

**NHS Golden Jubilee
Expansion Project (Phase 2)
Key Stage Assurance Review**

**Construction
KSAR Report**

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Document Overview

Key Stage Assurance Review Report | Construction Stage

Prepared for:

NHS Golden Jubilee

Prepared by:

NHS Scotland Assure – Assurance Service

Document Control Sheet

Revision History

Version	Date	Revision Details	Originator	Changes Marked
V1.0	18.08.22	First Draft Issue: Issued to NHS GJ for Factual Accuracy Checks	NHS Scotland Assure	
V2.0	02.11.22	Second Issue: Following Factual Accuracy Check	NHS Scotland Assure	

Approvals

This document requires the following signed approvals:

Version	Date	Name & Organisation	Role	Signature
V1.0	18.08.22	Thomas Rodger	Principal Engineering Manager – NHS Scotland Assure	TGR
V2.0	02.11.22	Thomas Rodger	Head of Engineering – NHS Scotland Assure	TGR

Distribution

This document has been distributed to:

Version	Date of Issue	Name	Role / Area
V1.0	18.08.22	[REDACTED]	Director of Facilities and Capital Projects, NHS Golden Jubilee
V2.0	02.11.22	[REDACTED]	Director of Facilities and Capital Projects, NHS Golden Jubilee
V2.0	02.11.22	[REDACTED]	Health Infrastructure, Investment and PPE - Scottish Government Health and Social Care Directorates
V2.0	02.11.22	[REDACTED]	Head of NHS Strategic Capital Investment

1. Executive Summary

It has been identified that an increased orthopaedic and surgical capacity is required to meet the needs of the increasing West of Scotland population. The NHS Golden Jubilee Hospital in Clydebank has been identified as a suitable site for this increased capacity.

The Principal Supply Chain Partner (PSCP) commenced work in 2021 and have a targeted programme of Summer 2023.

As a result of the Construction Stage Key Assurance Review (KSAR) and based on the information presented, NHS Scotland Assure (NHS SA) can support the project progressing to the next stage. However, the KSAR report acknowledges that there are a number of key issues which follow:

1. Some of the project governance documents are out of date and require updating with the new senior project team members.
2. Some of the operative CVs are not reflective of healthcare experience, however the NHS SA team acknowledge that the senior operatives do have that experience.
3. There is still work to be completed on ensuring the derogations log is accurate and reflective of stakeholder's understanding.
4. There requires to be an agreed sign off of all access and maintenance strategies with all stakeholders.
5. The environmental conditions and performance criteria associated with the CSPD and the EDU areas are not yet aligned with the current design proposals.
6. The medical gas design, whilst being implemented onsite, has not been subject to a documented design sign off.

Previously, the Phase 2 project was subject to an interim review where the Boards action plan is acknowledged to be a live document and outcomes found within the construction stage KSAR will be added into.

The NHS SA team have had various discussions on the above topics at workshops and site walk rounds with the Health Board, in which the Health Board have reiterated their commitment to address the findings of the review and to commence the review/closeout of key themes.

The NHS SA team have been satisfied that the NHS Golden Jubilee and their supply chain have engaged well throughout the KSAR processes and further acknowledge the good operations undertaken onsite are reflective of the high standards set out in the various project quality plans.

1.1 Summary of Findings

The findings of this report have been collated based on information provided by NHS Golden Jubilee. The following table outlines the status of key findings as derived from the KSAR and identified within the NHS SA Recommended Action Plan issued to NHS Golden Jubilee under separate cover:

Review	No. of Issues per category				
	1	2	3	4	5
Project Governance and General Arrangements	0	1	5	2	4
Water and Internal Plumbing / Drainage Systems	0	1	6	2	1
Ventilation	0	1	5	2	0
Electrical	0	2	3	4	0
Medical Gases	1	1	5	0	0
Fire	0	0	3	2	4
Infection Prevention & Control Built Environment	0	0	4	5	0

The following categories were used in relation to the findings:

Category	Definition
1	Significant – Concerns requiring immediate attention, no adherence with guidance
2	Major – Absence of key controls, major deviations from guidance
3	Moderate – Not all control procedures working effectively, elements of noncompliance with guidance
4	Minor – Minor control procedures lacking or improvement identified based on emerging practice
5	Observation and improvement activity

1.2 Project Overview

It is acknowledged there will be a significant growth in demand for elective surgical care over the next 25 years and the specialties of ophthalmology and orthopaedics are likely to continue to experience some of the most significant increases in demand. In meeting this demand the NHS Golden Jubilee has been tasked by Scottish Government with planning the elective care requirements of the West Region population between now and 2035. As a National Board currently supporting every Health Board in Scotland, Golden Jubilee will also engage with the North and East Regions to ensure there is continued support for each Health Board as necessary and to ensure there is a robust capacity planning for additional elective care requirements to meet the predicted need for NHS Scotland by 2035.

It is also noted that there is a significant number of patients currently treated within the private sector due to lack of capacity within the current system, that require to be treated within the NHS.

The Golden Jubilee expansion programme is structured into two phases as follows:

- Phase One – delivery of additional ophthalmology elective care capacity – completed and operational since 2021.
- Phase Two – delivery of additional orthopaedic and other surgical elective care capacity.

This Construction stage KSAR addresses the Phase 2 project only.

2. Review Methodology

2.1 Overview of NHS Scotland Assure & The KSAR Process

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

The NHS Scotland Assure - Assurance Service was launched on the 1 June 2021 following a letter issued by Scottish Government to Health Board Chief Executives, Directors of Finance, Nursing Directors and Directors of Estates. The letter outlined the purpose of NHS Scotland Assure, with an overarching aim 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 the 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.

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.

NHS Scotland Assure will also work closely with Health Boards to identify where a KSAR may be required for projects under their Delegated Authority, utilising a triage system to assess risk and complexity of projects.

The KSARs 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 Infection Prevention and Control (IPC).

The KSAR focuses on key topics, specifically – 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 purpose of the KSAR at Construction is to ensure that there are adequate governance arrangements in place across the project that maintains the standards required across various disciplines such as IPCT, Electrical, Ventilation, Water & Drainage and Medical Gas systems throughout the construction period.

Whilst the KSAR focusses on actions to improve the end product, it is not intended to detract from the merits of a development that will add significant benefit for the healthcare of the population served, and which has many exemplary elements. Rather, it is a reflection of the complexity of healthcare construction projects and the stage of development at which it was reviewed. Some conflicts and changes are to be expected as complex projects develop and project teams have in place mechanisms to identify and address these. This report adds a layer of scrutiny and assurance to that process to address the above requirement from government.

2.2 KSAR Process

The Construction KSAR for NHS Golden Jubilee on the Phase 2 Surgical Centre took place between 16 April 2022 and 18 August 2022.

- 2.2.1 To inform the findings of the KSAR, the Health Board were issued with key documents outlining the assurance question set and expected level of evidence and supporting documents in accordance with relevant legislation and guidance. This included the Construction KSAR Workbook and Construction Deliverables list.
- 2.2.2 The KSAR report includes an overview of the main findings of the review, with a further itemised list of detailed observations included within the appendices of the report. The detailed observations are recorded in an action plan that should be adopted by the Health Board following the review and subsequently monitored by them to ensure appropriate actions are completed in a timeous manner.

2.3 Application of Standards & Legislation

- 2.3.1 Health Facilities Scotland (HFS) currently provides a range of advisory and delivery services across a wide variety of topics from a portfolio which covers the built estate, engineering and environment and facilities management. With some exceptions these services are largely advisory in nature, identifying best practice and developing national guidance and standards.
- 2.3.2 Antimicrobial Resistance and Healthcare Associated Infection (ARHAI) Scotland currently provides advice and guidance on all aspects of infection protection and control nationally in Scotland, inclusive of expert advice and guidance on the topic of Healthcare Associated Infections (HAI) and antimicrobial resistance. It maintains and continues to develop a practice guide (National Infection Prevention and Control Manual – NIPCM) as well as a HAI Compendium of all extant guidance and policy appropriate for use in NHS Scotland. Like HFS, these services are largely advisory in nature,

identifying best practice and developing national guidance and standards. The NHS Scotland NIPCM was first published on 13 January 2012 as mandatory guidance, by the Chief Nursing Officer (CNO (2012)1), and updated by a second edition on 17 May 2012 (CNO(2012)01-update). The NIPCM provides guidance for all those involved in care provision and should be adopted for infection, prevention and control practices and procedures. The NIPCM is mandatory policy for NHS Scotland.

The authority of guidance produced by National Services Scotland (NSS) and other national organisations e.g., Healthcare Improvement Scotland is best described by the definitions outlined below (SHTM 00 – Best practice guidelines for healthcare engineering):

Regulations are law, approved by Parliament. These are usually made under the Health and Safety at Work etc Act following proposals from the Health & Safety Commission. Regulations identify certain risks and set out specific actions which must be taken.

Approved Codes of Practice give advice on how to comply with the law by offering practical examples of best practice. If employers follow the advice, they will be doing enough to comply with the law.

Approved Codes of Practice have a special legal status. If employers are prosecuted for a breach of health and safety law, and it is proved that they did not follow the relevant provisions of an Approved Code of Practice, they will need to show that they have complied with the law in some other way, or a court will find them at fault.

Standards (British or European), institutional guides and industry best practice play a large part in how things should be done. They have no direct legal status (unless specified by Regulations). However, should there be an accident; the applied safety practices at the place of work would be examined against existing British or European Standards. It would be difficult to argue in favour of an organisation where safety was not to the described level.

Guidance is issued in some cases to indicate the best way to comply with Regulations, but the guidance has no legal enforcement status.

2.3.3 Whilst guidance is deemed not compulsory by the Health and Safety Executive (HSE), where compliance with guidance is specified in a contract, as is the case here, it becomes a contractual requirement. Therefore, any permitted deviation from it would be expected to follow a formal process with input from all relevant parties, with clarity around how the outcome was reached, including risk assessments where appropriate and sign off by all those authorised to approve it.

2.4 Project Technical Outline Summary

NHS Golden Jubilee (The Board) have appointed a Principal Supply Chain Partner (PSCP) to undertake the design, construction, and delivery of the Golden Jubilee Expansion Project (Phase 2).

The Phase 2 project has a reliance on the existing sitewide infrastructure for key items, such as electricity, fire alarms, cold water services and medium temperature hot water.

Previously, the Phase 2 project was subject to a Full Business Case (FBC) Health Facilities Scotland (HFS) interim review in 2021 where the resulting Boards action plan is acknowledged to be a live document and outcomes found within this construction stage KSAR will be added into. An outline summary of the primary mechanical, public health and electrical systems installed on the project are as follows:

Mechanical

- The incoming mains water supply is derived from the existing site infrastructure to the Phase 2 extension, after being stored and chemically dosed.
- Hot water is generated from new plate heat calorifiers. Cold water is stored and filtered before distributing throughout the facility as boosted cold water. A Kemper venturi system is part of the design.
- The medical gas pipeline supplies to serve the extension are derived from the wider infrastructure VIE plant. Medical gas systems include oxygen, entonox, vacuum, medical and surgical air.
- Air Handling Units located on the roof have distribution ductwork throughout the extension.
- Low temperature hot water includes circuits to serve AHU heating coils, radiant panels and fan coil units.
- Above ground drainage is provided throughout the extension via a number of stacks and horizontal branches, ventilated stacks distributed around the extension connect into a new below found drainage network.

Electrical

- Electrical services are derived from the existing site infrastructure HV network which supplies 2No. ring main units which in turn serves 2No. transformers and 2No. main switchboards.
- IPS and UPS systems are provided within the building to serve the specific medical need.
- Fire detection and alarm systems are provided to maintain the Category L1 system within the facility.

Various HAI-SCRIBE documents have been made available to address the Infection, Prevention and Control requirements of the project and often link to the systems noted above.

3. KSAR Review Summary

The following narrative relates directly to the Construction KSAR workbook and the evidence indicated therein. The comments associated with the points are because of the evidence presented by the Board and their advisors during the review process.

3.1 Project Governance and General Arrangements

3.1.1 Project Governance and General Arrangements KSAR Observations

Workbook Ref 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
<p>NHS Scotland Assure Observations: The Health Board has included within its submission Project Quality Plans (PQPs) for the PSCP and also the MEPH sub-contractor, which show a significant appreciation for the importance of monitoring quality management and assurance.</p> <p>The Board have demonstrated that the PSCP has adopted a comprehensive PQP that addresses key elements such as:</p> <ol style="list-style-type: none"> 1. Document control and records 2. Subcontractors and suppliers 3. Planning and control of construction 4. Handling and storage of material 5. Measuring equipment 6. Non-conformance procedures 7. Instruction and training <p>This document has a formal approval process and is owned by the project manager. It is noted that the last update was 30 November 2020.</p> <p>It has been noted at technical workshops that the testing and commissioning planning and scheduling is being compiled by the commissioning manager currently and is not available for review.</p>		

At this stage of construction works, this is not unexpected and the PSCP has confirmed the programme does not require this to be complete yet.

The PQP confirms that the inspection and test plans (ITPs) will be summarised by the work element. All inspections and tests will be complete by competent persons, with suitable records being complete.

Further to the PSCP's project quality plan, the MEPH sub-contractor has also submitted a specific PQP which goes into very good detail on the requirements for testing and commissioning specifically, citing regulations and commissioning guides. The document details visual inspection protocols and interfaces with the "SnagR" quality management system for recording. There is also reference and links to testing and pre-commissioning sheets. The document also cites specific quality control procedures which include all relevant systems on the project. The document was last updated on the 30 March 2022.

