpose?	• Evidence that the smoke system has been designed by an accredited Fire Engineer. • Evidence that Building Control have accepted the solution. • Confirmation from the Building Services Design Consultant that the operating sequence for the smoke system has been agreed and integrated into the control of other building systems.
6.13	How does the Health Board assure itself that all pre-commissioning inspections are completed and recorded before commissioning can commence?	• Evidence that the Health Board has had all pre-commissioning checks audited and approved by an independent organisation.

No.	Areas to probe	Evidence expected
7.1	How does the Health Board demonstrate that there is an effective infection prevention and control management structure in place? How does the Health Board demonstrate leadership and commitment to infection prevention and control to ensure a culture of continuous quality improvement throughout the organisation and that there is an effective IPC structure in place?	**The Health Board provides evidence that there is an IPC Management Structure with the necessary expertise and leadership skills to support the organisation:** • The Health Board provides evidence that there is an IPC Management Team with the necessary expertise and leadership skills to support the project. The board are compliant with content of HDL (2008) role of the ICM / CNO 22.12.16. • Executive board reports or minutes. Risk registers or equivalent, Minutes from operational and governance groups, (and action points). • Structure of infection prevention and control team (IPCT) and qualifications held, previous experience supporting new build projects. • Evidence IPC and clinical teams have been involved with any derogation through the build process and are satisfied this will not impact on patient safety, evidence could be through meeting minutes, risk assessments, risk registers relating to IPC with evidence of escalation through the agreed NHS board governance process. • Evidence the Executive Board Member assigned to lead on IPCT has been kept informed of IPC risks identified and associated with the project this can be demonstrated by the board. • Evidence IPCT advice has been followed, such as IPCT walk round audits during the construction process. • Evidence that fixtures fitting and equipment have not been incorporated into the project that would represent an identified IPC risk. • Evidence that all contractors and sub-contractor competency checks have been completed and signed off.
7.2	How does the Health Board demonstrate implementation of evidence based infection prevention and control	**The Health Board provides evidence:** • The board can demonstrate the current version of the National Infection Prevention and Control Manual has been adopted by the organisation and all staff are aware of how and where to access this

No.	Areas to probe	Evidence expected
	measures during the construction process?	and it is being referred to during the construction process. • IPC risks (actual or perceived) risks identified during the work programme or through the KSAR evidence review are provided. • Evidence of walk rounds during the construction process and these are being fed back to clinical staff and the executive team to provide assurance that the requirements of the CD are being adhered with.
7.3	How does the Health Board assure itself that the contractors have a proper understanding of the infection prevention and control procedures required by the CD and that the contractors work is being rigorously managed in this respect?	**The Health Board evidences that:** • All relevant staff within the contractors' organisation are provided with clear guidance on roles and responsibilities in relation to infection prevention and control. • The contractors' organisation provides an education programme that meets the need of staff which includes mandatory induction, training and updates on HAI guidance, policies and procedures.
7.4	How does the Health Board assure itself that equipment meets the required IPC standards?	• The IPC Team are involved and IPC advice followed in all procurement decisions for new equipment prior to purchase. IPCT are satisfied that all equipment purchased can be decontaminated safely in line with National Guidance and manufacturer's instructions.

4. References

KSAR Master Glossary

Available to download from NHS National Services Scotland website.

5. Bibliography

Scottish Property Advisory Group – Building Design and Construction: Report on Construction Quality Matters
John Donnelly, Chair BDAC
Dated: December 2020

NHS Scotland Assure
Quality in the healthcare environment

NHS National Services Scotland

Key Stage Assurance Review Workbook

Commissioning

October 2022

Version V1.0

A46005509

Contents

1. About this workbook 3
Figure 1: Construction Procurement Journey 3
Using this workbook 4

2. Key Stage Assurance Review 5
Introduction to NHS Scotland Assure – Assurance Service 5
The KSAR Process 6
Value of the KSAR Process 6
KSAR as part of the overall assurance framework 7
The KSAR Process relationship with NHS Scotland Design Assessment Process (NDAP) 7
Sustainability 8
Commissioning KSAR 9

3. Assessment of Delivery Approach 11
Project Governance and General Arrangements 11
IPC Built Environment 16
Water and Internal Plumbing / Drainage Systems 19
Ventilation 22
Electrical 25
Medical Gases 29
Fire Safety 32

4. Appendix 36
KSAR Master Glossary 36

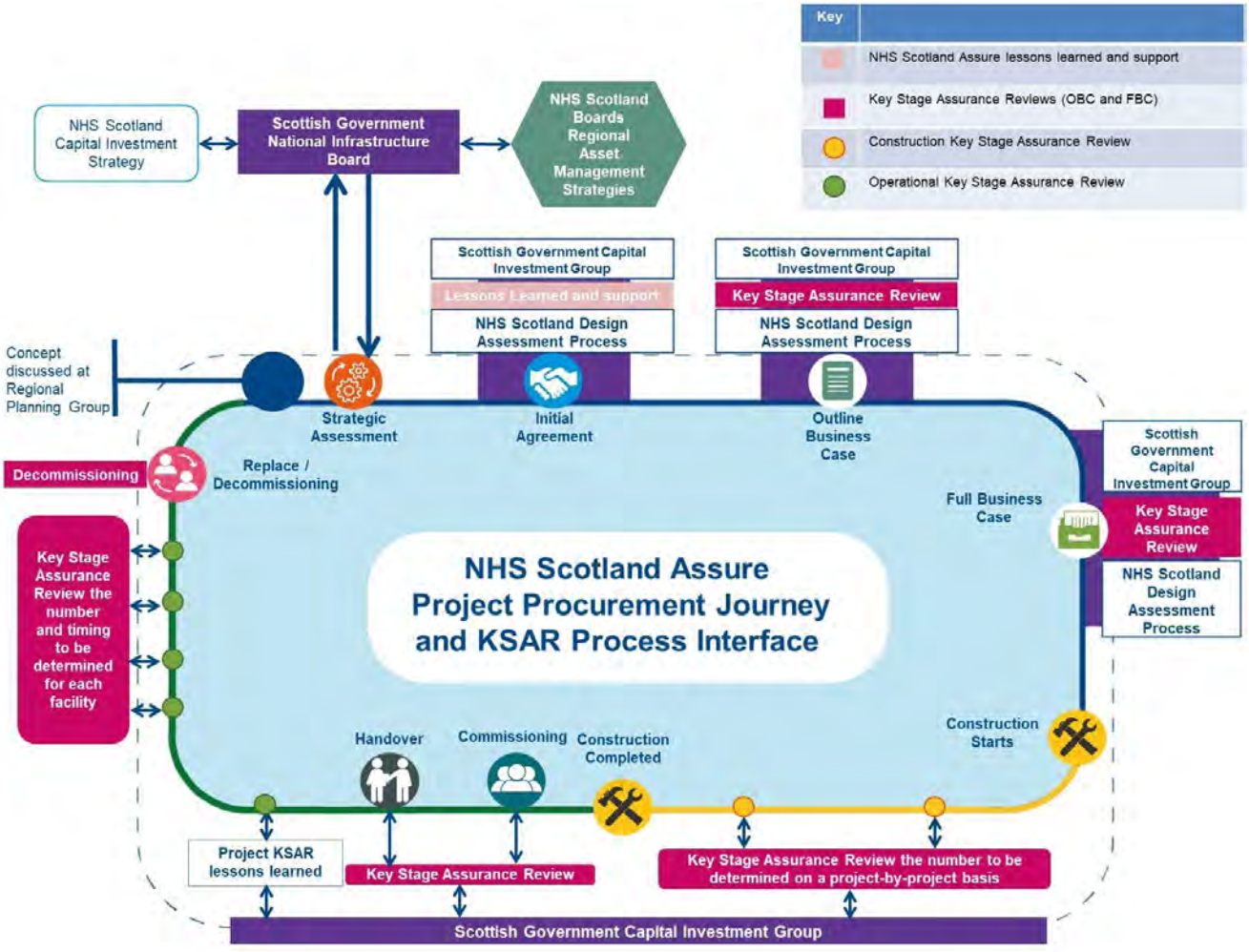
1. About this workbook

This workbook supports the Commissioning Key Stage Assurance Review (KSAR), delivered by the NHS Scotland Assure Assurance service.

Further information about the NHS Scotland Assure Assurance service and KSAR process is provided in Section 2.

Figure 1. shows how the Commissioning stage in the procurement and Construction journey. The timing and frequency of KSARs during this stage will vary dependent upon the facility. Specific workbooks have been developed for the other stages within this journey.

Figure 1: Construction Procurement Journey



The KSAR process and workbooks provide a transparent, structured framework for all clinical specialisms, facilities and operational management professionals to assess and manage a healthcare build or refurbishment. In turn this assists Health Boards to provide the best and safest outcomes for patients, staff and visitors in the built environment.

KSARs deliver an independent peer review. NHS Scotland Assure staff outside the project use their experience and expertise to examine the progress and likelihood of successful delivery, with a particular emphasis on the safety of the patients, staff and visitors using the facility. KSARs also focus on how projects are able to demonstrate compliance with relevant guidance and standards.

It is vital to receive feedback on the following elements of health facilities - Infection Prevention and Control (IPC), water, ventilation, electrical, plumbing, medical gases installations and fire. This ensures they are designed, installed and functioning from the initial commissioning of a new facility and throughout its lifetime. Health Boards are required to have appropriate governance in place at all stages of the construction procurement journey.

Using this workbook

The review at Commissioning stage investigates the approach taken by the Health Board and other stakeholders during this critical stage of the project to ensure that there continues to be an appropriate level of knowledge and awareness of the importance of the Commissioning stage on patient, staff and visitor safety.

The purpose of the KSAR at Commissioning stage is to confirm there is a continued good and comprehensive understanding of the category of patient who will use the proposed facility, and that the project team consider how appropriate quality and safety standards will influence the commissioning of the various systems. It looks to provide assurance that the project can proceed to the Handover phase.

