

**NHS Ayrshire & Arran
The National Secure Adolescent
Inpatient Service
Key Stage Assurance Review**

**Construction KSAR
Report**

V1.0

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Document Overview

Key Stage Assurance Review Report | Construction Stage

Prepared for:

NHS Ayrshire & Arran – The National Secure Adolescent Inpatient Service

Prepared by:

NHS Scotland Assure – Assurance Service

Document Control Sheet

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1. Executive Summary

As a result of the Construction Key Stage Assurance Review (KSAR) and based on the information presented, NHS Scotland Assure (NHS SA) note the project is “supported” at this stage.

Overall, there were no significant concerns identified throughout the course of the review that would prevent the project progressing to the next stage, however, there are a number of observations that have been raised through the KSAR process which are recorded in this KSAR report and detailed review findings. NHS SA recommend that the following key themes are addressed by NHS Ayrshire & Arran (NHS A&A) prior to the Commissioning Stage:

- NHS SA note that there are remaining observations, raised during the KSAR undertaken at Full Business Case (FBC), that have not been fully closed out through the FBC action plan. NHS A&A should develop and implement a consolidated action plan, combining any residual items from the FBC KSAR report.
- At the time of the KSAR, NHS SA understand that full validation of the electric characteristics of the existing site infrastructure, to which NSAIS will be connected to, had yet to be completed. Prior to energisation of the new supply, NHS SA recommend that the existing electrical characteristics are validated and reviewed against the proposed NSAIS design, to ensure they are safe.
- Whilst the Construction packages addressed a number of the technical points in relation to dependencies of the NSAIS facility on other parts of the engineering infrastructure, a number of the high-level clinical resilience strategies still need to be full recorded as part of NHS A&A’s overall operational resilience strategy. This should include, for example, a strategy for the provision of temporary boiler plant in the event of the failure of the heating supply from the adjacent Central Decontamination Unit (CDU); taking into account the location of plant, time to source plant, security requirements, HAI-SCRIBE considerations etc.
- Whilst NHS A&A have implemented a quality monitoring process, both the board and NHS SA have identified concerns in relation to quality on site, for example, the storage and protection of pipework and ductwork. It is unclear from the evidence provided as to how the project team plan to remedy this on site, or whether they have considered any residual risks that may remain as a result of protection protocols having been compromised during the works. It is also not clear how the individuals responsible for raising quality observations will be involved in the satisfactory close out of these issues - this must be a documented process to ensure transparency.
- NHS SA note at the time of the KSAR that due to circumstances outwith the control of NHS A&A, there has been a delay in the appointment of the security package specialist. NHS A&A have noted this as a project risk and are monitoring the impact on the programme. NHS SA echo the board’s concerns

in relation to risks around the appointment of a security contractor and recommend that NHS A&A continue to monitor the situation and document the process. NHS A&A should also consider any potential consequential impacts on the engineering services and ensure appropriate provisions are put in place to maintain the safety of engineering systems throughout the duration of the works and in the event of delays to the programme. In particular, the safety of ventilation and domestic water systems (e.g. to maintain wholesome water and the cleanliness of the ventilation systems etc).

- Given the uncertainty within the project programme, NHS A&A to ensure that the impact on the commissioning process is monitored. From the evidence submitted, it is noted that there is a lack of coordinated inspection and test plan (ITPs). Given that core MEP works have been progressing on site, NHS A&A should ensure that ITPs are coordinated, and the process is documented. The health board must also ensure that an appropriate level of pre-commissioning checks (in line with SHTM and industry guidance) has been undertaken and documented.
- Whilst a project derogations document has been provided, it is not clear how all stakeholders are being engaged in the derogations process. At the time of the KSAR NHS A&A were in the process of carrying out a final review and sign off of the Derogation schedule. NHS A&A to ensure that this process is concluded and documented.
- NHS SA note at the time of the KSAR, elements of the access and maintenance strategy, were still to be resolved by the project team, including how services installed at height will be safely accessed and maintained. It is also unclear whether HAI-SCRIBE considerations have been taken into account in the strategy. NHS A&A to ensure that the access and maintenance strategy is finalised and reviewed by the relevant stakeholders.
- NHS SA note that the firestopping sub-contractor was appointed whilst the KSAR was ongoing. Additional information was provided, and whilst there were no significant observations in relation to the information provided, NHS A&A should ensure that the works progressed to date are reviewed to ensure the relevant level of fire protection is provided.

We recommend that these are considered and addressed by NHS Ayrshire & Arran as part of their action plan going forward.

NHS SA would like to note that NHS A&A acted in a collaborative manner throughout the KSAR process and would like to thank the health board's team for their cooperation and commitment to the review process.

1.1 Summary of Findings

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

Review	No. of Issues per category				
	1	2	3	4	5
Project Governance and General Arrangements	0	4	11	1	1
Water and Internal Plumbing / Drainage Systems	0	2	3	1	0
Ventilation	0	3	11	1	0
Electrical	0	1	6	3	0
Medical Gases	N/A	N/A	N/A	N/A	N/A
Fire	0	0	2	5	1
Infection Prevention & Control Built Environment	0	2	7	2	0

The following categories were used in relation to the findings:

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

1.2 Project Overview

The building and its accompanying external spaces will provide a new National Secure Adolescent In-patient Service (NSAIS) that is located at the existing NHS Ayrshire & Arran (NHS A&A) Ayrshire Central Hospital site in Irvine. Throughout the report, there are references to “Foxgrove”. This is the name under consideration by NHS Ayrshire & Arran board for the NSAIS facility.

