

**NHS Fife
National Treatment Centre
Key Stage Assurance Review**

**Construction
KSAR Report**

Table of Contents

1. Executive Summary	5
1.1 Summary of Findings.....	7
1.2 Project Overview	8
2. Review Methodology.....	9
2.1 Overview of NHS Scotland Assure & The KSAR Process.....	9
2.2 KSAR Process.....	10
2.3 Application of Standards & Legislation.....	10
2.4 Project Technical Outline Summary	12
3. KSAR Review Summary	14
3.1 Project Governance and General Arrangements	14
3.2 Water and Internal Plumbing / Drainage Systems.....	29
3.3 Ventilation.....	42
3.4 Electrical.....	53
3.5 Medical Gases.....	63
3.6 Fire	71
3.7 Infection Prevention & Control Built Environment.....	84
4. Appendices	88
Appendix 1: Glossary	88



Document Overview

NHS Fife National Treatment Centre – Fife Orthopaedics Key Stage Assurance Review Report | Construction Stage

Prepared for:

NHS Fife and Scottish Government

Prepared by:

NHS Scotland Assure – Assurance Service

Document Control Sheet

Revision History

Version	Date	Revision Details	Originator	Changes Marked
V1.0	05/08/22	Issue to NHS Fife for factual accuracy review	NHS Scotland Assure	
V2.0	02/11/22	Issued to CIG and NHS Fife following confirmation of factual accuracy	NHS Scotland Assure	

Approvals

This document requires the following signed approvals:

Version	Date	Name	Role and organisation	Signature
V1.0	05/08/22	Thomas Rodger	Principal Engineering Manager, NHS Scotland Assure	TGR
V1.0	05/08/22	Ian Storrar	Assistant Director Engineering and Assurance, NHS Scotland Assure	IGS
V2.0	31/10/22	Thomas Rodger	Head of Engineering, NHS Scotland Assure	TGR
V2.0	31/10/22	Ian Storrar	Assistant Director Engineering and Assurance, NHS Scotland Assure	IGS

Distribution

This document has been distributed to:

Version	Date of Issue	Name	Role / Area
V1.0	05/08/22	[REDACTED]	NHS Fife, Head of Capital Planning/ Project Director
V2.0	02/11/22	[REDACTED]	NHS Fife, Head of Capital Planning/ Project Director
		[REDACTED]	Health Infrastructure, Investment and PPE – Scottish Government Health and Social Care Directorates
		[REDACTED]	Head of NHS Strategic Capital Investment

1. Executive Summary

As a result of the Construction Key Stage Assurance Review (KSAR) and based on the information presented by NHS Fife to NHS Scotland Assure (NHS SA), we are unable to support the project at this stage. Whilst NHS Fife have demonstrated a number of positive elements during the KSAR process, given the time left to construction completion we have concerns that should the key themes identified within the KSAR not be addressed in a timely and satisfactory manner, this could lead to delays to the programme or compromise the safety of the facility.

One of the most significant concerns relates to the prevention of lateral fire spread in accordance with the Scottish Non-Domestic Technical Handbook Clause 2.b.1, which notes *“Where a compartment wall or sub-compartment wall meets an external wall, there should be a 1m wide strip of the external wall which has the same level of fire resistance duration as the compartment wall or sub-compartment wall, to prevent lateral fire spread”*. The Principal Supply Chain Partner (PSCP) and design team could not evidence appropriate details as to how this protection would be achieved. NHS SA also observed physical gaps in the building construction during the site inspection phase.

NHS SA noted during the site inspections that the fire rated ducts connecting to the Automatic Opening Vent’s installed within the roof plantroom are still to be connected. NHS SA were advised by the Contractor that the AOV’s are installed within cold rolled steel purlins. Therefore, the supporting structure of the AOV’s will not provide the required 60 minutes fire rating.

Additional concerns were identified as to how firestopping was being applied to the facility and how fire dampers were being installed, specifically a lack of documented evidence to demonstrate these were being installed in accordance with the manufacturers certified details.

Further to the fire safety issues noted above, NHS SA have concerns over the level and consistency of supervision applied to the site works, including recording of site quality issues. The PSCP utilises a proprietary software system for recording site quality issues. The KSAR identified that NHS Fife and the appointed NEC Supervisor do not utilise this consistently and there is no process in place to link any issues raised in the software to the contractual defects process. There are also no defined protocols in place for NHS Fife or their appointed representatives to monitor closure of items raised in the software package, therefore NHS SA have concerns that this could potentially become “self-policing” by the PSCP, with no record of independent validation that quality issues have been addressed.

Within the KSAR report, we have identified concerns with respect to the level of detail recorded in the Supervisor reports, with examples given of potential quality issues observed by NHS SA that have not been identified by the appointed NEC Supervisor. It is also unclear to what extent the Authorising Engineers or Authorised Persons have been involved in site inspections – for example medical gas pipeline inspections in accordance with SHTM 02-01.

Co-ordination of installed services and control of working drawings was also identified as a concern during the KSAR. Whilst the PSCP was able to demonstrate a process for creating co-ordinated installation, NHS SA have concerns that this is not being consistently implemented on site, with examples noted of restricted access to maintainable services within ceiling voids during our site inspection. The PSCP process for co-ordinating services utilises software that cannot be reviewed by the NHS Fife internal team – whilst they have attempted to mitigate this by utilising site inspections and presentations by the PSCP of the software, this leads to reactive works to address any issues raised.

At the time of the KSAR the commissioning programme was not current and key appointments, such as the independent validator for critical ventilation systems had yet to be finalised. NHS SA note concerns over the pre-commissioning controls being implemented, including validation of existing infrastructure capacity and system parameters where interfaces to the new facility are present. In a number of instances this means construction works have progressed at risk without key activities and control mechanisms being implemented and a risk that pre-commissioning activities will not be or have not been carried out at the appropriate time.

The KSAR also identified that whilst NHS Fife noted observations from the Interim Assurance Service Full Business Case review had been addressed, there was no documented audit trail to evidence full close out. Some key elements appear to remain open such as governance processes around derogations and technical issues such as a single point of failure in the electrical infrastructure, with no supporting risk assessment evident.

NHS SA would like to thank the NHS Fife team for their time, support, transparency and engagement throughout the KSAR process.

1.1 Summary of Findings

The findings of this report have been collated based on information provided by NHS Fife. 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 Fife under separate cover:

Review	No. of Issues per category				
	1	2	3	4	5
Project Governance and General Arrangements		5	6	4	
Water and Internal Plumbing / Drainage Systems		12	12	4	1
Ventilation		14	13	2	1
Electrical		3	4	6	
Medical Gases		7	3		
Fire	3		6	5	
Infection Prevention & Control Built Environment				6	1

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

The NHS Fife National Treatment Centre (NTC) project is currently in the construction phase and is due to be completed by October 2022 prior to being operational from January 2023.

The project involves the construction of a new NTC on the existing Victoria Hospital site in Kirkcaldy. The facility will provide orthopaedic healthcare to the people of Fife region.

The development of the facility will allow a reconfiguration of Orthopaedic services across Fife and will support NHS Fife in managing elective (planned) orthopaedic activity, other healthcare services within the retained estate will also benefit from the delivery of this project as current orthopaedic clinical space is released and orthopaedic services transition to the new facility.

The accommodation is provided over three stories and includes:

- Ground floor – orthopaedic outpatient department with consultant rooms, plaster room, two Xray rooms and a virtual clinic. A link is provided at this level to connect to the existing hospital, ICU and for facilities management.
- First floor – inpatient ward and short stay facility with 33 patient beds and a rehabilitation unit.
- Second Floor – three Orthopaedic Theatres, Staff Rest Area.

Also included are diagnostics suite, collaboration, education and office space, and a therapeutic garden.

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 SA – 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 SA, 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 1 June 2021, all NHS health 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 SA to undertake reviews on other healthcare-built environment projects. This does not change accountability for the projects; NHS health boards remain accountable for their delivery. NHS SA will be accountable for the services it provides that support delivery of the projects.

NHS SA 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 the Construction stage is to confirm there is a good and comprehensive understanding of the category of patient who will use the proposed facility and that the project team consider how appropriate quality and safety standards will influence the build. It looks to provide assurance that the project can proceed to the Commissioning stage.

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 Fife ECOP National Treatment Centre took place between 09 May 2022 and 25 July 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

The project overview noted in 1.2 outlines the project works and the facilities being constructed at the Victoria Hospital, Kirkcaldy.

An outline summary of the primary mechanical and electrical systems installed on the project are as follows:

Electrical

- The incoming electrical infrastructure in respect to mains power and generator backup supplies is derived from the existing site infrastructure. The supplies enter a new switch room within the NTC facility. A&B supplies are provided throughout the facility to provide resilience in the event of a mains or sub-mains failure. UPS and Medical IT infrastructure is provided to Group 2 locations.
- Lighting and emergency lighting is provided throughout, with local battery packs utilised to provide initial emergency lighting in the event of a loss of mains power prior to the generator energising.
- A structured cabling system is provided throughout the new facility, linked to the existing site infrastructure. Local communications rooms are provided within the new NTC facility.
- A lightning protection system is installed.
- A Category L1 Fire Detection and Alarm system is utilised within the facility. The fire detection and alarm system interfaces with other electrical and mechanical systems such as ventilation plant.

Mechanical

- The new NTC facility is primarily mechanically ventilated. Mechanical supply and extract ventilation systems serve the UCV theatres suites (3 no. AHU's), recovery areas (1no AHU) and ward/outpatients' areas (1no AHU). Dirty extract ventilation systems (2no) serving toilets, dirty utilities etc throughout the building.
- The incoming mains water supply is derived from the existing site water infrastructure on Hayfield Road. The cold-water services system consists of a cold-water storage tank and packaged booster set. The cold-water system is a recirculating system which is chilled via a dedicated air-cooled chiller and packaged buffer vessel/plate heat exchanger. Hot water is generated from plate heat calorifiers (2no) to serve the various outlets within the building.
- Above ground drainage (foul) is provided throughout the facility via a number of primary, ventilated stacks distributed around the building connecting to the new below ground drainage network serving the facility. Stacks are ventilated either to atmosphere or via automatic admittance valves (AAV's). All rainwater downpipes are routed internally within the building.

- Heating is provided via a connection to the existing medium temperature hot water (MTHW) infrastructure that serves the Victoria Hospital site. Duty/standby plate heat exchangers within the ground floor plantroom provide low temperature hot water (LTHW) for space heating, tempering and control of mechanical ventilation systems and for hot water generation.
- Cooling is provided to ventilation plant, where required (e.g., AHU's serving theatre suites), via direct expansion (DX) refrigerant-based cooling coils. Comfort cooling is limited to a small number of spaces on the ground floor via packaged variable refrigerant volume (VRV) systems.
- Medical gas systems include oxygen, nitrous oxide, medical compressed air and medical vacuum. The gas pipeline supplies to serve the new facility are derived from the existing NHS Fife medical gas plant & infrastructure within their retained estate. A new anaesthetic gas scavenging system (AGSS) is provided to serve the new facility with the primary AGSS plant installed within the Level 04 roof plantroom.
- A Building Management System (BMS) including all necessary controls and cabling has been installed within the building. The system will be interfaced with the wider NHS Fife BMS systems for the Victoria Hospital site. Motor control panels (MCP's) incorporating BMS outstations are located within plantrooms to power, control and monitor the mechanical plant.

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:</p> <p>NHS Fife identified that Quality Management and Assurance is generally being monitored through the use of BIM 360 Field System (BIM 360 FS) software linked to the Contractors overarching quality management plan. NHS Fife have not provided any supporting documentation to identify how they as a Health Board maintain overarching control of Quality Management and Assurance nor how they are monitoring adherence to the use of the BIM 360 FS software. NHS SA have concerns around this approach, as throughout the KSAR process there was evidence to indicate that NHS Fife and the NEC Supervisors are not consistently utilising the BIM 360 FS software. It is also unclear how the NEC Supervisor is linking any observations made back to the overarching NEC Contract Defects Reporting protocols.</p> <p>NHS SA have concerns that any quality issues recorded in BIM 360 FS are within a system ultimately managed by the PSCP with no audit trail in place to support NHS Fife review/approval of closeout. It is unclear from a governance perspective how NHS Fife maintain control over this process to avoid it becoming “self-policing” as the data is in the domain of the Contractor.</p> <p>NHS Fife has provided the Contractor’s Project Quality Plan (PQP) to demonstrate the project specific processes and procedures that will be implemented throughout the project. The PQP is based on the Contractor’s Quality Management System which is aligned to the provisions of IOS 9001:2015. No evidence was provided to confirm implementation. NHS SA note that this is a Contractor document, and it is unclear whether this plan has been agreed and signed off with NHS Fife.</p> <p>The PQP provided is version 014, dated 08.04.22 and from the Revision Record it is evident that this document is being reviewed and updated monthly. The PQP includes ‘Inspection, Testing and Verification’ and confirms the Contractor’s Project Manager is responsible for detailing and controlling the</p>		

Inspection and Testing Documentation and for reviewing Supply Chain Inspection and Test documentation.

It is noted that results from inspections are retained on site. NHS SA have concerns following the site visits regarding the management of this information and the remedial actions taken, as NHS Fife and their NEC Supervisor's role in this process is not referenced in this PQP. NHS Fife also noted that not all stakeholders (e.g. AE's, AP's, etc) have access (or the ability to access) the BIM 360 FS software, therefore it is unclear as to how they are reviewing and validating the Inspection and Test Plans.

NHS Fife have not provided project specific examples of completed Inspection and Test Plans or a register of completed Inspection and Testing Plans for works packages undertaken to date. NHS SA raised this at the weekly Project meeting held 15.06.22. During the site visit on 01.07.22 the Contractor demonstrated the BIM 360 FS to NHS SA which shows how it is being used for managing quality on site.

NHS Fife provided the 'NHS Fife – Construction Assurance Review Tracker'. This document is part of NHS Fife's Action Plan in response to the previous FBC NHS Assurance Review. No evidence has been provided to demonstrate NHS Fife's implementation of the action plan, nor how they are evidencing closeout of identified issues.

Documents referenced are:

Project Quality Plan

Site Quality Induction (May 2021)

Site Specific Quality Questions (31st May 2021)

NHS Fife – Construction Assurance Review Tracker

NTC-FO – Commissioning Responsibility Matrix Rev. 0_Ver1

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:

NHS Fife have provided the 'Asite Protocols' document which is the tool being utilised for the project to collect, manage and disseminate project documentation. The protocol sets out the roles and responsibilities with the Document Controller and Designer Manager clearly identified.

This protocol document sets out the folder structure requirements for the project for document management. The Information Manager is responsible for uploading and publishing documents to ensure that document status changes are managed and approved prior to being shared with the project team.

NHS Fife have also provided monthly BIM Coordination Meeting Minutes for the previous four months. These meetings are attended by the Contractor and the Design Team and demonstrate the ongoing measures to identify clash detection occurrences enable preventative action to be taken. NHS SA have concerns that not all clashes can be detected as the Federated BIM model does not include secondary walls. It was noted during the site visit that where services clashed site operatives had omitted parts of secondary walls to allow passage, this was done without the input from the Design Team.

The documentation provided by NHS Fife demonstrates that measures are in place and being implemented on the project for document control processes. During the KSAR Review and the Technical Workshops a discrepancy between design drawings and MEP installation drawings was identified. For example, A heater battery was shown to be installed in the Anaesthetic Room, rather than in the corridor in compliance with the design.

Whilst the information produced by NHS Fife provides the process for addressing change management, no specific evidence has been provided to indicate the approach to the management of non-conformances. The lack of evidence of the management of non-conformance was raised at the weekly project meeting held 15.06.22. NHS Fife advised that all parties are utilising BIM 360 FS for managing the defects and non-conformance process and advised that issues are actioned as soon as they are recorded. This as noted in item 1.1 is has not been evidenced. During the on-site demonstration of BIM 360 FS, NHS SA notes it was discovered that some site operatives were working from images on smart phones due to inability to access BIM 360 FS.