The PSCP and MEPH sub-contractor are utilising significant offsite construction techniques, predominantly in the form of modular service distribution runs to corridors. These also carry their own off site PQP, prepared by the MEPH sub contractor. This document notes the various sign off procedures and acceptance protocols, also using visual inspections and the "SnagR" quality management system for recording.

The PSCP PQP has not been updated in over 2 years and it is noted that the project manager has now changed. Item 2.7 of the PQP States *"The Project Manager / Lead shall maintain an up-to-date copy of the PQP. There will be no other controlled copies."*

That aside, the suite of documentation reflects a good system of managing quality and assurance on the project.

It is however noted that the same level of information, quality control and documentation does not exist for the Medical Gas Installations or the IPCT elements of the project. Furthermore, there does not appear to be regular updates to the PSCP's PQP.

With reference to the above noted documents, the Board has demonstrated that there are documents provided which sets out the quality ambitions of the project.

Documents referenced are:

GJNH-KCSNE-XX-XX-PL-W-XX-0011 Golden Jubilee Foundation Project 2, Project Quality Plan.

01334 Golden Jubilee Project 2 – Surgical Unit, Electrical Quality Control Plan

01334 Golden Jubilee Project 2 – Surgical Unit, Mechanical Quality Control Plan

10000590 Off Site Quality Control Plan, Golden Jubilee Hospital

Workbook Ref No.	Areas to probe	Evidence expected
1.2	Has suitable arrangements been implemented on the project for document control processes for Quality Assurance and Management?	<p>Process for ensuring latest drawings approved and used.</p> <p>Processes for ensuring latest specification and details approved and used.</p> <p>Approach to management of non-conformances.</p> <p>Approach to change management control.</p> <p>Document management recording and structure.</p>

NHS Scotland Assure Observations:

As discussed in the response to question 1.1, the PSCP has developed a comprehensive PQP which details the document control processes for quality assurance and management.

The PQP notes the project manager is responsible for controlling registers to include receipt, issue, submission and approval of drawings, specifications, and other documents.

On completion, responsibility for the as built drawings and quality records also lie with the project manager.

From discussions at weekly KSAR touch down meetings and the technical workshops, it was noted that an electronic document management system is being used which controls all project documentation. This is relied upon to ensure that the latest documentation is available to the users. It is unknown if this requires formal user training and if this has been completed.

The MEPH sub-contractor, under their PQP outlines the quality control folder structures.

There is an extensive section on non-conformances within the PSCP's PQP which notes the procedure of; notification, removal, replacement, remedial and sign off/approvals. There is no reference to non-conformances within the MEPH sub contractor's PQPs.

Documents referenced are:

GJNH-KCSNE-XX-XX-PL-W-XX-0011 Golden Jubilee Foundation Project 2, Project Quality Plan.

01334 Golden Jubilee Project 2 – Surgical Unit, Electrical Quality Control Plan

01334 Golden Jubilee Project 2 – Surgical Unit, Mechanical Quality Control Plan

10000590 Off Site Quality Control Plan, Golden Jubilee Hospital

Workbook Ref No.	Areas to probe	Evidence expected
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.

NHS Scotland Assure Observations:

There are a number of organisations who have a responsibility to attend site and provide reports on the quality of works. None appear to audit the PQPs and focus on installation quality.

The Health Board has engaged the services of a client project manager and NEC supervisor, which gives the Board a technical review of the works on the day of inspection and reports are prepared which are shared with all stakeholders.

The NEC supervisor appears to be visiting site on a fortnightly basis, albeit only 3No. MEP supervisor reports were provided. It is not understood whether the supervisor has a mechanical or electrical bias and whether any further support is required or available to them throughout the project.

From the reports that have been reviewed it appears that the supervisor is not inspecting the material storage compound or containers.

It is also noted that the MEPH designer also attends site to carry out quality inspections. 1No. site inspection record was provided, however during the technical workshops and weekly touch downs it was advised the designer visits site on a monthly basis.

On review of the above documentation, it is evident that regular site quality monitoring is being undertaken and recorded.

Documents referenced are:

GJNH-KCSNE-XX-XX-PL-W-XX-0011 Golden Jubilee Foundation Project 2, Project Quality Plan.

Supervisor MEP Site Inspection Record 30.03.22

Supervisor MEP Site Inspection Record 13.04.22

Supervisor MEP Site Inspection Record 26.04.22

Wallace Whittle(TUV-SUD) Record of Site Inspection 22.02.22

Workbook Ref No.	Areas to probe	Evidence expected
1.4	How does the Health Board assure itself that Testing, and	Evidence of Testing and Commissioning monitoring / witness of tests.

	<p>Commissioning of services and systems have / are being developed and put in place to meet the project needs?</p>	<p>Evidence of Testing and Commissioning review of results.</p> <p>Evidence of Testing and Commissioning acceptance of results.</p> <p>Testing and Commissioning programme.</p> <p>Plans have / are being developed for collating information and documents.</p> <p>Have additional checks (external parties) been carried out to review the Contractors T&C's proposed plans.</p>
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NHS Scotland Assure Observations:

At this stage in the project the PSCP has confirmed that no testing and commissioning results information is available. This is as expected.

There is currently no draft testing and commission programme available, however there is a draft commissioning plan in place.

From discussions at various workshops and weekly touchdown meetings, it has been verbally confirmed that the PSCP have also appointed an independent Commissioning Manager with a responsibility to ensure suitable independent testing and commissioning is undertaken.

A draft commissioning plan which outlines the requirements for information review provides roles and responsibilities throughout the construction, commissioning and handover stages.

Whilst there is little in terms of definitive testing and commissioning information, that is not expected at this stage. There is sufficient evidence however to understand that the Health Board and the PSCP are engaged in generating the required information, appointing independent third parties and assigning actions.

Documents referenced are:

GJNH-KCSNE-XX-XX-PL-W-XX-0011 Golden Jubilee Foundation Project 2, Project Quality Plan.

01334 Golden Jubilee Project 2 – Surgical Unit, Electrical Quality Control Plan

01334 Golden Jubilee Project 2 – Surgical Unit, Mechanical Quality Control Plan

10000590 Off Site Quality Control Plan, Golden Jubilee Hospital

Draft commissioning plan, Hulley & Kirkwood and Kier Construction

Workbook Ref No.	Areas to probe	Evidence expected
1.5	How does the Health Board assure itself that the management of defects have / are being developed and put in place to meet the project needs?	<p>Systems and process for recording and management defects.</p> <p>Process for the rectification and close out of defects prior to handover.</p> <p>Plans have / are being developed for collating information and documents.</p>
<p>NHS Scotland Assure Observations: The PSCP PQP identifies a procedure for non-conformances through planned and ad hoc quality inspections. The recording process is immediate and then remedial works are identified before closing out to an approved methodology.</p> <p>The MEPH sub-contractor PQP details the process more precisely, which focusses on the visual inspections and the “SnagR” management system, which records each defect and supporting remedial action with action trackers, responsibilities and close out dates on an excel spreadsheet.</p> <p>The Health Board have engaged the PSCP and their PQP is aligned with that of their MEPH sub-contractor with regards to defects and non-conformances.</p> <p>Documents referenced are: <i>GJNH-KCSNE-XX-XX-PL-W-XX-0011 Golden Jubilee Foundation Project 2, Project Quality Plan.</i> <i>01334 Golden Jubilee Project 2 – Surgical Unit, Electrical Quality Control Plan</i> <i>01334 Golden Jubilee Project 2 – Surgical Unit, Mechanical Quality Control Plan</i></p>		

Workbook Ref No.	Areas to probe	Evidence expected
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?	<p>Soft Landings process</p> <p>Plans have / are being developed for collating as installed information and documents.</p>
<p>NHS Scotland Assure Observations: A number of documents have been provided that outlines the soft landings delivery process with roles and responsibilities.</p> <p>The soft landings champion has been identified as Susan McLaughlin who is noted as the Clinical Programme Manager.</p>		

The soft landings champion has prepared a number of the documentation and appears to have chaired the meetings and led the process.

Whilst incomplete, the Government Soft Landings document has been started by the champion and appears to be a work in progress.

The soft landings delivery plan has been cross referenced with the construction RIBA stages and includes detail on the activity, due dates, responsible owner and the agreed deliverables.

The O&M review process has been identified with responsible organisations in a flow chart, which includes PSCP, Lead Advisor and Client review actions. What is not evident is the feedback loop that will be required to ensure all comments are noted, actioned and approved.

There is sufficient documentation and evidence of momentum on soft landings and O&M information to offer comfort that the Board has taken sufficient measures to meet the project needs during the handover process.

Documents referenced are:

GJNH-KCSNE-XX-XX-PL-W-XX-0011 Golden Jubilee Foundation Project 2, Project Quality Plan.

NHS GJ Phase 2 O&M Review Process (No author)

NHS GJ Soft Landings Delivery Plan 27.01.22

Aecom Soft Landings Tracker 27.01.22

NHS Golden Jubilee Project Government Soft Landings (GSL) (No date)

Workbook Ref No.	Areas to probe	Evidence expected
1.7	How does the Health Board assure itself that the works are following the procedures as laid out in HAISCRIBE?	<p>Evidence that the Contractor in charge of the works has read, understood and signed the HAISCRIBE.</p> <p>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.</p> <p>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.</p>

NHS Scotland Assure Observations:

There has been a number of HAI-SCRIBE documents prepared, which have all been agreed with a group of stakeholders across infection prevention control (IPC),

estates and construction team. This is a broad range of stakeholders, which shows ongoing regular engagement and commitment to the HAI -SCRIBE process.

Of the 3No. HAI-SCRIBE documents submitted for review, only 1 has been signed by the contractor.

There is no evidence of regular IPC site inspections or any reference to HAI-SCRIBE onsite adjustments.

2No. of the HAI-SCRIBE documents submitted were specific to works on adjacencies for forming a breakthrough on level one. These have involved representatives from estates, IPC and the construction team, who appear to all have agreed to the methodology. These remain unsigned and there is no reference to ongoing monitoring from the Board.

The PSCP has created a HAI-SCRIBE checklist, which identifies the works descriptions, responsible inspecting parties, with dates and pass or fail sections. This document is used to maintain quality assurance at the project level. It is unclear if this forms part of the Board's monitoring process.

There appears to be a good level of engagement with relevant stakeholders with the HAI SCRIBE process. It is understood from discussions, that the board have a process in place for monitoring the HAI-SCRIBE validity and required contributions.

The Health Board has provided completed overarching and task-specific HAI-SCRIBES and supporting documents, signed off by the contractor and relevant clinical, project and IPC team members.

Documents referenced are:

NHS Golden Jubilee HAI Scribe Programme 04.02.22

GJF, Development Stage 3 Construction & Refurbishment HAI-Scribe Sign Off 06.11.19. (Various External Works)

NHS Golden Jubilee, Development Stage 3 Construction & Refurbishment HAI-Scribe Sign Off 31.03.22 Handover Stage (Level 1 Breakthrough)

NHS Golden Jubilee, Development Stage 3 Construction & Refurbishment HAI-Scribe Sign Off 08.02.22 Handover Stage (Level 1 Breakthrough Disconnections)

Kier Construction HAI-Scribe Checklist 16.02.21 Handover Stage (Level 1 Breakthrough)

SHFN 30 Part B: HAI-SCRIBE Implementation strategy

Q SET 2 HAI SCRIBE comms CSPD and ESCPY DECON final SUG

Q SET 2 HAI SCRIBE comms ORTHO THEATRES SUG app

Q SET 2 HAI SCRIBE comms SARU- ESCPY SUG app

Workbook Ref No.	Areas to probe	Evidence expected
1.8	How does the Health Board continue to assure itself that the clinical needs of the facility are	Updated description of each department of the facility review process evidenced.

	clearly understood by each section of the client organisation?	All specifications are being related back to the Portfolio Document (PD). An updated and live Derogation document.
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NHS Scotland Assure Observations:

It is noted that the clinical briefing document has remained as version 12 (dated 21st March 2019), which does not appear to have been updated to incorporate the variation for additional EDU capacity.

File notes are missing authors and dates but do confirm that the clinical brief is up to date with each clinical team consulted at various stages.

It was also confirmed during the KSAR technical workshops that the Health Board are expecting the derogations schedule to be re-issued for review. No date was offered.

There is a lack of evidence which provides assurance that the specific requirements of the EDU variation have been incorporated, however it is understood from discussions, that this has now been formally instructed through the contract.

There is a lack of evidence which provides assurance that derogations have been correctly collated and addressed with appropriate consultation and sign off.

Documents referenced are:

Golden Jubilee Foundation Phase 2 Clinical Brief v12 Final 21.03.19

File Note Department Sign Off (No Author or date)

File Note Derogation Closure Strategy (No Author or date)

Workbook Ref No.	Areas to probe	Evidence expected
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.

NHS Scotland Assure Observations:

A single CDM inspection report has been provided for review, dated 29 November 2021 from the appointed CDM Adviser.

There is no evidence provided that notes an inspection timetable, however we had verbal confirmation that inspections are being carried out on a regular basis.

There is no evidence that provides assurance that the installing contractor's quality safety plans have been reviewed.

There is little evidence provided which offers assurance that the role of the Principal Designer is being carried out regularly.