The over-arching requirement of the development is to establish a 12-bed national unit, with the main areas/zones within the NSAIS development to include:

- a small entrance hub and administrative area
- a staff area
- a visiting area
- day, dining and local activity areas
- patient bedroom areas (In 3 x blocks of 4 beds with Unit support & storage areas)
- clinical support & consulting areas
- group/therapy areas
- a school/further education/vocational training area
- enclosed external activity space.

The development will encompass all of the key KSAR topics with the exception of medical gas piped supplies. Therefore, a medical gas review has not been undertaken for this KSAR.

2. Review Methodology

2.1 Overview of NHS Scotland Assure & The KSAR Process

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

The NHS Scotland Assure (NHS SA), Assurance Service was launched on 1 June 2021 following a letter issued by Scottish Government to health board Chief Executives, Directors of Finance, Nursing Directors and Directors of Estates. The letter outlined the purpose of NHS Scotland Assure, with an overarching aim to deliver a co-ordinated approach to the improvement of risk management in new builds and refurbishment projects across NHS Scotland. The new service will underpin a transformation in the approach to minimising risk in our healthcare buildings and environments, protecting patients from the risk of infection and supporting better outcomes for patients in Scotland.

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

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

The KSARs will assess if health boards project management teams (inclusive of clinicians, appointed construction consultants, and contractors) are briefed and following best practice procedures in the provision of facilities. We will review if projects are compliant in all aspects of safety, if specific engineering systems are designed, installed and commissioned, and for ongoing safety maintenance including Infection Prevention and Control (IPC).

The KSAR focuses on key topics, specifically – IPC, water, ventilation, electrical, plumbing, medical gases installations and fire safety. This ensures they are designed, installed and functioning from initial commissioning of a new facility and throughout its lifetime. Health Boards are required to have appropriate governance in place at all stages of the construction procurement journey.

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

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

2.2 KSAR Process

The Construction KSAR for NHS Ayrshire & Arran's NSAIS project took place between 05th December 2022 and 28th April 2023.

- 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

Water and electricity are sourced from the existing site infrastructure. Heat is to be derived from the existing hotwell serving the steam boiler plant in the adjacent Central Decontamination Unit.

The mains water supply to the NSAIS building enters the facility from below ground within the new ground floor plant room. The mains water is then fed into a small break tank and booster set. From this, the water pipework splits into two, one line feeds external taps, whilst the other pipework line feeds into a filtration unit and then into a holding tank. The water from the holding tank then feeds two hot water calorifiers, whilst a separate line circulates cold water around the building to the outlets. The cold-water pipework has a return distribution system that passes back through a buffer/ chiller (to mitigate thermal pick up through the building). There is also an emergency water fill connection.

Above ground drainage is vented either to atmosphere at roof level or with air admittance valves.

Ventilation utilises mechanical, ducted systems in parts of the building with natural ventilation in others. Within the ventilation systems, the fire strategy requires a number of motorised smoke and fire dampers throughout.

Heating for space, water and fresh air heating is derived initially from the condensate hotwell which provides low temperature hot water (LTHW) via heat exchangers. Radiant panels deliver the heat to the spaces. Minimum room temperatures are controlled via local heating controls, while peak space temperatures are controlled by the ventilation arrangements with local refrigerant driven cooling units used in a limited number of spaces.

The new NSAIS facility derives its electrical supply at low voltage from an existing substation on the site, utilising a spare way on an existing switchboard. The supply is routed from the substation to the new facility via underground ducts, which enter the new switch room within the NSAIS. There is backup electrical generation provided to this existing substation. The electrical supply feeds a new switchboard dedicated to the NSAIS building located within this new switch room.

A number of low voltage distribution boards are provided throughout the NSAIS, these in turn supply power, lighting and other miscellaneous supplies. Due to the nature of the facility, local electrical isolation points are provided to the bedrooms from a location outside of the room.

CCTV and access control are provided to the facility. Security is of paramount importance to the NSAIS and a staff call/attack system is also provided. A perimeter intruder detection system (PIDS) is also specified to the external fence lines.

A structured cabling system is present; with two incoming communications ducted services provided to the facility, terminating in a new node room within the NSAIS building.

An L1 fire detection and alarm system is provided to the facility.

External lighting is also provided (around the perimeter, in the courtyards and the car park), with a focus on maintaining suitable illumination for safety & security purposes.

A lightning protection system and surge protection is also provided.

Routing of services plus the selection of terminal devices in patient areas, have been designed to reduce ligature risk.

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: NHS A&A have provided assurance that they have formal processes in place to monitor quality and change control within the project. These are summarised within the Project Execution Plan '20220123 NHS NSAIS PEP Rev 4.</p> <p>NHS SA note at the time of the KSAR, that due to circumstances outwith the control of NHS A&A, there has been a delay in the appointment of the security package specialist which has a consequential impact on their ability to compile fully coordinated and detailed inspection and test plans and schedules. NHS A&A have noted this as a project risk and are monitoring potential consequential impact on other engineering services and building fabric works.</p> <p>NHS A&A have implemented regular quality inspections on the project via an NEC 3 Supervisor and Clerk of Works, whilst this provides a level of assurance that works are being monitored, a number of observations relating to the quality of the works have been raised and do not appear to have been fully addressed yet by the PSCP. NHS SA also identified similar concerns during the site visit phase of the KSAR. Of specific note, with reference to the plumbing and drainage systems, is the absence of appropriate protection to open ends of pipework. NHS SA also observed multiple instances where pipework and ductwork materials were not being stored appropriately on site.</p> <p>Documents referenced are: A&A NASIS Quality Project Plan Organogram POL-GR-003 Business Assurance Policy Project Quality Responsibilities A&A NASIS CON-3001a ITP Schedule 20220123 NHS NSAIS PEP Rev 4 NSAIS Design Submission process NSAIS - MEP Tech Sub Status 22-10-5</p>		

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 Ayrshire & Arran have issued a number of documents which outline their processes for document control, including the use of the framework contract administration toolkit (CAT) and a dedicated project extranet site. Whilst this provides assurance that a process has been defined, the KSAR identified instances where it was not always evident that these processes were being followed, including whether approved drawings were being used for construction activities.