NHS SA have concerns as NHS Fife do not have access to BIM 360 FS, and defects are raised via the Contractor, with the subsequent risk that the Contractor might signing off defects without NHS Fife involvement.

Documents referenced are:

Asite Protocols

BIM Execution Plan (BEP) – NHSF Elective Orthopaedic Centre

BIM Coordination Meeting Minutes – 22/02/22, 23/03/22, 20/04/22, 05/05/22

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:

NHS Fife have provided weekly and monthly site inspection reports produced by the NEC Supervisor to evidence Quality Assurance on the project. NHS F Elective Care Site Inspection (weekly) and EOC Monthly Inspection Report.

These NEC Supervisor reports are intended to record the matters of concern and identify defects. These reports are issued to NHS Fife and the Contractor. NHS Scotland Assure have concerns that the inspections being undertaken and recorded are not identifying all potential quality concerns, with specific examples included within subsequent of this report. There are examples where the NEC Supervisor has included photographs of “progress” that may indicate a defect/quality issue being present, however this is not called out within the report, nor does it appear to have been recorded within BIM 360 FS.

NHS SA note that there appears to be no overall tracker of observations or defects created to index defects and QA issues raised by the NEC Supervisor. NHS SA notes that each individual defect or QA issue is signed off separately within the BIM 360 FS.

NHS SA visited the construction site on the 01.07.22. NHS SA were given a comprehensive demonstration of BIM 360 FS by the Contractor. NHS SA were shown how BIM 360 FS aids the QA process out with the reports mentioned above. BIM 360 FS allows tags to be placed on a drawing stored on the BIM 360 FS app on an iPad, highlighting the location of the works requiring attention. The details of the tag are updated to show remedial action required, who is performing the check, the findings of the check, supporting photographs and who is required to sign off successful remediation.

As noted in item 1.1 NHS Fife and the NEC Supervisors are not consistently utilising the BIM 360 FS and therefore unable to observe the management of the QA process through the app themselves.

From the above evidence provided it is apparent that processes are in place on site for the Contractor to monitor Quality Assurance processes through the usage of BIM 360 FS. However, NHS SA note that no evidence has been provided to show that NHS Fife are monitoring the close out process of defects. NHS Fife are placing heavy reliance on the Contractors QA system to provide assurance. NHS SA note that there is a risk that some items could be missed during entering them into the Contractor’s system. NHS SA recommends that NHS Fife should produce a documented QA process, to fully show the process and sign off protocols, and ensure all parties involved adhere to an agreed process.

Documents referenced are:

NHS F Elective Care Site Inspection – 01/04/2021 – 28/04/2022

EOC Monthly Inspection Report – 28/04/2021 – 30/04/2022

Workbook Ref No.	Areas to probe	Evidence expected
1.4	How does the Health Board assure itself that Testing and Commissioning of services and systems have / are being developed and put in place to meet the project needs?	Evidence of Testing and Commissioning monitoring / witness of tests. Evidence of Testing and Commissioning review of results. Evidence of Testing and Commissioning acceptance of results. Testing and Commissioning programme. Plans have / are being developed for collating information and documents. Have additional checks (external parties) been carried out to review the Contractors T&C's proposed plans.

NHS Scotland Assure Observations:

NHS Fife have provided the draft Commissioning Programme for the project which has been prepared by the Contractor's M&E Subcontractor. The draft programme has an overall duration of 20 weeks. This would indicate Testing and Commissioning activities should have commenced around June 2022, no evidence has been provided to confirm commissioning has commenced. The programme does not include actual start/end dates for the various Testing and Commissioning activities. NHS SA consider at this stage a Final Testing and Commissioning Programme should be in place with the key dates set out, reconciling with the current Construction Programme. This was raised with NHS Fife at the Weekly Project Meeting held 08.06.22, where NHS Fife and the Contractor agreed to review further. On 14.06.22 the Contractor provided an updated Commissioning Programme from their M&E Subcontractor dated 15.04.22 which includes start and end dates and stated that a further revision was due to be issued. NHS SA note that the M&E Subcontractor Programme does not include any Pre-Commissioning activities.

The M&E Subcontractor's Testing and Commissioning Programme details the commissioning activities associated with the Mechanical & Electrical items and also includes activities within the programme for witnessing the testing as part of the client demonstration process. NHS SA note that training is not included in this programme.

At this stage of the project NHS SA understand Testing and Commissioning results may not yet be available, however, some pre-commission activities should have been undertaken by this time. The Programme for witness testing is not yet finalised and invites to stakeholders have not yet been issued.

NHS SA recommends that the demonstration schedule and attendees are finalised now to ensure attendance by NHS Fife and NEC Supervisors.

The end of the Programme sets an 8-week period pre handover, for the collation of information for the project and O&M Manual and will include the various test results, certificates and as built drawings. This demonstrates that plans are being developed by the Contractor to collect and present the Testing and Commissioning documentation. NHS SA notes that NHS Fife do not have the required software to use/access the information in the BIM module.

NHS Fife provided the Contractor's Client Demonstration and Handover Schedule for the project, dated September 2021 which appears to be a Presentation Document to NHS Fife. The document details the planned timetable of demonstrations over a 5-day period including various Mechanical and Electrical services, as well as Building Demonstrations. The schedule states that each demonstration is to be attended by the relevant specialist subcontractor. The Handover Schedule also states that demonstrations will be recorded with copies given to NHS Fife for future use.

From the information provided by NHS Fife, there was no evidence that additional checks by external parties have been carried out to review the Contractor's proposed Testing & Commissioning plans. NHS Fife have confirmed at the weekly KSAR progress meeting on 6 July 2022 that independent validators for the ventilation systems have only recently been appointed. Based on the observations noted in relation to the project programme status it is unclear if there is now adequate time for the independent validator to undertake the noted early-stage activities.

Documents referenced are:

Client Demonstration and Handover Schedule
NHSF Elective Care Commissioning Programme

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: NHS Fife have provided no evidence in response to 1.5.</p> <p>BIM 360 FS appears to be the medium employed for managing defects. NHS Fife and their appointed representative (NEC Supervisor) have not been able to demonstrate that they have been using this. There was no link evidenced by NHS Fife to required NEC contractual mechanisms.</p>		

There is limited evidence to demonstrate the ‘closing of the loop’ of defects.

The process thus could have the potential to be “self-policing” by the contractor and there are no overall control measures demonstrated by NHS Fife.

There is no consolidated list of defects/issues raised by NHS Fife or their representatives.

Documents referenced are:

1.5 To Demonstrate Management of Defects (1) _ Ver 1 / Ver 2
BIM Field 360 Issues – Defects Management (2) – (4)

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?	Soft Landings process Plans have/are being developed for collating as installed information and documents.

NHS Scotland Assure Observations:

From the documentation provided by NHS Fife, it is evident that the Contractor has commenced planning in advance of the handover process. As noted under items 1.1 NHS Fife have provided their Commissioning Responsibility Matrix, that identifies the MEP systems that their AE’s, AP’s, Supervisors, and specialists are to be involved with in terms of commission pre-checks, witness testing and validation.

NHS SA note that project construction completion is planned in October 2022. Correspondence between the Contractor and NHS Fife has been provided dated 16/09/21 that shows the Contractor’s proposals for the client demonstration and handover process (note at the time of the KSAR, NHS Fife indicated that they were reviewing the overall programme and it may be subject to delay due to additional works). Included in the correspondence is the Client Demonstration and Handover Schedule and the proposed Client Familiarisation Attendance Register. Within the correspondence NHS Fife are requested to review the attachments and return any comments as well as requesting the names of the persons who will be attending the demonstrations / walk rounds. It is not clear from the evidence provided whether NHS Fife have provided details of the required attendees.

NHS Fife have provided, the Client Demonstration and Handover Schedule which was also provided under item 1.4 above. The document summarises the sign-off procedure at handover and relates to soft landings at handover. This demonstrates that NHS Fife and the Contractor are developing plans for the collation of project documentation as it becomes available to be included in the Building File and O&M Manual, Technical Specifications and Drawings, however, this is being driven by the contractor, and no evidence of NHS Fife’s specific requirements has been provided. NHS Fife have not provided any evidence for a soft-landing strategy post-handover.

From our review of the evidence provided, it's clear the Contractor has developed plans in advance of the handover stage of the project and has sought feedback from NHS Fife on the proposals. However, at this stage of the project NHS SA would expect these plans to be finalised with specific dates allocated to each handover activity, along with a confirmed list of attendees.

Documents referenced are:

NHSF-EOC Client Demo Handover Sessions (Soft Landings) Ver1

Client Familiarisation Session Attendance Register (blank)

Client Demonstration and Handover Schedule

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:

NHS Fife initially provided a completed Stage 3 HAI-SCRIBE document, signed off by the contractor and relevant clinical, project and IPC team members. This document contained several actions, and some commentary relating to these, but did not appear to have been revisited since being signed off in September 2020. An updated Stage 3 HAI-SCRIBE document, dated 10.02.21, was provided after the IPC KSAR workshop; this contained more information about the actions identified, some of which were noted as 'Action ongoing'. No evidence was provided as to the status of these actions after this date or of ongoing review of the HAI-SCRIBE. NHS Fife should ensure that the HAI-SCRIBE is regularly reviewed and updated, with appropriate version control in place, and maintain an action tracker to demonstrate the progress and completion of actions identified.

NHS Fife provided evidence of review by the IPC Team and other clinicians of a sample patient's bedroom in the form of a comment tracker. Many actions are noted as 'ongoing' and it is not clear what the process is for future review of actions. No evidence was presented of IPCT review of other areas of the site. NHS Fife should ensure that there is a structured programme of site visits by the IPC Team and that

there is a documented process for review of any recommendations or actions arising from these visits.

Following the IPC KSAR Workshop, NHS Fife provided a task specific HAI-SCRIBE for breakthrough into the existing building. Again, the status of actions arising from the HAI-SCRIBE process was not clear. As noted above, NHS Fife should maintain an action tracker to demonstrate progress and completion of actions identified.

Documents referenced are:

SHFN 30 Part B: HAI-SCRIBE Implementation strategy

FEOC HAI Scribe Stage 3 – 17.09.20 Final Signed

FEOC HAI Scribe Stage 3 Revised – 10.02.21 (submitted 30.06.22)

NTC F HAI Scribe Stage 3 – Link Bridge 16.05.22 – BJ (submitted 30.06.22)

NTC – Fife Orthopaedics Sample Bedroom Comment Tracker (Submitted in hard copy only, 28.06.22)

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 clearly understood by each section of the client organisation?	<p>Updated description of each department of the facility review process evidenced.</p> <p>All specifications are being related back to the Portfolio Document (PD).</p> <p>An updated and live Derogation document.</p>

NHS Scotland Assure Observations:

Evidence produced by NHS Fife includes Project Board Meeting Minutes and Schedule of Derogations from RIBA Stage 4 / FBC.

NHS Fife have not fully demonstrated how they continue to assure itself, that the clinical needs of the facility are clearly understood by each section of the organisation.

The Project Board and Project Team Meeting Minutes have been produced which demonstrated that the various representative from clinical departments and sections of the client organisation are involved at these meetings Six examples of Project Board & Project Team minutes were provided to demonstrate the on-going involvement of the clinical stakeholders. The appropriate clinical persons attend the meetings, and the agenda includes Service Update, Project Directors Update, Risk Management, Financial Matters and Matters for Escalation to EDG.

The Project Board is chaired by the Director of Nursing and includes other clinical representatives. The HAI-SCRIBE review team also includes appropriate clinical and service representation, but the HAI-SCRIBE document provided has not been signed off by all members of the team. Notably, the Pharmacy Operations Manager, Director of Acute Services and Service and Project Managers are all listed as members of the review team, but their signatures are not included. Evidence of review by the IPC Team and other clinicians of a sample patient's bedroom was

provided in the form of a comment tracker. It is unclear what review there has been by clinicians or the IPC Team of other elements of the building such as operating theatres.

No evidence was provided relating to an updated description of each department as a result of a facility review process. No evidence was provided in reference to specifications being related back to the Portfolio Document.

A schedule of derogations was provided but it is unclear what the process is for agreeing and signing off derogations, and how the IPC Team are included in this process, for example with respect to the derogation to SHPN 04-01 Part A stipulating that rodding eyes should not be located within patient accommodation. NHS Fife should ensure that that is a clear, documented process for agreement and sign off of derogations, involving all relevant parties, particularly the IPC Team where relevant.

Documents referenced are:

EOC Monthly Inspection Report – 28/04/2021 – 02/03/2022

NHSF Elective Care Site Inspection Report – 01/04/2021 – 18/05/2022

NHSF Contractors Report

01 Construction Phase Plan (4)_Ver(1)

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?	<p>Regular (fortnightly) reports being provided to the clients' project management team, certifying installation is being provided in accordance with the CD.</p> <p>Regular comment on each of the installing contractors' quality safety plan and work delivered.</p> <p>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.</p>

NHS Scotland Assure Observations:

NHS Fife have provided no clear evidence that the Principal Designer is carrying out regular site inspections. The evidence provided by NHS Fife includes the same NEC Supervisor reports that were uploaded in response to item 1.3. These documents are not applicable to the question being asked under this section.

NHS SA note that under the "01 Construction Phase Plan (4)Ver(1)" provided separately the role of Principal Designer is confirmed to be undertaken by the

Contractor. This document does not contain any evidence of regular site inspections being carried out by the Principal Designer.

NHS Fife should ensure that the Principal Designer is undertaking appropriate site inspections and providing reports for the remainder of the construction phase.

Documents referenced are:

EOC Monthly Inspection Report – 28/04/2021 – 02/03/2022

NHSF Elective Care Site Inspection Report – 01/04/2021 – 18/05/2022

NHSF Contractors Report

01 Construction Phase Plan (4)_Ver(1)

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 evidence produced by NHS Fife is limited to the Commissioning Responsibility Matrix (CRM).

The CRM details the various roles of persons to be involved in the technical commissioning process and their general responsibilities in that process. The roles listed include Contractor, Designer, Supervisor, NHS Fife Authorised Person(s), Authorised Engineer(s) and Specialist Theatre Validation.

It is unclear how this document addresses the requirements in terms of the NHS Fife's approach on the procurement journey.

No evidence was provided to demonstrate how the IPC Team will be involved with the procurement process. NHS Fife should ensure that the formal process for procuring fixtures, fittings and equipment has suitable IPC engagement and that there is sufficient resource available in the NHS Fife IPC Team to support this.

NHS SA raised this at the weekly Project Meeting 15.06.22. NHS Fife advised that the CRM was provided to demonstrate the services and personnel that have been procured for the project.

Documents referenced are:

NTC-FO – Commissioning Responsibility Matrix Rec.0_ Ver 1

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 noted under item 1.4, the Commissioning Programme provided as evidenced did not contain project specific timescales. The latest Programme does not reflect the current status of the site activities which was evident following the NHS SA site visits undertaken 28/06/22 and 01/07/22.

Evidence provided to demonstrate NHS Fife’s Commissioning Plans consists of the NEC Supervisor’s Completion Tracker and MEP Inspection, Test and Commissioning Plan.

NHS SA acknowledge that due to the current status of the project, final commissioning activities may not have commenced or be completed at this stage, however pre-commission activities should have been undertaken by this time.

The Completion Tracker, compiled by NHS Fife’s NEC Supervisor, lists a number of activities categorised under various headings such as:

- Statutory Consents
- Commissioning/testing, Demonstrations and Certification / Documentation
- Fire (alarms and systems)
- Handover Documentation

The Tracker identifies the party who is responsible for actioning / providing these criteria with columns to be populated to provide Verification, Completion status and Target / Actual completion dates along with the opportunity for the Contractor, Project Manager and Supervisor to add any further notes.