Additionally, the KSAR at Commissioning will carry out an appropriate level of checking of the Testing and Commissioning documentation. This level of checking will be set by the Review Team following their initial discussions on site.

The KSAR workbook is a tool for both NHS Scotland Assure to undertake project reviews and for Health Boards to support the development of their own projects. It provides guidance on the review structure and areas of investigation to be addressed by the review team and should be regarded as indicative and not prescriptive. The review team will consider whether any emerging findings require additional topics to be addressed. If so, evidence relating to these areas, regarding the safety of the patients, staff and visitors, should be provided.

2. Key Stage Assurance Review

Introduction to NHS Scotland Assure – Assurance Service

Good management and effective control of projects are essential elements to the successful delivery and maintenance of healthcare facilities across NHS Scotland estates.

The NHS Scotland Assure Assurance Service will deliver KSARs, designed to provide independent assurance to Scottish Government Health and Social Care Directorates (SGHSCDs).

It will assess if Health Boards Project Management teams (inclusive of clinicians, appointed construction consultants, and contractors) are briefed and following best practice procedures in the provision of facilities. We will review if projects are compliant in all aspects of safety, if specific engineering systems are designed, installed and commissioned, and for ongoing safety maintenance including IPC.

The KSAR process is applicable regardless of procurement route chosen.

The KSAR Process

The KSAR process examines projects at key points in their lifecycle. It does not remove any legal or contractual obligations from the NHS Health Board, their designers or contractors. It provides assurance to progress successfully to the next review point. KSARs focus on the assessment of the delivery approach and the review team will work with the Health Board's project team to ensure there is comprehensive understanding of the patient cohorts utilising the facility. KSARs also ensure relevant guidance is fully implemented and any technical derogations have been fully reasoned, transparently discussed, the implications understood, recorded and signed-off by the Health Board and their advisors.

KSARs will concentrate on project governance related to the core review topics of water, ventilation, electrical, plumbing, medical gases installations, fire, and associated IPC guidance. If further issues are raised with the review team, they will fully incorporate those issues into the reporting process.

Value of the KSAR Process

Key Stage Assurance Reviews (KSARs) deliver an independent peer review. NSS staff outside the Health Board's project use their experience and expertise to examine the progress and likelihood of successful delivery, with a particular emphasis on the safety of the patients, staff and visitors using the facility. KSARs provide an external perspective and provide a challenge to the robustness of the Health Board's brief, plans and processes.

This includes work delivered by construction consultants, employed either directly or through construction contractors, and the work being delivered by the primary contractor, their sub-contractors and specialist suppliers.

The KSAR provides an independent report and recommended action plan, which is shared with the Health Board to ensure:

- Appropriate skills and experience are deployed on the project by the Health Board, consultants, primary contractor and all sub-contractors.
- The clinicians and wider stakeholders covered by the project fully understand the project status, aims and the issues involved.
- Appropriate management structures, put in place to ensure appropriate infection prevention and control measures, are designed into the project to reduce the risk of transmission of infectious agents.
- There is assurance the project can progress to the next stage of development or implementation, with particular emphasis on the safety of the patients, staff and visitors utilising the facility.
- Provision of advice and guidance to programme and project teams by fellow Practitioners.

KSAR as part of the overall assurance framework

Each NHS Health Board will be fully responsible for the delivery of all projects, and its own internal process and resources for carrying out internal reviews and audits of its activities. The KSAR is seen as a complementary independent review, and not as a replacement for the responsibilities of the Health Board.

NHS Health Boards should have in place an effective framework to provide a suitable level of assurance for their programmes and projects. Health Boards are encouraged and expected to ensure adequate and timely coordination and sharing of information, including plans, between the various internal reviews and functions.

The KSAR process is not a substitute for a rigorous governance framework being put place by the Health Board to manage key processes including business planning, investment appraisal, business case management, risk management and service and contract management.

The KSAR Process relationship with NHS Scotland Design Assessment Process (NDAP)

The Scottish Government's ambition for NHS Scotland's estate and the need for well-designed healthcare environments is articulated in the Policy on Design Quality for NHS Scotland. Good design in the built environment encompasses a wide range of inter-related factors such as, sustainability, engineering, architecture, fire safety, energy, environment, decontamination, space utilisation, landscaping, security, technology, lighting, access for visitors and mobility impaired persons.

The mandated NDAP process is undertaken by NHS Scotland Assure and Architecture and Design Scotland and considers all of the above. It sets the principles for the resolution of potential conflicts of statutory or mandatory compliance to ensure the specific facility provides; the best balance of the technical requirements, meets clinical needs and fulfils the conceptual aims of the policy on Design Quality. The NDAP process begins at the Initial Agreement stage of a project and provides advice through to the Full Business Case. There is no change to either Scottish Capital Investment Manual (SCIM) or NDAP processes.

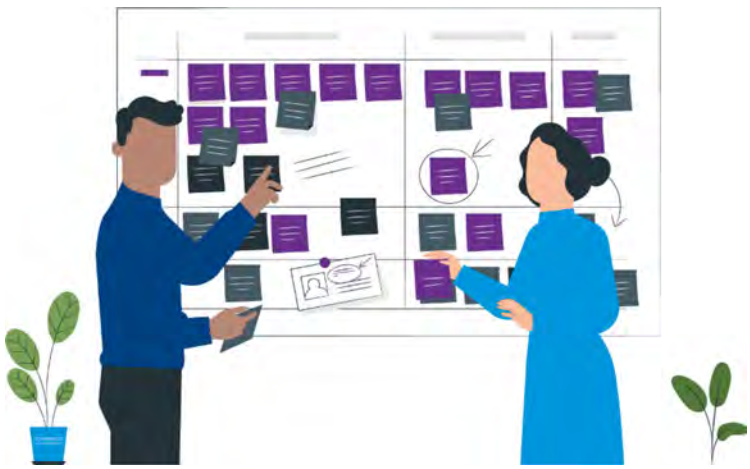
The Scottish Government is progressing policy to improve the safety of the healthcare environment in relation to the built environment risk. The Assurance Service delivered through NHS Scotland Assure is a response to this policy and the KSARs are integral to the compliance work. The aspiration is not to duplicate any of the work included in the NDAP process, but to provide assurance regarding the critical components highlighted throughout this workbook.

Integral to the KSARs will be a review of the balance between sustainability issues and patient safety.

Where possible the two reviews will be aligned to avoid duplication of work. For example, in instances where the NDAP has reviewed detail at a technical level, this will be used by the KSAR team rather than being separately requested and reviewed.

Sustainability

The review will provide assurance that the proposals for the project provide an effective balance in terms of patient, staff and visitors safety, whilst meeting required sustainability outcomes and complying with the guidance standards.



Commissioning KSAR

The Commissioning KSAR will be an independent “peer review” in which NHS Scotland Assure (NHS SA) subject matter experts, independent of the project, use their experience and expertise to review and assess the proposed pre-Commissioning and Commissioning stage documentation and any Commissioning results available (i.e., water microbiology results). It is anticipated that the implementation of the Commissioning KSAR will differ from other reviews, as it will predominately take the form of a site-based audit of the processes and documentation associated with the Commissioning phase.

Any areas of concern found during this KSAR will be immediately raised with the NHS Health Board.

The Commissioning KSAR will consider (particularly with respect to IPC measures):

- Water systems
- Ventilation systems
- Plumbing and drainage
- Fire safety
- Electrical systems
- Medical gases
- Any other building or engineering component critical to the safety and welfare of a particular patient cohort (defined by the review team).
- The requirements of the NHS Scotland National Infection Prevention and Control Manual have been incorporated and implemented to allow staff to deliver the health services in a safe and comprehensive manner.

At all stages of Commissioning phase, knowledge of compliance in design and implementation will need to encompass (but is not limited to) the following:

- NHS Scotland policy letters (DLs, CELs, CMOs)
- Scottish Health Planning Notes (SHPN)
- Scottish Health Facilities Notes (SHFN)
- Scottish Health Technical Memoranda (SHTM)
- Scottish Health Technical Notes (SHTN)
- Scottish Fire Practice Notes (SFPN)
- Health Building Notes (HBN)
- Health Technical Memoranda (HTM)
- Health Facilities Notes (HFN)
- Incident Reporting and Investigation Centre (IRIC) Alerts
- Relevant British Standards

- UK construction industry bodies best practice or design guidance publications e.g., HSE, CIBSE, BRE, IHEEM, IET, BRE, BSRIA, sustainability, dementia and equality.
- Incident Reporting and Investigation Centre (IRIC) Alerts
- Other statutory requirements: Planning permission; Building Regulations compliance; Equality Act compliance; Health and Safety Executive (HSE) compliance; Construction (Design and Management) Regulations compliance. Fire Scotland Act.
- Other mandatory NHS Scotland use of
  - Activity Data Base (ADB);
  - Achieving Excellence Design Evaluation Tool;
  - The Sustainable Design and Construction Guide (SDaC) SHTN 02-01
  - Scottish Government BIM Policy (SPPN 1/2017; implementation of building information modelling within construction projects: March 2017).
- The implementation of NHS Scotland Soft Landings (SL) guidance.
- Confirm that there are plans in place for risk management, issue management and that these plans are being shared with suppliers and delivery partners.
- Evaluation of actions taken to implement recommendations made in earlier assessment of deliverability.
- Confirm there are plans in place to ensure the requirements of the NHS Scotland National Infection Prevention and Control Manual for Scotland are being incorporated into the development in a manner which will allow the staff allocated to the role to deliver the services to the patients.

Additionally, the Commissioning KSAR will carry out an appropriate level of checking of the testing and commissioning results for the solutions adopted. This level of checking will be set by the review team following their initial discussions with the Health Board and other stakeholders.