The drawings and specifications provided during the KSAR process were examples of MEP designer’s documentation, noted as ‘Stage 4’ and examples of MEP sub-contractor working information noted as ‘Construction’. The examples of working drawings provided contain a number of outstanding comments to be addressed. It is also recorded within the examples of the NEC 3 Supervisor’s reports, that working drawings were not available on Viewpoint, whilst MEP services were in the process of being installed. During the site inspection on Monday 06 February 2023 MEP designer’s drawings were observed on site. It is not clear if all drawings being used on site have been approved for Construction.

The Project Execution Plan (PEP) provided by the health board’s NEC Project Manager, states that *“A design quality monitoring system will be implemented through the design development period which ensures all documents issued by the PSCP are properly checked and signed off in accordance with contract requirements.”* However, it is not clear what stakeholders are involved in this review and approval process from a health board perspective and how this relates to information being approved for Construction.

The PSCP’s Project Quality Plan (PQP) provides detailed commentary on identifying, recording and managing non-conformances. There is no reference to escalation mechanisms. Further observations on quality monitoring are also detailed within KSAR Question 1.1.

Documents referenced are:

P20220123 NHS NSAIS PEP Rev 4
PLA-BUK-C-4001 Design management Plan
Snagmaster Dashboard
Example Non Conformance Report
Various viewpoint screenshots
A&A NASIS Quality Project Plan

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 Ayrshire & Arran have provided a number of documents demonstrating that there are regular quality assurance audits and reports being undertaken on site by their MEP Supervisors and Clerk of Works, however, there is no evidence of regular visits being undertaken by NHS A&A, including the IPC and Estates teams. There is no assurance, however, that all quality issues being raised by the NEC 3 Supervisor and Clerk of Works role are being monitored, actioned and closed out in a timely manner.

The health board have engaged a third-party to deliver supervisory services in relation to the NEC3 form of contract for MEP and fabric. Examples of fabric and MEP site inspection reports have been provided to demonstrate the level of reporting being undertaken and any issues identified. The reports reference a number of examples of pipework and ductwork not being adequately protected in line with SHTM guidance, for example both MEP Supervisor reports 2 and 3 note ductwork accessories and fittings left unprotected and with obvious signs of dust.

The MEP supervisor's reports show that there is a single individual undertaking the mechanical and electrical aspects of the inspections and reports. This individual has been appointed in both the NEC 3 MEP Supervisor and the Clerk of Works role. NHS Ayrshire & Arran did not provide any information in relation to how they had assessed the competency of the individual undertaking this role.

The '*quality audit inspection table*' states that the MEP and fabric NEC 3 supervisor visits site and provides reports on a fortnightly basis. There is also a further MEP and fabric clerk of works inspection undertaken on an alternating fortnightly basis, providing weekly attendance on site by the third party, on behalf of NHS A&A.

During the KSAR, two site visits were undertaken, on 6th February 2023 and 3rd March 2023. During the first visit, issues were raised to the PSCP in relation to the level of protection of pipework and ductwork, these included;

- caps missing on stainless steel domestic water services pipework,
- stainless steel domestic water services fittings lying around loose, not bagged within the mechanical stores
- ductwork fittings, such as dampers, lying on the floor, not protected and covered in dust etc.

During the second visit, around 4 weeks later, similar issues were found within the stores, therefore NHS SA have concerns that the protection of materials onsite is not being addressed in a timely manner and that the MEP supervisor's observations are not being suitably actioned.

Documents referenced are:

MEP Supervisor Report No. 1

MEP Supervisor Report No. 2

MEP Supervisor Report No. 3

Quality Audit Inspection Table

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 A&A have evidenced that the PSCP have appointed a commissioning manager to oversee elements of the testing and commissioning programme and processes. From the information provided it is not clear how this role will interface with other key stakeholders, or how the scope of services has been assessed by the project team to ensure all commissioning activities are appropriately coordinated.

The commissioning manager was appointed whilst the KSAR was underway, with the installation of the engineering building services progressed on site to a point where main ventilation ductwork and water service pipework runs were substantially complete and sections insulated. There was no evidence to indicate whether the installation works to date had been assessed by the commissioning manager, or whether any pre-commissioning tests had yet been undertaken. As noted earlier in the KSAR report, no Designer's Commissioning Briefs have been provided by NHS A&A as part of their KSAR response; these are a requirement of SHTM 03-01 Part A and SHTM 04-01 Part A.

A project commissioning plan has been provided, (authored by the commissioning manager on behalf of the PSCP) which makes reference to mechanical, electrical and plumbing schedules to be checked 'by others'. It is unclear what control mechanisms are in place to ensure these have been checked and approved or who the parties responsible for the checking and approvals will be.

No detail has been provided on the roles and responsibilities of key stakeholders involved in the commissioning process, including requirements for the witnessing of testing and commissioning activities. The evidence submitted also gave no assurance of the intention to undertake pre-commissioning checks in line with SHTM guidance, or a consideration of testing required during the installation period, i.e. sectional pressure testing of pipework and ductwork.