This Tracker provides a detailed checklist of the completion criteria which will be used by the Project Manager and NEC Supervisor to assist in certifying Completion

and should provide NHS Fife with the assurance that the respective works are completed and signed off by the respective parties.

The MEP Inspection, Test and Commissioning Plan compiled by NHS Fife's NEC Supervisor lists the separate Mechanical and Electrical activities which includes Overview and Visual Inspections. The document is in a different format to the Contractor's MEP Commissioning Programme noted under item 1.4. The MEP Inspection Test and Commissioning Plan is a high-level document which demonstrates to NHS Fife that there will be a process in place which the NEC Supervisor will utilise as part of the completion certification process and recording of the same. NHS SA note the Plan is not yet populated to include specific details of the responsible persons for witnessing & inspection.

NHS SA notes that the documents provided by NHS Fife have been developed by the NEC Supervisor, rather than NHS Fife, which details the criteria that is to be undertaken by the team as part of the project commissioning plan. It is unclear if NHS Fife have approved and adopted this plan, or whether the needs of the Operational Estates Team have been incorporated.

No evidence has been provided to confirm that NHS Fife will have audited and approved the pre-commissioning checks carried out by an independent organisation. This was raised by NHS SA at the weekly project meeting on 15.06.22 where NHS Fife advised that due to the current status of the project the Commissioning Plan and independent review has yet to be completed and this level of information should be available at the Commissioning Stage review. As previously noted under item 1.4 NHS Fife confirmed verbally that the specialist company "H&V Commissioning" are to be employed to undertake this role. NHS SA were unable to verify this statement from the documents provided for the review.

NHS SA have concerns that some elements of pre-commission checks may have already been carried out without input from an independent organisation.

Documents referenced are:

Completion Tracker_Ver1

MEP Inspection, Test and Commissioning Plan_Ver1

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>
<p>NHS Scotland Assure Observations:</p> <p>NHS Fife have provided the Commissioning Responsibility Matrix (CRM) previously discussed under item 1.10, which detailed the various roles.</p> <p>The CRM details the named individuals and their respective disciplines for the project on behalf of NHS Fife. However, the CRM does not make reference to or demonstrate a clear governance structure or how this is to be implemented.</p> <p>The Authorising Engineers and Authorised Persons within the CRM are NHS Fife staff and are listed for the following services:</p> <ul style="list-style-type: none"> • HV and LV • Ventilation General • Ventilation Critical • Water • Medical Gas <p>The CRM does not reference the IPC Team but does note that commissioning will be covered in greater detail within the commissioning strategy, programme and supporting information, NHS Fife have not provided a separate commissioning strategy or other 'supporting information' (as noted under item 1.4 the Contractor has provided the commissioning programme). NHS Fife should ensure that the commissioning process is fully considered at the regular meetings of the HAI-SCRIBE Team described in SHFN 30 Part B.</p> <p>The Duty Holder Matrix was raised by NHS SA at the weekly project meeting held 15.06.22 and NHS Fife advised there is not a Duty Holder Matrix for the project, however NHS Fife noted that this will be rectified going forward. NHS SA recommends that a Duty Holder Matrix should be produced to support the remainder of the construction stage.</p>		

NHS Fife also referenced the Project Execution Plan (PEP) developed at the start of the project which sets out the various roles and responsibilities of various parties. The PEP was not provided as evidence to review. NHS Fife should ensure the PEP is reviewed and updated at the completion of each stage and regularly throughout the life of the project.

Documents referenced are:

NTC-FO-Commissioning Responsibility Matrix Rev. 0_Ver1

SHFN 30 Part B: HAI-SCRIBE Implementation strategy and assessment process

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.

<p>3.1.2.1</p>	<p>NHS SA note that it is unclear whether NHS Fife has discharged all conditions associated with Planning Permission. NHS Fife should ensure all Planning Permission conditions are discharged.</p> <p>NHS Fife have not provided the Building Warrant details for the project. NHS Fife should ensure that Building Control are consulted and involved as required and that sign-off and certification for the project is achieved.</p>
<p>3.1.2.2</p>	<p>NHS Fife has noted within their FBC Interim Assurance Service Review tracker that a Situation Background Assessment Recommendation (SBAR) risk assessment has been produced in relation to the derogation from SHTM 04-01 regarding the omission of water filtration of the incoming mains water supply.</p> <p>The SBAR and associated supporting documentation has not been submitted to NHS SA for review.</p>

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>

NHS Scotland Assure Observations:

The documentation provided by NHS Fife is limited to evidence of the lead plumber's certifications, registrations, and qualifications. No further evidence is provided to confirm the number of plumbing operatives working on the project and their respective qualifications, registrations, and experience.

The evidence submitted does not provide details of plumbing operatives previous healthcare experience.

There is no evidence of any relevant onsite training provided to those working on the project with no previous healthcare experience prior to commencing work on site. There is also no evidence provided to confirm a site induction for working on water or plumbing/drainage services has been developed, implemented, and agreed with the Health Board.

The documentation provided does not confirm the plumbing contractors/sub-contractors have been vetted by the Health Board. There is no documented evidence detailing the vetting process to be followed, the level of competency checks being undertaken, or that the competency of the Contractor(s) has been signed off by NHS Fife.

NHS SA have concerns that the evidence submitted for review does not provide suitable assurance that NHS Fife have undertaken the necessary checks to confirm

the site operatives undertaking plumbing works have the appropriate training and experience of installing water and plumbing/drainage systems within a healthcare environment.

Documents referenced are:

2.1 To Demonstrate Plumber Training and Competency.doc

Plumber Training & Competency (1) (IMG_0032.jpg)

Plumber Training & Competency (2) (IMG_0033.jpg)

GEBERIT MAPRESS Training Certificate (GE.pdf)

CITB Site Safety Plus Training Certificate

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?	Evidence of similar, previous healthcare projects by the contractor. Evidence of site management structure. Evidence of HAI and SHPN 30 training.

NHS Scotland Assure Observations:

The documentation provided in response to this question is the same information provided as evidence in response to question 2.1.

As noted in 2.1 above NHS SA have concerns that the evidence submitted for review does not provide suitable assurance that NHS Fife have undertaken the necessary checks to confirm the plumbing contracting company has the relevant experience to direct and manage their staff within a healthcare environment.

Documents referenced are:

2.1 To Demonstrate Plumber Training and Competency.doc

Plumber Training & Competency (1) (IMG_0032.jpg)

Plumber Training & Competency (2) (IMG_0033.jpg)

GEBERIT MAPRESS Training Certificate (GE.pdf)

CITB Site Safety Plus Training Certificate

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:

NHS Fife have appointed an NEC Supervisor who are independent of the Contractor, including a dedicated Mechanical and Electrical (M&E) resource.

The NEC Supervisor carries out regular site inspections on behalf of NHS Fife. Inspection reports produced by the NEC Supervisor have been provided for review. The reports include general observations relating to the ongoing construction works, observed defects, health and safety concerns and supporting photographic evidence.

NHS SA would note that the reports provided in relation to the inspection of the water and plumbing / drainage systems have limited commentary on system specific observations relative to areas, rooms or locations inspected. The reports typically provide high level, general observations. NHS SA note that some of the photographic evidence provided in the reports include potential areas of quality/safety concern that are not specifically addressed or identified in the main body of the NEC Supervisors observations. It is therefore unclear how specific technical and quality issues are being identified, monitored, and tracked.

The NEC Supervisor reports do not include any means of tracking observations and defects identified or provide clarity on the status of all observations and defects raised to date.

During the site inspection undertaken by NHS SA on Friday 1 July 2022, the Contractor demonstrated a cloud-based collaboration and reporting tool (BIM 360 FS) that has been adopted on the project. This software facilitates the ability to integrate Building Information Modelling (BIM) data and documentation with field-based data. The software has been adopted to manage, monitor, and track quality and safety of the construction works.

It was also confirmed that NHS Fife currently do not adopt the use of this system to record observations and defects. NHS SA have concerns around the effectiveness of utilising this software and therefore the lack of control measures in place if all parties are not participating in the adoption of this tool. There are also concerns that the data, documentation, and records being recorded through this tool is not readily accessible to NHS Fife following completion of the project.

There has been no evidence provided that confirms a consolidated methodology has been adopted by NHS Fife to manage and monitor quality and compliance with the works information that clearly documents and tracks status of any observations, issues, and defects raised. No documentation has been provided to confirm how NEC protocols with respect to defects management has been provided for review.

No evidence has been provided to confirm if other independent parties have inspected the ongoing installation works such as the Authorised Person (AP) or Authorising Engineer (AE) for water. In particular, the evidence provided for review does not confirm who is undertaking the inspection of water services pipework joints in accordance with 16.3 of SHTM 04-01, Part A. No documentation has been provided to confirm the quantity of fittings that have been cut out for examination and the associated observations.

It was also confirmed by the Contractor during the site inspection on Friday 1 July 2022 that pneumatic pressure testing of the water services pipework has been undertaken however no test records have been provided to NHS SA for review nor has it been confirmed who has witnessed and reviewed the Contractor's test records on behalf of NHS Fife.

NHS SA have concerns that the absence of the information noted above does not provide the required assurance that the pipework joint inspections are being carried out at appropriate intervals and suitably documented. NHS SA also have concerns that there is a risk pressure testing is being completed out of sequence and prior to the necessary join inspections being undertaken.

Documents referenced are:

NEC Supervisor Inspection Reports (211223 - EOC Monthly Inspection Report Nr 9 inc attachments_Ver1.pdf, 02022022 - EOC Monthly Inspection Report Nr 10_Ver1.pdf, 02032022 - EOC Monthly Inspection Report Nr 11_Ver5_Ver1.pdf, 31032022 - EOC Monthly Inspection Report Nr 12_Ver1.pdf, 30042022 - EOC Monthly Inspection Report Nr 13_Ver1.pdf)

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:

As noted in 2.3 above, NHS Fife have appointed an NEC Supervisor to undertake regular site inspections.

A statement on the need for temporary protection of open pipe ends for the installed and stored pipework is included within the NEC Supervisor reports. This statement appears to be repeated on a regular basis in multiple supervisor reports but does not identify specific areas or rooms where these issues have been identified. There is also limited photographic evidence to support the observations made and how this is being monitored by the NEC Supervisor. NHS SA have noted some examples within the reports where open ends are evident but have not been specifically identified or recorded by the NEC Supervisor.

No evidence has been provided to confirm how the observations and defects in relation to pipe open ends are recorded and tracked or how the noted defects are escalated and addressed where the concerns have been consistently noted within the reports.

During the site inspection undertaken by NHS SA on Friday 1 July 2022 it was noted that generally pipe open ends had been sealed by a combination of proprietary plastic pipe end caps or taped.

There were however some pipe open ends noted within the ground floor cold water storage plantroom and within some first-floor bedrooms. These examples were raised with the Contractor during the site inspection who noted that these will be escalated with their installer and rectified.

NHS SA are concerned that the inspection and monitoring of open pipe ends is not focussed on specific observations and are generic in nature. There are also concerns around the documenting, tracking and escalation of defects relating to open pipe ends.

Documents referenced are:

NEC Supervisor Inspection Reports (211223 - EOC Monthly Inspection Report Nr 9 inc attachments_Ver1.pdf, 02022022 - EOC Monthly Inspection Report Nr 10_Ver1.pdf, 02032022 - EOC Monthly Inspection Report Nr 11_Ver5_Ver1.pdf, 31032022 - EOC Monthly Inspection Report Nr 12_Ver1.pdf, 30042022 - EOC Monthly Inspection Report Nr 13_Ver1.pdf

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:

A federated BIM model and the Contractor's construction issue 2D general arrangement drawings for the water and above ground drainage systems have been provided for review in response to this question. In addition to this the designers Major Plant Access and Replacement Strategy report has been provided.

The Contractor's 2D drawings provided for review are single service drawings in isolation from other services. During the electrical technical workshop on 20 July 2022 the Contractor's MEP sub-contractor has confirmed that they are taking

ownership of the federated BIM model and are using this model for services co-ordination in lieu of multi-disciplinary services co-ordination drawings. The BIM execution plan for the project details the coordination activities however there is no commentary around how the BIM model would be adopted in the field for installation purposes.

During the electrical workshop on 20 July 2002 the contractor stated that a full set of installation working drawings had been produced and that the operatives on site were working to these and using iPads to get direct access to the BIM model information (via BIM 360 FS) for installation and setting out purposes.

It was observed on site during the NHS SA visit that one of the site operatives was working to a photo of the consultants drawing on their phone which contradicts what was being advised by the Contractor. NHS SA therefore have concerns around the level of governance applied on site to ensure defined protocols are adhered to. It is also unclear whether the NEC Supervisor is monitoring this process.

No evidence has been provided to confirm that the Contractor's co-ordination drawings have been presented to NHS Fife and their estates Facilities Management FM team. There is also no evidence provided to confirm that the design consultant has reviewed and agreed the Contractor's co-ordination drawings for construction.

The Contractors response to the KSAR gap analysis undertaken prior to commencement of the review noted that the documentation and data contained within their BIM Level 2 model is being used by their site operatives for services co-ordination and setting out. Whilst a generic demonstration on the capabilities and application of their BIM 360 FS software was provided by the Contractor, how this is adopted and utilised by the operatives in the field was not evidenced during the site inspection on Friday 1 July 2022.

The response to the KSAR also noted that the evidence provided for review has been presented to NHS Fife and that NHS Fife's Project Director internally communicates this information to the relevant internal stakeholders within NHS Fife. It is however acknowledged in the same document that NHS Fife have no capability to review the BIM model.

The Major Plant Access and Replacement Strategy provided is the designers RIBA Stage 4 document. There is no evidence provided to confirm how the original design intent is being followed by the PSCP and how this document is being monitored, tracked, and updated as required. It was acknowledged by NHS Fife during the electrical workshop on 20th June 2022 that this document should be updated to construction stage including the up-to-date plantroom drawings and 3D visuals. There are concerns that these proposed updates would be undertaken too late within the programme to have any meaningful impact.

NHS Fife's action plan tracker from the Full Business Case (FBC) Interim Assurance Service Review noted concerns in relation to the location of drainage rodding eyes and the quantity of air admittance valves (AAV's) proposed on the project that would require maintenance access from clinical areas.

The drawing review and site inspections completed highlighted that there are still access and maintenance limitations and that a significant number of stacks will require maintenance access via patient bedrooms. Within patient bedrooms rainwater drainage pipework is also routed within the ceiling voids and in some instances above beds.

NHS SA have concerns that the noted observations could result in restricted maintenance activities when the room is occupied, potential IPC related concerns due to the requirement to access clinical spaces to maintain drainage pipework and risks of potential smells if the AAV malfunctions (e.g., becomes stuck in the open position).

During the site inspection undertaken on Friday 1 July 2022, NHS SA observed that corridor ceiling voids, particularly on the ground and first floors, are congested and potentially impact on accessibility to services. The water services pipework (and other piped services) and electrical containment has been routed at low level and in several areas restricts access to services installed within the upper part of the corridor ceiling voids.

NHS SA have concerns that these access issues do not demonstrate that NHS Fife and their appointed supply chain have satisfactorily discharged their duties with respect to Regulation 9 (2) of the Construction Design and Management Regulations, (particularly sub-clause (b)):

'When preparing or modifying a design the designer must take into account the general principles of prevention and any pre-construction information to eliminate, so far as is reasonably practicable, foreseeable risks to the health or safety of any person

(a) carrying out or liable to be affected by construction work;

(b) maintaining or cleaning a structure; or

(c) using a structure designed as a workplace'.

No evidence has been provided to confirm that residual access and maintenance issues noted have been discussed and agreed with NHS Fife's FM team or infection prevention and control (IPC) colleagues.