The review teams consist of experienced operational estates professionals and experienced Infection Control clinicians. The team will work with the Health Board's project team, inclusive of their clinicians and their appointed facility management consultants, contractor and specialist sub-contractors. The review will result in a report being prepared for the Programme Director at the Health Board and a copy of the report will also be provided to Scottish Government Capital Investment Group.

Section 3 below provides the typical question sets for each discipline that the review team will use as the basis for the Commissioning KSAR review process. The team will amend this as necessary depending on the project and areas of particular interest. The Health Board, their designers and contractors should be aware that this is the information which will typically be reviewed during the site visit. It is expected that the Construction stage should effectively be completed at the time of the Commissioning KSAR to ensure the accuracy of the report.

3. Assessment of Delivery Approach

It is anticipated that Project Commissioning may be phased as determined by the scale and complexity of the building and systems.

The KSAR will focus on governance, management, planning, resources, risk assessments, method statements, validation and Health Board acceptance of Commissioning results. Those responsible for Commissioning should have the appropriate level of competency to undertake the Commissioning of the systems which they are responsible for. All Commissioning should be carried out in accordance with the Board Contract Requirements (BCR) and appropriate industry standards.

Project Governance and General Arrangements

No.	Areas to probe	Evidence expected
1.1	How does the Health Board assure itself that actions from the previous KSAR have been closed out, and any design changes documented? How does the Health Board assure itself that any other design, strategic or project changes have been appropriately reviewed, agreed and documented?	• Evidence of a completed action plan, with reference to evidence, to demonstrate close out of actions. • Evidence of any substantive changes to the design from previous review stage. • Evidence of the change control processes in place to capture any changes to the systems and/or their design conditions. • Evidence of ongoing compliance with relevant standards and guidance, for example compliance with Firecode, updated fire strategy, updated water management plan, etc.
1.2	How does the Health Board ensure that all design activities, including Contractor Design Portions (CDPs) are concluded prior to commencement of commissioning?	• Evidence of Health Board design acceptance processes, including stakeholder review/sign-off. • Evidence of engagement with designers, including written acceptance of Contractor Design Portions. • Evidence that any derogations from standards have been agreed by the Health Board and signed-off prior to the start of the Commissioning process.

No.	Areas to probe	Evidence expected
1.3	Does the Health Board continue to demonstrate service / clinical input into design, Commissioning and Handover decisions based on a current and comprehensive knowledge of patient cohorts?	• Evidence of recorded and updated input taken from service lead(s) / clinician(s) about relevant patient cohort characteristics and their typical needs in terms of the accommodation's environment, safety and infection control standards. • Demonstrable expertise of service lead(s) / clinician(s) in providing this advice. • Evidence of how service users / patient cohort needs, and their expected use of the accommodation are influencing the Commissioning brief, including critical building, engineering and infection prevention and control quality and safety standards.
1.4	How does the Health Board ensure that there is a planned approach for the implementation of the Commissioning process, to ensure compliance with the design requirements and to provide a safe environment for the patient cohorts?	• Evidence of the appointment of a specialist Commissioning company (or companies) with relevant healthcare experience and competency. • Evidence of a competence verification process by the Health Board. • Evidence that a competent independent validation organisation has been appointed by the Health Board for all disciplines covered under the KSAR. • Evidence of processes in place to deliver relevant training to those who do not have previous healthcare experience, prior to commencing work on site. • Evidence of processes for audits and ongoing reviews of the Commissioning companies. • Evidence of stakeholder input into Commissioning company selection process, including IPC / Estates / AE / AP.
1.5	How does the Health Board assure itself that the Commissioning company and all personnel included in the Commissioning process	• Evidence of competence verification process by the Health Board. • Evidence of similar, previous healthcare projects by the Commissioning company.

No.	Areas to probe	Evidence expected
	(including Commissioning managers and engineers) have the relevant competence, experience and training to carry out the commissioning of the following in a healthcare environment: • Domestic Water & Above Ground Drainage • Ventilation • Electrical Systems • Medical Gas • Fire Safety Systems/Measures How does the Health Board assure itself that experience competency and training are relevant to the healthcare environment?	• Evidence of a vetted list of site Commissioning engineers which confirms qualifications and healthcare experience. • Where specialist systems are present, evidence that individuals are competent in working with these systems (e.g., RO plant, Medical IT Power Supplies, etc). • Where anyone does not have previous healthcare experience, evidence of the specific and relevant on-site training which is provided to them before they commence work on site (for example infection control and health and safety within the healthcare-built environment). • Evidence of site management structure.
1.6	How does the Health Board ensure that there is a planned approach towards determining the necessary design and Commissioning standards for this accommodation, including compliance with local Health Board policy requirements?	• Updated and current list of the relevant NHS and non-NHS guidance that is being used and adopted (see previous section of this workbook (Page 9 and 10) for examples of appropriate guidance). • Updated and current list of all proposed derogations from NHS guidance with a detailed technical narrative on each derogation and/or list of known gaps in guidance that will need to be resolved in order to meet the needs of the patient / user cohort. • Evidence of the processes in place to ensure that personnel from the Commissioning companies have been trained in the requirements of the local Health Board policy and procedures. • Knowledge of the role of infection prevention and control advisors (IPCN and ICD) to be used throughout the Commissioning stage, and details of the resource plan in place to ensure continuity into the Handover phase.

No.	Areas to probe	Evidence expected
1.7	How does the Health Board ensure that there is a planned approach for managing the Commissioning process to ensure successful compliance with agreed and approved standards?	• Evidence of how the Health Board assures themselves that relevant stakeholders (e.g., IPC / AE / AP) are available for pre-commissioning and commissioning activities as required. • Evidence of the processes in place to demonstrate how gaps in commissioning expertise are being filled. • Details of how compliance with the appropriate guidance, design brief, Commissioning brief and other standards are being agreed, signed-off, monitored, reported against and if necessary escalated / adjudicated throughout the Construction, Commissioning and Handover stages. • Evidence of a detailed Commissioning programme encompassing all pre-Commissioning and Commissioning activities for all systems. • Evidence of a roles and responsibilities document for all individuals involved in Commissioning, including independent validators/verifiers. • Details of stakeholder engagement in the pre-commissioning and commissioning process. • Evidence that there are processes in place to allow stakeholders to review Commissioning documentation and that these are kept up to date.
1.8	How does the Health Board ensure that Commissioning results are witnessed and agreed as acceptable including independent validation where required?	• Evidence of the activities to be witnessed and by whom. • Evidence that a body, independent of the Contractor, has witnessed the results of the final Commissioning readings. • Evidence that the design consultant has signed-off that the results achieved are within the limits of deviation from design, as agreed with the Health Board / Contractor. • Evidence that the validation processes have been undertaken in line with the

No.	Areas to probe	Evidence expected
		requirements of relevant guidance, considering the additional requirements for specialist tests (e.g., UCV theatres, isolation rooms, aseptic facilities, IAP rooms, and labs etc). • Evidence of a validation report for each system detailing the findings, for review by stakeholders (Clinical head of dept. / IPC / Estates etc).
1.9	How does the Health Board ensure that the safety and performance of all commissioned systems will not be compromised in the period between Commissioning and Handover of the facility?	• Evidence of processes for undertaking risk assessments. • Evidence of roles and responsibilities. • Evidence of stakeholder review of strategies, including the local safety groups e.g., Water Safety Group, Ventilation Safety Group etc. • Evidence of consideration of PPM activities to be undertaken in the period between commissioning and handover. • Evidence of adequate/appropriate numbers of APs and CPs.
1.10	How does the Health Board ensure that all relevant information from the Commissioning phase will be collated and reviewed prior to Handover, including training records, Commissioning results and O&M information?	• Evidence of programme for completing O&M information. • Evidence of training programme for all relevant stakeholder groups, including service users, IPC, AE, AP etc. • Evidence of all factory tests and / or type test results. • Evidence that apparatus used during Testing and Commissioning has been appropriately calibrated. • Evidence of activities undertaken. • Evidence of the completed, final Commissioning records which demonstrate design conditions and actual commissioned conditions. • Evidence of final Commissioning schematics.

IPC Built Environment

No.	Areas to probe	Evidence expected
2.1	How does the Health Board assure itself that there is an effective infection prevention and control management structure in place and how does it relate to the development of the project?	• Evidence IPC and clinical teams have been integrated into all decisions regarding any derogations through the design, Construction and Commissioning processes and are satisfied this will not impact on patient safety.
2.2	How does the Health Board demonstrate leadership and commitment to infection prevention and control to ensure a culture of continuous quality improvement throughout the organisation and that there is an effective IPC structure in place and how does it relate to the Commissioning process?	• Evidence may include specific sign-off documentation, meeting minutes, risk assessments, risk registers relating to IPC, with evidence of escalation through the agreed NHS Health Board governance process.
2.3	How does the Health Board ensure that there is an effective Infection Prevention and Control strategy in place, including evidence of how evidence-based infection prevention and control measures will be implemented?	• Evidence that IPC are fully embedded in the project team and the Commissioning programme takes cognisance of any actual or perceived risks identified. • Evidence that the Health Boards approach ensures that all IPC related matters are integrated into the design, Construction and Commissioning processes, (e.g., HAI-SCRIBE etc.). • Evidence that the Health Board can demonstrate the current version of the National Infection Prevention and Control Manual has been adopted by the organisation and all staff are aware of how and where to access this.