The '*Testing and Commissioning Programme*' has been developed by the PSCP and is provided in draft format, with a number of items to be confirmed. It is lacking in coordinated detail and does not include reference to pre-commissioning checks, in line with SHTM guidance. NHS SA note that there is no allowance for client training within the programme. There is also limited detail on the commissioning process within the overall project programme, therefore it is unclear if sufficient time has been allocated to the process and how this is coordinated with other site activities.

Documents referenced are:

22021121 NSAIS Soft Landings Meeting 01 Agenda
22021121 NSAIS Soft Landings Meeting 01 Minutes
22021121 NSAIS Soft Landings Delivery Plan
Commissioning Soft Landings
Commissioning Master Plan
File Note – Commissioning Strategy
20230120 NSAIS – AECOM PM Comment on T&C Plan
Commissioning Plan NSAIS – Draft Revision
Testing & Commissioning Programme NSAIS Draft Revision

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:</p> <p>NHS A&A have not provided assurance that all quality observations being raised through the defined project quality management protocols are being addressed in a timeous and transparent manner. There is also no assurance that relevant stakeholder groups have visibility on remedial or close out works being undertaken to address issues being raised. The comments provided for items 1.2 and 1.3 are also relevant to this item.</p> <p>The quality management protocols rely on site supervisor and clerk or works inspections, formal NEC 3 defect reporting protocols and the PSCP’s own internal quality monitoring processes. As noted previously in the KSAR report, there are examples of quality observations being raised by the NEC supervisor and clerk of works that have not been addressed by the PSCP.</p> <p>NHS SA noted that whilst on site, there was an instance of water ingress into the building, which had caused damage to the fabric. Whilst remedial works were ongoing to replace the plasterboard, it is unclear how the proposed remedial works had been reviewed by NHS A&A stakeholders, including the IPCT. Whilst there are processes in place, it is not clear how the individuals responsible for raising the observations will be involved in the satisfactory close out of these issues, nor whether relevant stakeholders such as IPC are made aware of relevant issues. This must be a documented process to ensure transparency.</p> <p>Documents referenced are:</p> <p><i>File Note – Management of Defects</i></p> <p><i>NSAIS – Defects Tracker_20221117</i></p> <p><i>A&A NASIS Quality Project Plan</i></p>		

Workbook Ref No.	Areas to probe	Evidence expected
1.6	How does the Health Board assure itself that the management of the Handover process have / are being developed and put in place to meet the project needs?	Soft Landings process Plans have / are being developed for collating as installed information and documents.

NHS Scotland Assure Observations:

NHS Ayrshire & Arran have provided documentation to demonstrate that the processes around the handover of the project are being developed. The information provided, however, lacks evidence of any IPC involvement.

A Soft Landings (SL) delivery plan was provided that covers IA, OBC, FBC as well as Construction, Handover and In Use stages. It is not clear how the delivery plan has been implemented at earlier stages as much of the template remains blank. Within the Construction phase SL plan, all deliverables are noted as ongoing.

Furthermore, the FBC KSAR identified that a number of elements within the project required further development to consider the implications on the operation of the building in service. These included development of operational management strategies to compliment the evacuation strategy, and development of operational policies and procedures to address the interdependency between the NSAIS and CDU facilities as a result of the heating strategy. Whilst there was evidence that the design in relation to these elements had been addressed, there was not further information provided to demonstrate how NHS A&A have considered the operational impacts.

NHS Ayrshire & Arran have provided a document '*NSAIS – O&M Sign-off Procedure*', which details the processes in place for the delivery of the operation and maintenance (O&M) information at handover. This is in draft format and the detailed content of the O&M is not broken down, however, this demonstrates that there is a process in place to prepare this information, validate it and make ready for handover.

No details of client training have been defined within the information; this should be incorporated into the commissioning programme to ensure adequate time is allowed.

Documents referenced are:

22021121 NSAIS Soft Landings Meeting 01 Agenda

22021121 NSAIS Soft Landings Meeting 01 Minutes

22021121 NSAIS Soft Landings Delivery Plan

Commissioning Soft Landings

Commissioning Master Plan

NSAIS – O&M Sign-off Procedure

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:

Whilst NHS Ayrshire & Arran have provided evidence that they have considered how the requirements of the HAI-SCRIBE procedures will be implemented on the project, NHS SA have identified a number of points that we recommend that NHS A&A consider, in order to provide a greater level of assurance that all relevant IPC risks are being appropriately managed.

NHS Ayrshire & Arran have used their own HAI-SCRIBE documents; these have been adapted from SHFN 30 but do not fully correlate with it. The HAI-SCRIBE review team includes contractors' representatives who have signed off the Stage 3 HAI-SCRIBE and a contractor's representative is listed among the attendees in the single set of HAI-SCRIBE meeting minutes provided, for a meeting held on 8th June 2021. The Stage 3 HAI-SCRIBE is dated 7th June 2021. No evidence was seen of more recent HAI-SCRIBE reviews, or of completion or monitoring of the actions listed in the minutes provided.

In discussion at the KSAR IPC workshop, NHS SA was informed that HAI-SCRIBE issues can be raised in any meeting and is a standing item within project group meeting agendas; however, NHS Ayrshire & Arran also stated that a meeting is being arranged to discuss the issues identified at the meeting held on 8th June 2021, suggesting that there has been no clear oversight of HAI-SCRIBE issues or actions since that date. NHS Ayrshire & Arran should ensure that there is a clear, documented process for periodic review of HAI-SCRIBE and for monitoring and following up any issues or actions identified through this process.