Documents referenced are:

CDM Adviser Construction Phase Progress Report, Thomson Gray, 29.11.21

Workbook Ref 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.	<p>Evidence on how this requirement is being managed and how it fits with the project governance arrangements</p> <p>Plans to identify any gaps in the procurement approach that may require to be addressed.</p> <p>Evidence on how Infection Prevention and Control are involved with the procurement approach to future plans for project.</p> <p>Evidence that the Health Boards selected procurement route has gone through the Board's Governance channels.</p>

NHS Scotland Assure Observations:

The key members of the programme team were identified as part of the HLIP issue with a number of omissions including Programme Director and then further Lead Advisor support roles. The lead advisor support roles have been filled through the Lead Advisor Framework following the PSCP appointment.

There is no documentary evidence to suggest that IPC has been part of the procurement approach to date or to be in the future. However, a file note was provided from the Infection Control Manager describing IPC involvement in the procurement process. This process will be formalised in the forthcoming Procurement Policy. The Board should expedite publication of this policy.

No information has been provided on equipping strategies nor IPC involvement in that process.

The Health Board's procurement process has been developed in accordance with the HLIP issued in February 2017 and this involved a series of key quality evaluation criteria such as key members CVs, skills and experience, programming etc all of which led to a project interview chaired and scored by members of the Board's delivery team.

The procurement journey from the appointment of the PSCP and continued assurance is not evidenced in the submitted documentation.

Documents referenced are:

GJNH Hospital Expansion HLIP Version 2.4 FINAL, 10.02.17

KSAR DELIVERABLES – 7.4 ICT Response

Workbook Ref No.	Areas to probe	Evidence expected
1.11	Evaluation of the Health Boards commissioning plan.	<p>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.</p> <p>Evidence that the Board has had all pre-commissioning checks audited and approved by an independent organisation.</p>

NHS Scotland Assure Observations:

As discussed in the response to question 1.4. At this stage in the project the PSCP has confirmed that no testing and commissioning results information is available. This is as expected.

There is currently no draft testing and commission programme available, however there is a draft commissioning plan in place.

From discussions at various KSAR workshops and weekly touchdown meetings, it has been confirmed that the PSCP have also appointed an external company as Commissioning Managers, with a responsibility to ensure suitable independent testing and commissioning is undertaken.

The commissioning managers have prepared a draft commissioning plan which outlines the requirements for information review, provides roles and responsibilities throughout the construction, commissioning and handover stages.

Whilst there is little in terms of definitive testing and commissioning information, that is not expected at this stage. There is sufficient evidence however to understand that

the Health Board and the PSCP are engaged in generating the required information, appointing independent third parties and assigning actions.

Documents referenced are:

GJNH-KCSNE-XX-XX-PL-W-XX-0011 Golden Jubilee Foundation Project 2, Project Quality Plan.

01334 Golden Jubilee Project 2 – Surgical Unit, Electrical Quality Control Plan

01334 Golden Jubilee Project 2 – Surgical Unit, Mechanical Quality Control Plan

10000590 Off Site Quality Control Plan, Golden Jubilee Hospital

Draft commissioning plan, Hulley & Kirkwood and Kier Construction

Workbook Ref No.	Areas to probe	Evidence expected
1.12	Evaluation of the Health Boards duty holder matrix.	<p>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.</p> <p>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.</p>

NHS Scotland Assure Observations:

The duty holder matrix provided does not identify the roles beyond the Authorised and Competent persons for MEPH and other services. The reporting structure is directly to the Designated Person, who is the Director of Facilities & Capital Projects.

There is no reference to IPC roles within this matrix.

The Authorised Engineers associated with the relevant MEPH systems are named however the Board's fire representative is missing.

The submitted information is insufficient to evidence the integration of IPC and duty holders out with the MEPH and fire systems.

The Board provided evidence of engaging an additional, appropriately qualified and experienced, IPC specialist to support the project

Documents referenced are:

NHS Golden Jubilee Duty Holder Matrix v1 17.01.22

Prof Masterton File Note

3.1.2 Project Governance and General Arrangements: Further Observations

In addition to the points raised via the KSAR workbook above, we also include the following observations as a result of the review, all of which relate to the evidence presented during the appraisal.

3.1.2.1	There is a requirement to integrate the IPC team into the procurement journey.
3.1.2.2	PQPs are in place for most disciplines, however not in place for Medical Gases.

3.2 Water and Internal Plumbing / Drainage Systems

3.2.1 Water and Internal Plumbing / Drainage Systems: KSAR Observations

Workbook Ref 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?	<p>Evidence of a vetted list of site plumbers which confirms qualifications and healthcare experience.</p> <p>Evidence that the site induction with respect to working on water and plumbing/drainage services has been developed, implemented and agreed with the Board.</p> <p>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.</p> <p>Evidence that all contractors and sub-contractor competency checks have been completed and signed off.</p>
<p>NHS Scotland Assure Observations:</p> <p>The PSCP has submitted a Sub-Contractor Vetting List for review. The Vetting list tracker identifies that the plumbing contractor has submitted to the PSCP individual CV's, documents confirming their previous healthcare experience and their site management structure.</p> <p>11 Nr individual's CV's have been submitted for review. Each CV identifies the individual's grade, e.g., Joint Managing Director, Contracts Manager, Supervisor Technician Plumber, Advanced Plumber etc along with their qualifications, brief career history and a list of healthcare projects where the operative has been employed. All of the individual CV's submitted for review confirm their healthcare experience, therefore the PSCP confirmed at the Plumbing and Domestic Water Services Workshop held on Friday 24 June 2022 that additional onsite training is not required.</p> <p>At the Plumbing and Domestic Water Services Workshop held on Friday 24 June 2022, the PSCP confirmed that the site induction process is primarily associated with Health and Safety. The PSCP confirmed that prior to the induction process the plumbing contractor prepared and submitted a Risk Assessment and Method Statement (RAMS) for their works, this statement would have been used during the induction process. The PSCP confirmed that the RAMS statement would not have been issued to the Board. Therefore, there is no evidence that the site inductions in relation to working on ducts and plant services has been developed and agreed with the Health Board.</p>		

No evidence has been submitted which confirms that all contractors and sub-contractor competency checks have been completed and signed off. It was confirmed by the Health Board during the Plumbing and Domestic Water Services Workshop held on Friday 24 June 2022, that the contractor competency checks were still being reviewed by the Water Systems AE and the Board.

Notwithstanding all of the above, the PSCP has utilised offsite manufacturing techniques in the form of Prefabricated Service Modules (PSMs). These modules have been constructed off site and installed within the main circulation routes in the building. The PSMs include the mains service distribution routes for ductwork, domestic water, chilled and heating pipework etc.

It was confirmed at the Plumbing and Domestic Water Services Workshop held on Friday 24 June 2022 that the domestic water services pipework included with the PSM's have not been installed by ventilation employees. The MEPH subcontractor operatives installed the domestic water services pipework on the PSMs. No additional information has been submitted to confirm the relevant experience of the operatives manufacturing the PSMs.

Documents referenced are:
Kier Sub-Contractor Vetting List
Employee CVs

Workbook Ref No.	Areas to probe	Evidence expected
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?	<p>Evidence of similar, previous healthcare projects by the contractor.</p> <p>Evidence of site management structure.</p> <p>Evidence of HAI and SHPN 30 training.</p>

NHS Scotland Assure Observations:

The PSCP has submitted for review documents identifying the plumbing contractor's previous healthcare experience and site management structure.

The PSCP has submitted a folder containing 32Nr various healthcare facilities, all located within Scotland where the plumbing contractor has actively been involved. The facilities range from large district hospitals to smaller ward refurbishments and upgrades. Whilst some of the projects listed suggest that the plumbing contractor was responsible for the plumbing and domestic water services installations, not all of them do. Eg. Ayr Hospital includes an RFI associated with LTHW heating systems.

The site management structure submitted for review is appropriate as it identifies the individuals and clear lines of responsibilities including the Site Foreman, Senior Supervisor, Transport Manager, Contracts Managers and the Joint Managing Director.

No evidence has been submitted which demonstrates that HAI and SHPN 30 training has been provided to the onsite personnel. It was confirmed at the Plumbing and Domestic Water Services Workshop held on Friday 24th June 2022 that the senior mechanical sub contractor personnel have all received HAI scribe training and they would take the lead on the HAI and SHPN 30 tasks. The Health Board were in acceptance of this proposal.

Documents referenced are:

Previous NHS Projects JCM

Plumbing Golden Jubilee Organisational Chart Mar 2022

Workbook Ref No.	Areas to probe	Evidence expected
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.

NHS Scotland Assure Observations:

The Health Board has submitted for review a copy of the NEC Supervisor's Site Inspection Record. The report records any general observations noted at the time of inspection, priority issues to be addressed, health and safety issues observed and progress photos.

Under the NEC form of contract, the Contractor (PSCP) and the Supervisor are required to identify and inform each other of any defects or non-compliances are identified. It was confirmed at the Workshops that defects / non compliances would be recorded as follows.

The NEC Supervisor would be responsible for the Defects Tracker. This would be the main contractual document and it will contain a record of all non-compliances with the Works Information.

The PSCP and the NEC Supervisor would both be jointly responsible for identifying defects and for uploading the defects onto the PSCP's Snagmaster defect management system. The PSCP confirmed that the NEC Supervisor would be accompanied by a member of the PSCP team to ensure that the NEC Supervisor does not raise defects on incomplete work. The NEC Supervisor would be responsible for replicating any non-compliances within the Snagmaster defect management system into the Defects Tracker.

The PSCP's sub-contractor, would raise defects on their internal Snag R defect management system. The PSCP nor the NEC Supervisor has access to the Snag R defect management system.

Documents referenced are:

AECOM Supervisor MEP Site Inspection Record dated 13 April 2022

Workbook Ref No.	Areas to probe	Evidence expected
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).

NHS Scotland Assure Observations:

The Board has submitted for review a copy of the NEC Supervisor's Site Inspection Record. The report records any general observations noted at the time of inspection, priority issues to be addressed, health and safety issues observed and progress photos.

It was confirmed during the Plumbing and Domestic Water Services Workshop held on Friday 24 June 2022 that the sub-contractor would be monitoring the plumbing and domestic Water Services installation and producing monthly site progress reports which would include photographic evidence of progress.

Documents referenced are:

AECOM Supervisor MEP Site Inspection Record dated 13 April 2022

Workbook Ref No.	Areas to probe	Evidence expected
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?	<p>Evidence that the contractor has presented their co-ordination drawings (BIM model) to the Board.</p> <p>Evidence that the contractor has presented their co-ordination drawings (BIM model) to the design consultant and that they have agreed them for construction.</p> <p>Evidence that the contractor has presented each of the main service runs plus plant rooms to the Board's FM team.</p> <p>Evidence that the plant access strategy is being adhered too.</p>

NHS Scotland Assure Observations:

There is evidence of the PSCP issuing a link to the BIM Model to the Health Board (email dated 7 March 2022) and also an invitation to the FM /Estates teams to present the main services runs and plantrooms on the 3, 4 and 5 May 2022. During the Plumbing and Water Services Workshop held on Friday 24 June 2022 the Project Manager tabled copies of the minutes of the FM/Estates review meetings.

The PSCP have submitted for review a copy of their Maintenance Access Strategy, Revision A, dated 6 December 2019. This document includes Appendix G, M&E Access and Maintenance Strategy, Revision 2 dated April 21. The document refers to the cold-water storage tanks, break tanks, filtration plant and water booster sets located within the Water Tank Room. The Health Board confirmed that this document has been reviewed and commented made by the Board.

There is clearly a disconnect between the dates on the main document and the appendices. The PSCP confirmed at the Ventilation Services Workshop that the document will be updated to correct the dates but also aligned with the current drainage and water services proposals.

The maintenance and access strategy whilst identifying access routes to the Heat Station plantroom. Water Tank Room, it is silent on the access provisions associated with the domestic hot water calorifier plant.

The Health Board confirmed at the Plumbing and Water Workshop that the FM/Estates team have not yet reviewed the spatial allowances associated with the water services plant and distribution systems. This remains an action for the Health Board.

The PSCP confirmed at the workshop that access to drainage and water services pipework in IPS systems will be in the majority of instances through lift off access panels and in some cases hinged access doors.

Documents referenced are:

PSCP email to the Board, dated 07 March 2022 14:04

NHS GJ - Phase 2 - FM/Estates Main Services Review invitation dated 19 April 2022

Workbook Ref No.	Areas to probe	Evidence expected
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?	<p>Evidence that the contractor has presented their co-ordination drawings (BIM model), with space for future flexibility identified, to the Board.</p> <p>Evidence that the design consultant has considered and agreed with the Board, space for future flexibility in the service installations.</p>

		<p>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.</p> <p>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.</p> <p>Evidence that the Health Board has agreed a strategy (percentage) for spare capacity and a documented allowance to be incorporated into the design.</p> <p>Are plant/tank rooms, IPS sections, horizontal distribution runs and risers appropriately sized for the equipment being installed and facilitate safe adequate maintenance?</p>
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NHS Scotland Assure Observations:

There is evidence of the PSCP issuing a link to the BIM Model to the Board (refer to the email dated 07 March 2022), however there is no evidence to suggest that the PSCP has presented their coordination drawings indicating the future flexibility zones to the Health Board. In addition, there is no evidence presented for review which would confirm that the Design Consultant has considered and agreed space for future flexibility for in the domestic water installation.

It was evident from the site inspection on Monday 13 June 2022, that the domestic water pipework distribution systems have generally been installed above cable baskets. The PSCP confirmed that access to valves on pipework within the corridor ceilings void could be achieved through the 500mm zone allowed in the corridor voids. The PSCP confirmed that they have not yet demonstrated access to the valves to the Health Board. The Health Board confirmed that they accept the current installation, and it will give them the flexibility that they require.