NHS SA have concerns that there is a lack of control measures and governance in place relating to the provision for access and maintenance on the project and consider the documentation provided and the observations raised from site visits do not provide the required assurance that these elements have been appropriately addressed.

Documents referenced are:

Federated Model (EOC-NOR-ZZ-XX-CM-A-00001)

Domestic Water Services Layouts (EOC-AMK-XX-01-DR-Z-53001 to 53004, EOC-AMK-XX-02-DR-Z-53001 to 53004, EOC-AMK-XX-03-DR-Z-53001 to 53004 and EOC-AMK-XX-04-DR-Z-53002)

Above Ground Drainage Layouts (EOC-AMK-XX-01-DR-Z-52001 to 52004, EOC-AMK-XX-02-DR-Z-52001 to 52004, EOC-AMK-XX-03-DR-Z-52001 to 52004 and EOC-AMK-XX-04-DR-Z-52001 to 52004)

Major Plant Access and Replacement Strategy (EOC-RYB-XX-XX-RP-ME-79002)
Major Plant Replacement Strategy Drawings (EOC-RYB-XX-01-DR-M-79020, EOC-RYB-XX-02-DR-M-79020, EOC-RYB-XX-03-DR-M-79020, EOC-RYB-XX-04-DR-M-79020, EOC-RYB-XX-XX-DR-M-79020)

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>

NHS Scotland Assure Observations:

The response provided to question 2.5 is also applicable to this question.

In addition to this NHS Fife have provided no documented evidence that an agreed strategy is in place for spare capacity and that these requirements have been incorporated within the design and construction.

NHS SA have similar concerns to those noted in the response to question 2.5. NHS SA note that the required assurance has not been provided to confirm that the

plumbing / drainage services are being installed in a manner that will retain space for minor additions and modifications to services in the future.

Documents referenced are:

Federated BIM Model (EOC-NOR-ZZ-XX-CM-A-00001)

Domestic Water Services Layouts (EOC-AMK-XX-01-DR-Z-53001 to 53004, EOC-AMK-XX-02-DR-Z-53001 to 53004, EOC-AMK-XX-03-DR-Z-53001 to 53004 and EOC-AMK-XX-04-DR-Z-53002)

Above Ground Drainage Layouts (EOC-AMK-XX-01-DR-Z-52001 to 52004, EOC-AMK-XX-02-DR-Z-52001 to 52004, EOC-AMK-XX-03-DR-Z-52001 to 52004 and EOC-AMK-XX-04-DR-Z-52001 to 52004)

Major Plant Access and Replacement Strategy (EOC-RYB-XX-XX-RP-ME-79002)

Major Plant Replacement Strategy Drawings (EOC-RYB-XX-01-DR-M-79020, EOC-RYB-XX-02-DR-M-79020, EOC-RYB-XX-03-DR-M-79020, EOC-RYB-XX-04-DR-M-79020, EOC-RYB-XX-XX-DR-M-79020)

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 comments noted in response to question 2.4 are applicable to this question.

A standard statement on temporary protection of open pipe ends for stored pipework is included within the NEC Supervisor reports.

A statement is made by the mechanical NEC Supervisor in multiple Supervisor reports relating to the storage of materials. This same statement is regularly repeated within multiple Supervisor reports. However, there is limited evidence that confirms that plumbers' materials are being stored on site within an appropriate environment and with suitable protection that would prevent deterioration or entry of contaminants into pipework and components.

NHS SA were unable to inspect the storage facilities containing plumbers' materials during the site inspection undertaken by NHS SA on Friday 1 July as the stores were locked. There is no evidence provided to confirm that the NEC Supervisor has been checking these facilities regularly.

NHS SA have some concerns that there is limited evidence provided that gives assurance that plumbers materials are being appropriately stored on site.

Documents referenced are:

NEC Supervisor Inspection Reports (211223 - EOC Monthly Inspection Report Nr 9 inc attachments_Ver1.pdf, 02022022 - EOC Monthly Inspection Report Nr 10_Ver1.pdf, 02032022 - EOC Monthly Inspection Report Nr 11_Ver5_Ver1.pdf, 31032022 - EOC Monthly Inspection Report Nr 12_Ver1.pdf, 30042022 - EOC Monthly Inspection Report Nr 13_Ver1.pdf)

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?	Evidence that adequate pre-commissioning check sheets (SHTM 04-01 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.

NHS Scotland Assure Observations:

NHS Fife have provided limited information in response to this question. A commissioning responsibility matrix has been provided noting the relevant parties that will be involved in the pre-commissioning and commissioning activities which includes NHS Fife's AP and AE for water, the designer, and the NEC Supervisor.

No documentation has been provided to confirm and record what pre-commissioning checks and audits have been undertaken to date.

The Contractor's commissioning plan notes that pre-functional commissioning checklist documentation would be provided in advance of these activities commencing however none of this documentation has been provided for review.

A tracker document in response to the Interim Assurance Service Review undertaken at FBC stage provides NHS Fife's response to the review observations. The response provided in relation to an observation raised regarding commissioning and workmanship standards states that a Construction Phase Water Management Group (CPWMG) would be formed with the primary purpose of reviewing, validating, and tracking the commissioning process for water systems.

During the water and drainage technical workshop held on 21 June 2022 the Contractor's Technical Advisor confirmed that a draft version of the CPWMG's file including the relevant pre-commissioning activities and checklists was currently being produced. This documentation has not been provided for review. NHS SA have significant concerns around the timing of when this documentation has been produced as this documentation is critical to commissioning activities.

Based on the current construction progress witnessed during the site inspections on 1 July 2022, NHS SA have concerns that a number of activities associated with pre-

commissioning should have already been undertaken by the parties identified in the commissioning matrix.

There has been no evidence provided to confirm that these parties have undertaken these activities such as design checks and validation, installation inspections, development of the commissioning brief and joint inspection.

None of the above documentation has been provided for review and therefore NHS Assure note that there is insufficient assurance provided that the required pre-commissioning activities are being completed and recorded in advance of commissioning.

Documents referenced are:

- FBC KSAR Report Tracker (NHS Fife – Elective Care Centre Design Assurance Report Tracker – COMBINED – v20.09 (version 1))*
- Commissioning Management Plan (ES20-NHSF EOC Cx Plan_Ver1)*
- Commissioning Programme (Rev C15 Commissioning Programme-C3)*
- Commissioning Responsibility Matrix (NTC-FO - Commissioning Responsibility Matrix Rev. 0_Ver1 (1))*

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 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.
<p>NHS Scotland Assure Observations:</p> <p>The current derogations schedule (P11) provided is noted as being RIBA Stage 4 / FBC. NHS Fife confirmed at the KSAR weekly progress meeting on 8 June 2022 that a further update of the derogations schedule had been completed in relation to overheating design criteria for two rooms however there has been no further derogations identified in addition to what was recorded in revision P11.</p> <p>Minutes from the project board meeting dated 17 December 2020 confirm that the NHS Fife Project Director noted no concerns around the proposed derogations and no further comments were received by NHS Fife.</p> <p>No documentation has been provided that confirms the process of how derogations and variations to the plumbing and drainage systems are controlled, assessed, and agreed by all relevant stakeholders including the Water Safety Group.</p> <p>The Contractor adopts the use of a project extranet site (A-site) to publish construction stage works information such as plant and materials technical submissions and contractor design portion (CDP) documentation.</p>		

Whilst there is a defined workflow adopted for this review process this is restricted to input from the Contractor, designers, sub-contractors, and NHS Fife's Project Manager.

No documentation or procedures has been provided that confirms NHS Fife's governance around the technical analysis of any variations or derogations submitted by the Contractor and what input has been sought from relevant stakeholders prior to accepting and instigating the submitted proposals.

NHS SA have concerns that there are currently gaps in the governance around how derogations and variations to the design are controlled and documented during the construction stage.

Documents referenced are:


FBC Derogations Schedule (EOC-NOR-XX-XX-RP-A-00014_revP11_Ver1)

Project Board Minutes (FEOC Project Board Minutes 17.12.20_Ver1)

3.2.2 Water and Internal Plumbing / Drainage Systems: 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.

3.2.2.1	<p>NHS Fife has noted within their FBC Interim Assurance Service Review tracker that a Situation Background Assessment Recommendation (SBAR) risk assessment has been produced in relation to the derogation from SHTM 04-01 regarding the omission of water filtration of the incoming mains water supply.</p> <p>The SBAR and associated supporting documentation has not been submitted to NHS SA for review.</p>
3.2.2.2	<p>An emergency fill connection has been provided to enable the filling of the cold-water storage tank in the event of a mains water failure. No details are provided in relation to the associated control measures to ensure the water quality from a temporary bowser is of an appropriate quality and safe for use.</p> <p>It was also confirmed at the water and drainage technical workshop on 21 June 2022 by NHS Fife's AP for water that this proposal had not been submitted to the water safety group for review and approval. NHS SA note that this highlights further concerns around the governance of the project.</p>
3.2.2.3	<p>An air-cooled chiller has been installed to assist in the control of cold-water temperatures within the building. There is a plate heat exchanger and associated buffer vessel installed as part of this installation.</p> <p>As per item 5.17 of SHTM 04-01 Part A, all items in contact with water should be WRAS approved. The manufacturer of the plate heat exchanger and buffer vessel could not be determined and therefore is unclear if the installed product is on the WRAS approvals register for</p>

	<p>plumbing products and materials. If the product is not WRAS approved, then the installer must be able to demonstrate that the product is compliant with the Water Supply (Water Fittings) (Scotland) Byelaws.</p>
<p>3.2.2.4</p>	<p>No schematic drawings for water or drainage were provided for review. It was confirmed at the water and drainage technical workshop on 21 June 2022 that construction issue schematic drawings have been produced by the designer.</p> <p>However, as per item WS15 of the FBC Interim Assurance Service review observations these schematics provide typical room details only. The schematic drawings were previously noted as not providing a full representation required for commissioning, water risk assessments and Client familiarisation of systems. NHS Fife have therefore not fully addressed the previous observations raised by Health Facilities Scotland/NHS Scotland Assure.</p>
<p>3.2.2.5</p>	<p>Examples of photographic evidence provided in NEC Supervisors report dated 18/05/2022 (NHSF Elective Care Site Inspection Report - date of issue - 220518_Ver1.pdf, Photo 3) where the following items have not been included within the supervisor's report observations in relation to the photograph.</p> <p>NHS SA have observed pipe open ends, tape used for capping pipes in lieu of proprietary pipe caps, foil wrapping pipe of stainless-steel pipework has not been completed where pipe blocks are installed, and a plastic bottle has been disposed of inside a drainage pop-up.</p>  <p>The photograph shows a complex network of stainless-steel pipes and fittings on a concrete floor. Several pipe ends are visible, some of which are highlighted with red circles. One circle highlights a pipe end that appears to be capped with a piece of tape. Another circle highlights a pipe end that is wrapped in foil. A third circle highlights a pipe end that is open. In the background, a drainage pop-up is visible, and a red circle highlights a plastic bottle that has been disposed of inside it. A yellow stool is also visible in the foreground.</p>

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>
<p>NHS Scotland Assure Observations:</p> <p>The observations noted in response to question 2.1 apply to this question with respect to ventilation. There is no evidence provided in relation to the qualifications and healthcare experience of the project duct and plant installers. The information provided does not confirm the adoption of specific site inductions that have been developed, implemented and agreed with NHS Fife. There is also no assurance provided that the competency of the sub-contractor has been checked, completed and signed off by NHS Fife.</p> <p>NHS SA have concerns that the evidence submitted for review does not provide suitable assurance that NHS Fife have undertaken the necessary checks to confirm the site operatives undertaking duct and plant installation have the appropriate training and experience of installing ventilation systems within a healthcare environment.</p> <p>Documents referenced are:</p> <p><i>Constructionline Certificate of Membership (Constructionline Gold_Constructionline Gold_Ver1.pdf)</i></p> <p><i>Cyber Essentials – Certificate of Assurance (Cyber Essentials Plus RGM_TOPCO_Limited_CertOnly_Cyber Essentials Plus RGM_TOPCO_Limited_CertOnly_Ver1.pdf)</i></p> <p><i>FIRAS Certification for Fire Rated Ductwork (Issue 2 Certificate - RGM Vent Ltd_Issue 2 Certificate - RGM Vent Ltd_Ver1.pdf)</i></p> <p><i>Email correspondence noting ventilation installers experience (RE KSAR item 3.1_Ventilation System Installer Experience Case Studies_Ver1.msg)</i></p> <p><i>Certificate of Health & Safety Accreditation (SSIP_Acclaim 2021_SSSIP_Acclaim 2021_Ver1.pdf)</i></p>		

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.
<p>NHS Scotland Assure Observations: The observations noted in response to question 2.1 and 2.2 apply to this question with respect to ventilation.</p> <p>NHS SA have concerns that the evidence submitted for review does not provide suitable assurance that NHS Fife have undertaken the necessary checks to confirm 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.</p> <p>Documents referenced are: <i>Constructionline Certificate of Membership (Constructionline Gold Constructionline Gold_Ver1.pdf)</i> <i>Cyber Essentials – Certificate of Assurance (Cyber Essentials Plus RGM_TOPCO_Limited_CertOnly_Cyber Essentials Plus RGM_TOPCO_Limited_CertOnly_Ver1.pdf)</i> <i>FIRAS Certification for Fire Rated Ductwork (Issue 2 Certificate - RGM Vent Ltd_Issue 2 Certificate - RGM Vent Ltd_Ver1.pdf)</i> <i>Email correspondence noting ventilation installers experience (RE KSAR item 3.1_Ventilation System Installer Experience Case Studies_Ver1.msg)</i> <i>Certificate of Health & Safety Accreditation (SSIP_Acclaim 2021_Ssip_Acclaim 2021_Ver1.pdf)</i></p>		

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.
<p>NHS Scotland Assure Observations: The observations noted in response to question 2.3 apply to this question with respect to ventilation. Based on the noted observations NHS SA have concerns around the lack of control measures and governance being adopted by NHS Fife to ensure that the electrical systems are being installed to the correct standard and reflect the agreed design.</p>		

Documents referenced are:

NEC Supervisor Inspection Reports (211223 - EOC Monthly Inspection Report Nr 9 inc attachments_Ver1.pdf, 02022022 - EOC Monthly Inspection Report Nr 10_Ver1.pdf, 02032022 - EOC Monthly Inspection Report Nr 11_Ver5_Ver1.pdf, 31032022 - EOC Monthly Inspection Report Nr 12_Ver1.pdf, 30042022 - EOC Monthly Inspection Report Nr 13_Ver1.pdf)

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).

NHS Scotland Assure Observations:

The observations noted in response to question 2.4 apply to this question with respect to ventilation.

During the site inspection undertaken by NHS SA on Friday 1 July 2022 it was noted that generally open duct or plant ends had been sealed however there were some instances of duct components located within rooms where the plastic protective covers on duct open ends had been damaged and exposed. NHS SA brought to the attention of the Contractor that duct components (heater batteries) were also being stored externally on the roof and the plastic wrapping had been damaged exposing the components to the elements.

NHS SA are concerned that the inspection and monitoring of open duct or plant ends is not focussed on specific observations and are generic in nature. There are also concerns around the documenting, tracking and escalation of defects relating to open duct or plant ends.