No evidence was seen of interim site inspections by the infection prevention and control team (IPCT). In discussion at the KSAR IPC workshop, NHS Ayrshire & Arran verbally confirmed that there are monthly site visits for stakeholders, including IPC. NHS SA recommend that the IPC visits are documented and a clear process for escalating and resolving any issues formally defined.

NHS SA note that previous health board HAI-SCRIBE meetings had identified that risks and control measures in relation to nearby inpatient and CDU facilities would need to be fully considered (reference health board meeting 8th June 2021). There was no evidence to demonstrate that further consideration to these risks had been taken by the project team.

Documents referenced are:

- Stage 2 HAI SCRIBE*
- Stage 3 HAI SCRIBE*
- 20210608 NSAIS HAI Scribe Meeting Notes*

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:

NHS Ayrshire & Arran have provided assurance that they continue to monitor the clinical needs of the facility, particularly given the specialist nature of the facility.

Whilst a project derogations document has been provided, it is not clear how all stakeholders are being engaged in the derogations process.

Documents referenced are:

- Clinical Output Specification*
- NACH – Clinical Brief Document v14*
- Needs Assessment*
- NSAIS Design Tracker v20*
- Environmental Matrix (Foxgrove) v3.0*
- HFS Comment XXX Response 160620*
- MA Derogation Schedule P02*
- SHTM Derogation Clarification Schedule 240620*
- Draft Notes – NSAIS Construction & Commissioning – 03.05.22*
- Draft Notes – NSAIS Construction & Commissioning – 25.05.22*

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:

Within the PEP provided by NHS Ayrshire & Arran, the Principal Designer (PD) for the project has been confirmed as the PSCP, who also acts as Principal Contractor.

The project have appointed a third party, to provide regular Principal Designer site inspections and audits, with evidence of these inspections/audits provided as part of the NHS Ayrshire & Arran KSAR response. The PSCP's PQP does not record the use of a third party, which may lead to ambiguity and should be updated.

Documents referenced are:

'Advisor to Principal Designer' Audit – June 2022

'Advisor to Principal Designer' Audit – November 2022

'Advisor to Principal Designer' Audit – October 2022

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>

		Evidence that the Health Boards selected procurement route has gone through the Board's Governance channels.
<p>NHS Scotland Assure Observations: As noted in the FBC KSAR, NHS A&A have appointed a PSCP led design team via HFS Framework Scotland 2. There are 5 no. PSCP's on the framework and a mini-competition was undertaken to appoint a PSCP team.</p> <p>NHS A&A as part of the KSAR response, provided a copy of the interview questions that were used to probe the potential PSCP as to their specific experience of mental health projects, including them providing examples of similar projects over the past 5 years.</p> <p>This is a recognised procurement route; however, it is not clear from the evidence provided as to what IPC expertise NHS A&A have employed to support the procurement journey. No further assurance has been provided during the Construction KSAR to address this observation.</p> <p>Documents referenced are: <i>PSCP HLIP – Final</i> <i>Construction Offer Letter</i> <i>Construction Acceptance Letter</i></p>		

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>
<p>NHS Scotland Assure Observations: The responses for KSAR question 1.1 and 1.4 are relevant to this also.</p> <p>NHS SA also note that the testing and commissioning manager is not an independent organisation and has been appointed by the PSCP, as per the original requirements of the Board.</p> <p>Documents referenced are: <i>22021121 NSAIS Soft Landings Meeting 01 Agenda</i> <i>22021121 NSAIS Soft Landings Meeting 01 Minutes</i> <i>22021121 NSAIS Soft Landings Delivery Plan</i> <i>Commissioning Soft Landings</i></p>		

Commissioning Master Plan
File Note – Commissioning Strategy
File Note – Pre-Commissioning Inspection
20230120 NSAIS – AECOM PM Comment on T&C Plan
Commissioning Plan NSAIS – Draft Revision
Testing & Commissioning Programme NSAIS Draft Revision

Workbook Ref No.	Areas to probe	Evidence expected
1.12	Evaluation of the Health Boards duty holder matrix.	<p>Evidence that the Health Board have a fully recorded matrix of the required roles and responsibilities and have a clear governance structure that is fully resourced together with plans in place for the implementation.</p> <p>Evidence that Health Boards have appropriate number of competent, qualified staff to carry out specific duties throughout the life cycle of the project e.g., IPC, Engineers, Estates staff etc. The number of competent, qualified staff will depend on the type and size of the Build Project.</p>

NHS Scotland Assure Observations:

NHS A&A have provided details of their internal duty holder structure, including Authorising Engineers and Estates staff such as APs. This contains details of role titles, but does not detail responsibilities, or reference where this information may be found. NHS SA also note that the duty holder matrix identifies a number of positions to be filled and no commentary is provided as to how these will be resourced.

NHS Ayrshire & Arran have provided a project specific IPC involvement document, which, whilst undated, provides assurance that the IPC team have considered the resources required and identified a responsible person. The document also outlines the time allocation to the project for the responsible person in managing their commitments across clinical activity and projects.

NHS SA note that the duty holder matrix provided does not specifically detail a security advisor type role. It is unclear from the evidence provided whether NHS A&A have considered the need to expand their standard duty holder matrix to include this specialist role.

Documents referenced are:

NHS A&A Duty Holder Matrix
NHS AA NSAIS – IPC Involvement

3.1.2 Project Governance and General Arrangements: Further Observations

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

3.1.2.1	N/A
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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:

As part of the KSAR response, NHS A&A provided details of 5 no. plumbing operatives and advised that as a health board they were satisfied with their level of competence. NHS SA would note that one of the five operatives do not appear to have any specific healthcare experience, nor does the competency information provided specifically detail any training or qualifications specific to plumbing and drainage installations within a healthcare environment. Where healthcare experience has been noted, it is not clear as to what this experience relates to (reference made only to project name, not role or responsibility). It is unclear as to how NHS A&A or the PSCP have assessed the competence of the operatives. There is also no information as to how training will be provided to the operative with no healthcare experience.