The PSCP confirmed during the Plumbing and Domestic Water Services Workshop held on Friday 24 June 2022 that the domestic water system details, i.e the cold-water storage tanks, filtration plant, booster sets, calorifiers and distribution pipework are included in the BIM model.

The PSCP have submitted for review a copy of their Overview of Plant Capacity and Spatial Provisions – March 2022 document as produced by the designers. This document confirms that no spare capacity has been included within the cold-water storage tanks. The Health Board confirmed at the Water Services Workshop that

they had reviewed and accepted that no spare capacity would be included within either the cold water storage tanks.

The Overview of Plant Capacity and Spatial Provisions – March 2022 document is silent on any spare capacity provisions included within the domestic hot water generation equipment, booster pumps, or circulation pipework. It is unclear whether the Health Board have reviewed and accepted this position.

It was evident from the site inspection on Monday 13 June 2022, that the cold water storage tank room and heat station is appropriately sized to provide access for maintenance, to the cold water storage tanks, domestic hot water generators, filtration plant etc. None of the domestic water pipework risers were installed at the time of the site inspection. However, it was advised by the PSCP and the Health Board during the Plumbing and Water Services Workshop that additional plate heat exchangers will need to be located within the current plantroom. The additional plate heat exchangers are required to reduce the cold water temperatures. The Health Board accepted this change, and they accept that the additional store adjacent to the water service plantroom may need to be used to locate the plant.

Documents referenced are:

PSCP email to the Board, dated 07 March 2022 14:04

Overview of Plant Capacity and Spatial Provisions – March 2022

Workbook Ref No.	Areas to probe	Evidence expected
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?	<p>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.</p> <p>Photographic evidence of the site storage of materials produced by a body which is independent of the contractor (on a monthly basis).</p>

NHS Scotland Assure Observations:

The Board has submitted for review a copy of the NEC Supervisor’s Site Inspection Record. The report records any general observations noted at the time of inspection, priority issues to be addressed, health and safety issues observed and progress photos.

There is evidence to suggest that the NEC Supervisor is recording the storage of materials on site as the Inspection Records makes reference to pipework end protection being used.

It was evident from the site inspection on Monday 13 June 2022, that the first fix domestic water services pipework installation was progressing. It was noted by NHS

SA review team that the domestic water pipework was being stored on site in a dry, unsecured area. The pipework was stored horizontally on purpose designed pipe racks to ensure that the pipework was clear of the floor. The stored pipework was also capped and sealed with polythene. In addition, it was noted that any installed pipework open ends had been capped with proprietary plastic plugs.

Documents referenced are:

AECOM Supervisor MEP Site Inspection Record dated 13 April 2022

Workbook Ref No.	Areas to probe	Evidence expected
2.8	How does the Health Board assure itself that all pre-commissioning inspections are completed and recorded before commissioning can commence?	<p>Evidence that adequate pre-commissioning check sheets (SHTM 04-01 Part A) have been completed and signed off.</p> <p>Evidence that the Health Board has had all pre-commissioning checks audited and approved by an independent organisation.</p>

NHS Scotland Assure Observations:

At the time of writing, as the domestic water pipework is still being installed the ‘pre commissioning checks’ are continuously ongoing as noted previously. The PSCP has also prepared and submitted a document titled, Mechanical Quality Control Plan Golden Jubilee Project 2 – Surgical Unit (01334) revision 0.

This document has been prepared to ensure the domestic water system meets the requirements of legislation, SHTMs, CIBSE and BSRIA guides and commissioning codes, Building Regulations, the contract specification, manufacturer’s instructions and industry best practice. The document is structured, and it makes reference to the Mechanical Inspection, Test and Commissioning Plan, visual inspection and quality control procedures, Testing and Pre-commissioning, competences and training records, domestic water systems information and completion certificates.

The quality control procedures listed reference the pneumatic and hydraulic testing of pipework, pre-commissioning cleaning of pipework, Inspection testing and commissioning of water pipework systems and the disinfection and chlorination of pipework systems.

The testing and pre-commissioning forms include those associated with pipework pressure tests, pump performance, water balance, DHWS valve test sheets, Unvented Hot Water Storage checklists, RPZ valve test report certificate

The PSCP confirmed at the Plumbing and Water Services Workshop held on Friday 24th June 2022, that the electronic links to the various pre-commissioning checklists are only available to PSCP personnel. The PSCP confirmed however that hard copies of the pre-commissioning checklists will be submitted to the Health Board

and the Water AE for review prior to the commissioning phase commencing. NHS SA have not been advised how far in advance of pre-commissioning the Health Board will receive this.

As identified above, none of the pre-commissioning check sheets associated with the Plumbing or water systems have been completed at this time, however the Pre-Commissioning Inspection File Note published by the Health Board confirms that the Water AE and the NEC Supervisor will provide appropriate technical assistance to the Board to complete and sign off the pre-commissioning checks.

Documents referenced are:

Mechanical Quality Control Plan Golden Jubilee Project 2 – Surgical Unit (01334) revision 0. *Pre-Commissioning Inspection File Note*

Workbook Ref No.	Areas to probe	Evidence expected
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.

NHS Scotland Assure Observations:

The Health Board have confirmed that a variation to the water services design has been undertaken by the designer following an agreement made during the Water Management workshops. The Board have confirmed that the design has now been finalised and will be reviewed with the Health Boards Water Safety Management Group.

The Health Board have submitted the designer’s report titled Domestic Cold Water Further Measures to Limit Water Temperatures Options Appraisal – December 2021, as evidence of the change. The report centres on methods to mitigating high temperatures in the cold water system.

In addition, the Health Board have submitted written records of a report published to the Senior Users Group outlining the actions to be taken to address the high domestic cold water temperatures within the new Phase 1 Eye Centre, minutes of a meeting where the members of the group are requested to discuss and approve the proposals.

It was also confirmed that the Health Board are expecting the derogations schedule to be re-issued for review. NHS SA are unaware when this will be re-issued.

It was verbally confirmed by the Health Board at the Plumbing and Water Services Workshop held on Friday 24 June 2022 that the derogations identified during the

FBC review, namely, TSRE 003,004 and 006 have been accepted and signed off by the Board

Documents referenced are:

File Note – Section 3.9

Domestic Cold Water Further Measures to Limit Water Temperatures Options

Appraisal – December 2021

Water Safety Group Meeting Minutes – 10/2/22

3.2.2 Water and Internal Plumbing / Drainage Systems: Further Observations

No further observations identified.

3.3 Ventilation

3.3.1 Ventilation: KSAR Observations

Workbook Ref 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?	<p>Evidence of a vetted list of duct and plant installers which confirms qualifications and healthcare experience.</p> <p>Evidence that the site induction with respect to working on ducts and plant services has been developed, implemented and agreed with the Board.</p> <p>Evidence that all contractors and sub-contractor competency checks have been completed and signed off.</p>

NHS Scotland Assure Observations:

The PSCP has submitted a Sub-Contractor Vetting List for review. Vetting list tracker identifies that the ventilation contractor has submitted to the PSCP a document confirming their previous healthcare experience.

The Vetting list includes the names of 5Nr individual ventilation employees, however the names submitted do not align with the Operatives Training Register submitted by the ventilation contractor. It is assumed that the Operatives Training Register provides the correct operatives information.

The Operatives Training Register dated 4 April 2022 identifies 7 Nr employees and includes information such as the individual's grade, e.g., Supervisor, Craftsman, Foreman, Installer etc along with their qualifications. It is noted from the register that 3 Nr employees have identifiable healthcare experience.

As 4Nr employees don't have healthcare experience, no evidence has been submitted to confirm any relevant onsite training has been provided to these individuals. The PSCP confirmed at that the Ventilation Services Workshop held on Friday 24th June 2022 that additional onsite training for the remaining 4 Nr operatives is not required as peer support from the other 3Nr operatives will be available. The Health Board confirmed acceptance of this arrangement.

At the Ventilation Services Workshop held on Friday 24 June 2022, the PSCP confirmed that the site induction process is primarily associated with Health and Safety. The PSCP confirmed that prior to the induction process the ventilation contractor prepared and submitted a Risk Assessment and Method Statement (RAMS) for their works, this statement would have been used during the induction process. The PSCP confirmed that the RAMS statement would not have been issued to the Health Board. Therefore, there is no evidence that the site inductions in relation to working on ducts and plant services has been developed and agreed with the Board.

No evidence has been submitted which confirms that all contractors and sub-contractor competency checks have been completed and signed off. It was confirmed by the Board during the Ventilation Services Workshop held on Friday 24 June 2022, that the contractor competency checks were still being reviewed by the Ventilation AE and the Board.

Documents referenced are:

Kier Sub-Contractor Vetting List

Ductform HFE – Operative Training Register

Workbook Ref No.	Areas to probe	Evidence expected
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.

NHS Scotland Assure Observations:

The PSCP has submitted for review documents identifying the ventilation contractor’s previous healthcare experience.

The PSCP has submitted a Healthcare Contract Experience document, which appears to have been produced for the Baird & Anchor Family Hospital. Notwithstanding this, the document identifies 25 Nr various healthcare facilities, all located within Scotland where the GJNH-Phase 2 ventilation contractor has been responsible for the ventilation installations.

The PSCP have not submitted a copy of the ventilation contractor’s site management structure for review.

However, it was confirmed at the Ventilation Services Workshop held on Friday 24 June 2022 that they do have a site management structure consisting of Installers, Foreman, Craftsman, Supervisors, Contract Managers etc. It was also confirmed that the MEPH sub contractor management structure would oversee all their sub-contractors.

Documents referenced are:

Ductform HFE Ltd, Healthcare Contract Experience – Past projects

Workbook Ref No.	Areas to probe	Evidence expected
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.

NHS Scotland Assure Observations:

The Board has submitted for review a copy of the NEC Supervisor’s Site Inspection Record. The report records any general observations noted at the time of inspection, priority issues to be addressed, health and safety issues observed and progress photos.

It was confirmed during the Ventilation Services Workshop held on Friday 24th June 2022 that the MEPH sub contractor would be monitoring the ductwork installation and producing monthly site progress reports which would include photographic evidence of progress.

Under the NEC form of contract, the Contractor (PSCP) and the Supervisor are required to identify and inform each other of any defects or non-compliances are identified. It was confirmed at Ventilation Services Workshop that defects / non compliances would be recorded as follows.

The NEC Supervisor would be responsible for the Defects Tracker. This would be the main contractual document and it will contain a record of all non-compliances with the Works Information.

The PSCP and the NEC Supervisor would both be jointly responsible for identifying defects and for uploading the defects onto the PSCP’s Snagmaster defect management system. The PSCP confirmed that the NEC Supervisor would be accompanied by a member of the PSCP team to ensure that the NEC Supervisor does not raise defects on incomplete work. The NEC Supervisor would be responsible for replicating any non-compliances within the Snagmaster defect management system into the Defects Tracker.

The PSCP’s MEPH sub-contractor would raise defects on their internal Snag R defect management system. The PSCP nor the NEC Supervisor has access to the Snag R defect management system.

Documents referenced are:

AECOM Supervisor MEP Site Inspection Record dated 13 April 2022

Workbook Ref No.	Areas to probe	Evidence expected
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).
<p>NHS Scotland Assure Observations: The Board has submitted for review a copy of the NEC Supervisor's Site Inspection Record. The report records any general observations noted at the time of inspection, priority issues to be addressed, health and safety issues observed and progress photos.</p> <p>It was confirmed during the Ventilation Services Workshop held on Friday 24th June 2022 that THE MEPH sub contractor would be monitoring the ductwork installation and producing monthly site progress reports which would include photographic evidence of progress.</p> <p>Documents referenced are: <i>AECOM Supervisor MEP Site Inspection Record dated 13 April 2022</i></p>		

Workbook Ref No.	Areas to probe	Evidence expected
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?	<p>Evidence that the Contractor has presented their co-ordination drawings (BIM model) to the Board.</p> <p>Evidence that the Contractor has presented their co-ordination drawings (BIM model) to the Design Consultant and that they have agreed them for construction.</p> <p>Evidence that the Contractor has presented each of the main service runs plus plant rooms to the Board's FM team. Safe and adequate access has been provided.</p>
<p>NHS Scotland Assure Observations: There is evidence of the PSCP issuing a link to the BIM Model to the Board (refer to the email dated 7 March 2022) and also of an invitation from the PSCP to the FM /Estates teams to present the main services runs and plantrooms on the 3, 4 and 5 May 2022. During the Ventilation Services Workshop held on Friday 24 June 2022 the Project Manger tabled copies of the minutes of the FM/Estates review meetings.</p>		

The PSCP have submitted for review a copy of their Maintenance Access Strategy, Revision A, dated 6 December 2019. This document includes Appendix G, M&E Access and Maintenance Strategy, Revision 2 dated April 21. The document refers to Air Handling Units and dirty extract fans on the roof, ductwork within risers within ceiling voids. The Board confirmed that this document has been reviewed and commented on by the Board.

There is clearly a disconnect between the dates on the main document and the appendices. The PSCP confirmed at the Ventilation Services Workshop that the document will be updated to correct the dates but also aligned with the current Ventilation proposals.

It was also noted during the walk round on Monday 13 June 2022, that a significant number of access panels will need to be installed on the ceilings within the CSPD department to provide access to the various ventilation components within the ceiling void, e.g. volume control dampers, CFSDs, air heater batteries and the like. The Health Board should ensure that all access panels are detailed and agreed with the CSPD delivery group. It was confirmed during the Ventilation Services Workshop by the Board that the inclusion of the access panels constitutes a risk to achieving the required cleanliness classification of the area and that this is currently being review by HFS.