No.	Areas to probe	Evidence expected
2.4	How does the Health Board assure itself that specialists in Infection Prevention and Control (IPC) have been fully involved in the Commissioning process?	• Evidence of the Executive Health Board reports. • Evidence of minutes and actions from Governance and Operational Groups relevant to the project, including IPC.
2.5	How does the Health Board assure itself that those IPC specialists involved in the Commissioning process are appropriately qualified and experienced?	• Evidence of the structure of the IPCT with details of qualifications held and previous experience in commissioning new builds, refurbishments or special projects. • Evidence that this has been reviewed and approved by the Health Board.
2.6	How has the Health Board ensured that the IPC specialists engaged in the Commissioning process have access to all relevant information, including the results of Commissioning tests on water and ventilation systems and any decontamination equipment?	• Evidence of a process in place for reporting the results of Commissioning tests to IPC stakeholders. • Evidence of minutes and actions from governance and operational groups relevant to the project, including IPC and Water/Venilation Safety Groups.
2.7	What are the Health Board's processes in the event that the results of any Commissioning tests are unsatisfactory?	• Evidence of processes for approving and responding to Commissioning test results.
2.8	How has the Health Board assured itself that staff in the new/refurbished unit will be able to comply with the requirements of the National Infection Prevention and Control Manual?	• Evidence of HAI-SCRIBE documentation. • Evidence of minutes and actions from governance and operational groups relevant to the project, including IPCC.

No.	Areas to probe	Evidence expected
2.9	How has the Health Board assured itself that all new equipment (for example furniture, fixtures & equipment (FF&E)) meets required standards for IPC?	• Details of IPC involvement in procurement process. • Minutes and actions from governance and operational groups relevant to the project, including IPCC.
2.10	How has the Health Board assured itself that proposed cleaning schedules will be implemented to meet the requirements of the National Cleaning Specification?	• Evidence of demarcation of responsibilities for cleaning activities, including programme of activities (e.g., “builders clean”, “sparkle clean”, “clinical clean” and any subsequent ongoing activities). • Evidence that proposed cleaning schedules have been matched against the National Cleaning Specification. • Details of facilities, clinical and IPC teams’ involvement in drawing up proposed cleaning schedules.

Water and Internal Plumbing / Drainage Systems

No.	Areas to probe	Evidence expected
3.1	How does the Health Board assure itself that the domestic water and above ground drainage systems are commissioned in accordance with local Health Board policy requirements?	• Evidence that the personnel from the Commissioning company have been trained in the requirements of the local water policy and procedures. • Evidence that the Health Board are engaging with the Water Safety Group. • Evidence that the site induction, with respect to working on domestic water services and above ground drainage systems, has been agreed with all stakeholders, including the water safety group. • Evidence that the written scheme(s) has been reviewed and updated to reflect the works and that the revised scheme is being implemented.
3.2	How does the Health Board ensure that the domestic water and above ground drainage systems are being commissioned to the correct standard and in accordance with relevant guidance?	• Evidence of a Commissioning brief in line with SHTM 04-01 Part A which confirms the processes which are to be applied (including reference to relevant British Standards and manufacturers guidelines). • Evidence of a summary and sequence of activities with named responsibilities / Inspection and Test Plans (ITP). • List of all Commissioning documentation and records that will be produced. • Evidence that there are relevant manufacturers reassurance letters, confirming that the disinfection methods proposed won't adversely affect their components (outlets and pipework) and will not impact on component warranty.
3.3	How does the Health Board ensure that the relevant stakeholders are involved in reviewing the Commissioning processes?	• Evidence that the Commissioning documents and processes as noted in 3.2 have been reviewed by all relevant stakeholders. • Evidence of a list of all stakeholders required to be involved in the Commissioning process, including pre-

No.	Areas to probe	Evidence expected
		Commissioning, mapped to each Commissioning exercise. • Evidence of the roles and responsibilities of all stakeholders involved in the process. • Evidence of the attendance of the relevant stakeholders during the Commissioning process, including pre-Commissioning. • Evidence of Action Plans, with responsibilities defined. • Evidence that there are processes in place for stakeholders to review all findings, including out of specification findings. • Evidence that IPC have been engaged during the Construction and Commissioning stages.
3.4	How does the Health Board ensure that the data used for Commissioning reflects the final design (inclusive of any changes to the design undertaken during the Construction phase)?	• Evidence of the design information, validated against the as-installed condition, to confirm the flow rates, pressures, temperatures, etc., to be used for Commissioning. • Evidence of a written agreement from the Health Board representatives to confirm that they have checked this list of the criteria before Commissioning commences. • Evidence of the change control processes in place to capture any changes to the systems and/or their design conditions. • Evidence that the final Commissioning schematics and documents have been signed-off by the design consultants.

No.	Areas to probe	Evidence expected
3.5	How does the Health Board assure itself that all pre-Commissioning inspections are completed and recorded before Commissioning can commence?	• Evidence that adequate pre-Commissioning check sheets, in line with the recommendations in SHTM 04-01 Part A, (including reference to British Standards for above ground drainage checks) have been prepared and reviewed / accepted by the Health Board prior to commencing works. • Evidence that the pre-Commissioning check sheets have been completed and signed-off by the Contractor and Health Board representatives. • Evidence of stakeholder engagement in pre-Commissioning processes (IPC / WSG / AE / AP etc.) • Evidence of ongoing review of protection measures installed in relation to above ground drainage systems, including verification that all drains were appropriately capped during Construction until final connection. • Evidence of a strategy to ensure drains flow freely and are free from any debris or obstructions (e.g., pre-Commissioning CCTV surveys).

Ventilation

No.	Areas to probe	Evidence expected
4.1	How does the Health Board assure itself that the ventilation systems are commissioned in accordance with local Health Board policy requirements?	• Evidence that the personnel from the Commissioning company have been trained in the requirements of the local ventilation policy and procedures. • Evidence that the Health Board are engaging with the Ventilation Safety Group (VSG). • Evidence that the site induction, with respect to working on ventilation and heating / chilled water systems has been agreed with all stakeholders, including the ventilation safety group.
4.2	How does the Health Board ensure that the ventilation systems are being commissioned to the correct standard and in accordance with relevant guidance?	• Evidence of a Commissioning brief in line with SHTM 03-01 Part A which confirms the processes which are to be applied (including reference to relevant British Standards, CIBSE/BSRIA guides and manufacturers guidelines). • Evidence of a summary and sequence of activities with named responsibilities / Inspection and Test Plans (ITP). • List of all Commissioning documentation and records that will be produced.
4.3	How does the Health Board ensure that the relevant representatives are involved in reviewing the Commissioning processes?	• Evidence that the Commissioning documents and processes as noted in 4.2 have been reviewed by all relevant stakeholders. • Evidence of a list of all stakeholders required to be involved in the Commissioning process, including pre-Commissioning, mapped to each Commissioning exercise. • Evidence of the roles and responsibilities of all stakeholders involved in the process. • Records of the parties who will need to support the Commissioning engineers to make those adjustments and facilitate all results to be recorded (e.g., BMS Specialists). • Evidence of the attendance of the relevant stakeholders during the

No.	Areas to probe	Evidence expected
		Commissioning process, including pre-Commissioning. • Evidence of Action Plans, with responsibilities defined. • Evidence that there are processes in place to review all commissioning documents, including out of specification findings. • Evidence that IPC have been engaged during the Construction and Commissioning stages.
4.4	How does the Health Board ensure that the data used for Commissioning reflects the final design (inclusive of any changes to the design undertaken during the Construction phase)?	• Evidence of the design information, validated against the as-installed condition, to confirm the pressure cascades, air flow rates, temperatures, etc. to be used for Commissioning. • Evidence of a written agreement from the Health Board representatives to confirm that they have checked this list of the criteria before Commissioning commences. • Evidence of the change control processes in place to capture any changes to the systems and/or their design conditions. • Evidence that the final Commissioning schematics and documents have been signed-off by the design consultants.
4.5	How does the Health Board assure itself that all pre-Commissioning inspections are completed and recorded before Commissioning can commence?	• Evidence that adequate pre-Commissioning check sheets, in line with recommendations in SHTM 03-01 Part A, (including reference to British Standards / CIBSE / BSRIA guides) checks have been prepared and reviewed / accepted by the Health Board prior to commencing works. • Evidence that the pre-Commissioning check sheets have been completed and signed-off by the Contractor and Health Board representatives.

No.	Areas to probe	Evidence expected
		• Evidence of stakeholder engagement in pre-Commissioning processes (IPC / VSG / AE / AP etc.) • Evidence that inspections by the independent validator have been carried out during and on completion of the installation of the ventilation systems, in line with the requirements of SHTM 03-01 Part A. • Evidence of air permeability tests, where applicable, in line with the requirements of SHTM 03-01 Part A. • Evidence of ongoing review of protection measures installed in relation to the ventilation systems, including verification that all ductwork, fans, air handling units, etc were appropriately protected during Construction until final connection.

Electrical

No.	Areas to probe	Evidence expected
5.1	How does the Health Board assure itself that the electrical systems are commissioned in accordance with local Health Board policy requirements?	• Evidence that the personnel from the Commissioning company have been trained in the requirements of the local electrical policy and procedures. • Evidence that the Health Board and Contractor team, including the Commissioning company, are engaging in Electrical Safety Group meetings. • Where interfaces to existing Health Board electrical systems are present, evidence that the site induction with respect to working on electrical services has been agreed with the Health Board, including confirmation of the Duty Holder. • Confirmation which safe system of work will be in force, naming the AE and AP's. • Evidence that safe systems of work have been documented and reviewed in accordance with SHTM 06-02 and 06-03.
5.2	How does the Health Board ensure that the electrical systems are being commissioned to the correct standard and in accordance with relevant guidance?	• Evidence of a detailed method statement for the electrical system Commissioning process, which confirms the national standards which are to be applied, including but not limited to process for validating instrumentation calibration, "lock off", safety/hazard/warning signage protocols and PPE requirements. • Evidence of a summary and sequence of activities with named responsibilities / Inspection and Test Plans (ITP). • List of all Commissioning documentation and records that will be produced.