Documents referenced are:

NEC Supervisor Inspection Reports (211223 - EOC Monthly Inspection Report Nr 9 inc attachments_Ver1.pdf, 02022022 - EOC Monthly Inspection Report Nr 10_Ver1.pdf, 02032022 - EOC Monthly Inspection Report Nr 11_Ver5_Ver1.pdf, 31032022 - EOC Monthly Inspection Report Nr 12_Ver1.pdf, 30042022 - EOC Monthly Inspection Report Nr 13_Ver1.pdf)

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:</p> <p>The observations noted in response to question 2.5 apply to this question with respect to ventilation.</p> <p>No evidence has been provided to confirm that the residual access and maintenance issues noted have been discussed and agreed with NHS Fife's FM team or infection prevention and control (IPC) colleagues. These items have also not been noted in the Construction stage HAI-SCRIBE documentation.</p> <p>NHS SA have concerns that there is a lack of control measures and governance in place relating to the provision for access and maintenance on the project and consider the documentation provided and the observations raised from site visits do not provide the required assurance that these elements have been appropriately addressed.</p> <p>Documents referenced are:</p> <p><i>Federated BIM Model (EOC-NOR-ZZ-XX-CM-A-00001)</i></p> <p><i>Ventilation Services Layouts (EOC-AMK-XX-01-DR-Z-57001 to 57004, EOC-AMK-XX-02-DR-Z-57001 to 57004, EOC-AMK-XX-03-DR-Z-57001 and EOC-AMK-XX-04-DR-Z-57001 to 57004)</i></p> <p><i>Ventilation Fabrication Drawings (EOC-RGM-XX-01-DR-Z-57001 to 57004, EOC-RGM-XX-02-DR-Z-57001 to 57004, EOC-RGM-XX-03-DR-Z-57002 to 57004 and EOC-RGM-XX-04-DR-Z-57001 to 57004)</i></p> <p><i>Heating drawings (EOC-AMK-XX-01-DR-Z-56001 to 56004, EOC-AMK-XX-02-DR-Z-56001 to 56004, EOC-AMK-XX-03-DR-Z-56001 to 56004 and EOC-AMK-XX-04-DR-Z-56001 to 56004)</i></p> <p><i>Major Plant Access and Replacement Strategy (EOC-RYB-XX-XX-RP-ME-79002)</i></p> <p><i>Major Plant Replacement Strategy Drawings (EOC-RYB-XX-01-DR-M-79020, EOC-RYB-XX-02-DR-M-79020, EOC-RYB-XX-03-DR-M-79020, EOC-RYB-XX-04-DR-M-79020, EOC-RYB-XX-XX-DR-M-79020)</i></p>		

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 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>
<p>NHS Scotland Assure Observations:</p> <p>The observations noted in response to question 2.5 and 2.6 apply to this question with respect to ventilation.</p> <p>No documented evidence has been provided that confirms an agreed strategy is in place for spare capacity and that these requirements have been incorporated within the design and construction.</p> <p>During the ventilation technical workshop on 23 June 2022 NHS SA queried what assessment has been undertaken to validate that the Victoria Hospital's existing medium temperature hot water (MTHW) infrastructure has sufficient capacity to support the new facility or to assess whether the additional load may have a</p>		

detrimental impact on the existing facility. NHS Fife were unable to confirm what studies had been undertaken to date.

NHS SA have similar concerns to those noted in the response to question 2.5 and 2.6. NHS SA note that the required assurance has not been provided to confirm that the ventilation and heating services are being installed in a manner that will retain space for minor additions and modifications to services in the future.

Documents referenced are:

Federated BIM Model (EOC-NOR-ZZ-XX-CM-A-00001)

Ventilation Services Layouts (EOC-AMK-XX-01-DR-Z-57001 to 57004, EOC-AMK-XX-02-DR-Z-57001 to 57004, EOC-AMK-XX-03-DR-Z-57001 and EOC-AMK-XX-04-DR-Z-57001 to 57004)

Ventilation Fabrication Drawings (EOC-RGM-XX-01-DR-Z-57001 to 57004, EOC-RGM-XX-02-DR-Z-57001 to 57004, EOC-RGM-XX-03-DR-Z-57002 to 57004 and EOC-RGM-XX-04-DR-Z-57001 to 57004)

Heating drawings (EOC-AMK-XX-01-DR-Z-56001 to 56004, EOC-AMK-XX-02-DR-Z-56001 to 56004, EOC-AMK-XX-03-DR-Z-56001 to 56004 and EOC-AMK-XX-04-DR-Z-56001 to 56004)

Major Plant Access and Replacement Strategy (EOC-RYB-XX-XX-RP-ME-79002)

Major Plant Replacement Strategy Drawings (EOC-RYB-XX-01-DR-M-79020, EOC-RYB-XX-02-DR-M-79020, EOC-RYB-XX-03-DR-M-79020, EOC-RYB-XX-04-DR-M-79020, EOC-RYB-XX-XX-DR-M-79020)

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 observations noted in response to question 2.7 apply to this question with respect to ventilation.

During the site inspection undertaken by NHS SA on Friday 1 July 2022 it was noted that generally open duct or plant ends had been sealed however there were some instances of duct components located within rooms where the plastic protective covers on duct open ends had been damaged and exposed. NHS SA brought to the attention of the Contractor that duct components (heater batteries) were also being

stored externally on the roof and the plastic wrapping had been damaged exposing the components to the elements.

NHS SA is concerned that the inspection and monitoring of ventilation materials stored on site is not focussed on specific observations and are generic in nature. There is also limited reference to inspections of the Contractors stores to validate that ventilation materials are stored in an appropriate environment that protects them from deterioration and contaminants. There are also concerns around the documenting, tracking and escalation of defects relating to open duct or plant ends.

Documents referenced are:

NEC Supervisor Inspection Reports (211223 – EOC Monthly Inspection Report Nr 9 inc attachments_Ver1.pdf, 02022022 – EOC Monthly Inspection Report Nr 10_Ver1.pdf, 02032022 – EOC Monthly Inspection Report Nr 11_Ver5_Ver1.pdf, 31032022 – EOC Monthly Inspection Report Nr 12_Ver1.pdf, 30042022 – EOC Monthly Inspection Report Nr 13_Ver1.pdf)

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:

The observations noted in response to question 2.8 apply to this question with respect to ventilation.

In addition to the commissioning responsibility matrix referenced in question 2.8, sample system acceptance certificates for a typical AHU (AHU 01 - Theatre 01) have been provided to evidence the templates proposed to be used for the completed commissioning certification. Pre-commissioning observations noted in the acceptance certificates highlight discrepancies in the designer’s information (differing flow rates noted on schematics & grille schedules) however there is no clarity provided regards the status of these observations by the commissioning engineer or whether they have subsequently been clarified by the system designer.

During the ventilation technical workshop held on 23 June 2022 the Contractor’s Technical Advisor confirmed that a draft version of the construction stage ventilation validation file was currently in development and would include the relevant pre-commissioning activities and checklists. This documentation has not been provided for review. NHS SA are also concerned that this demonstrates a risk and lack of control as based on the status of the current construction programme these activities should potentially already have been undertaken.

NHS Fife confirmed at the weekly KSAR progress meeting on 6 July 2022 that independent validators for the ventilation systems have only recently been appointed. SHTM 03-01 (Clause 8.8) notes that the designer's information should be provided to for commissioning and independent validation purposes. There is also a requirement within SHTM 03-01 (Clauses 8.18 to 8.28) for various inspections to be undertaken which the independent validator should be party to in order to fully validate the systems. NHS SA have concerns around the timeline of when the independent validators have been appointed based on current construction progress and whether the early-stage activities have been undertaken in accordance with SHTM 03-01. Based on the observations noted in relation to the project programme status it is unclear if there is now adequate time for the independent validator to undertake the noted early-stage activities.

From the documentation provided it is also not clear if NHS Fife has considered the updated requirements of SHTM 03-01 (v.3 - February 2022) as part of their independent validators scope of works.

Based on the observations noted, NHS SA have concerns that the pre-commissioning activities that should be completed and recorded in advance of commissioning commencing may not have been undertaken.

Documents referenced are:

FBC KSAR Report Tracker (NHS Fife – Elective Care Centre Design Assurance Report Tracker – COMBINED – v20.09 (version 1))

Commissioning Management Plan (ES20-NHSF EOC Cx Plan_Ver1)

Commissioning Programme (Rev C15 Commissioning Programme-C3)

Commissioning Responsibility Matrix (NTC-FO - Commissioning Responsibility Matrix Rev. 0_Ver1 (1))

Sample System Acceptance Certificates (P8109 AHU01 Extract_PHOENIX SYSTEM ACCEPTANCE CERTIFICATE EXTRACT_Ver1.pdf, P8109 AHU01 Supply_PHOENIX SYSTEM ACCEPTANCE CERTIFICATE SUPPLY_Ver1.pdf)

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 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.
<p>NHS Scotland Assure Observations: The observations noted in response to question 2.9 apply to this question with respect to ventilation. In addition to the observations noted in 2.9 NHS SA noted that a low temperature hot water (LTHW) heater battery was shown within an Anaesthetic Room (01/TH/014).</p>		

This is a derogation from SHTM 03-01, Clause 9.84, which states 'to facilitate maintenance access, they should be located above corridors or other non-clinical areas and never above patient-occupied spaces' in relation to LTHW heater batteries.

NHS SA raised this concern in the ventilation technical workshop held on 23 June 2022 and was confirmed by NHS Fife during the site inspection on 6 July 2022 that the heater battery would be moved into the adjacent dirty utility. NHS SA still have concerns that this presents an IPC risk as the dirty utility forms part of the theatre suite and is therefore still considered a clinical space.

NHS SA would note that the example provided above further supports their concerns noted in response to question 2.9 that there are currently gaps in the governance around how derogations and variations to the design are controlled and documented during the construction stage.

Documents referenced are:

FBC Derogations Schedule (EOC-NOR-XX-XX-RP-A-00014_revP11_Ver1)

Project Board Minutes (FEOC Project Board Minutes 17.12.20_Ver1)

Second Floor Heating Layout (EOC-AMK-XX-03-DR-Z-56001)

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	There is currently no frost protection heating provided within the roof AHU plantroom. NHS SA have concerns that this could result in a freezing risk for any water-based pipework resulting in pipework leaks which could compromise the functionality of plant operation (e.g. critical care areas such as operating theatres) in the absence of any other risk mitigation measures.
3.3.2.2	No installation details or test certification (Declaration of Performance, Test Reports etc) have been provided for the smoke fire dampers being installed on site. NHS SA note that fire smoke dampers have been installed within blanket cavity barriers however no certified installation detail has been provided for this installation method.
3.3.2.3	The drawing information provided (e.g., ductwork fabrication drawings and contractors installation drawings) does not detail the ductwork interfaces with the UCV canopies within the operating theatres and the termination details (e.g., quantity, location and size) has not been detailed on the installation drawings.
3.3.2.4	Examples of photographic evidence provided in NEC Supervisors report dated 22/05/2022 (NHSF Elective Care Site Inspection Report - date of issue - 220325_Ver1.pdf, Photos 6, 9, 10) where the following items have not been included within the supervisors report observations in relation to the photograph.

NHS SA have observed installed ductwork with open ends, unprotected duct components in AHU plantroom not sealed, and protective netting provided within plantroom only at roof level. NHS SA would note that a lack of protection to the plantrooms including the installed plant and ductwork could potentially lead to contamination by bird droppings (fungal spore contamination) and control of pests and vermin whose corpses can become a reservoir of biological material that may lead to insect infestations within the AHU's and ductwork.



Photo 6



Photo 9



Photo 10

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>
<p>NHS Scotland Assure Observations: The observations noted in response to question 2.1 apply to this question with respect to electrical systems.</p> <p>NHS SA have concerns that the evidence submitted for review does not provide suitable assurance that NHS Fife have undertaken the necessary checks to confirm the electricians undertaking electrical systems installations have the appropriate training and experience of installing ventilation systems within a healthcare environment.</p> <p>Documents referenced are: 20220427125953_001_Electrician Training And Competency (1)_Ver1.pdf 20220427130034_001_Electrician Training And Competency (2)_Ver1.pdf 20220428085259_001_EAL Qualification_Ver1.pdf SMSTS_CITB Site Safety Plus_Ver1.pdf</p>		

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>

		Evidence of trained operatives (AP and CP) to SHTM 06-02.
<p>NHS Scotland Assure Observations: The observations noted in response to question 2.1 apply to this question with respect to electrical systems. The documentation provided in response to this question is the same information provided as evidence in response to question 4.1.</p> <p>There is no evidence provided of the previous healthcare projects or a project specific site management structure that has been implemented. This is also no evidence provided that confirms AP/CP training for electricians has been undertaken as per SHTM 06-02 requirements.</p> <p>As noted in 4.1 above, NHS SA have concerns that the evidence submitted for review does not provide suitable assurance that NHS Fife have undertaken the necessary checks to confirm the electrical contracting company have the relevant experience to direct and manage their staff on the site for a healthcare environment.</p> <p>Documents referenced are: 20220427125953_001_Electrician Training And Competency (1)_Ver1.pdf 20220427130034_001_Electrician Training And Competency (2)_Ver1.pdf 20220428085259_001_EAL Qualification_Ver1.pdf SMSTS_CITB Site Safety Plus_Ver1.pdf</p>		

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?	<p>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> <p>Photographic and written evidence for the progress of work produced by a body which is independent of the contractor (on a monthly basis).</p>
<p>NHS Scotland Assure Observations: The observations noted in response to question 2.3 apply to this question with respect to electrical systems.</p> <p>As noted in 2.3 there are concerns around items noted in the photographic evidence provided in the reports that are not specifically addressed or identified as observations or defects. Some examples would be as follows:</p> <ul style="list-style-type: none"> Submain cables installed on vertical cable tray externally using plastic cables ties. Submain cables should be tied using metal cable ties to guard against premature collapse especially when fixed on vertically mounted cable tray and in external conditions. 		

- Cable trays with no equipotential bonding present.
- Cables trenches noted as ready for installation of switchboards which are full of dirt and debris.

Whilst construction is ongoing, NHS SA have concerns that these types of observations are not being recorded within NEC Supervisor reports.

Based on the noted observations NHS SA have concerns around the lack of control measures and governance being adopted by NHS Fife to ensure that the electrical systems are being installed to the correct standard and reflect the agreed design.

Documents referenced are:

211223 - EOC Monthly Inspection Report Nr 9 inc attachments_Ver1.pdf

02022022 - EOC Monthly Inspection Report Nr 10_Ver1

02032022 - EOC Monthly Inspection Report Nr 11_Ver5_Ver1

31032022 - EOC Monthly Inspection Report Nr 12_Ver1

30042022 - EOC Monthly Inspection Report Nr 13_Ver1

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?	<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 main service runs plus plant rooms to the Health Board's FM team.</p>

NHS Scotland Assure Observations:

The observations noted in response to question 2.5 apply to this question with respect to electrical systems.

In addition to the comments noted in 2.5 in relation to the BIM model, containment services have only been provided in relation to this question which have been generated from the BIM model. Electrical schematics, small power and lighting and emergency lighting drawings issued for review are the consultants design drawings. In addition to this the designers Major Plant Access and Replacement Strategy report has been provided.

During the electrical workshop on 20 June 2022 it was advised that the NHS Fife Fire Officer had agreed to a reduction in the amount of detection devices to be installed in the ceiling voids of the building. There has been no supporting risk assessment provided in accordance with BS 5839 and there has been no

confirmation if the designer and appointed fire alarm specialist have endorsed this or how this will be captured from a system certification perspective.

The contractor's drawings issued for review are showing a significant number of void detection devices and there is no evidence to show that these have been coordinated with other services and that safe access to these devices has been demonstrated to NHS Fife's FM team.

The fire alarm drawings which have been produced by the Contractor have no design information or notes on them. They are signed off for checking and approval by the company initials. They are not signed by a responsible authorised person. The fire alarm drawings issued for review produced by the subcontractor's supplier are only issued for comment. They have not been given a status by the designer or contractor and they contradict discussions around void detection devices noted above during the electrical workshop on 20 June 2022.

NHS SA have concerns that there is a lack of control measures and governance in place relating to the provision for access and maintenance on the project and consider the documentation provided and the observations raised from site visits do not provide the required assurance that these elements have been appropriately addressed.