Documents referenced are:

PSCP email to the Board, dated 07 March 2022 14:04

NHS GJ - Phase 2 - FM/Estates Main Services Review invitation dated 19 April 2022

Workbook Ref No.	Areas to probe	Evidence expected
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?	<p>Evidence that the contractor has presented their co-ordination drawings (BIM model), with space for future flexibility identified, to the Board.</p> <p>Evidence that the design consultant has considered and agreed with the Board, space for future flexibility in the service installations.</p> <p>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.</p> <p>Evidence that the contractor has presented each of the main service runs</p>

		<p>plus plant rooms to the Board's Estates team and / or, to highlight space for future flexibility.</p> <p>Evidence that the ventilation solution has been agreed with clinical and IPC colleagues.</p> <p>Evidence that the Board has agreed a strategy (percentage) for spare capacity and a documented allowance to be incorporated into the design.</p> <p>Are plant rooms, horizontal distribution runs and risers appropriately sized for the equipment being installed and facilitate safe adequate maintenance?</p>
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NHS Scotland Assure Observations:

There is evidence of the PSCP issuing a link to the BIM Model to the Board (refer to the email dated 07 March 2022), however there is no evidence to suggest that the PSCP has presented their coordination drawings indicating the future flexibility zones to the Board. In addition, there is no evidence presented for review which would confirm that the Design Consultant has considered and agreed space for future flexibility for in the ductwork installation.

It was evident from the site inspection on Monday 13 June 2022, that the ductwork distribution systems have been installed above the prefabricated service modules. The Health Board have accepted that access to, and the future flexibility of the ductwork systems is not readily achievable.

The PSCP confirmed during the Ventilation Services Workshop held on Friday 24 June 2022 that the ventilation system details, i.e., the ductwork distribution and air handling units / fan locations are included in the BIM model.

The Health Board confirmed during the Ventilation Services Workshop that the CSPD ventilation system designs had been reviewed by the CSPD delivery group. The CSPD delivery group consists of members from the SPDS, IPC and HRF teams. Comments on the environmental conditions within the CSPD have been received from the CSPD delivery group and that these comments have still to be incorporated into the current design proposals.

In addition, the Health Board also confirmed that the Ventilation designs associated with the Theatres had been reviewed by the Theatre Delivery group (i.e., theatre staff and IPC staff).

The PSCP have submitted for review a copy of their Overview of Plant Capacity and Spatial Provisions – March 2022 document as produced by the designers This document confirms that the air handling plant is sized with 25% for future expansion and ductwork having 20% above current requirements. The Health Board confirmed

their acceptance of these allowances, whilst the PSCP confirmed that the calculated allowances have been based on the air volumes current at the time of FBC. It is therefore feasible that by the time of completion, depending upon variations, that the final spare capacity allowances may not be as indicated in the designer's document. The Health Board and PSCP confirmed that the final spare capacity allowances will be logged on the final commissioning reports for each ventilation system.

The Health Board confirmed at the Ventilation Services Workshop that the FM/Estates team have not yet reviewed the spatial allowances associated with the ventilation plant and distribution systems.

It was evident from the site inspection on Monday 13 June 2022, that the main ventilation plant areas (on the roof and on the ground floor) are sized to provide access for maintenance, with the exception of AHU 11 as mentioned above. None of the ductwork risers were installed at the time of the site inspection.

Documents referenced are:

PSCP email to the Board, dated 07 March 2022 14:04

Overview of Plant Capacity and Spatial Provisions – March 2022

Workbook Ref No.	Areas to probe	Evidence expected
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?	<p>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.</p> <p>Photographic evidence of the site storage of materials produced by a body which is independent of the contractor (on a monthly basis).</p>

NHS Scotland Assure Observations:

The Board has submitted for review a copy of the NEC Supervisor's Site Inspection Record. The report records any general observations noted at the time of inspection, priority issues to be addressed, health and safety issues observed and progress photos.

There is evidence to suggest that the NEC Supervisor is recording the storage of materials on site as the Inspection Records makes reference to ductwork end protection being used, and that there are some examples of where ductwork fittings are not protected.

It was confirmed by the sub-contractor during the Ventilation Services Workshop that they have instructed installer to work to PDI Level 3. The Health Board should ensure that this standard is maintained throughout the duration of the works.

It was evident from the site inspection on Monday 13 June 2022, that the first fix ventilation ductwork installation was progressing. It was noted by the NHS SA review team that the duct fitting is being stored on site in a dry, unsecured areas and that the ends of the fittings are being protected against the ingress of dirt and debris.

Documents referenced are:

AECOM Supervisor MEP Site Inspection Record dated 13 April 2022

Workbook Ref No.	Areas to probe	Evidence expected
3.8	How does the Health Board assure itself that all pre-commissioning inspections are completed and recorded before commissioning can commence?	<p>Evidence that adequate pre-commissioning check sheets (CIBSE, BSRIA) have been completed and signed off.</p> <p>Evidence that the Board has had all pre-commissioning checks audited and approved by an independent organisation.</p>

NHS Scotland Assure Observations:

At the time of writing, the ductwork installations are at the 1st fix stage, therefore none of the pre-commissioning check sheets included in SHTM 03-01 or CIBSE Commissioning Code A have been completed at this time.

The PSCP has however prepared and submitted a document titled, Mechanical Quality Control Plan Golden Jubilee Project 2 – Surgical Unit (01334) revision 0.

This document has been prepared to ensure the ventilation installation meets the requirements of legislation, CIBSE and BSRIA guides and commissioning codes, Building Regulations, the contract specification, manufacturer’s instructions and industry best practice. The document is structured, and it makes reference to the Mechanical Inspection, Test and Commissioning Plan, visual inspection and quality control procedures, Testing and Pre-commissioning, competences and training records.

The quality control procedures listed reference the inspection and testing of air ductwork systems and for the inspection and testing of Fire and Smoke damper systems.

The testing and pre-commissioning forms include those associated with Air Handling Unit (AHU) and air distribution pre-commissioning checklists, fan performance test sheets, air balance (terminals) test sheets, duct tracers record sheets and finally the inspection and test forms for the Fire and Some Dampers.

The PSCP confirmed at the Ventilation Services Workshop held on Friday 24 June 2022, that the electronic links to the various pre-commissioning checklists are only available to PSCP personnel. The PSCP confirmed however that hard copies of the pre-commissioning checklists will be submitted to the Health Board and the Ventilation AE for review prior to the commissioning phase commencing.

As identified above, none of the pre-commissioning check sheets associated with the Ventilation systems have been completed at this time, however the Pre-Commissioning Inspection File Note published by the Health Board confirms that the Ventilation AE and the NEC Supervisor will provide appropriate technical assistance to the Board to complete and sign off the pre-commissioning checks.

Documents referenced are:

Mechanical Quality Control Plan Golden Jubilee Project 2 – Surgical Unit (01334) revision 0.

Pre-Commissioning Inspection File Note

Workbook Ref No.	Areas to probe	Evidence expected
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.

NHS Scotland Assure Observations:

Folder 3.09 includes a file note which the Health Board confirmed there have been no variations which have caused a change to the ventilation strategy since FBC. However, it is understood from the site inspection on Monday 13 June 2022, that workshops have been held between the Health Board, PSCP, Design Team and Clinical leads to discuss and agree changes to the ventilation systems associated with the CSPD department.

Comments have been received from the CSPD delivery group which included agreement of the environmental conditions for this area. The PSCP confirmed that the environmental conditions and performance criteria associated with the CSPD and the EDU areas are not yet aligned with the current drawings.

The PSCP confirmed that revision 10D of the environmental matrix is now in circulation and it needs to be incorporated into the contract, as a variation, to allow the design drawings to be updated accordingly.

It was also confirmed that the Health Board are expecting the derogations schedule to be re-issued for review.

It was verbally confirmed by the Health Board at the Ventilation Services Workshop held on Friday 24 June 2022 that the derogations identified during the FBC review, namely, TSRE 001 and 002 (associated with the Operating Theatres) and Derogation TSRE 010 (temperature control scenarios) have been accepted and signed off by the Board.

Documents referenced are:

File Note – Section 3.9

3.3.2 Ventilation: Further Observations

In addition to the points raised via the KSAR workbook above, we also include the following observations as a result of the review, all of which relate to the evidence presented during the appraisal.

3.3.2.1	Mechanical Quality Control Plan Golden Jubilee Project 2 – Surgical Unit (01334) revision 0 should be updated to reflect the testing and commissioning requirements associated with the CSPD department.
3.3.2.2	<p>During the site walk round on Monday 13 June 2022, it was noted that access to several Combined Fire Smoke Dampers (CFSDs) and to the primary ductwork runs in corridor ceilings could prove to be problematic.</p> <p>The Project manager and the PSCP confirmed that this item had been previously identified by the NEC Supervisor with the ductwork access issue recorded on the MEP Site Inspection Record dated 13 April 2022.</p>

3.4 Electrical

3.4.1 Electrical: KSAR Observations

Workbook Ref 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?	<p>Evidence of a vetted list of site electricians which confirms qualifications and healthcare experience.</p> <p>Evidence that the site induction with respect to working on electrical services has been developed, implemented and agreed with the Board.</p> <p>Evidence that all contractors and sub-contractor competency checks have been completed and signed off.</p>

NHS Scotland Assure Observations:

The PSCP has submitted a Sub-Contractor Vetting List for review. The list confirms that NG Bailey have been appointed to install the Electrical systems within the Phase 2 works. The Vetting list tracker identifies that the sub-contractor has submitted to the PSCP a document confirming their previous healthcare experience.

The Vetting list includes the names of 11Nr individual Electrical employees, and this aligns with the sub-contractor vetting list. It is noted that the CVs provided make reference to a company who are not a declared sub-contractor. It is noted that the CVs presented are not in a typical CV format, however where relevant, projects are identified.

As 4Nr employees don't have healthcare experience, no evidence has been submitted to confirm any relevant onsite training has been provided to this individual. The PSCP confirmed at that the Electrical Services Workshop held on Tuesday 21 June 2022, that additional onsite training for the remaining 4 Nr operatives is not required as peer support from the other 10Nr operatives will be available. The Health Board confirmed acceptance of this arrangement.

At the Electrical Services Workshop held on Tuesday 21 June 2022, the PSCP confirmed that the site induction process is primarily associated with Health and Safety. The PSCP confirmed that prior to the induction process, the electrical sub-contractor prepared and submitted a Risk Assessment and Method Statement (RAMS) for their works. This statement would have been used during the induction process. The PSCP confirmed that the RAMS statement would not have been issued to the Board. Therefore, there is no evidence that the site inductions in relation to working on existing electrical and proposed services has been developed and agreed with the Board.

Documents referenced are:

Workbook Ref No.	Areas to probe	Evidence expected
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?	<p>Evidence of similar, previous healthcare projects by the contractor.</p> <p>Evidence of site management structure.</p> <p>Electricians completed approved current BS 7671 training course.</p> <p>Evidence that commissioning contractors have completed relevant test and commissioning courses.</p> <p>Evidence of trained operatives (AP and CP) to SHTM 06-02.</p>

NHS Scotland Assure Observations:

The PSCP has submitted for review documents identifying the sub-contractors previous healthcare experience.

The PSCP has submitted a Healthcare Contract Experience document, which appears to have been produced for the Baird & Anchor Family Hospital. Notwithstanding this, the document identifies 18 Nr various healthcare facilities, all located within Scotland where NG Bailey has been responsible for the electrical installations.

The PSCP have submitted a copy of the sub-contractors site management structure for review. This document clearly shows the line of governance internally to the team, with the site operations leads through the senior projects manager and up to the operations manager.

This organisation chart is not dated or with a version, therefore it is not possible to confirm if this is the most up to date nor if the declared individuals are still in place.

18th Edition certificates, entitled "Level 3 Award in the Requirements for Electrical Installations for BS7671:2018" for 3No. operatives have been provided. The remaining 8No. operatives have not had their certificates provided.

No certification has been provided with regard to the commissioning engineers.

Documents referenced are:

NG Bailey, *Healthcare Contract Experience – Past projects*

Organisation Chart, NG Bailey

18th Edition Certificates

Workbook Ref No.	Areas to probe	Evidence expected
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).
<p>NHS Scotland Assure Observations: The Health Board has submitted for review a copy of the NEC Supervisor's Site Inspection Record. The report records any general observations noted at the time of inspection, priority issues to be addressed, health and safety issues observed and progress photos.</p> <p>It was confirmed during the Electrical Services Workshop held on Tuesday 21st June 2022, that the sub-contractor would be monitoring the installation and producing monthly site progress reports which would include photographic evidence of progress.</p> <p>Documents referenced are: <i>AECOM Supervisor MEP Site Inspection Record dated 13 April 2022</i></p>		

Workbook Ref No.	Areas to probe	Evidence expected
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.
<p>NHS Scotland Assure Observations: There is evidence of the PSCP issuing a link to the BIM Model to the Board (refer to the email dated 7 March 2022) and also of an invitation from the PSCP to the FM/</p>		

Estates teams to present the main services runs and plantrooms on the 3, 4 and 5 May 2022.

The PSCP has submitted for review a copy of their Maintenance Access Strategy, Revision A, dated 6 December 2019. This document includes Appendix G, M&E Access and Maintenance Strategy, Revision 2 dated April 21. The document refers to main LV switchboards, distribution boards and other forms of electrical switchgear. The Board confirmed that this document has been reviewed and comments made by the Board.