No.	Areas to probe	Evidence expected
5.3	How does the Health Board ensure that the relevant stakeholders are involved in reviewing the Commissioning processes?	• Evidence that the Commissioning documents and processes as noted in 5.2 have been reviewed by all relevant stakeholders. • Evidence of a list of all stakeholders required to be involved in the Commissioning process, including pre-Commissioning, mapped to each Commissioning exercise. • Evidence of the roles and responsibilities of all stakeholders involved in the process. • Records of the parties who will need to support the Commissioning engineers to make those adjustments and facilitate all results to be recorded (e.g., electrical testers). • Evidence of the attendance of the relevant stakeholders during the Commissioning process, including pre-Commissioning. • Evidence of Action Plans, with responsibilities defined. • Evidence that there are processes in place to review all commissioning documents, including out of specification findings. • Evidence that IPC have been engagement during the Construction and Commissioning stages.
5.4	How does the Health Board ensure that the data used for Commissioning reflects the final design (inclusive of any changes to the design undertaken during the Construction phase)?	• Evidence of the design information, validated against the as-installed condition, to confirm the characteristics of the system to be used for Commissioning. • A written agreement from the Health Board representatives that they have checked this information before Commissioning commences. • Evidence of the change control processes in place to capture any changes to the systems and/or their design conditions.

No.	Areas to probe	Evidence expected
		• Evidence that the final Commissioning schematics and documents have been signed-off by the design consultants. • A copy of test results, signed by a qualified competent electrical tester and designer.
5.5	How does the Health Board assure itself that all pre-Commissioning inspections are completed and recorded before Commissioning can commence?	• Evidence that adequate pre-Commissioning checks and documentation, in line with SHTM 06-01 and BS 7671 have been prepared and reviewed / accepted by the Health Board prior to commencing works. • Evidence that the pre-Commissioning check sheets have been completed and signed-off by the Contractor and Health Board representatives. • Evidence that test schedules and "dead" test sheets relating to the installation are available, along with live testing results in accordance with BS7671. • Evidence of stakeholder engagement in pre-Commissioning processes (IPC / Electrical Safety Group / AE / AP etc.).
5.6	How does the Health Board ensure that all emergency power systems have been appropriately commissioned, tested and the results agreed as acceptable?	• Evidence of generator dynamic test results in accordance with SHTM 06-01 and manufacturers recommendations, including but not limited to: - Full load run, not less than four hours. - Start up within specified times. - Voltage regulation. • Evidence that generator synchronisation has been tested and proved: - Where multiple generators are used, confirmation of whether they share the load equally, and that this has been confirmed through site testing. - Confirmation of the start-up sequence validation. • Evidence of the validation of operational switching philosophy,

No.	Areas to probe	Evidence expected
		cause-and-effect scenarios and local operational procedures; including details of load shedding requirements to change from the distribution for power supplied from the primary electrical source and any secondary power supplies, generators or tertiary power supplies within the installation. • Evidence of the validation of changeover times in accordance with BS7671 and SHTM 06-01. • For UPS Systems: - Evidence that all UPS systems have been confirmed as no break supply and battery endurance tested. - Confirmation that the environmental conditions of the battery locations have been documented and validated as per the manufacturer's requirements.

Medical Gases

No.	Areas to probe	Evidence expected
6.1	How does the Health Board assure itself that the medical gas pipeline systems are commissioned in accordance with local Health Board policy requirements?	• Evidence that the personnel from the Commissioning company have been trained in the requirements of the local medical gas pipeline systems policy and procedures. • Evidence that the Health Board are engaging with the Medical Gas Safety Committee. • Evidence that the site induction, with respect to working on medical gas pipeline systems has been agreed with all stakeholders, including the Medical Gas Safety Committee.
6.2	How does the Health Board ensure that the medical gas pipeline systems are being commissioned to the correct standard and in accordance with relevant guidance?	• A detailed method statement of the medical gas pipeline systems Commissioning process, which confirms the national standards which are to be applied. • Evidence of a summary and sequence of activities with named responsibilities / Inspection and Test Plans (ITP). • List of all Commissioning documentation and records that will be produced, with reference to the relevant forms required by SHTM 02-01 Part A.
6.3	How does the Health Board ensure that the relevant representatives are involved in reviewing the Commissioning processes?	• Evidence that the Commissioning documents and processes as noted in 6.2 have been reviewed by all relevant stakeholders. • Evidence of a list of all stakeholders required to be involved in the Commissioning process, including pre-Commissioning, mapped to each Commissioning exercise. • Evidence of the roles and responsibilities of all stakeholders involved in the process. • Evidence of the attendance of the relevant stakeholders during the Commissioning process, including pre-Commissioning.

No.	Areas to probe	Evidence expected
		• Evidence of Action Plans, with responsibilities defined. • Evidence that IPC and NHS Health Board Pharmacists have been engaged during the Construction and Commissioning stages. • Evidence that there are processes in place to review Commissioning documentation and that these are kept up to date.
6.4	How does the Health Board ensure that the data used for Commissioning reflects the final design (inclusive of any changes to the design undertaken during the Construction phase)?	• Evidence of the design information, validated against the as-installed condition, to confirm the flow rates, pressures etc. to be used for Commissioning. • Evidence of a written agreement from the Health Board representatives that they have checked this list of the criteria before Commissioning commences. • Evidence of the change control processes in place to capture any changes to the systems and/or their design conditions. • Evidence that the final Commissioning schematics and documents have been signed-off by the design consultants.
6.5	How does the Health Board assure itself that all pre-Commissioning inspections are completed and recorded before Commissioning can commence?	• Evidence that adequate pre-Commissioning check sheets, in line with recommendations in SHTM 02-01 have been prepared and reviewed / accepted by the Health Board prior to commencing works. • Evidence that the pre-Commissioning check sheets have been completed and signed-off by the Contractor and Health Board representatives. • Evidence of stakeholder engagement in pre-Commissioning processes (IPC / MGPS Safety Committee / AE / AP etc.).

No.	Areas to probe	Evidence expected
6.6	How does the Health Board ensure that all validation is carried out on the relevant systems?	• Evidence that the validation process has been undertaken in line with the requirements of SHTM 02-01. • Records of the validation, with all readings signed-off by an agency which is independent of the Contractor.

Fire Safety

No.	Areas to probe	Evidence expected
7.1	Has the Fire Strategy been changed since the last KSAR? Has the Health Board made any design, or on-site changes, concerning active or passive fire precaution measures? How does the Health Board monitor and agree any such changes? Do any of the changes result in a variation or derogation from technical guidance?	• Evidence of Health Board change control mechanisms e.g., change control log. • Evidence of updated design information, including evidence of review and approval by Health Board specialists e.g., Local Fire Safety Advisor etc. • Evidence of reviews of the impact of any changes on statutory approvals. • Evidence that standards are achieved by alternative means. • Evidence that any changes comply with Firecode and the technical standards. • Amended and updated fire strategy.
7.2	How does the Health Board assure itself that all pre-Commissioning inspections are completed and recorded before Commissioning can commence?	• Evidence of the documented pre-Commissioning process / check sheets being used for fire safety systems, which confirms the technical standards that are to be applied. • Evidence that the pre-Commissioning check sheets have been completed and signed-off by the Contractor and Health Board representatives. • Evidence of stakeholder engagement in pre-Commissioning processes (Local Fire Safety Advisors etc.).
7.3	Have all fire safety systems been individually tested to ensure that the final installation conforms to the agreed design specification, is functioning correctly and is ready for acceptance testing? Have the fire safety systems been tested collectively to ensure that they are fully integrated and compatible with other life safety systems?	• Evidence of a detailed method statement of the fire systems Commissioning which confirms the technical standards that are to be applied. • Evidence of the Testing & Commissioning documents for all fire safety systems, including but not limited to: - Certificates of conformity, - O&M manuals - Commissioning schematics - Test records for each individual component - Testing & Commissioning certificates

No.	Areas to probe	Evidence expected
		• Fire detection & alarm system commissioned and function tested in accordance with BS 5839, including a completed 'cause and effect' ratified by the Board. • Evidence of Fire Stopping Certificates and Evidence Labels. • Evidence of a written agreement from the design consultant that they have checked the list of Commissioning criteria before Commissioning commenced. • Evidence of the Commissioning sheets which confirm all of the smoke venting performance criteria to be achieved during Commissioning. • Evidence of Action Plans which identify the adjustments (for simulation of conditions) which need to be made to systems during Commissioning to enable results to be recorded and witnessed. • Records of the parties who will need to support the Commissioning engineers to make those adjustments and facilitate all results to be recorded (e.g., BMS specialists). • Records of adjustments to the systems which were made, recorded against the relevant set of results. • Breaches in compartmentation have been repaired with evidence of conformity i.e. Fire Stopping Certificates and Labels. • Emergency lighting tested, commissioned & certified in accordance with BS5266 • Fire doors including hold open devices • Emergency door release mechanisms (green break glass units) • Fire and smoke dampers • Firefighting equipment

No.	Areas to probe	Evidence expected
		• Passenger lifts fail safe measures in the event of fire • Refuge area communication equipment • Rising mains • Fire hydrants and water pressure.
7.4	Have fire safety procedures and training been relayed to all NHS Staff and others who work within the premises prior to full occupation.	• A written Emergency fire action plan • Training records
7.5	Has the Board carried out a pre-occupation fire safety assessment*. Note* a pre-occupation fire safety assessment is not to be confused with the fire risk assessment required by fire safety legislation, which can only properly be carried out after a building has been handed over to the end user	• A written fire safety assessment and action plan
7.6	How does the Health Board ensure that the data used for Commissioning reflects the final design (inclusive of any changes to the design undertaken during the Construction phase)?	• Evidence of the design information, validated against the as-installed condition. • A written agreement from the Health Board representatives that they have checked this list of the criteria before Commissioning commences. • Evidence that the final Commissioning schematics and documents have been signed-off by the design consultants.

No.	Areas to probe	Evidence expected
7.7	How does the Board ensure that ongoing snagging works do not impact on occupant safety?	• Evidence of the snags/defects inspected and by whom. • Written evidence of safe systems of works. • Evidence of defect/snagging review and mitigation. • Evidence that remedial works are undertaken in accordance with the relevant standards and certified where applicable.

4. Appendix

KSAR Master Glossary

Please refer to NHS Scotland Assure – Assurance Service Master Glossary document.