Documents referenced are:

- Federated BIM Model (EOC-NOR-ZZ-XX-CM-A-00001)*
- EOC-AMK-XX-01-DR-Z-61001,61002,61003,61004 - Ground Floor Containment Drawings*
- EOC-AMK-XX-02-DR-Z-61001,61002,61003,61004 - First Floor Containment Drawings*
- EOC-AMK-XX-04-DR-Z-61001,61002,61003,61004 - Roof Containment Drawings*
- EOC-AMK-XX-03-DR-Z-61001,61002,61003,61004 - Second Floor Containment Drawings*
- EOC-HON-XX-01-DR-Z-67003 - Ground Floor Void Detection Layout Ver2*
- EOC-HON-XX-02-DR-Z-67003 - First Floor Void Detection Layout Ver4*
- EOC-HON-XX-03-DR-Z-67003 - Second Floor Void Detection Layout Ver1*
- Major Plant Access and Replacement Strategy (EOC-RYB-XX-XX-RP-ME-79002)*
- Major Plant Replacement Strategy Drawings (EOC-RYB-XX-01-DR-M-79020, EOC-RYB-XX-02-DR-M-79020, EOC-RYB-XX-03-DR-M-79020, EOC-RYB-XX-04-DR-M-79020, EOC-RYB-XX-XX-DR-M-79020)*

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</p>

		<p>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>
--	--	--

NHS Scotland Assure Observations:

The observations noted in response to question 2.5 and 2.6 apply to this question with respect to electrical systems. The response provided to question 4.4 above is also applicable to this question.

As part of the previous interim assurance review undertaken at FBC stage the subject of spare capacity through the electrical distribution network was raised. In response to this NHS Fife advised that 20% spare capacity would be provided through the electrical distribution and containment system. Additional spare ways had been added to the main electrical distribution schematic.

It was not evident from the information provided that the spare capacity had been allowed for on the containment systems and in particular the main submain cable distribution system. This was also raised in the electrical workshop on 20 June 2022.

NHS Fife took an actioned to review these observations however NHS SA have concerns that there is limited opportunity to address and shortfalls in the installed spare capacity.

The access and maintenance report refers to the removal of the main electrical switchboard and no electrical plant room drawings or riser access information is provided in the report or the associated drawings. It is also not clear if space

provision has been provided in the main switch room for future PFC or Harmonic Filtration equipment as shown on the schematic.

There is no evidence to show that switch rooms, distribution board cupboards, horizontal distribution runs and risers are appropriately sized for the equipment being installed and facilitate safe, adequate maintenance.

NHS SA have similar concerns to those noted in the response to question 2.5, 2.6 and 4.4. NHS SA note that the required assurance has not been provided to confirm that the electrical services are being installed in a manner that will retain space for minor additions and modifications to services in the future.

Documents referenced are:

Federated BIM Model (EOC-NOR-ZZ-XX-CM-A-00001)

EOC-AMK-XX-01-DR-Z-61001,61002,61003,61004 - Ground Floor Containment Drawings

EOC-AMK-XX-02-DR-Z-61001,61002,61003,61004 - First Floor Containment Drawings

EOC-AMK-XX-04-DR-Z-61001,61002,61003,61004 - Roof Containment Drawings

EOC-AMK-XX-03-DR-Z-61001,61002,61003,61004 - Second Floor Containment Drawings

Major Plant Access and Replacement Strategy (EOC-RYB-XX-XX-RP-ME-79002)

Major Plant Replacement Strategy Drawings (EOC-RYB-XX-01-DR-M-79020, EOC-RYB-XX-02-DR-M-79020, EOC-RYB-XX-03-DR-M-79020, EOC-RYB-XX-04-DR-M-79020, EOC-RYB-XX-XX-DR-M-79020)

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?	Written, monthly and photographic evidence for the progress of work produced by a body which is independent of the contractor and which confirms inspection of the site storage of materials. Photographic evidence of the site storage of materials produced by a body which is independent of the contractor (on a monthly basis).

NHS Scotland Assure Observations:

The comments noted in response to question 4.3 are applicable to this question.

The independent NEC Supervisor reports that are produced on behalf of NHS Fife so far do not contain any photographic evidence or description of where and how the electrical materials are being stored on site.

It was not possible during the site visit undertaken by NHS SA on 1 July 2022 to inspect the site storage facilities as the site was closed to installers and therefore the electrical sub-contractor's storage facilities were locked.

Therefore, no evidence has been provided that gives assurance that the electrical materials are being appropriately stored on site.

Documents referenced are:

211223 - EOC Monthly Inspection Report Nr 9 inc attachments_Ver1.pdf

02022022 - EOC Monthly Inspection Report Nr 10_Ver1

02032022 - EOC Monthly Inspection Report Nr 11_Ver5_Ver1

31032022 - EOC Monthly Inspection Report Nr 12_Ver1

30042022 - EOC Monthly Inspection Report Nr 13_Ver1

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>

NHS Scotland Assure Observations:

The observations noted in response to question 2.8 apply to this question with respect to electrical services.

No records of pre-commissioning check sheets in accordance with the requirement of SHTM 06-01 Part A or BS 7671 have been provided.

During the electrical workshop on 20 June 2022 NHS SA queried NHS Fife regarding what validation of the existing infrastructure electrical characteristics for both mains and generator supplies had been undertaken. This also led to questions from NHS SA in relation to what data has been used for calculations & design undertaken to date to size the installed equipment and the strategy for validating these characteristics as part of the electrical testing process. NHS Fife were unable to confirm this at the workshop and took this as an action to review and confirm. NHS SA have concerns around the risks associated with this approach.

There are concerns around the timing of when this information is being assessed, the data used and assumptions made. There are also concerns around the risks to the project if the data used and assumptions made prove to be incorrect. None of the above documentation (validation studies/reports, calculations & data inputs used for sizing equipment) has been provided for review.

Based on the observations noted, NHS SA have concerns that there is limited assurance in relation to the pre-commissioning activities that should be completed and recorded in advance of commissioning commencing.

Documents referenced are:

4 Commissioning Management Plan (ES20-NHSF EOC Cx Plan_Ver1)
 Commissioning Programme (Rev C15 Commissioning Programme-C3)
 Commissioning Responsibility Matrix (NTC-FO - Commissioning Responsibility Matrix Rev. 0_Ver1 (1))

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.
<p>NHS Scotland Assure Observations: The observations noted in response to question 2.9 apply to this question with respect to electrical systems.</p> <p>NHS SA have concerns that there are currently gaps in the governance around how derogations and variations to the design are controlled and documented during the construction stage.</p> <p>Documents referenced are: FBC Derogations Schedule (EOC-NOR-XX-XX-RP-A-00014_revP11_Ver1) Project Board Minutes (FEOC Project Board Minutes 17.12.20_Ver1)</p>		

3.4.2 Electrical: 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.

3.4.2.1	The main switchboards serving A&B supplies to the critical and life safety systems are contained within the same room and fire compartment. The submain cable trays carrying the A&B supply cables are also routed through the same fire compartment. The sub switchboards located on level 2 serving the Uninterruptible Power Supply (UPS) units, Automatic Transfer Switches (ATS) and Isolated Power Supply (IPS) panels are also contained within the same room. All of these items present single points of failure on the system.
---------	--

<p>3.4.2.2</p>	<p>From the drawing information provided and observations on site it is unclear how the provision of emergency exit signage will comply with the requirement of BS 5266, BS 5499 and BS EN ISO 7010:2012.</p> <p>For example, there appears to be a number of emergency exit signs missing from the drawings and inconsistencies around where they are positioned. Examples would be within some main corridors at changes of direction and the staff room on level 2.</p> <p>There are no direction arrows on the drawings making it unclear what the direction of escape is meant to be. The drawings referenced are the consultants design drawings. No contractor's drawings have been issued for review. It's unclear if the exit sign provision has been checked and verified as compliant.</p> <p>The rationale behind the lighting design and fitting positions within the stairwells is unclear. Based on the positioning of the luminaires within the stairwells, it is unclear as to how the illuminance levels to facilitate emergency escape in accordance with BS5266-1 will be achieved. NHS SA have concerns that the minimum lighting levels required for escape will not be achieved. It is also unclear whether emergency lighting luminaires will be provided in all locations as per BS 5266-1, Clause 5.2.8.1.</p>
<p>3.4.2.3</p>	<p>Examples of photographic evidence provided in NEC Supervisors report dated 30/04/2022 (30042022 - EOC Monthly Inspection Report Nr 13_Ver1.pdf, Photos 1 & 2) where the following items have not been included within the supervisor's report observations in relation to the photographs.</p> <p>NHS SA have observed Submain cables installed on vertical cable tray externally using plastic cable ties. Submain cables should be tied using metal cable ties especially when fixed on vertically mounted cable tray and in external conditions. Other observations are cable trays with no equipotential bonding present and cable trenches noted as ready for installation of switchboards which are full of dirt and debris.</p>



Photo No. 1: The parallel feeder cables (i.e., 2No x 4Core x 150mm SWA cable complete with 150mm² supplementary earth(s) have been installed.



Photo No. 2: The cubicles of the E&I Form 4b type 6 low voltage switchboard are ready to be joined together and mounted over the steel grating.

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>
<p>NHS Scotland Assure Observations: The observations noted in response to question 2.1 apply to this question with respect to medical gas systems.</p> <p>Further commentary has been received from NHS Fife that the Medical Gas installer was selected on the basis that they are NHS Fife's nominated Contractor for the medical gas installations on their estate. However, no documentation has been provided to confirm the vetting of the nominated sub-contractor that NHS Fife are using across their estate.</p> <p>NHS SA have concerns that the evidence submitted for review does not provide suitable assurance that NHS Fife have undertaken the necessary checks to confirm the site operatives undertaking medical gas installations have the appropriate training and experience of installing medical gas systems within a healthcare environment.</p> <p>Documents referenced are: <i>5.1 To Demonstrate Medical Gas Installers Training and Competency_ALGAS Medical Gas Contracting Company Training & Competency_Ver1.docx</i></p>		

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	<p>Evidence of similar, previous healthcare projects by the contractor.</p> <p>Evidence of site management structure.</p> <p>AP and CP training to SHTM 02-01 for operatives.</p>

	relevant healthcare environment?	
<p>NHS Scotland Assure Observations: The observations noted in response to question 2.1 apply to this question with respect to electrical systems. The documentation provided in response to this question is the same information provided as evidence in response to question 5.1.</p> <p>There is no evidence provided of the previous healthcare projects or a project specific site management structure that has been implemented. This is also no evidence provided that confirms MGPS AP/CP training for Operatives has been undertaken as per SHTM 02-01 requirements.</p> <p>As noted in 5.1 above, NHS SA have concerns that the evidence submitted for review does not provide suitable assurance that NHS Fife have undertaken the necessary checks to confirm the electrical contracting company have the relevant experience to direct and manage their staff on the site for a healthcare environment.</p> <p>Documents referenced are: 5.2 To Demonstrate Relevant Experience of The Medical Gas Contracting Company_ALGAS Medical Gas Contracting Company Experience_Ver1.docx</p>		

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.
<p>NHS Scotland Assure Observations: The observations noted in response to question 2.3 apply to this question with respect to medical gases.</p> <p>In addition to the observations in 2.3, No evidence has been provided to confirm if other independent parties have inspected the ongoing installation works such as the Authorised Person (AP) or Authorising Engineer (AE) for medical gases. In particular, the evidence provided for review does not confirm who is undertaking the inspection of medical gas pipework and joints in accordance with SHTM 02-01, Part A. As per clause 15.10 of SHTM 02-01 all relevant medical gas inspections and tests should be carried out by the persons listed in Table 40 and witnessed by the appropriate persons, who must record the results of the inspection or tests in writing for the hospital Board.</p> <p>Based on the noted observations NHS SA have concerns around the lack of control measures and governance being adopted by NHS Fife to ensure that the electrical systems are being installed to the correct standard and reflect the agreed design.</p>		

Documents referenced are:

NEC Supervisor Inspection Reports (211223 - EOC Monthly Inspection Report Nr 9 inc attachments_Ver1.pdf, 02022022 - EOC Monthly Inspection Report Nr 10_Ver1.pdf, 02032022 - EOC Monthly Inspection Report Nr 11_Ver5_Ver1.pdf, 31032022 - EOC Monthly Inspection Report Nr 12_Ver1.pdf, 30042022 - EOC Monthly Inspection Report Nr 13_Ver1.pdf)

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:

As noted in 5.3 above, NHS Fife have appointed an NEC Supervisor to undertake regular site inspections, but the information provided does not address any of the medical gas installations or any witnessing and inspection records by other parties.

A typical standard statement on protection of open pipe ends for the progressing installation works and temporary protection on open pipe ends for stored pipework is included within the NEC Supervisor reports.

There are also similar standard statements with regards to protection of open pipe ends noted within the defects section of the reports however there is limited photographic evidence that documents specific examples. There is also limited photographic evidence that would confirm the status of site storage of pipework. There is also no observations or commentary provided in relation to the quality of installed joints.

No evidence has been provided to confirm how the observations and defects in relation to pipe open ends are recorded and tracked or how the noted defects are escalated and addressed where the concerns have been consistently noted within the reports.

Documents referenced are:

NEC Supervisor Inspection Reports (211223 - EOC Monthly Inspection Report Nr 9 inc attachments_Ver1.pdf, 02022022 - EOC Monthly Inspection Report Nr 10_Ver1.pdf, 02032022 - EOC Monthly Inspection Report Nr 11_Ver5_Ver1.pdf, 31032022 - EOC Monthly Inspection Report Nr 12_Ver1.pdf, 30042022 - EOC Monthly Inspection Report Nr 13_Ver1.pdf)

Workbook Ref No.	Areas to probe	Evidence expected
5.5	How does the Health Board ensure that medical gas services are installed in a fashion which will provide ease of access for future maintenance?	<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 Health Board's FM team.</p>

NHS Scotland Assure Observations:

The observations noted in response to question 2.5 apply to this question with respect to medical gases.

During the medical gas technical workshop held on 21 June 2022, NHS SA also raised concerns that there are no medical gas drawings provided to indicate the access and maintenance strategy for the buried oxygen pipe running within the service trench. This also does not appear to be documented in the federated BIM model.

NHS SA have concerns that there is a lack of control measures and governance in place relating to the provision for access and maintenance on the project and consider the documentation provided and the observations raised from site visits do not provide the required assurance that these elements have been appropriately addressed.

Documents referenced are:

Federated BIM Model (EOC-NOR-ZZ-XX-CM-A-00001)

Major Plant Access and Replacement Strategy (EOC-RYB-XX-XX-RP-ME-79002)

Major Plant Replacement Strategy Drawings (EOC-RYB-XX-01-DR-M-79020, EOC-RYB-XX-02-DR-M-79020, EOC-RYB-XX-03-DR-M-79020, EOC-RYB-XX-04-DR-M-79020, EOC-RYB-XX-XX-DR-M-79020)

Workbook Ref No.	Areas to probe	Evidence expected
5.6	How does the Health Board ensure that medical gas services are installed in a fashion which will retain space for minor additions and	<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,</p>

	<p>modifications to services in the future?</p>	<p>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>
--	---	--

NHS Scotland Assure Observations:

The observations noted in response to question 2.5 and 2.6 apply to this question with respect to ventilation. The response provided to question 5.5 is also applicable to this question.

During the medical gas technical workshop held on 21 June 2022, NHS SA also queried how the existing site infrastructure capacity had been assessed with regards to existing capacity. It was noted that there was a separate medical gas infrastructure project that did not form part of this project however no further documented clarity was provided to confirm how the requirements for this project have been assessed or whether the programme of the separate medical gas infrastructure project is likely to have a material impact on the ability for the National Treatment Centre (NTC) facility to provide the full clinical service (e.g. procedures that require medical gas provision).