It was also noted during the walk round on Tuesday 14 June 2022, that the busbar tap off units were considerably larger than originally understood, which suggests a disconnect between the BIM model. It was confirmed by the PSCP that there was no impact on partitions, given the size of the distribution cupboards.

Whilst no formal records or minutes have been issued, there is evidence to suggest that the PSCP has been arranging this during the KSAR review process.

Documents referenced are:

PSCP email to the Board, dated 07 March 2022 14:04

NHS GJ - Phase 2 - FM/Estates Main Services Review invitation dated 19 April 2022

Access & Maintenance Strategy-Rev A, IBI, 06.12.19

Workbook Ref No.	Areas to probe	Evidence expected
4.5	How does the Health Board ensure that electrical services are installed in a fashion which will retain space for minor additions and modifications to services in the future?	<p>Evidence that the contractor has presented their co-ordination drawings (BIM model), with space for future flexibility identified, to the Health Board.</p> <p>Evidence that the design consultant has considered and agreed with the Health Board, space for future flexibility in the service installations.</p> <p>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.</p> <p>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.</p>

		<p>Evidence that the Health Board has agreed a strategy (percentage) for spare capacity and a documented allowance to be incorporated into the design.</p> <p>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?</p>
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NHS Scotland Assure Observations:

There is evidence of the project BIM model being issued around the design team, whilst still working on the model.

There is no evidence to suggest that the BIM model has been used in discussions with the Health Board for spatial requirements and future provisions, however it is understood that these meetings have been taking place during the KSAR process.

The PSCP have submitted for review a copy of their Overview of Plant Capacity and Spatial Provisions – March 2022 document as produced by the designers.

The Board confirmed at the Electrical Services Workshop that the FM/Estates team have not yet reviewed the spatial allowances associated with the ventilation plant and distribution systems.

Within the electrical risers, it is evident that the size of the bus bar tap offs are in excess of expectations, but the distribution cupboards can accommodate these elements. At this stage in the programme, it is not possible to determine whether the switchrooms will be suitable. This can be determined as progress continues and the required plant and switchgear are mounted.

Documents referenced are:

PSCP email to the Board, dated 07 March 2022 14:04

Overview of Plant Capacity and Spatial Provisions – March 2022

Workbook Ref No.	Areas to probe	Evidence expected
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?	<p>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.</p> <p>Photographic evidence of the site storage of materials produced by a body</p>

		which is independent of the contractor (on a monthly basis).
<p>NHS Scotland Assure Observations: The Board has submitted for review a copy of the NEC Supervisor’s Site Inspection Record. The report records any general observations noted at the time of inspection, priority issues to be addressed, health and safety issues observed and progress photos.</p> <p>There is evidence to suggest that the NEC Supervisor is recording the storage of mechanical materials on site. However, to date there has been no equivalent recorded photographs of the electrical services.</p> <p>It was evident from the site inspection on Monday 13 June 2022, that the first fix electrical containment installation was progressing, predominantly using the prefabricated modular rig systems.</p> <p>During the site inspection on Tuesday 14 June 2022, the electrical services storage containers were inspected and the condition, recording of materials were of a very high standard, with a logistics plan readily available for all. Particularly impressive was the quarantine section for materials and tools that did not pass site quality assurance procedures.</p> <p>Documents referenced are: <i>AECOM Supervisor MEP Site Inspection Record dated 13 April 2022</i></p>		

Workbook Ref No.	Areas to probe	Evidence expected
4.7	How does the Health Board assure itself that all pre-commissioning inspections are completed and recorded before commissioning can commence?	<p>Evidence that adequate pre-commissioning check sheets (e.g. SHTM 06-01 Part A, , BS7671, etc.) have been completed and signed off.</p> <p>Evidence that the Health Board has had all pre-commissioning checks audited and approved by an independent organisation.</p>
<p>NHS Scotland Assure Observations: At the time of writing, the containment installations are at the 1st fix stage, therefore none of the pre-commissioning check sheets included in SHTM 06-01 or CIBSE Commissioning Code A have been completed.</p> <p>The PSCP has however prepared and submitted a document titled, Electrical Quality Control Plan Golden Jubilee Project 2 – Surgical Unit (01334) revision 0.</p>		

This document has been prepared to ensure the electrical installation meets the requirements of legislation, SHTMs, BS7671, CIBSE and BSRIA guides and commissioning codes, Building Regulations, the contract specification, manufacturer's instructions and industry best practice. The document is structured, and it makes reference to the Electrical Inspection, Test and Commissioning Plan, visual inspection and quality control procedures, Testing and Pre-commissioning, competences and training records.

The PSCP confirmed at the Electrical Services Workshop held on Tuesday 21 June 2022, that the electronic links to the various pre-commissioning checklists are only available to PSCP personnel. The PSCP confirmed however that hard copies of the pre-commissioning checklists will be submitted to the Board and the Electrical AE for review prior to the commissioning phase commencing.

As identified above, none of the pre-commissioning check sheets associated with the Electrical systems have been completed at this time, however the Pre-Commissioning Inspection File Note published by the Board confirms that the Electrical AE and the NEC Supervisor will provide appropriate technical assistance to the Board to complete and sign off the pre-commissioning checks.

Documents referenced are:

Electrical Quality Control Plan Golden Jubilee Project 2 – Surgical Unit (01334) revision 0.

Pre-Commissioning Inspection File Note

Workbook Ref No.	Areas to probe	Evidence expected
4.8	How does the Health Board assure itself that all variations which may be required to electrical systems after tender are investigated and agreed by all parties before they are instigated?	Evidence that each variation / derogation has a detailed technical analysis and has been referred to the Health Board and agreed with their clinical, Estates, infection control and FM teams.

NHS Scotland Assure Observations:

Folder 3.09 includes a file note which the Health Board confirmed there have been no variations which have caused a change to the electrical strategy since FBC. However, it is understood throughout the KSAR process that there has been a significant proposed amendment to the IPS/UPS strategy within the theatre suites.

The PSCP confirmed at the Electrical Services Workshop held on Tuesday 21 June 2022 that the IPS/UPS proposed amendments have been accepted by the Board. There has been no documentation to confirm this, nor has there been any clarifications through the derogation process.

The PSCP confirmed that revision 10D of the environmental matrix is now in circulation and it needs to be incorporated into the contract, as a variation, to allow the design drawings to be updated accordingly.

It was also confirmed that the Board are expecting the derogations schedule to be re-issued for review.

Documents referenced are:

File Note – Section 3.9

3.4.2 Electrical: Further Observations

No further observations identified.

3.5 Medical Gases

3.5.1 Medical Gases: KSAR Observations

Workbook Ref 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?	<p>Evidence of a vetted list of site medical gas installers which confirms qualifications and healthcare experience.</p> <p>Evidence that the site induction with respect to working on medical gas services has been developed, implemented and agreed with the Board.</p> <p>Evidence that all contractors and sub-contractor competency checks have been completed and signed off.</p>

NHS Scotland Assure Observations:

The PSCP has submitted a Sub-Contractor Vetting List for review. The list confirms that the Medical gas sub-contractor has been appointed to design and install the Medical Gas Pipeline Systems (MGPS) within the Phase 2 works. The Vetting list identifies that Medical gas sub-contractor has submitted to the PSCP a capability statement, CV documentation / Certificates and Site Management Structure.

The Vetting list does not indicate the names of the individual operatives nor their healthcare experience.

Whilst CV documentation has not been submitted for review, the Medical gas sub-contractor has submitted a copy of their internal QA document reference Q6/1 (issue 17) which identifies their operatives MGPS skills matrix based upon SHTM 02-01 & the British Compressed Gases Association (BCGA) Training Requirements. The skills matrix cover elements such as pipeline systems, terminal units, manifold panels, medical and surgical plant etc. The matrix also includes a section relating to knowledge of standards, which includes SHTM02-01. All operatives identified are identified a Class 1 operatives with regard to their knowledge of SHTM02-01.

Individual operative's certificates of training have been submitted for review. These certificates confirm that the identified operatives have successfully completed the HTM02:01 Competent Persons Refresher (MGPS) course. The training certificates are valid until November 2024.

The training records submitted for review do not confirm the operative's healthcare experience.

There is no evidence that the site inductions in relation to working on the medical gas services has been developed and agreed with the Board. It was confirmed at the MGPS workshop on 20 June 2022, that the Medical gas sub-contractor has not yet submitted a method statement to the Board in relation to the connection into the

existing MGPS pipeline systems serving Phase 1. The Board should ensure that the method statement is submitted and agreed before any works commence.

No evidence has been submitted which confirms that all contractors and sub-contractor competency checks have been completed and signed off. It was confirmed by the Health Board during the MGPS workshop on 20th June 2022, that the contractor competency checks were still being reviewed by the MGPS AE and the Board.

Documents referenced are:

Kier Sub-Contractor Vetting List

QA document reference Q6/1 (issue 17) Installation / Maintenance Engineer Skill Matrix.

HTM 02:01 Competent Persons Refresher (MGPS) certificates of training

Pearson SRF BTEC Level 4 in Medical Gas Systems to HTM02:01 (Competent Person)

Medical gas sub contractor Appointment of Competent Person (MGPS) letters

Workbook Ref No.	Areas to probe	Evidence expected
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.

NHS Scotland Assure Observations:

The PSCP has submitted for review documents identifying Medical gas sub contractor's previous healthcare experience and site management structure.

The medical gas sub-contractor has submitted a list of Previous healthcare experience which includes facilities operated by NHS Fife, NHS Grampian, NHS Highland, NHS Lanarkshire and NHS Greater Glasgow and Clyde.

The organogram of the site management structure is a generic document which only identifies the position of the persons rather than individuals responsible for each of the positions.

The medical gas sub-contractor has submitted a copy of their internal QA document reference Q6/1 (issue 17) which identifies their operatives MGPS skills matrix based upon SHTM 02-01 & the British Compressed Gases Association (BCGA) Training Requirements. The skills matrix cover elements such as pipeline systems, terminal units, manifold panels, medical and surgical plant etc. The matrix also includes a section relating to knowledge of standards, which includes SHTM02-01. All

operatives identified are identified a Class 1 operatives with regard to their knowledge of SHTM02-01.

Individual operative's certificates of training have been submitted for review. These certificates confirm that the identified operatives have successfully completed the HTM02:01 Competent Persons Refresher (MGPS) course. The training certificates are valid until November 2024.

Documents referenced are:

QA document reference Q6/1 (issue 17) Installation / Maintenance Engineer Skill Matrix.

HTM 02:01 Competent Persons Refresher (MGPS) certificates of training
Pearson SRF BTEC Level 4 in Medical Gas Systems to HTM02:01 (Competent Person)

Medical gas sub contractor Appointment of Competent Person (MGPS) letters.

Workbook Ref No.	Areas to probe	Evidence expected
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.

NHS Scotland Assure Observations:

The Health Board's project manager has submitted a file note associated with the MGPS installation for review. This note states that the material storage and quality of the install will be reviewed closely by the NEC Supervisors. Written and photographic evidence will be included within the NEC Supervisor Inspection Reports. The note does not confirm the methods to be used to determine if the MGPS installation have been installed to the correct standard and if the installations reflect the agreed design.

During the MGPS workshop of 20th June 2022 it was confirmed that the PSCP and Medical gas sub-contractor would be monitoring the installation and producing monthly site progress reports which would include photographic evidence of progress.

In addition, the NEC 3 Supervisor would also be undertaking regular inspections and producing an independent report which would include any identified quality / compliance related issues.

The Supervisors reports issued by the Health Board for review are silent on the MGPS systems, it is assumed that the cause of this is that the report submitted predates the MGPS installation start date. The Health Board should ensure that subsequent reports include photographic evidence of the stored materials.

The PSCP also confirmed that the agreed Construction programme would identify time periods for the NEC Supervisor to review the installations enclosed in ceiling voids before they are to be closed up,

Documents referenced are:

File Note – Medical Gases Install

Workbook Ref No.	Areas to probe	Evidence expected
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).

NHS Scotland Assure Observations:

The Health Board’s project manager has submitted a file note associated with the MGPS installation for review. This note states that the material storage and quality of the install will be reviewed closely by the NEC Supervisors. Written and photographic evidence will be included within the NEC Supervisor Inspection Reports. The note does not confirm the precautions to be used to avoid open ended pipes beyond the time needed to make a joint on that pipe end.

During the MGPS workshop of 20th June 2022 it was confirmed that the PSCP and Medical gas sub-contractor would be monitoring the installation and producing monthly site progress reports which would include photographic evidence of pipe ends being plugged to prevent the ingress of dirt / debris.

It was evident from the site inspection on Monday 13th June 2022, that the first fix MGPS pipework installation was progressing. It was noted by the NHS SA review team that the MGPS pipework was being stored on site in a dry, unsecured area. The pipework was stored horizontally on purpose designed pipe racks to ensure that the pipework was clear of the floor. The stored pipework was also capped and sealed with polythene. In addition, it was noted that any installed pipework open ends had been capped with proprietary plastic plugs.

Documents referenced are:

File Note – Medical Gases Install

Workbook Ref No.	Areas to probe	Evidence expected
5.5	How does the Health Board ensure that medical gas services are installed	Evidence that the contractor has presented their co-ordination drawings (BIM model) to the Board.