It is not clear from the evidence submitted that a site induction process has been developed and implemented by the PSCP in relation to the internal plumbing / drainage systems. It was explained by NHS Ayrshire & Arran and PSCP representatives at the KSAR water workshop on Friday 17th February that the development of the site induction process followed the basic principles of standard health and safety inductions for site operatives and were not specific to a healthcare project, nor included any project specific IPC briefings.

Documents referenced are:

- 04. File Note Competency Check
- 02. Arc-Tech Contractor Vetting List
- 01. NHS NSAIS – CV's. zip

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 SHFN 30 training.

NHS Scotland Assure Observations:

Whilst NHS Ayrshire & Arran have provided documentation noting the plumbing contractor's healthcare experience (two specific projects referenced) and their site management structure, there is no assurance as to how the health board have assessed this as being relevant to the NSAIS project. The documentation provided is not clear as to how the individuals named in the management structure were involved in the reference projects. The site management structure does not specifically identify a plumbing sub-discipline.

NHS A&A provided assurance that the plumbing operatives had undertaken HAI training.

Documents referenced are:

- 01. Management Team Organogram
- 02. Capability Statement - NHS Properties
- 01. Management NHSAA Inductions
- 02. NSAIS - Hai-Scribe Training Email
- 03. NHS- Health Facilities Scotland 15m_H264
- 04. HAI Scribe DVD briefing Record Session 1
- 05. HAI Scribe DVD briefing Record Session 2and3

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 Ayrshire & Arran have submitted a number of NEC Supervisor's Site Inspection Reports, MEP progress reports, which cover the fabric and MEP installations. These offer assurance that regular inspections are being carried out. As noted previously in the KSAR report, there are a number of quality observations being raised that do not appear to have been addressed. Of specific note, with reference to the plumbing and drainage systems is the absence of appropriate protection to open ends of pipework. NHS SA also observed multiple instances where pipework materials were not being stored appropriately on site.

Documents referenced are:

0.1 Quality Audit Inspection Table
 20220803 MEP Site Inspection Report No 1
 20221109 MEP Site Inspection Report No 2
 20221123 MEP Site Inspection Report No 3

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:

NHS SA note that the KSAR has identified concerns with respect to the protection of open ends of pipework. NHS A&A have implemented a monitoring process, which has identified concerns in relation to this and the NHS SA KSAR site inspection identified similar concerns which also extended to the storage of pipework materials. It is unclear from the evidence provided as to how the project team plan to remedy this on site, or whether they have considered any residual risks that may remain as a result of protection protocols having been compromised during the works, for example, contamination of pipework and fittings.

During the site visit on the 6 February 2023, it was noted on site that there were several instances of missing proprietary end caps on the domestic water services pipework. In some instances, it was also noted that pipework was being protected by the use of foil / duct tape. Examples of this were found within the high-level services gantry, as well as the materials stores, which were found to be in a messy and largely unorganised state. It was explained at both the site walkround on Monday 06th February 2023 and the KSAR water services workshop on the 17th February 2023, that the MEP sub contractor was previously facing difficulties in sourcing the proprietary cap ends. At the KSAR water services workshop it was stated that the caps had been eventually sourced and that remedial works would be taking place across the site.

In addition to the above, during the inspection on the 6th of February, it was observed that the domestic water pipework and fittings were being stored within a container. Not all pipework or pipework fittings were stored with adequate protection.

Documents referenced are:

- MEP Supervisor Report No. 1
- MEP Supervisor Report No. 2
- MEP Supervisor Report No. 3
- Quality Audit Inspection Table

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:

NHS SA note at the time of the KSAR a number of items in relation to the access and maintenance of the domestic water services and drainage installation were still to be resolved by the project team. NHS A&A have been engaging in reviews of the services design, including BIM fly-through meetings and a number of issues were identified in these meetings, including how services installed at height will be safely accessed and maintained. NHS SA also note at this time the access hatch strategy, within part of the facility, was still to be fully developed.

The PSCP has provided an outline plant replacement strategy, however, it is unclear whether this has been ratified against actual plant selection to ensure that the space provided affords suitable and safe clearance to facilitate the strategy. It is also unclear whether HAI-SCRIBE considerations have been taken into account.

Documents referenced are:

- 01. NSAIS-HAK-XX-XX-RP-MEP-50-0006
- 02. NSAIS BIM Meeting 25.11.22

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:

NHS A&A have not provided assurance that they have in place a fully coordinated and agreed strategy for retaining space for minor additions and modifications to services in the future. The Employer's Requirements provided at the FBC KSAR stage, noted various requirements for spare capacity, including space for future flexibility. No assurance was provided as to how these are being monitored or whether this is still a project requirement.

The observations as noted in KSAR Question 2.5 are also relevant to this question.

Documents referenced are:

NSAIS-KCSNE-ZZ-XX-RP-z-W&P-2641_2.6.4.1 Domestic Water Details Pipework Sizing

NSAIS-KCSNE-ZZ-XX-RP-z-W&P-2642_2.6.4.2 Domestic Water Pipework

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:

As noted previously within this report, NHS Ayrshire & Arran have appointed an NEC Supervisor to undertake regular site inspections and prepare reports. There is evidence, both written and photographic, to demonstrate that as part of the site inspections, materials storage containers have been inspected. The report samples provided appear to cover local materials storage within the site itself as well as external storage containers.