NHS Fife have also provided no documented evidence that an agreed strategy for the medical gas spare capacity has been accounted for and that these requirements have been incorporated within the design and construction.

NHS SA have similar concerns to those noted in the response to question 2.5 and 2.6. NHS SA note that the required assurance has not been provided to confirm that the ventilation and heating services are being installed in a manner that will retain space for minor additions and modifications to services in the future.

Documents referenced are:

Federated BIM Model (EOC-NOR-ZZ-XX-CM-A-00001)

Major Plant Access and Replacement Strategy (EOC-RYB-XX-XX-RP-ME-79002)

Major Plant Replacement Strategy Drawings (EOC-RYB-XX-01-DR-M-79020, EOC-RYB-XX-02-DR-M-79020, EOC-RYB-XX-03-DR-M-79020, EOC-RYB-XX-04-DR-M-79020, EOC-RYB-XX-XX-DR-M-79020)

EOC-RYB-XX-01-DR-M-54001_GROUND FLOOR MEDICAL GAS LAYOUT_Ver3

EOC-RYB-XX-02-DR-M-54001_FIRST FLOOR MEDICAL GAS LAYOUT_Ver2

EOC-RYB-XX-03-DR-M-54001_SECOND FLOOR MEDICAL GAS LAYOUT_Ver3

EOC-ALG-XX-04-DR-Z-54001_ROOF LEVEL PROPOSED MEDICAL GAS LAYOUT_Ver1

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 entry of contaminants into the parts of the component which will be in contact with the gas?	<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>
<p>NHS Scotland Assure Observations:</p> <p>The comments noted in response to question 5.4 are applicable to this question.</p> <p>A standard statement on temporary protection of open pipe ends for stored pipework is included within the NEC Supervisor reports.</p> <p>NHS SA were unable to inspect the storage facilities containing medical gas pipework and materials during the site inspection undertaken by NHS SA on Friday 1 July as the site was closed to all operatives and the sub-contractor's stores were locked.</p> <p>NHS SA have some concerns that there is limited evidence provided that gives assurance that plumbers materials are being appropriately stored on site.</p> <p>Documents referenced are: <i>NEC Supervisor Inspection Reports (211223 - EOC Monthly Inspection Report Nr 9 inc attachments_Ver1.pdf, 02022022 - EOC Monthly Inspection Report Nr 10_Ver1.pdf, 02032022 - EOC Monthly Inspection Report Nr 11_Ver5_Ver1.pdf, 31032022 - EOC Monthly Inspection Report Nr 12_Ver1.pdf, 30042022 - EOC Monthly Inspection Report Nr 13_Ver1.pdf)</i></p>		

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?	<p>Evidence that adequate pre-commissioning check sheets (e.g. SHTM 02-01 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:

The observations noted in response to question 2.8 apply to this question with respect to electrical services.

In addition to this, the documentation provided in response to this question is the medical gas contracting companies' standard installation checklist templates/proformas. These are standard templates and are not project specific. Records of pipeline installation checks have not been provided nor has any method statements and procedures relating to the medical gas sign off process.

Whilst the pre-commissioning records provided are template examples and completed records are not available at this stage there is no confirmation from NHS Fife that all pre-commissioning checks have been audited and approved by an independent party (e.g. the Board's Medical Gas AP/AE).

Based on the observations noted, NHS SA have concerns that there is limited assurance in relation to the pre-commissioning activities that should be completed and recorded in advance of commissioning commencing.

Documents referenced are:

00 HSF 009-01_00 HSF 009-01_Ver1

01 - Medical Gas Pipeline Test Summary Sheet_01 - Medical Gas Pipeline Test Summary Sheet_Ver1.

A2 - Carcass Tests -1st Fix Pressure, Markings, Sleeves & Cross Connection_A2 - Carcass Tests -1st Fix Pressure, Markings, Sleeves & Cross Connection_Ver1.

A3 - 2nd Fix Pressure Test_A3 - 2nd Fix Pressure Test_Ver1

A4 - AVSU-LVA - Zoning, Closure & NIST Tests_A4 - AVSU-LVA - Zoning, Closure & NIST Tests_Ver1

A6 - NIST Connectors - Specificity & Function Tests_A6 - NIST Connectors - Specificity & Function Tests_Ver1

A6 - NIST Connectors - Specificity & Function Tests_A6 - NIST Connectors - Specificity & Function Tests_Ver1

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 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
NHS Scotland Assure Observations: The observations noted in response to question 2.9 apply to this question with respect to medical gas systems.		

In addition to these observations, NHS Fife confirmed at the medical gas technical workshop on 22 June 2022 that a further update of the medical gas system derogations schedule had been completed and communicated with the medical gas authorised person (AP) however a specific schedule in relation to medical gas derogations has not been provided for review. There has also been no evidence provided to confirm how any variations or changes have been analysed and agreed by NHS Fife.

NHS SA have concerns that there are currently gaps in the governance around how derogations and variations to the design are controlled and documented during the construction stage.

Documents referenced are:

FEOC Project Board Minutes 17.12.20_Ver1

EOC-NOR-XX-XX-RP-A-00014_revP11_Ver1

3.5.2 Medical Gases: Further Observations

3.5.2.1	There is no documentation provided that considers the resilience of the existing site infrastructure and any requirements (if applicable) for future expansion and/or maintaining spare capacity within the oxygen, medical air or vacuum systems.
3.5.2.2	No evidence has been provided to confirm an assessment has been undertaken on the existing medical infrastructure capacity to confirm that it is sufficient to serve the project.
3.5.2.3	The oxygen pipe supply is noted as being routed within a service trench. No details of the service trench have been provided or the level of protection provided. There is also no evidence provided to confirm whether ultrasonic metering has been provided on the main oxygen supply pipework to provide remote capacity figures for the existing installation.

3.6 Fire

3.6.1 Fire: 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>NHS Fife has provided the Contractors pre-appointment checklist for their fire stopping sub-contractor which evidences an element of vetting being undertaken however the documentation provided does detail the fire stopping operatives involved on the project and their relevant qualifications and healthcare experience.</p> <p>NHS Fife has provided evidence that confirms a 3rd Party (BRE/Material Manufacturer) has been contracted to undertake checks of the installation which confirms their relevant qualifications and healthcare experience.</p> <p>No evidence provided with respect to site inductions for work on fire stopping of services that has been developed/ implemented and agreed with NHS Fife.</p> <p>NHS SA have concerns that the evidence submitted for review does not provide sufficient assurance that NHS Fife has undertaken the necessary checks to confirm the site operatives undertaking fire stopping have the appropriate training and experience of undertaking fire stopping within a healthcare environment.</p> <p>Documents referenced are:</p> <p><i>Fire Stopping Pre-Appointment Checklist (APPENDIX.17 Quality Assurance for Key Work Packages - Firestopping Pre-Appointment Checklist.pdf)</i></p> <p><i>Appendix 33 – Request for Information (RFI264) (Fire Alternative RFI_GRAHAM Request for Information_Ver1.pdf)</i></p> <p><i>Independent Verifier’s Professional Qualifications and Profile (Firespec Details_Firespec Ltd - Professional Qualifications and Profile_Ver1.pdf)</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:</p> <p>NHS Fife has provided email correspondence from the fire stopping specialist that details a management structure they would typically adopt but it is not a project-specific structure that details key personnel, their qualifications/experience, roles and responsibilities etc.</p> <p>The email correspondence also lists some relevant experience within the healthcare environment but lacks detail including confirmation of full extent of the scope of works undertaken, project values, dates when the work was undertaken etc.</p> <p>An organogram has been provided however this relates to the Contractor's site team and is not specific to the fire stopping contracting companies' personnel.</p> <p>As per 6.1, NHS SA have concerns that the evidence submitted for review does not provide sufficient assurance that NHS Fife has undertaken the necessary checks to ensure the fire stopping contracting company have the relevant experience to direct and manage their staff within a healthcare environment.</p> <p>Documents referenced are:</p> <p><i>GA Second Floor Plan (6.2 To Demonstrate Relevant Experience of the Fire Stopping Contracting Company Drawing_ORR FIRE PROTECTION INSTALLATION MARK UP_Ver1.jpg)</i></p> <p><i>Email correspondence from fire stopping specialist (6.2 To Demonstrate Relevant Experience of the Fire Stopping Contracting Company_ORR FIRE PROTECTION NHSF CLIENT QA INFO_Ver1.msg)</i></p> <p><i>Graham Construction Organogram (RE 220421-NHSF-Client QA Info_RE 220421-NHSF-Client QA Info_Ver1.msg Organogram_Ver1.ppx)</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: The observations noted in response to question 2.3 apply to this question with respect to fire. In addition, NHS SA also note:</p> <ul style="list-style-type: none"> • The April 2022 Supervisors report states that an inspection of the fire stopping within a sample room is to be undertaken by the NEC Supervisor, but no evidence is provided to confirm the extent, methodology or benchmarking of inspections to be undertaken. • At the Fire technical workshop on 23 June 2022, NHS Fife confirmed that both the Contractor and their independent fire stopping inspector undertake regular firestopping inspections which includes destructive sample testing. It was also confirmed that the Supervisor also review the outcomes of these inspections as part of regular NEC Supervisor inspection. No evidence has been provided to confirm what inspections have been undertaken to date or to confirm that the noted process is being followed including the frequency and extent of inspections, the methodology adopted and deliverables. <p>During the site visit carried out by NHS SA on 28 June 2022, the Boris document management system being adopted on site to record firestopping was demonstrated. The information recorded includes the location on a floor plan, a basic description of the materials used and a photograph of the service penetration at the specific location identified. There is no labelling system to record the installation detail and there is no site-specific installation documentation provided that relates to the various service penetrations on the project.</p> <p>During the site inspection NHS SA also noted that there was no evidence of the main firestopping installation details being adopted on site (batt with mastic) included within the fire stopping details documentation produced by the firestopping specialist sub-contractor. Similarly, no installation detail was provided for the two main types of intumescent electrical box liners installed on site.</p> <p>The installation details that were made available during the inspection were generic and did not address the specific site installation details. NHS SA noted that a site-specific installation documentation should be produced for the Operation and Maintenance (O&M) manuals. NHS SA also noted that it is critical that the manufacture's fire tested installation details should be provided to verify the details installed on site achieve the required fire safety performance.</p> <p>The junctions between internal compartment walls and sub-compartment walls were also inspected by NHS SA during the site inspection. Gaps were noted at the junction of the partition walls and external façade.</p>		

The Contractor was unable to provide architect's constructional details and the firestopping specialist was unable to confirm how fire resistance would be maintained and achieve compliance with SHTM guidance and the Non-Domestic Technical Handbook (NDTH) for example 'Where a compartment wall or sub-compartment wall meets an external wall, there should be a 1m wide strip of the external wall which has the same level of fire resistance duration as the compartment wall or sub-compartment wall, to prevent lateral fire spread. (Non-Domestic Technical Handbook, Clause 2.B.1 - Compartmentation)'.

Based on the noted observations NHS SA have concerns around the lack of control measures and governance being adopted by NHS Fife to ensure that the fire stopping is being installed to the correct standard and reflect the agreed design.

Documents referenced are:

NHS Fife's responses to Gap Analysis (2022-05-23_ GCL Response_Combined Const Deliverables List_NHS Fife NTC Infrastructure Gap Analysis.xlsx)

NEC Supervisor Reports (example - NHSF Elective Care Site Inspection Report - Fabric 21_04_2022_V1_Ver1.pdf)

Link to Independent Verifiers Website (6.3 To demonstrate correct system installation_Fire Stopping System Installation INFO LINK_Ver1.docx)

Independent Verifier's Professional Qualifications and Profile (Firespec Details_Firespec Ltd - Professional Qualifications and Profile_Ver1.pdf)

Firespec Details_Firespec Ltd - Professional Qualifications and Profile_Ver1.pdf

GA Second Floor Plan (Example Boris mark up drawing_Example Boris mark up drawing_Ver2.jpg)

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).

NHS Scotland Assure Observations:

The project is a new build construction. There is an interface with the existing building via a link bridge at Level 01 of the building. NHS Fife consider this question is not applicable to this project, however, no further commentary has been provided to confirm why the question is not considered applicable.

No evidence has been provided to confirm if the interface with the existing building is likely to impact on occupied spaces during the works nor does the documentation provided address the potential risk of spread of fire from the existing building(s) to the new building (or vice versa).

NHS SA have concerns around the wider governance on the project if these aspects have not been considered.

Documents referenced are:

NHS Fife's responses to Gap Analysis (2022-05-23_ GCL Response_Combined Const Deliverables List_NHS Fife NTC Infrastructure Gap Analysis.xlsx)

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).

NHS Scotland Assure Observations:

Refer to general observations in relation to fire stopping noted in response to Question 6.3.

During the site visit carried out by NHS SA on 28 June 2022, it was noted that pattresses (letterboxes) were formed where services were passing through fire rated partitions with only a few exceptions i.e., where services such as pipework were penetrating the wall with no letterbox detail adopted.

Fire rated partitions were noted as being double sheeted with plasterboard. It was noted that batts were installed within letterbox openings and services were sealed with mastic.

Whilst the work appeared to be carried out satisfactorily and in a good workmanlike manner, there was no installation details provided and no fire tested manufacturer's detail presented for the details being adopted on site.

Documents referenced are:

NHS Fife's responses to Gap Analysis (2022-05-23_ GCL Response_Combined Const Deliverables List_NHS Fife NTC Infrastructure Gap Analysis.xlsx)

NEC Supervisor Reports (example - NHSF Elective Care Site Inspection Report - Fabric 21_04_2022_V1_Ver1.pdf)

Link to Independent Verifiers Website (6.3 To demonstrate correct system installation_Fire Stopping System Installation INFO LINK_Ver1.docx)

Independent Verifier's Professional Qualifications and Profile (Firespec Details_Firespec Ltd - Professional Qualifications and Profile_Ver1.pdf)

Firespec Details_Firespec Ltd - Professional Qualifications and Profile_Ver1.pdf

GA Second Floor Plan (Example Boris mark up drawing_Example Boris mark up drawing_Ver2.jpg)

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: Refer to general observations in relation to fire stopping noted in response to question 6.3 and 6.5.</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?	<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>
<p>NHS Scotland Assure Observations: The observations noted in response to question 6.4 note that the Supervisor and an independent fire stopping certifier are engaged on the project.</p> <p>Multiple Supervisors fabric inspection reports (March 2022 onwards) have been provided that note that the materials storage yard is generally tidy, but there is no specific information provided in relation to the storage of firestopping products.</p> <p>Documents referenced are: <i>NEC Supervisor Reports (NHSF Elective Care Site Inspection Report - Fabric 03_03_2022_Ver1.pdf, NHSF Elective Care Site Inspection Report - Fabric 10_03_2022_Ver1.pdf, NHSF Elective Care Site Inspection Report - Fabric 16_03_2022_Ver1.pdf, NHSF Elective Care Site Inspection Report - Fabric 23_03_2022_Ver1.pdf, NHSF Elective Care Site Inspection Report - Fabric 31_03_2022_Ver1.pdf, NHSF Elective Care Site Inspection Report - Fabric 07_04_2022.V1_Ver1.pdf, NHSF Elective Care Site Inspection Report - Fabric 14_04_2022_V1_Ver1.pdf, NHSF Elective Care Site Inspection Report - Fabric 21_04_2022_V1_Ver1.pdf, NHSF Elective Care Site Inspection Report - Fabric 28_04_2022_V1_Ver1.pdf, NHSF Elective Care Site Inspection Report - Fabric 05_05_2022_V1_Ver1.pdf, NHSF Elective Care Site Inspection Report - Fabric 12_05_2022_V1_Ver1.pdf)</i></p>		

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?	<p>Written evidence for the progress of work produced by a body which is independent of the contractor (on a monthly basis).</p> <p>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.</p>
<p>NHS Scotland Assure Observations:</p> <p>The observations noted in response to question 2.5 and 4.5 apply to this question with respect to fire detection and alarm systems.</p> <p>Supervisor reports are provided however there is limited observations within these reports with respect to the fire detection and alarm systems as noted in response to questions 2.3 and 4.3.</p> <p>There is no evidence to confirm how fire detection will be maintained when located above 3m nor has any evidence been provided that a maintenance strategy for fire detectors has been provided to NHS Fife's FM team for review and comment.</p> <p>During the fire technical workshop on 23 June 2022, NHS Fife confirmed that weekly site walk rounds are undertaken with the local NHS Fife estates team to review accessibility of systems and confirmed that no issues have been raised regarding accessibility of detector heads. However, no records or documentation has been provided to confirm the extent of inspections undertaken or how the access to detectors has been demonstrated by the Contractor to NHS Fife.</p> <p>NHS SA have concerns that there is a lack of control measures and governance in place relating to the provision for access and maintenance on the project and consider the documentation provided and the observations raised from site visits do not provide the required assurance that these elements have been appropriately addressed.</p>		

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 the each variation has been referred to the Health Board and agreed with their clinical, engineering, infection control and FM teams.