	<p>in a fashion which will provide ease of access for future maintenance?</p>	<p>Evidence that the contractor has presented their co-ordination drawings (BIM model) to the design consultant and that they have agreed them for construction.</p> <p>Evidence that the contractor has presented each of the main service runs plus plant rooms to the Health Board's FM team.</p>
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NHS Scotland Assure Observations:

There is evidence of the PSCP issuing a link to the BIM Model to the Board (refer to the email dated 07 March 2022) and also of an invitation from the PSCP to the FM /Estates teams to present the main services runs and plantrooms on the 3, 4 and 5 May 2022. There is no evidence that the FM/Estates review meetings took place.

The PSCP have submitted for review a copy of their Maintenance Access Strategy, Revision A, dated 6 December 2019. This document includes Appendix G, M&E Access and Maintenance Strategy, Revision 2 dated April 21. The document refers to AGS plant on the roof, gas scavenging plant within the Level 03 heat station and general pipework within ceiling voids. There is clearly a disconnect between the dates on the main document and the appendices. The Health Board should ensure that strategy is updated to correct the dates but also aligned with the current Medical gas sub-contractor MGPS proposals.

Documents referenced are:

PSCP email to the Board, dated 07 March 2022 14:04

NHS GJ - Phase 2 - FM/Estates Main Services Review invitation dated 19 April 2022

Workbook Ref No.	Areas to probe	Evidence expected
5.6	<p>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?</p>	<p>Evidence that the contractor has presented their co-ordination drawings (BIM model), with space for future flexibility identified, to the Health Board.</p> <p>Evidence that the design consultant has considered and agreed with the Board, space for future flexibility in the service installations.</p> <p>Evidence that the contractor has presented their co-ordination drawings (BIM model), with space for future flexibility identified, to the design</p>

		<p>consultant and that they have agreed them for construction.</p> <p>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.</p>
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NHS Scotland Assure Observations:

There is evidence of the PSCP issuing a link to the BIM Model to the Board (refer to the email dated 7 March 2022), however there is no evidence to suggest that the PSCP has presented their coordination drawings indicating the future flexibility zones to the Board. In addition, there is no evidence presented for review which would confirm that the Design Consultant has considered and agreed space for future flexibility for in the MGPS installation.

The PSCP has utilised offsite manufacturing techniques in the form of Prefabricated Service Modules (PSMs). These modules have been constructed off site and installed within the main circulation routes in the building. The PSMs include the mains service distribution routes for ductwork, domestic water, chilled and heating pipework etc. However, it is noted that the PSMs do not include the MGSP pipework distribution system.

It was evident from the site inspection on Monday 13 June 2022, that the MGPS pipework systems are independent to, and are being installed on the underside of the prefabricated service modules. The MGPS pipework is therefore the lowest of all services within the circulation routes and, ceiling type permitting, theoretically the easiest system to access.

The PSCP confirmed during the MGPS workshop on Monday 20 June 2022 that the MGPS system details, i.e., the MGPS pipework distribution and plantroom manifold layouts were included in the BIM model. Whilst folder 38 contains the MGPS technical submission drawings, the selection of coordinated services drawings submitted for review (folder 19) do not represent the entire facility nor do they indicate the MGPS installations.

Documents referenced are:

PSCP email to the Board, dated 07 March 2022 14:04.

Workbook Ref No.	Areas to probe	Evidence expected
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	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.

	entry of contaminants into the parts of the component which will be in contact with the gas?	Photographic evidence of the site storage of materials produced by a body which is independent of the contractor (on a monthly basis).
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NHS Scotland Assure Observations:

The Health Board’s project manager has submitted a file note associated with the MGPS installation for review. This note states that the material storage and quality of the install will be reviewed closely by the NEC Supervisors. Written and photographic evidence will be included within the NEC Supervisor Inspection Reports. The note does not confirm the means in which MGPS pipework and components will be stored.

The Supervisors reports issued by the Health Board for review are silent on the MGSP systems, it is assumed that the cause of this is that the report submitted predates the MGPS installation start date. The Health Board should ensure that subsequent reports include photographic evidence of the stored materials.

It was evident from the site inspection on Monday 13 June 2022, that the first fix MGPS pipework installation was progressing. It was noted by the NHS SA review team that the MGPS pipework was being stored on site in a dry, unsecured area. The pipework was stored horizontally on purpose designed pipe racks to ensure that the pipework was clear of the floor. The stored pipework was also capped and sealed with polythene. In addition, it was noted that any installed pipework open ends had been capped with proprietary plastic plugs.

During the MGSP workshop on Monday 20 June 2022, the medical gas sub-contractor confirmed that as the installation progresses and the various components arrive on site, e.g. alarm panels, LVA’s, AVSU’s etc, that they will be stored in a dry, clean and secured area. It was intimated that the manifold room may be used for this purpose, however this is to be confirmed by the PSCP.

The medical gas sub-contractor also confirmed that the Terminal Units will be installed when the building is relatively clean and that they will be plugged to prevent the ingress of dirt.

Documents referenced are:

File Note – Medical Gases Install

Workbook Ref No.	Areas to probe	Evidence expected
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.
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NHS Scotland Assure Observations:

The validation and verification of MGPS is a series of tests which are split into 6 Nr distinct phases.

The first phase is the validation of the design. It is evident that the MGPS AE has reviewed the MGPS Technical Submission Revision 2 as evidenced by the MGPS AE's comments dated 4 April 2022. A subsequent MGPS Technical Submission, Revision 3, was submitted to the Board on 10 May 2022. The Health Board should confirm if the latest design information is accepted and therefore validated.

It was confirmed by the medical gas sub-contractor during the MGPS workshop meeting held on 20 June 2022 that the medical gas sub-contractor would be using their HSF 009-02 Quality of Pipework Installation checklist as a pro forma for checking the quality of the installation. Whilst this is acceptable, the checklist does not entirely include the other 5 phases of the checks as identified in SHTM 02-01.

The Board also confirmed during the workshop that they have employed the MGPS AE to undertake and ensure that all of the pre commissioning checks (i.e., the 6Nr distinct phases) are completed before the commissioning process can commence.

At the time of writing, the MGPS installations are at the 1st fix stage, therefore none of the pre-commissioning check sheets included in SHTM 02-01 have been completed at this time.

It was confirmed by the medical gas sub-contractor during the MGPS workshop meeting held on 20th June 2022 that they have not yet identified which of the forms included within Appendix A of SHTM 02-01 are applicable to this project. Subsequently it is noted that the Draft Commissioning Plan (Folder 1.04) submitted for review does not make reference to any Pre-Commissioning checks associated with the MGPS. The Board should ensure that these are added to the Commissioning Plan.

As identified above, none of the pre-commissioning check sheets included in SHTM 02-01 have been completed, however the Pre-Commissioning Inspection File Note published by the Health Board confirms that the MGPS AE and the NEC Supervisor will provide appropriate technical assistance to the Board to complete and sign off the pre-commissioning checks.

The Health Board confirmed during the MGPS workshop meeting held on 20th June 2022 that the MGPS Quality Controller is broadly aware of the timeline / programme of sign off of the MGPS.

Documents referenced are:

Kier Draft Commissioning Plan

Pre-Commissioning Inspection File Note

Workbook Ref No.	Areas to probe	Evidence expected
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.
<p>NHS Scotland Assure Observations:</p> <p>Folder 5.09 includes a file note which identifies that following 1:50's review with Clinical users, the proposed medical gas install within Endoscopy and Theatres was not as per the clinical requirements for these spaces. It is understood that workshops were held between the Health Board, PSCP, Design Team and Clinical leads to discuss and agree the changes. The updated requirements were subsequently recorded on Rev 8 Environmental matrix and instructed into the contract. Revision 10A of the Matrix has been issued for review, therefore the Rev 8 changes cannot be readily identified.</p> <p>Included within this folder is a copy of the Medical Gas AE's comments (dated 4 April 2022) on the MGPS Technical Submission Revision 2. The comments include 2 Nr points which were deemed to be worthy of future discussion. One of the comments identified a non-compliance with the Level 1 manifold room.</p> <p>Revision 3 of the MGPS technical submission was submitted to the Board on 10 May 2022, confirmation should be sought by the Board that the non-compliance identified within Revision 2 has either been rectified to the satisfaction, or accepted by, the Board.</p> <p>It was verbally confirmed by the PSCP during the site visit of 13 June 2022 that derogation "TSRE 016 – SHTM 02-01 - Medical gases tie into existing hospital services" had been accepted and signed off by the Health Board. At the time of the FBC review the Board confirmed that the derogation had been rejected as the comment applies to the source only, but the SHTM relates to more than that and that specific clauses should be referenced.</p> <p>It is noted from folder 1.08 that the Health Board await the latest Derogation Schedule from the PSCP. The Board should confirm if the above derogation is accepted or otherwise as it was stated during the MGPS workshop meeting held on 20 June 2022 that no further derogations are known of, nor expected in relation to the MGPS.</p> <p>Documents referenced are: <i>Medical Gas AE's comments (dated 4th April 2022)</i> <i>MGPS technical submission Revision 3 dated 10 May 2022</i> <i>File Note – Derogation Closure Strategy</i></p>		

3.5.2 Medical Gases: Further Observations

3.5.2.1	The Contractor competency checks need to be completed as the MGPS installation works are now underway.
3.5.2.2	The access and maintenance strategy should be updated to reflect the latest medical gas sub-contractor MGPS proposals.
3.5.2.3	It was confirmed during the MGPS workshop on 20 th June that the MGPS system design has been produced by medical gas sub-contractor and that all the necessary design calculations have been submitted to the MGPS AE for review.
3.5.2.4	<p>Folder 38 includes a copy of Revision 3 of the Medical Gas Pipeline Systems technical submission dated 10 May 2022. The Project Manager's Acceptance of Design included within this folder is for the IPS / UPS installation. The Board should ensure that the appropriate Acceptance of Design form is completed for the MGPS system.</p> <p>The Project Manager's Acceptance of Design Submission Tracker dated 15 February 2022, Revision 8, identifies on item 37, that the Medical Gas system design had not yet been approved.</p>

3.6 Fire Safety

3.6.1 Fire Safety: KSAR Observations

Workbook Ref 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?	<p>Evidence of a vetted list of site fire stopping specialists which confirms qualifications and healthcare experience.</p> <p>Evidence that the site induction with respect to working on fire stopping services has been developed, implemented and agreed with Board.</p> <p>Evidence that all contractors and sub-contractor competency checks have been completed and signed off.</p>
<p>NHS Scotland Assure Observations:</p> <p>Documentation provided shows evidence of competency checks being carried out of the chosen fire stopping specialist. Evidence of the chosen specialist's healthcare experience was also provided which listed the previous healthcare projects where their services were provided.</p> <p>The chosen fire stopping specialist's LPCB certificate (<i>C862PI – Stopfire Ltd – Fire Stopping Certificate</i>) was provided as evidence as to their qualifications and demonstrates that they are approved under LPS 1531 to undertake the following works:</p> <ul style="list-style-type: none"> • Penetration, cavity barriers and linear gap seals • Board fire protection • Intumescent coatings <p>Documentation provided did not include evidence a site induction had been developed, implemented, and agreed with the Health Board.</p> <p>Documents referenced are: <i>22041401 Paul Holt – Company CV</i> <i>22041402 David Reeves – Company CV</i> <i>Kier Sub-Contractor Vetting List</i> <i>Previous Hospital Projects</i> <i>C862PI – Stopfire Ltd – Fire Stopping Certificate</i> <i>Fire Stopping Subcontractor Selection File Note</i> <i>Kier Firestopping Tender List</i></p>		

Workbook Ref No.	Areas to probe	Evidence expected
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.
<p>NHS Scotland Assure Observations: Evidence of the chosen specialist's healthcare experience was provided which listed the previous healthcare projects where their services were provided.</p> <p>An overall site organogram was provided as evidence. The document was not specific to the fire stopping specialist and it cannot be determined how the specialist team would be managed on site.</p> <p>Documents referenced are: <i>Previous Hospital Projects</i> <i>Kier Fire Stopping Works - Organogram</i></p>		

Workbook Ref No.	Areas to probe	Evidence expected
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.
<p>NHS Scotland Assure Observations: A file note has been provided that states that "fire sealant works aren't due to commence on site until May/June 2022". The document notes that works will be reviewed closely by the NEC Supervisors with written and photographic evidence included with the reports.</p> <p>The NHS SA review team attended site on 14 June 2022 and witnessed completed areas of fire stopping on Level 1 and 3. All areas witnessed had been labelled by fire stopping specialist and generally appeared to be installed well. At this time however, no evidence was provided of independent monthly checks by the NEC Supervisors. It is noted however, that the NEC Supervisor confirmed at this site meeting that these inspections are taking place regularly.</p> <p>Documents referenced are: <i>File Note – Fire Stopping Installation</i></p>		

Workbook Ref No.	Areas to probe	Evidence expected
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).
<p>NHS Scotland Assure Observations: See Question 6.3</p> <p>Documents referenced are: File Note – Fire Stopping Installation NHS Scotland Assure Site Visit Report – 220615_R00_NHS Assure GJ_Site Report_CIC</p>		

Workbook Ref No.	Areas to probe	Evidence expected
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).
<p>NHS Scotland Assure Observations: The NHS SA review team attended site on 14 June 2022 and witnessed completed areas of fire stopping on Level 1 and 3 and notably where electrical, pipework and ductwork penetrated fire-resistant barriers. All areas witnessed had been labelled by the fire stopping specialist and generally appeared to be installed well.</p> <p>No evidence was provided of written and photographic monthly progress reports by the NEC Supervisors. It is noted however, that the NEC Supervisor confirmed at this site meeting these inspections are taking place regularly.</p> <p>Documents referenced are: File Note – Fire Stopping Installation NHS Scotland Assure Site Visit Report – 220615_R00_NHS Assure GJ_Site Report_CIC</p>		

Workbook Ref No.	Areas to probe	Evidence expected
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).
<p>NHS Scotland Assure Observations: The NHS SA review team attended site on 14 June 2022 and witnessed completed areas of fire stopping on Level 1 and 3 and this included where electrical containment systems penetrated fire-resistant barriers. All areas witnessed had been labelled by the fire stopping specialist and generally appeared to be installed well, with some minor exceptions, which were noted to the PSCP at the time.</p> <p>However, no evidence was provided of written and photographic monthly progress reports by the NEC Supervisors. It is noted however, that the NEC Supervisor confirmed at this site meeting these inspections are taking place regularly.</p> <p>Documents referenced are: File Note – Fire Stopping within Electrical Containment NHS Scotland Assure Site Visit Report – 220615_R00_NHS Assure GJ_Site Report_CIC</p>		

Workbook Ref 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).
<p>NHS Scotland Assure Observations: The NHS SA review team attended site on 14 June 2022 and observed the dedicated storage area for fire stopping materials. The storage area was a weatherproof room internal to the building and appeared to protect the materials from deterioration.</p>		

However, no evidence was provided of written and photographic monthly progress reports by the NEC Supervisors. It is noted however, that the NEC Supervisor confirmed at this site meeting these inspections are taking place regularly.