NHS Scotland Assure
Quality in the healthcare environment

NHS National Services Scotland

Key Stage Assurance Review Workbook

Handover

December 2022

Version d0.15

Contents

Contents **2**

1. About this workbook **3**
Figure 1: Construction Procurement Journey 3
Using this workbook 4

2. Key Stage Assurance Review **5**
Introduction to NHS Scotland Assure – Assurance Service 5
The KSAR Process 6
Value of the KSAR Process 6
KSAR as part of the overall assurance framework 7
The KSAR Process relationship with NHS Scotland Design Assessment Process (NDAP) 8
Sustainability 9
Handover KSAR 9

3. Assessment of Delivery Approach **12**
Project Governance and General Arrangements 12
IPC Built Environment 16
Fire 17

4. Appendix **18**
KSAR Master Glossary 18

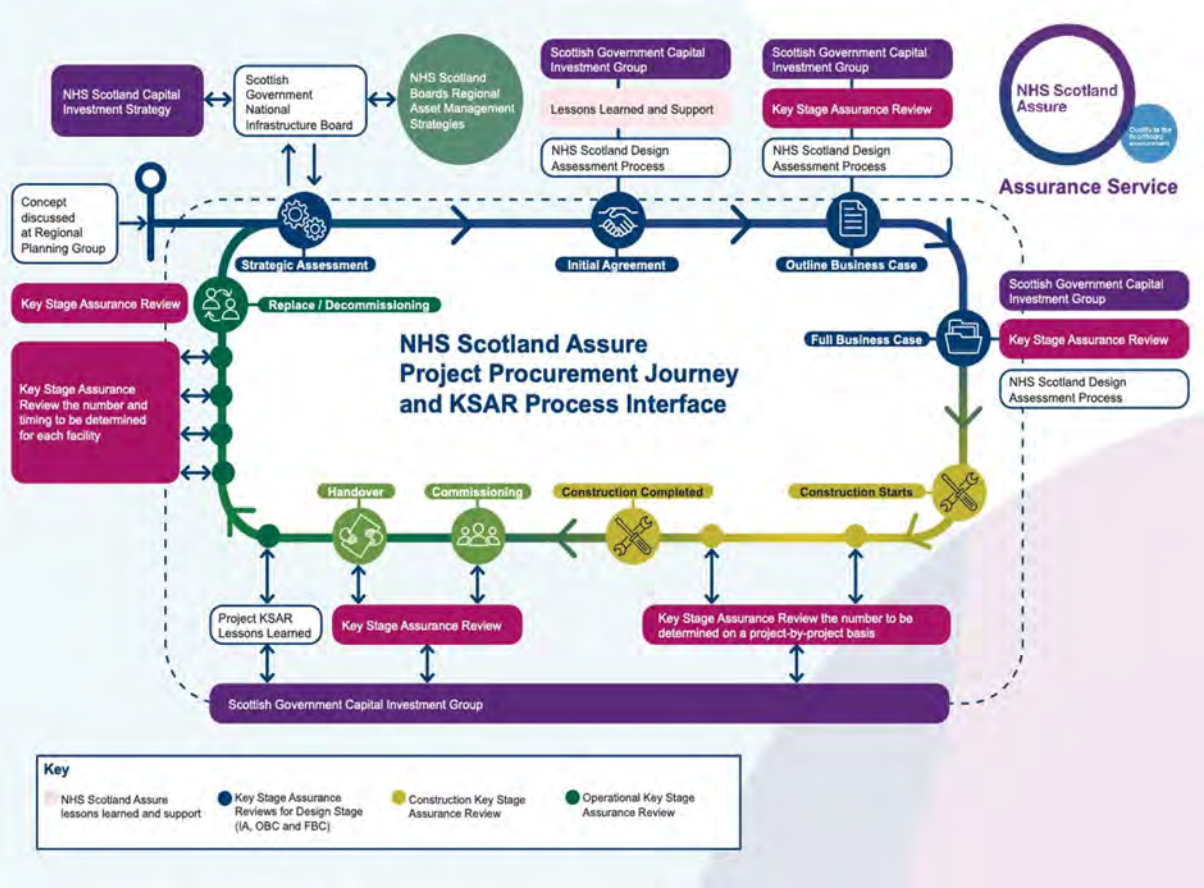
1. About this workbook

This workbook supports the Handover Key Stage Assurance Review (KSAR), delivered by the NHS Scotland Assure Assurance service.

Further information about the NHS Scotland Assure Assurance service and KSAR process is provided in Section 2.

Figure 1. shows how the Handover stage in the procurement and construction journey. The timing and frequency of KSARs during this stage will vary dependent upon the facility. Specific workbooks have been developed for the other stages within this journey.

Figure 1: Construction Procurement Journey



The KSAR process and workbooks provide a transparent, structured framework for all clinical specialisms, facilities and operational management professionals to assess and manage a healthcare build or refurbishment. In turn this assists health boards to provide the best and safest outcomes for patients, staff and visitors in the built environment.

KSARs deliver an independent peer review. NHS Scotland Assure staff, outside the project, use their experience and expertise to examine the progress and likelihood of successful delivery, with a particular emphasis on the safety of the patients, staff and visitors using the facility. KSARs also focus on how projects are able to demonstrate compliance with relevant guidance and standards.

It is vital to receive feedback on the following elements of health facilities - Infection Prevention and Control (IPC), water, ventilation, electrical, plumbing, medical gas installations and fire. This ensures they are designed, installed and functioning from the initial commissioning of a new facility and throughout its lifetime. Health boards are required to have appropriate governance in place at all stages of the construction procurement journey.

Using this workbook

The review at Handover stage investigates the approach taken by the health board and other stakeholders during this critical stage of the project to ensure that there continues to be an appropriate level of knowledge and awareness of the importance of the Handover stage on patient, staff and visitor safety.

The purpose of the KSAR at Handover stage is to confirm there is a continued good and comprehensive understanding of the category of patient who will use the proposed facility, and that the project team consider how appropriate quality and safety standards will influence the handover of the various systems. It looks to provide assurance that the project can proceed to the Operational phase.

Additionally, the KSAR at Handover will carry out an appropriate level of checking of the handover documentation. This level of checking will be set by the review team following their initial discussions on site.

The KSAR workbook is a tool for both NHS Scotland Assure to undertake project reviews and for health boards to support the development of their own projects. It provides guidance on the review structure and areas of investigation to be addressed by the review team and should be regarded as indicative and not prescriptive. The review team will consider whether any emerging findings require additional topics to be addressed. If so, evidence relating to these areas, regarding the safety of the patients, staff and visitors, should be provided.

2. Key Stage Assurance Review

Introduction to NHS Scotland Assure – Assurance Service

Good management and effective control of projects are essential elements to the successful delivery and maintenance of healthcare facilities across NHS Scotland estates.

The NHS Scotland Assure Assurance Service will deliver KSARs, designed to provide independent assurance to Scottish Government Health and Social Care Directorates (SGHSCDs).

It will assess if health board's project management teams (inclusive of clinicians, appointed construction consultants, and contractors) are briefed and following best practice procedures in the provision of facilities. We will review if projects are compliant in all aspects of safety, if specific engineering systems are designed, installed and commissioned, and for ongoing safe maintenance including IPC consideration.

The KSAR process is applicable regardless of procurement route chosen.

The KSAR Process

The KSAR process examines projects at key points in their lifecycle. It does not remove any legal or contractual obligations from the NHS health board, their designers or contractors. It provides assurance to progress successfully to the next review point. KSARs focus on the assessment of the delivery approach and the review team will work with the health board's project team to ensure there is comprehensive understanding of the patient cohorts utilising the facility. KSARs also ensure relevant guidance is fully implemented and any technical derogations have been fully reasoned, transparently discussed, the implications understood, recorded and signed-off by the health board and their advisors.

KSARs will concentrate on project governance related to the core review topics of water, ventilation, electrical, plumbing, medical gases installations, fire, and associated IPC guidance. If further issues are raised with the review team, they will fully incorporate those issues into the reporting process.

Value of the KSAR Process

Key Stage Assurance Reviews (KSARs) deliver an independent peer review. NSS staff outside the health board's project use their experience and expertise to examine the progress and likelihood of successful delivery, with a particular emphasis on the safety of the patients, staff and visitors using the facility. KSARs provide an external perspective and provide a challenge to the robustness of the health board's brief, plans and processes.

This includes work delivered by construction consultants, employed either directly or through construction contractors, and the work being delivered by the primary contractor, their sub-contractors and specialist suppliers.

The KSAR provides an independent report and recommended action plan, which is shared with the health board to ensure:

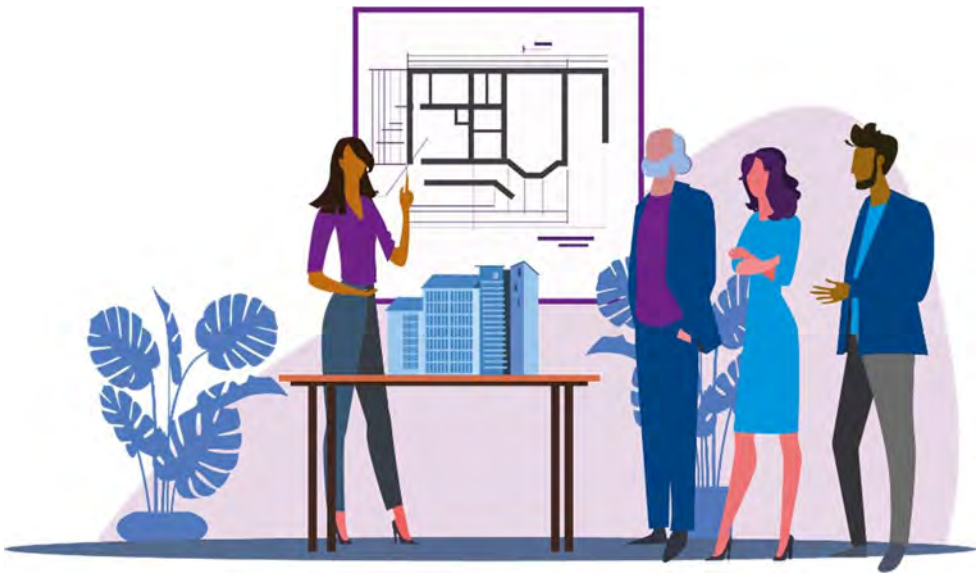
- Appropriate skills and experience are deployed on the project by the health board, consultants, primary contractor and all sub-contractors.
- The clinicians and wider stakeholders covered by the project fully understand the project status, aims and the issues involved.
- Appropriate management structures, put in place to ensure appropriate infection prevention and control measures, are designed into the project to reduce the risk of transmission of infectious agents.
- There is assurance the project can progress to the next stage of development or implementation, with particular emphasis on the safety of the patients, staff and visitors utilising the facility.
- Provision of advice and guidance to programme and project teams by fellow practitioners.