NHS Scotland Assure Observations:

The observations noted in response to question 2.9 apply to this question with respect to fire stopping systems.

The response to the NHS SA gap analysis noted that NHS Fife considered that this question was not applicable as fire stopping works are designed post tender.

NHS SA do not consider this statement to be accurate and that firestopping details and specifications forms part of the design documentation provided at FBC stage.

NHS Fife's response to question 6.01 also includes a technical submittal proposing a change from the specified firestopping products to an alternative product however no justification has been provided by the Contractor in the documentation that clearly confirms the reasoning behind using an alternative product to what has been specified. Whilst this product has been approved by the project architect there is no evidence provided to confirm how this change has been agreed with NHS Fife and other stakeholders, where applicable.

NHS SA have concerns that there are currently gaps in the governance around how derogations and variations to the design are controlled and documented during the construction stage.

Documents referenced are:

Appendix 33 – Request for Information (RFI264) (Fire Alternative RFI_GRAHAM Request for Information_Ver1.pdf)

Appendix 34 – Technical Submittal (TSUB152) (Tech Submittal - Alternative Material_GRAHAM Technical Submittal_Ver1.pdf)

NHS Fife's responses to Gap Analysis (2022-05-23_GCL Response_Combined Const Deliverables List_NHS Fife NTC Infrastructure Gap Analysis.xlsx)

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:

NHS Fife have provided a federated BIM model, the architect's reflected ceiling plant drawings, sub-contractor installation drawings, and the ventilation duct fabricators installation drawings for review.

In response to the gap analysis undertaken by NHS SA, the Contractor has noted that evidence relating to damper access has been presented to NHS Fife's Project Director however no documented evidence has been provided to confirm this, nor any subsequent actions, agreement or comments from this review have been provided.

At the fire technical workshop on 23 June 2022 NHS Fife confirmed that weekly site walk rounds are undertaken with the local NHS Fife estates team to review accessibility of systems, including fire dampers.

NHS SA noted that the ventilation fabricators drawings provided for review have a number of duct access doors missing that are required to facilitate access to smoke fire dampers.

The site inspections undertaken on 28 June 2022 and 1 July 2022 did note that a significant number of fire smoke dampers had been installed however no fire smoke damper test and inspections records have been provided for review.

As noted in response to questions 2.5 and 3.5 access within corridors areas is restricted and a number of duct access doors are difficult to access due to the location of other services. In many instances this limits access to within clinical spaces.

Documents referenced are:

Federated BIM Model (EOC-NOR-ZZ-XX-CM-A-00001)

Ventilation Services Layouts (EOC-AMK-XX-01-DR-Z-57001 to 57004, EOC-AMK-XX-02-DR-Z-57001 to 57004, EOC-AMK-XX-03-DR-Z-57001 and EOC-AMK-XX-04-DR-Z-57001 to 57004)

Ventilation Fabrication Drawings (EOC-RGM-XX-01-DR-Z-57001 to 57004, EOC-RGM-XX-02-DR-Z-57001 to 57004, EOC-RGM-XX-03-DR-Z-57002 to 57004 and EOC-RGM-XX-04-DR-Z-57001 to 57004)

Heating drawings (EOC-AMK-XX-01-DR-Z-56001 to 56004, EOC-AMK-XX-02-DR-Z-56001 to 56004, EOC-AMK-XX-03-DR-Z-56001 to 56004 and EOC-AMK-XX-04-DR-Z-56001 to 56004)

Major Plant Access and Replacement Strategy (EOC-RYB-XX-XX-RP-ME-79002)

Major Plant Replacement Strategy Drawings (EOC-RYB-XX-01-DR-M-79020, EOC-RYB-XX-02-DR-M-79020, EOC-RYB-XX-03-DR-M-79020, EOC-RYB-XX-04-DR-M-79020, EOC-RYB-XX-XX-DR-M-79020)

NHS Fife's responses to Gap Analysis (2022-05-23_GCL Response_Combined Const Deliverables List_NHS Fife NTC Infrastructure Gap Analysis.xlsx)

Project Architect's RCP drawings (EOC-NOR-XX-XX-DR-A-35011 to 350114.pdf)

Project Architect's Ceiling Finishes Drawings (EOC-NOR-XX-01-DR-A-35001_Ver4_Ver1.pdf, EOC-NOR-XX-02-DR-A-35002_Ver3_Ver1.pdf, EOC-NOR-XX-03-DR-A-35003_Ver8_Ver1.pdf, EOC-NOR-XX-04-DR-A-35004_Ver2_Ver1.pdf)

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?	<p>Evidence that the system is certificated and that the installation follows the installation details which were used for the certification.</p> <p>Written confirmation from the design consultant.</p>
<p>NHS Scotland Assure Observations:</p> <p>The technical submittal for fire rated ductwork has been included. Whilst the testing has been undertaken in accordance with EN 1366 the tests are for uninsulated, rectangular ductwork. The specifications and drawings provided for review does not confirm if the ductwork is required to provide 120 minutes for stability, integrity and insulation. The fire rated ductwork serving the lift shafts currently has no insulation installed.</p> <p>From discussions held with the Contractor during the site inspections undertaken on 28 June 2022 and 1 July 2022 it was noted that fire rated duct installations are still to commence for the automatic opening vents (AOV's).</p> <p>It was also noted during the site inspections that the fire rated ducts connecting to the AOV's installed within the roof plantroom are still to be connected. NHS SA were advised by the Contractor that the AOV's are installed within cold rolled steel purlins. Therefore, the supporting structure of the AOV's will not provide 60 minutes fire rating. The installation detail between the fire rated ductwork and roof structure needs to ensure 60minutes fire resistance is maintained.</p> <p>Documents referenced are: <i>Ductwork Technical Submittal TS039 (TS039 Rev B – Ductwork.pdf)</i></p>		

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:

Correspondence has been provided to confirm that building control have accepted the smoke control strategy (automatic opening vents) for the reduced compartment sizes however the findings noted in 6.11 raises concerns that the current proposed installation detail will provide the necessary fire rating to satisfy the fire strategy requirements that have been accepted by building control.

Schematics and technical submittals have been provided for the smoke control (automatic opening vents) and fire smoke damper systems however there is no evidence provided to confirm that these systems have been designed by an accredited fire engineer.

The fire alarm cause and effect meeting minutes provided notes a number of aspects of fire damper and ventilation system shut down procedures that deviate from SHTM 03 and 82. These are not referenced or justified within the fire strategy report or derogations schedule nor is there confirmation from the building services design consultant that the operating sequence for smoke systems (e.g. AOV's and fire smoke dampers) has been agreed and integrated into the control of other building systems.

During the site inspection carried out on 28 June 2022 it was noted that fire dampers were installed in line with mineral wool cavity barriers. The fire dampers were supported off drop rods. The manufacturer's fire tested detail has not been provided as evidence to support this installation detail.

Refer to the observations noted in 6.11 for further observations in relation to the automatic opening vents (AOV's).

Documents referenced are:

Fire Alarm Cause and Effect (EOC-GRA-XX-XX-MN-W-45008_Ver1.pdf)

Fire Alarm Cause and Effect Schedule (NHS Fife Cause and Effect Schedule Matrix Rev 0_FIRE ALARM CAUSE AND EFFECT SHEDULE_Ver1.xlsx)

Fire Strategy – Stage 4 Report (EOC-NOR-XX-XX-RP-A-00013_Ver1_Fire Strategy – Stage 4_Ver1.pdf)

Smoke Ventilation Schematic (EOC-RYB-XX-XX-DR-M-57003_Ver1_SMOKE VENTILATION LOCATION SCHEMATIC_Ver1.pdf)

Motorised Fire Smoke Damper Schematic (EOC-RYB-XX-XX-DR-M-57004_Ver2_MOTORISED FIRE SMOKE DAMPER SCHEMATIC_Ver1.pdf)

Smoke Extract System Technical Submittal TS038 (TS038 Rev B - Smoke Extract_SYSTEM INSTALLATION - SMOKE EXTRACT_Ver1.pdf)

Ductwork System Technical Submittal TS039 (TS039 Rev B - Ductwork_SYSTEM INSTALLATION - DUCTWORK_Ver1.pdf)

Correspondence from Building Control Officer (Fw Victoria Hospital-2001042BW_Ver1.msg)

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.
<p>NHS Scotland Assure Observations: The observations noted in response to question 2.8 apply to this question with respect to fire systems.</p> <p>A Commissioning Responsibility Matrix document has been provided but does not detail the roles and responsibilities for commissioning of fire safety systems</p> <p>No commissioning strategy or check sheets specific to the fire systems was provided for review, nor is there any evidence to confirm how these will be reviewed and approved by an independent organisation prior to commencement of commissioning.</p> <p>Based on the observations noted, NHS SA have concerns that there is limited assurance in relation to the pre-commissioning activities that should be completed and recorded in advance of commissioning commencing.</p> <p>Documents referenced are: <i>Commissioning Responsibility Matrix (NTC-FO - Commissioning Responsibility Matrix Rev. 0_Ver1 (2).docx)</i></p>		

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	<p>The derogations schedule (EOC-NOR-XX-XX-RP-A-00014_revP11_Ver1.xlsx) appears to show 14no. fire safety derogations, however the Norr Fire Strategy Report (EOC-NOR-XX-XX-RP-A-00013 Rev C01 04 05 2021) only addresses/justifies one.</p> <p>The derogation schedule also contains only limited information/justification on fire safety derogations.</p> <p>Detailed discussion and justification for all fire safety derogations has not been provided in either the derogations schedule or the fire strategy as a consistent record for approval by Building Control and NHS Fife, and for ongoing reference throughout building operation.</p> <p>It is critical that all derogations are addressed, justified and approved as part of the design process prior to construction commencing.</p>
---------	---

3.6.2.2	The tracker in response to the interim assurance service review undertaken at FBC stage (NHS Fife - Elective Care Centre Design Assurance Report Tracker - COMBINED - v20.09.21_Ver1.xlsx) contains PSCP comments/responses to the observations raised during the review.
3.6.2.3	<p>Appendix A to the Fire Strategy (EOC-NOR-XX-XX-RP-A-00013 Rev C01 04 05 2021) only provides drawing references, and not copies, of the fire strategy drawings. The latest/relevant version of the fire strategy drawings should be appended to the Fire Strategy drawings as a single reference point for the fire strategy design.</p> <p>NHS Assure have been advised that the current version of the Fire Strategy is Rev C04 however this version of the document was not provided within the agreed KSAR programme timescales and has therefore not been reviewed.</p>
3.6.2.4	NHS SA note that the lift lobbies serving the evacuation lifts have fire hazard rooms opening directly on to them. The evacuation strategy and fire safety procedures provided for review (Revision C01 of Fire Strategy noted in 3.6.2.3 above) does not account for this aspect of the design (e.g., considering the fire scenario where a lift lobby may not be safe for patients to wait in).
3.6.2.5	<p>It was noted during the site visit carried out by NHS SA on 28 June 2022 that:</p> <ol style="list-style-type: none"> 1. Metal studs to partitions were installed at 600mm centres. The floor to ceiling level at first floor was measured at 4.6m. 2. A timber runner within the steel door frame was missing above a door opening. <p>No documentation was provided to confirm that they are constructed in accordance with manufacturer's specifications.</p>

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.</p>

		<p>Evidence that fixtures fitting and equipment have not been incorporated 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>
--	--	--

NHS Scotland Assure Observations:

No documentary evidence was provided relating to NHS Fife’s IPC management structure or expertise. Verbal assurance was provided during the IPC workshop, where it was also noted that the IPC resource available to the project had been limited by service pressures on the IPC Team due to the COVID-19 pandemic, although this was mitigated to some extent by reducing team activity in other areas. NHS Fife should ensure that the IPC Team has sufficient resource available to be able to provide any input necessary to the project.

As noted previously in section 1.8, it is unclear what the process is for agreeing and signing off derogations, and how the IPC Team are included in this process.

The review team was informed at the IPC workshop that the Director of Nursing is the executive board member responsible for IPC and chairs both NHS Fife’s Infection Prevention and Control Committee (IPCC) and the project board. The review team was given verbal assurance that the project is a standing item on the IPCC agenda.

Evidence of IPC Team advice was presented in the form of a comment tracker following review of sample patient’s bedroom; it is unclear to what extent the IPC Team has been involved in review of fixtures, fittings, and equipment for other areas of the project such as the operating theatres or what the process is for ongoing monitoring of actions. As noted previously, NHS Fife should maintain an action tracker to demonstrate progress and completion of actions identified. This document should be regularly reviewed.

No evidence was provided that all contractors and sub-contractor competency checks have been completed and signed off. NHS Fife should ensure that there is a process in place to provide assurance of contractor and sub-contractor competency.

Documents referenced are:

NTC – Fife Orthopaedics Sample Bedroom Comment Tracker (Submitted in hard copy only, 28.06.22)

Elective Orthopaedic Project Board Meeting minutes 17.12.20

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: 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>

NHS Scotland Assure Observations:

No documentary evidence of the requirements of the NIPCM are being considered during the construction process other than the Sample Bedroom Comment Tracker. NHS Fife should ensure that the Project Team are familiar with the NIPCM and that it is being taken into consideration in all areas.

Documents referenced are:

NTC – Fife Orthopaedics Sample Bedroom Comment Tracker (Submitted in hard copy only, 28.06.22)

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>

NHS Scotland Assure Observations:

No evidence was seen that staff within the contractors' organisation are provided with clear roles and responsibilities in relation to potential risks to future patients from, for example, contaminated water or ventilation systems. Induction material for site workers includes slides on COVID-19, pest control and HAI-SCRIBE but does not explicitly address the risks noted above. No evidence was seen of an education programme including training and updates on HAI guidance, policies and procedures. NHS Fife should ensure that contractors and sub-contractors are aware of potential infection risks and of their roles in minimising them, and of relevant policies and procedures.

Documents referenced are:

Appendix 5 Site Induction PowerPoint

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.

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. NHS Fife 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.

3.7.2 Infection Prevention & Control Built Environment: 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.

3.7.2.1	As noted in Section 3.9, a heater battery has been sited above an operating theatre dirty utility. This room forms part of the theatre suite and access for maintenance is therefore through this clinical area; this is a potential infection risk and not in line with current guidance. There is no evidence that the siting of this battery has been through a formal derogation process or approved by the IPCT. The health board should ensure that that is a clear, documented process for agreement and sign-off of derogations, involving all relevant parties, particularly the IPC Team in this case. We would recommend that this unit is relocated.
----------------	--

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](#)