Documents referenced are:

File Note – Fire Stopping Installation

NHS Scotland Assure Site Visit Report – 220615_R00_NHS Assure GJ_Site

Report_CIC

Workbook Ref No.	Areas to probe	Evidence expected
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.

NHS Scotland Assure Observations:

A file note has been provided that states, “as per PSCP programme, Fire Detection and Alarm works aren’t due to commence on site until May 2022”. The document notes that works will be reviewed closely by the NEC Supervisors with written and photographic evidence included with the reports.

No evidence has been provided from the NEC Supervisor visits.

The NHS SA review team attended site on the 14/06/2022. The Contractor advised verbally that the Health Board’s FM team were due to attend site the following week and at regular intervals thereafter. Therefore, at the time of this site visit, suitable access above 3m had not been demonstrated to the Health Board’s FM team.

Documents referenced are:

File Note – Fire Detection and Alarms

Workbook Ref No.	Areas to probe	Evidence expected
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 each variation has been referred to the Health Board and agreed with their clinical, engineering, infection control and FM teams.

NHS Scotland Assure Observations:

A document provided states the following in relation to variations to fire stopping “at this stage within the project NHS GJ can confirm there has been no variations which have caused the overall fire stopping strategy change since FBC stage”

‘Weekly NHS GJP2 / NHS SA Construction KSAR Progress meeting’ on 18th May 2022 it was noted that in the event of a variation, standard NEC contract variation clauses would take effect. Therefore, a design approval would take place that involved the Health Board and relevant supplier/manufacturer of the fire stopping products.

Documents referenced are:

File Note – Section 6.9

Workbook Ref No.	Areas to probe	Evidence expected
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?	<p>Evidence that the contractor has presented their co-ordination drawings (BIM model) to the Health Board.</p> <p>Evidence that the contractor has presented their co-ordination drawings (BIM model) to the design consultant and that they have agreed them for construction.</p> <p>Evidence that the contractor has presented each of the fire dampers and smoke / fire dampers to the Health Board's FM team.</p>

NHS Scotland Assure Observations:

While evidence is available showing that the PSCP issued a BIM model link to a number of people within the NHS and coordination meeting took place, the meeting minutes presented was dated November 2020 and titled BIM Coordination Meetings, a model was issued to the Health Board in March of this year, after construction had started with no follow up coordination meeting evident.

There is no evidence that the model was presented to the design consultants and agreed for construction.

Whilst evidence is available showing a meeting invite to individuals from the NHS, it is not evident that this meeting discussed the damper locations.

From ‘Weekly NHS GJP2 / NHS SA Construction KSAR Progress meeting’ on 18 May 2022 it was noted that a series of meetings, commencing 23 May, were scheduled for the Board FM team to review damper locations on site.

From the NHS SA review team attendance on site (14 June 2022) we witnessed completed areas of fire stopping on Level 1 and 3 and this included fire dampers. All areas witnessed had been labelled by Stopfire Ltd and generally appeared to be installed well, with some accessibility issues for some dampers. At that time, the PSCP advised that solutions had been agreed with their sub-contractor and remedial work would be undertaken.

At this site meeting, the PSCP advised that no Health Board FM team meetings had begun but had been arranged for the following week.

At this time however, no evidence was provided of written and photographic monthly progress reports by the NEC Supervisors. It is noted however, that the NEC Supervisor confirmed at this site meeting that these inspections are taking place regularly.

Documents referenced are:

NHS GJ – Kier Issuing BIM Model Link to NHS GJ

GJ2-KCSNE-XX-XX-MI-W-XX-9002_S2_P1_Minutes 2020.11.25

NHS GJ – FM Team Review – Plant Room Layouts and Main Service Runs

NHS GJ – Phase 2 – Individual Discipline Meeting Schedule

NHS Scotland Assure Site Visit Report – 220615_R00_NHS Assure GJ_Site Report_CIC

Workbook Ref No.	Areas to probe	Evidence expected
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.

NHS Scotland Assure Observations:

From the evidence provided a file note states that “the Fire Rated Ductwork within Level 1 is due to commence on site in May 2022”. The document notes that the PSCP will provide certification for the system and confirmation that this was installed as per installation details. Also noted is that the MEP sub-contractor will review this install during their Site Audits and will provide written confirmation to validate installation.

Upon visit to site on 14 June 2022, it was evident that some of the fire rated ductwork had been installed but it was not completed. As the install is still ongoing, no certification or validation has or can be provided to date.

Documents referenced are:

01. File Note – Fire Rated Ductwork

Workbook Ref 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?	<p>Evidence that the smoke system has been designed by an accredited Fire Engineer.</p> <p>Evidence that Building Control have accepted the solution.</p> <p>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.</p>

NHS Scotland Assure Observations:

From the document review a file note and a Building Warrant Amendment letter from West Dunbartonshire Council has been provided.

No evidence has been provided that the smoke control system has been designed by an accredited fire engineer.

It is noted that the letter from West Dunbartonshire Council provides a granted amendment to Building Warrant for Stage 3 Fire. This would demonstrate acceptance of the fire strategy for the building.

The file note provided states “the smoke system operation will be agreed at the Commissioning Strategy meetings which are to be arranged and organised by Commissioning Managers”.

These meetings have not taken place to date.

Documents referenced are:

01. File Note – Smoke System Operation

02. Building Warrant – Demonstrating Smoke Control Acceptance

Workbook Ref No.	Areas to probe	Evidence expected
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.

NHS Scotland Assure Observations:

A file note provided indicates that the appropriate technical assistance has been employed in order to sign off pre-commissioning checks.

It is noted that the file note states that the PSCP Commissioning Managers and have provided a draft commissioning strategy. This draft has not been provided in evidence to NHS SA.

Documents referenced are:

01. Pre-Commissioning Inspection File Note

3.6.2 Fire: Further Observations

In addition to the points raised via the KSAR workbook above, we also include the following observations as a result of the review, all of which relate to the evidence presented during the appraisal.

3.6.2.1	It should be noted that the review on site took place at a time when installation of services and subsequent fire stopping had just begun with no ceilings yet installed. Therefore, access hatches and similar have not been viewed on site.
3.6.2.2	At the time information was provided to NHS SA, and by the time works had commenced on site, no detailed fire stopping pack had been received from the chosen supplier.
3.6.2.3	During the site visit, fire rated ductwork was stored in such a way that some small chipping/damage may occur. This was noted to the PSCP.
3.6.2.4	During the site visit, it was observed that several dampers were either difficult to access or were inaccessible. Whilst on site, the NHS SA review team raised with the PSCP who confirmed that they were aware of the situation and were undertaking an exercise to rectify these dampers.
3.6.2.5	During the site visit, it was noted in one particular area that some fire stopping framing had some pipework and cable baskets touching the framing itself. This was reported to the PSCP who will seek to rectify where required.
3.6.2.6	During the site visit, located in one of the breakthroughs on Level 1, it was noted that a steel column appeared to have a cementitious spray applied and plasterboard abutting the column. The PSCP have advised they are awaiting fire stopping details from Rockwool, however, this would appear to be a partition detailing that would be required here.
3.6.2.7	The NHS SA review team noted on site that in some locations where the fire strategy drawings advised 60 minutes fire rated walls, a single layer of plasterboard was seen. However, after discussions with the PSCP, it was verbally confirmed that the board is a 15mm Duraline board achieving 60 minutes fire resistance.

3.6.2.8

During the site visit, it was noted that on Level 1 between Office 01-014 and AP 01-016, 30 minutes fire resistant construction was to be provided where windows are located within partitions. It was not possible to ascertain on site that the glazing achieved the required level of fire resistance shown on fire strategy drawing GJ2-IBI-XX-DR-A-68-0001 (Revision 11).

3.7 Infection Prevention & Control Built Environment

3.7.1 Infection Prevention & Control Built Environment: KSAR Observations

Workbook Ref No.	Areas to probe	Evidence expected
7.1	<p>How does the Health Board demonstrate that there is an effective infection prevention and control management structure in place?</p> <p>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?</p>	<p>The Health Board provides evidence that there is an IPC Management Structure with the necessary expertise and leadership skills to support the organisation:</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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</p>

		<p>into the project that would represent an identified IPC risk.</p> <p>Evidence that all contractors and sub-contractor competency checks have been completed and signed off.</p>
<p>NHS Scotland Assure Observations:</p> <p>No documentary evidence was provided relating to the Health Board’s IPC management structure; however, NHS SA is familiar with the Board’s IPC Team and is satisfied that the leadership and expertise available are sufficient to support the project, particularly with the additional resource engaged for this project.</p> <p>Minutes from the Senior User Group include reports from the Infection Control Manager, and the Key Roles document references the IPC Team, both demonstrating appropriate engagement with the project.</p> <p>It is unclear what the process is for agreeing and signing off derogations, and how the Board ensures that the IPC Team are included in this process. A discussion with the Infection Control Doctor in 2018 regarding the size of operating theatres is noted, but evidence of a formal derogation process was not seen. The Health Board should ensure that there is a clearly documented process for agreement and sign off of derogations, involving all relevant parties, particularly the IPC Team where relevant.</p> <p>Evidence was provided of discussion with the IPC Team during the design phase and of IPC membership of key groups.</p> <p>During the NHS SA site visit, a verbal description was provided of contractors and sub-contractor competency checks, and attendance registers for training were provided.</p> <p>Documents referenced are: <i>SUG Meeting Logs</i> <i>SUG Action Logs</i> <i>Prof Masterton File Note</i> <i>ICD Timeline PCIT 190719</i> <i>NHS GJ Key Roles (IPC included)</i></p>		

Workbook Ref No.	Areas to probe	Evidence expected
7.2	How does the Health Board demonstrate implementation of evidence based infection prevention and control measures during the design process?	<p>The Health Board provides evidence:</p> <p>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 and it is being referred to during the construction process.</p>

		<p>IPC risks (actual or perceived) risks identified during the work programme or through the KSAR evidence review are provided.</p> <p>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.</p>
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NHS Scotland Assure Observations:

No documentary evidence was provided relating to the Board’s IPC management structure; however, NHS SA is familiar with the Board’s IPC Team and is satisfied that the leadership and expertise available are sufficient to support the project, particularly with the additional resource engaged for this project.

Minutes from the Senior User Group include reports from the Infection Control Manager, and the Key Roles document references the IPC Team, both demonstrating appropriate engagement with the project.

No evidence was provided to demonstrate the National Infection Prevention and Control Manual is used by the Board as part of the project during all stages.

Evidence was provided of discussion with the IPC Team during the design phase and of IPC membership of key groups. No evidence was seen of IPC team walkarounds of the site during the construction process. The Health Board should ensure that there is IPCT review of the site at appropriate intervals.

During the NHS SA site visit a verbal description was provided of contractors and sub-contractor competency checks, and attendance registers for training were provided.

Documents referenced are:

SUG Meeting Logs

SUG Action Logs

Prof Masterton File Note

ICD Timeline PCIT 190719

NHS GJ Key Roles (IPC included)

Workbook Ref No.	Areas to probe	Evidence expected
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?	<p>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.</p> <p>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.</p>
<p>NHS Scotland Assure Observations: The induction material for the site includes slides on COVID-19, pest control and HAI-SCRIBE but does not explicitly address the potential risks to future patients from, for example, contaminated water or ventilation systems. The Health Board should ensure that contractors and sub-contractors are aware of these risks and of their roles in minimising them.</p> <p>Documents referenced are: <i>Appendix 5 Site Induction PowerPoint</i></p>		

Workbook Ref No.	Areas to probe	Evidence expected
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.
<p>NHS Scotland Assure Observations: No documentary evidence was provided to demonstrate IPC Team involvement in the procurement process. Verbal assurance was given at the IPC Workshop of IPC Team engagement. The Health Board should ensure that the formal process for procuring fixtures, fittings and equipment has suitable IPC engagement and that there is sufficient resource available to the IPC Team to provide this.</p> <p>Documents referenced are:</p>		

3.7.2 Infection Prevention & Control Built Environment: Further Observations

No further observations identified.

4. Appendices

Appendix 1: Glossary

Please refer to NHS Scotland Assure – Assurance Service Master Glossary document available to download from [NHS National Services Scotland website](#)