The observations as noted in KSAR Question 2.4 are also relevant to this question.

Documents referenced are:

20220803 MEP Site Inspection Report No 1

20221109 MEP Site Inspection Report No 2

20221123 MEP Site Inspection Report No 3

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

NHS Scotland Assure Observations:

As noted in KSAR Question 1.4, full commissioning plans are still being developed and there is no Designer's Commissioning Brief in line with SHTM 04-01 Part A and BS 8680.

Within the evidence provided as part of the KSAR response, the PSCP have provided water services and drainage services system check sheets used for visual inspections, however, these documents are blank and do not provide assurance as to the appropriate methodologies for pre-commissioning of water and drainage services.

A file note has been provided which states *"NHS A&A have employed appropriate technical assistance in order to complete and sign off pre-commissioning checks. This will include the technical AE's for each discipline and the NEC Supervisor, as per the provisions of the contract. Upon receiving the commissioning strategy from the PSCP, commissioning meetings will commence in order to mutually agree the Pre-Commissioning inspections. This will ensure that these are in line with SHTM 04-01 Part A."*

NHS SA note that the domestic water pipework installation has progressed on site to the point where sections are now insulated and there is no evidence to note how the above file note has been implemented in practice, nor whether any pre-commissioning checks have been undertaken.

Documents referenced are:

- 01. File Note - Pre-Commissioning Inspection
- 01. Visual Inspection - Water Services System Check Sheet
- 03. Visual Inspection - Drainage System Check Sheet

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

NHS Scotland Assure Observations:

NHS A&A provided a file note to state that there have been *"no impactful changes"* to the water and drainage design between FBC and construction. The response provides no assurance that the findings of the FBC KSAR have been reviewed and addressed by NHS A&A.

Documents referenced are:

- 01. File Note - No Change Water & Drainage

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	N/A
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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>No assurance has been provided that all duct and plant installers are trained to understand the installation of ventilation systems in the healthcare environment. The organisational structure provided by NHS A&A does not specifically reference ventilation systems as a specialist discipline, referring only to an overarching mechanical discipline. No evidence of training, qualification or healthcare experience has been provided for those responsible for the installation of the ventilation systems on the projects. There is no evidence of competency checks being undertaken for the ventilation contractor. The M&E sub-contractor healthcare experience list makes reference to use of a specialist ventilation sub-contractor on the projects listed, but it is not clear what relevance this will have to the organisation structure in place at NSAIS.</p> <p>As noted in KSAR Question 2.1, the site induction process appears only to cover basic health and safety protocols for site operatives and does not contain any specific detail as to considerations of ventilation in healthcare, including any associated IPC requirements.</p> <p>Documents referenced are:</p> <p>01. NHS NSAIS – CV’s. zip</p> <p>02. Contractor Vetting List</p> <p>04. File Note Competency Check</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: With reference to previous healthcare experience, the MEP sub-contractor's capability statement indicates that they relied upon a specialist ventilation sub-contractor to carry out the installation of the ductwork on the projects noted within their statement. No further evidence has been provided to confirm if this is the case on this project and whether the ventilation sub-contractor has relevant healthcare experience.</p> <p>As noted in the response to KSAR question 2.2, the mechanical supervisor identified within the organogram is the plumbing foreman, and no evidence has been provided to demonstrate that they have the relevant ventilation experience to manage sub-contractors on site.</p> <p>The observations noted in response to KSAR Question 3.1 also apply.</p> <p>Documents referenced are: 01. Management Team Organogram 02. Capability Statement - NHS Properties</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: NHS Ayrshire & Arran have submitted a number of NEC Supervisor's Site Inspection Reports, MEP progress reports, which cover the fabric and MEP installations. These offer assurance that regular inspections are being carried out. As noted previously in the KSAR report, there are a number of quality observations being raised that do not appear to have been addressed. Of specific note, with reference to the ventilation systems, is the absence of appropriate protection to open ends of ductwork and concerns over damage to ductwork and fittings. NHS SA also note concerns with</p>		

respect to the storage of materials associated with the ventilation installation, including air handling unit equipment.

Documents referenced are:

- 0.1 Quality Audit Inspection Table
- 20220803 MEP Site Inspection Report No 1
- 20221109 MEP Site Inspection Report No 2
- 20221123 MEP Site Inspection Report No 3

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:

NHS SA note that the KSAR has identified concerns with respect to the protection of open ends of ductwork and plant. NHS A&A have implemented a monitoring process, which has identified concerns in relation to this and the NHS SA KSAR site inspection identified similar concerns. It is unclear from the evidence provided as to how the project team plan to remedy this on site, or whether they have considered any residual risks that may remain as a result of protection protocols having been compromised during the works, for example, contamination of ventilation ductwork and equipment.

There did not appear to be any external storage for ventilation ductwork. Ductwork sections including straight square ductwork and bends were witnessed to be stored in various rooms throughout the site upon the NHS SA site walkround on the 06 February 2023.

During the visit, it was also noted that there were a number of damaged duct-end protection covers which would allow for the ingress of dirt and dust.

During the ventilation workshop held on the 13th of February 2023, the cleaning and protection of ductwork was discussed with the PSCP, where the PSCP confirmed that the cleaning would likely be in accordance with the manufacturer’s recommendations. The project manager subsequently confirmed via a file note dated the 23rd of February 2023, that the contractor will comply with TR19 table 1 and appendix B. The file note indicates an intermediate level in accordance with BESA TR 19, whereas SHTM 03-01 Part A recommends an ‘advanced’ level. There was no assurance that this had been agreed with NHS A&A, nor was there a corresponding derogation noted.