KSAR as part of the overall assurance framework

Each NHS health board will be fully responsible for the delivery of all projects, and its own internal process and resources for carrying out internal reviews and audits of its activities. The KSAR is seen as a complementary independent review, and not as a replacement for the responsibilities of the health board.

NHS health boards should have in place an effective framework to provide a suitable level of assurance for their programmes and projects. Health boards are encouraged and expected to ensure adequate and timely coordination and sharing of information, including plans, between the various internal reviews and functions.

The KSAR process is not a substitute for a rigorous governance framework being put place by the health board to manage key processes including business planning, investment appraisal, business case management, risk management and service and contract management.



The KSAR Process relationship with NHS Scotland Design Assessment Process (NDAP)

The Scottish Government's ambition for NHS Scotland's estate and the need for well-designed healthcare environments is articulated in the Policy on Design Quality for NHS Scotland. Good design in the built environment encompasses a wide range of inter-related factors such as:

- access for visitors and mobility impaired persons
- architecture
- decontamination
- energy
- engineering
- environment
- fire safety
- landscaping
- lighting
- security
- space utilisation
- sustainability
- technology.

The mandated NHS Scotland Design Assessment Process (NDAP) process is undertaken by NHS Scotland Assure, Architecture and Design Scotland, and considers all of the above. It sets the principles for the resolution of potential conflicts of statutory or mandatory compliance to ensure the specific facility provides; the best balance of the technical requirements, meets clinical needs and fulfils the conceptual aims of the policy on Design Quality. The NDAP process begins at the Initial Agreement stage of a project and provides advice through to the Full Business Case (FBC). There is no change to either Scottish Capital Investment Manual (SCIM) or NDAP processes.

The Scottish Government is progressing policy to improve the safety of the healthcare environment in relation to the built environment risk. The Assurance Service delivered through NHS Scotland Assure is a response to this policy and the KSARs are integral to the compliance work. The aspiration is not to duplicate any of the work included in the NDAP process but to provide assurance regarding the critical components highlighted throughout this workbook.

Integral to the KSARs will be a review of the balance between sustainability issues and patient safety.

Where possible the two reviews will be aligned to avoid duplication of work. For example, in instances where the NDAP has reviewed detail at a technical level, this will be used by the KSAR team rather than being separately requested and reviewed.

Sustainability

The review will provide assurance that the proposals for the project provide an effective balance in terms of patient, staff and visitors safety, whilst meeting required sustainability outcomes and complying with the guidance standards.

Handover KSAR

The Handover KSAR will be an independent “peer review” in which NHS Scotland Assure (NHS SA) subject matter experts, independent of the project, use their experience and expertise to review and assess the proposed pre-Handover and Handover stage documentation. It is anticipated that the implementation of the Handover KSAR will differ from other reviews, as it will predominately take the form of a site-based audit of the processes and documentation associated with the Handover phase.

Any areas of concern found during this KSAR will be immediately raised with the NHS health board.

The Handover KSAR will consider (particularly with respect to IPC measures):

- Water systems.
- Ventilation systems.
- Plumbing and drainage.
- Fire safety.
- Electrical systems.
- Medical gases.
- Any other building or engineering component critical to the safety and welfare of a particular patient cohort (defined by the review team).
- The requirements of Infection Prevention & Control Guidance have been incorporated and implemented, including the NHS Scotland National Infection Prevention and Control Manual, to allow staff to deliver the health services in a safe and comprehensive manner.

At all stages of the Handover phase, knowledge of compliance in design and implementation will need to encompass (but is not limited to) the following:

- NHS Scotland policy letters (DLs, CELs, CMOs).
- Scottish Health Planning Notes (SHPN).
- Scottish Health Facilities Notes (SHFN).
- Scottish Health Technical Memoranda (SHTM).
- Scottish Fire Practice Notes (SFPN).
- Health Building Notes (HBN).
- Health Technical Memoranda (HTM).
- Health Facilities Notes (HFN).
- Incident Reporting and Investigation Centre (IRIC) Alerts.
- Relevant British Standards.
- UK construction industry bodies best practice or design guidance publications e.g., HSE, CIBSE, BRE, IHEEM, IET, BRE, BSRIA, sustainability, dementia and equality.
- Incident Reporting and Investigation Centre (IRIC) Alerts.
- The implementation of NHS Scotland Soft Landings (SL) guidance.
- Confirm that there are plans in place for risk management, issue management and that these plans are being shared with suppliers and delivery partners.
- Evaluation of actions taken to implement recommendations made in earlier assessment of deliverability.
- Confirm there are plans in place to ensure the requirements of IPC Guidance, including the NHS Scotland National Infection Prevention and Control Manual for Scotland, are being incorporated into the development in a manner which will allow the staff allocated to the role to deliver the services to the patients.
- Other statutory requirements: Planning permission; Building Regulations compliance; Equality Act compliance; Health and Safety Executive (HSE) compliance; Construction (Design and Management) Regulations compliance. Fire Scotland Act.
- Other mandatory NHS Scotland use of:
  - Activity Data Base (ADB).
  - Achieving Excellence Design Evaluation Tool.
  - Sustainable Design and Construction (SDaC).
  - Scottish Government BIM Policy (SPPN 1/2017; implementation of building information modelling within construction projects: March 2017).

Additionally, the Handover KSAR will carry out an appropriate level of checking of the commissioning results, as-installed drawings, health and safety documents, manufacturers' literature and solutions adopted.

This level of checking will be set by the review team following their initial discussions on site. One impact of this work may be that the review will take longer than the initial programme, dependant on the conclusions / findings from this assessment of the design.

The review teams consist of experienced professionals and Infection Control clinicians. The team will work with the health board's project team, inclusive of their clinicians and their appointed facility management consultants and contractor. Each review will result in a report being prepared for the Programme Director at the Board and a copy of the report will also be provided to Scottish Government Capital Investment Group.

Section 3 below provides the typical question sets for each discipline that the review team will use as the basis for the Handover KSAR review process. The team will amend this as necessary depending on the project and areas of particular interest. The health board, their designers and contractors should be aware that this is the information which will be expected, and the project should effectively be completed and ready for acceptance at the time of the KSAR to ensure the accuracy of the report.

3. Assessment of Delivery Approach

It is anticipated that Project Handover may be phased as determined by the scale and complexity of the building and systems.

The review should focus on Governance, management, planning, resources, risk assessments, method statements, validation and health board acceptance of Commissioning results. Those responsible for Project Handover should have the appropriate level of competency to undertake the receipt of the systems which they are responsible for. The Handover process should be carried out in accordance with the Board Contract Requirements (BCR).

A suite of documents should be specified for handover to include health and safety files and operations and maintenance manuals. Further, project handover plan checklist should be completed by all relevant parties confirming system completion, system acceptance, training, certification and as installed document handover.

Project Governance and General Arrangements

No.	Areas to probe	Evidence expected
1.1	How does the health board assure itself that actions from the previous Key Stage Assurance Review have been appropriately closed out?	• Evidence of a completed action plan, with reference to evidence, to demonstrate appropriate close out of actions.
1.2	How does the health board ensure that all Commissioning activities have been completed successfully, appropriately validated (including witnessing) and documented, prior to handover?	• Evidence that commissioning / validation processes are complete, and that the Contractor has issued a verification letter to confirm that the systems have been installed and commissioned in line with specification and guidance. • Evidence of commissioning and witnessing activities, including any independent 3rd party validation. • Completed commissioning and validation records for all mechanical, electrical and public health (MEP) systems. • Completed commissioning and validation records for all fire safety systems. • Completed commissioning and validation records for all MEP plant, including plant associated with incoming utilities.

No.	Areas to probe	Evidence expected
1.3	How does the health board ensure that all relevant information from the Commissioning and Handover phases has been collated, appropriately documented and reviewed prior to Handover?	• Evidence of the completed, final Commissioning records which demonstrate design conditions and actual commissioned conditions. • Evidence of completed O&M information in line with the requirements of guidance, the BCRs and BSRIA BG 79. • Evidence of record drawings. • Evidence of the completed Health and Safety file. • Evidence of digital information exchange in line with Employers Information Requirements (EIRs). (Graphical and non-graphical data, e.g. Federated BIM model, COBie data, asset lists etc.). • Evidence of an updated access and maintenance strategy. • Evidence that any derogations from standards have been agreed by the health board and signed-off prior to Handover. • Evidence of processes in place to allow stakeholders to review and comment on Handover documentation prior to Handover. • Completed handover checklists. • Evidence that testing commissioning and validation processes are complete, and documentation has been received and reviewed by key stakeholders from the health board (e.g. WSG/VSG/ESG, AEs, IPC etc.) in line with their governance processes.
1.4	How does the health board ensure that the works have been completed to the required safety and quality standards?	• Evidence of a quality monitoring role having been undertaken with associated supporting documentation e.g. actioned observation trackers. • Evidence there is a process in place to track the close out of any observations / defects prior to handover, including review by key health board stakeholders. • Evidence of contractor/designer approvals of completed works.

No.	Areas to probe	Evidence expected
1.5	How does the health board assure itself that key stakeholders have been involved in the handover process?	• Evidence of a roles and responsibilities document for all individuals involved in the handover process. • Evidence of how the health board assures themselves that relevant stakeholders (e.g., IPC / AE / AP) are available for handover activities as required. • Evidence that maintenance procedures and operational processes have been completed with clinical and IPC stakeholders (to consider access requirements etc).
1.6	How does the health board ensure that there is sufficient resource allocated to manage the accommodation post-handover?	• Evidence that health boards (and/or their appointed FM provider) have appropriate number of competent, qualified staff appointed to carry out specific duties during operation e.g., IPC, Estates staff, APs, CPs etc. • Evidence that the health board (and/or their appointed FM provider) has a fully recorded duty holder matrix, stating the required roles and responsibilities. • Evidence there is a Handover plan in place for staff assuming responsibility for ongoing maintenance and operation of the systems.
1.7	How does the health board ensure that adequate site familiarisation training has been provided?	• Evidence of processes in place to deliver relevant site training / familiarisation sessions to key stakeholders (including end users, IPC, Estates, Hard FM / Soft FM). • Evidence of site visits and walk-rounds by end users.
1.8	How does the health board ensure that adequate technical training has been provided?	• Evidence of demonstrations/ training of system operation for those who will operate and maintain the installed systems, including routine planned preventive maintenance activities. • Evidence that dedicated training has been provided to clinical staff on the operation of technical systems (for example theatre control panels, magnehelic gauges, staff call systems, etc). • Evidence of attendance at training sessions / demonstrations. • Evidence of any training resources / materials provided. • Evidence that all required tools, spares and consumables have been received, along with an inventory. • Evidence of maintenance processes in place.

No.	Areas to probe	Evidence expected
1.9	How does the health board ensure that knowledge of the project is transferred to operational teams? How does the health board ensure that Soft Landings processes are being implemented?	• Evidence of a detailed Handover programme encompassing all Handover activities, as agreed with the health board. • Evidence of PPM activities undertaken in the period between commissioning and handover. • Evidence of Soft Landings review meetings. • Evidence of user guides provided for systems. • Evidence of an aftercare team in place, with delivery plan for in-use support and monitoring. • Evidence of Post Occupancy Evaluation plan. • Evidence of a process for fine tuning, measuring performance and capturing lessons learned from the building operation following Handover.
1.10	How does the health board ensure that there is a process in place for managing Statutory Compliance (including use of the NHS Scotland SCART system)	• Evidence of SCART question review. • Evidence of personnel allocated to compliance. • Evidence of policies and procedures in place for managing and operating engineering systems. • Evidence of process for storing and managing documentation and statutory maintenance records associated with the project.

IPC Built Environment

No.	Areas to probe	Evidence expected
2.1	How does the health board assure itself that IPC specialists have been fully involved in the handover process?	• Evidence of Executive Board reports. • Evidence of Board Minutes. • Evidence of Minutes and actions from Governance and Operational Groups relevant to the project, including IPCC. • Evidence of completed Stage 4 HAI-SCRIBE.
2.2	How does the health board assure itself that those IPC specialists involved in the Handover process are appropriately qualified and experienced?	• Evidence of the structure of IPCT with details of qualifications held and previous experience in commissioning new builds, refurbishments, or special projects. • Evidence that this has been reviewed and recorded by the health board.
2.3	How has the health board ensured that the IPC specialists engaged in the handover process have access to all relevant Commissioning completion documentation for all water, ventilation, and decontamination equipment?	• Evidence that the respective technical commissioning experts have liaised with IPC on final commissioning results, including consideration of any residual IPC risks. Evidence of minutes and actions from governance and operational groups relevant to the project, including IPCC and Water / Ventilation Safety Groups.
2.4	How has the health board assured itself that staff in the facility will be able to comply with the requirements of IPC guidance including the National Infection Prevention and Control Manual?	• Evidence of HAI-SCRIBE documentation. • Evidence of minutes and actions from governance and operational groups relevant to the project, including IPCC. • Evidence of a process in place for access to NIPCM across the facility/organisation.
2.5	How has the health board assured itself that proposed cleaning schedules will meet the requirements of the National Cleaning Specification?	• Evidence that proposed cleaning schedules have been matched against the National Cleaning Specification. • Details of facilities, clinical and IPC teams' involvement in drawing up proposed cleaning schedules.

Fire

No.	Areas to probe	Evidence expected
3.1	Have there been any changes to the fire strategy since the previous Key Stage Assurance Review?	• Evidence of written confirmation of any changes that have been made to the fire strategy.
3.2	Has a Fire Risk Assessment been carried out in accordance with SHTM 86?	• Evidence of Fire Risk Assessment Documentation.
3.3	Have the findings of the Fire Risk Assessment generated a significant findings report?	• Evidence of significant findings Action Plan. • Evidence of the timeline for completion of actions has been documented.
3.4	Are appropriate members of the management team including the Nominated Officer (fire) aware of their responsibility for fire safety management procedures?	• Written documentation and verbal verification from responsible persons. • Evidence of the Board Fire Safety Policy. • Evidence of the Board fire safety procedures.
3.5	Has an Emergency Fire Action Plan (EFAP) been produced in accordance with SHTM 83?	• Evidence of the Emergency Fire Action Plan (EFAP) documentation. • Evidence that this is available to staff. • Details of Emergency response team and their expected actions in response to fire.
3.6	Is there a fire safety induction-training programme in place in line with SHTM 83 Part 2: Fire Safety Training?	• Evidence of the training syllabus. • Evidence of all training programmes and materials. • Evidence of training records.
3.7	Are commissioning documents such as completed for all passive and active fire safety measures?	• Evidence of documentation such as OEM manuals, testing/inspection reports, as-installed information and certificates for all passive and active fire safety measures? • Evidence that the documents are available to relevant staff.
3.8	Has a Fire Safety Manual been produced?	• Evidence of Fire Safety Manual documentation. • Evidence that the document is available to relevant staff.

4. Appendix

KSAR Master Glossary

Please refer to NHS Scotland Assure – Assurance Service Master Glossary document.

ASR200-021

Environmental Matrix Template

NHS Scotland Assure
Quality in the healthcare environment

ENVIRONMENTAL MATRIX TEMPLATE

NHS National Services Scotland

Project Name:		Date:	1st June 2021
Notes	1	This template should be completed in full by the board	
	2	All temperatures to be in °C	
	3	Room pressure regimen to be indicated on diagramatic floor plans	
	4	High risk task areas in accordance with BS5266 should be identified.	
	5	Selection of ventilation type must also be verified by dynamic simulation modelling. Final air change rates must recognise where flow may need to be higher to offset cooling/heating demands	
	6	Within the cell, identify where different forms of temperature control are applied e.g., sink, wash hand basin, shower, cleaner sink. This may require multiple entries in the cell.	

ITEM NO:	ROOM NO.	ROOM NAME	ROOM FUNCTION	ROOM AREA m2	CLINICAL RISK CATEGORY	BUILDING LEVEL	DEPARTMENT	APPROXIMATE OCCUPANCY	OCCUPANCY PATTERN	ELECTRICAL MEDICAL GROUP & RISK CATEGORIES	WATER & DRAINAGE (Y/N)	DOMESTIC HOT WATER AT OUTLET		THERMODYNAMIC COMFORT						HEATING			COOLING		VENTILATION										LIGHTING										ELECTRICAL POWER				MEDICAL GASES
												MAX SAFE TEMPERATURES	TEMP CONTROL METHOD (see note 6)	OCCUPIED			UNOCCUPIED	DEGREE OF ROOM TEMPERATURE CONTROL (OCCUPIED)		EMITTER TYPE	EMITTER LOCATION	CONTROL	EMITTER TYPE	EMITTER LOCATION	GENERAL TYPE (see note 5)	LEV		MINIMUM AC/H			RELATIVE PRESSURE (see note 3)	MIN SUPPLY AIR FILTRATION GRADE		MIN EXHAUST FILTRATION GRADE								CONTROL	PLANE	EMERGENCY LIGHTING	SOCKET OUTLET (list number of each type)				GAS OUTLET
										Medical location group to BS 7671		Temp °C	None TMV TMT	Temp (max) °C	Temp (min) °C	%RH (max)	Temp (min) °C	Floating between max and min (Y/N)	Control at any setpoint between max and min (Y/N)	Name generic emiiter type and note where low surface temperature type is required or confirm "by ventilation supply air"	Ceiling/Wall/Floor	e.g. Direct Acting/ Electronic	Name generic emiiter type or confirm "by ventilation supply air"	Ceiling/Wall/Floor	e.g. Natural mixed mode supply air supply + general extract supply + dirty extract general extract dirty extract	Type	Usage profile e.g. Intermittent use / Run during all occupied hours	Supply (ac/hr)	General Extract (ac/hr)	Dirty Extract (ac/hr)		In AHU	In room terminal	Select grade or none	Normal illumination level (average Lux)	Normal Illumination Uniformity (U0)	Night Illumination Level (ave. Lux)	Task Illumination Level (Lux)	Standby Grade	Colour Render Index (Ra)	Glare Rating (UGR)	e.g. Manual / dimmable / timed / presence detection / absence detection /	Height from floor to working plane or indicate vertical surface (m)	Type - state open area / high risk / escape route, etc	General socket outlet	UPS scoket outlet	Medical IT socket outlet	Other socket outlet (specify)	List numbers of each type of outlet Oxygen, Nitrous Oxide, Nitrous Oxide/Oxygen Mix, Vacuum, Medical Air, Surgical Air, Helium/ Oxygen Mix, AGSS, Oxygen/CO2, CO2, Nitric Oxide
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Scottish Hospitals Inquiry

Hearing Commencing 26 February 2024 – Bundle 9 – Documents relevant to NHS Assure