Documents referenced are:

- 0.1 Quality Audit Inspection Table

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>

NHS Scotland Assure Observations:

The observations noted in the response to question 2.5 are relevant here to ventilation systems included within the BIM model.

Notwithstanding this, it was noted during the site inspection on the 6th of February that access to services above structural cassettes appears limited given access will be via hatches in the MF Ceiling within the education wing. The main ductwork runs in corridors are approx. 4-5m above finished floor level. Access to VCD's, MFSD's and access panels for duct cleaning will be difficult at this height. It is noted that the NEC supervisor identified that ductwork cleaning access panels had not be installed, the PSCP should ensure that these are installed in positions that are accessible and not impeded by other MEP services installations.

It is noted that NHS Ayrshire & Arran verbally confirmed during the KSAR process that BIM reviews were carried out with the NHS A&A Estates team. NHS Ayrshire & Arran raised comments specific to access to fire dampers and other access related items. This resulted in a site visit by the Estates team and a follow up workshop was scheduled to discuss the access and maintenance concerns. Non-conformance review/report (NCR) documentation was issued by the PSCP to their relevant supply chain members in order to rectify any issues raised.

With reference to the plant replacement strategy report (July 2021), it identifies that for the purposes of the AHU replacement, components of plant will be replaced rather than entire AHU. With reference to extract fans, the report identifies that access hatches will be provided to allow for plant replacement. The plant replacement strategy report is not a fully developed replacement, the report indicates that the PSCP is required to develop a detailed method statement for plant replacement based on the strategies contained within this report.

It is evident from the BIM review meeting minutes held on 25th November 2022 that the maintenance and access strategy has been discussed between the PSCP and NHS Ayrshire & Arran, however the minutes do not reference the plant replacement strategy report.

Documents referenced are:

- 01. NSAIS-HAK-XX-XX-RP-MEP-50-0006
- 02. NSAIS BIM Meeting 25.11.22

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>

NHS Scotland Assure Observations:

NHS A&A have not provided assurance that they have in place a fully coordinated and agreed strategy for retaining space for minor additions and modifications to services in the future. The Employer's Requirements provided at the FBC KSAR stage, noted various requirements for spare capacity, including space for future flexibility. No assurance was provided as to how these are being monitored or whether this is still a project requirement.

The PSCP has provided minutes of a meeting held between PSCP, MEP sub-contractor, the designers and NHS Ayrshire & Arran technical representatives dated 25.11.22. The minutes do not clearly record the discussions with reference to the space for future flexibility. The minutes record that through viewing the model, attendees were able to see where future services could be installed and provision of space for same. The information provided does not clearly define the zones for future flexibility in the ductwork installation.

At the ventilation workshop, it was confirmed verbally by representatives of the PSCP that there was a 20% spare capacity allowance included within the AHU specification. With reference to the supply and extract fan pressure drop calculations, a 10% spare capacity has been included on both the air volume and system static pressure.

There has been evidence provided within the KSAR document transmittal which demonstrates core IPC and clinical colleagues have agreed to the ventilation solution through the sign off of the project environmental matrix. The Environmental Matrix details all of the internal environmental characteristics which will be controlled by the building services such as space temperatures, air change rates due to the supply of fresh air and extracting of stale air, and pressure regimes.

Documents referenced are:

*NSAIS-KCSNE-ZZ-XX-RP-z-W&P-2645_2.6.4.5 Resilience
Strategy_Information_00.pdf*

07. Environmental Matrix (Foxgrove) v3.0

*NSAIS-HAK-XX-XX-CA-M-50-0004_M04 - NSAIS AHU01 Supply Fan PD
Calculations_Construction_-.pdf*

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

NHS Scotland Assure Observations:

As noted previously within this report, NHS Ayrshire & Arran have appointed an NEC Supervisor to undertake regular site inspections and prepare reports. There is evidence, both written and photographic, to demonstrate that as part of the site inspections, materials storage containers have been inspected. The report samples provided appear to cover local materials storage within the site itself as well as external storage containers.

The observations as noted in KSAR Question 3.4 are also relevant to this question.

Documents referenced are:

20220803 MEP Site Inspection Report No 1

20221109 MEP Site Inspection Report No 2

20221123 MEP Site Inspection Report No 3

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 pre-commissioning can commence?	Evidence that adequate pre-commissioning check sheets (CIBSE, BSRIA) have been completed and signed off. Evidence that the Board has had all pre-commissioning checks audited and approved by an independent organisation.

NHS Scotland Assure Observations:

As noted in KSAR Question 1.4, full commissioning plans are still being developed and there is no Designer's Commissioning Brief in line with SHTM 03-01 Part A. Within the evidence provided as part of the KSAR response, the PSCP have provided ventilation system check sheets used for visual inspections, however, these documents are incomplete and do not provide assurance as to the appropriate methodologies for pre-commissioning of ventilation services.

NHS SA note that the ventilation ductwork installation has progressed on site to the point where sections are now insulated and there is no evidence to note whether any pre-commissioning checks have been undertaken in line with SHTM 03-01 Part A, such as air pressure tests and air-leakage tests on ductwork in accordance with the methods set out in the BESA ‘DW/143: Ductwork Leakage Testing’.

Documents referenced are:

- 01. Visual Inspection - Air Handling Unit Check Sheet
- 02. Visual Inspection - Ventilation Ductwork

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

NHS Scotland Assure Observations:

NHS A&A provided a file note to state that there have been “no impactful changes” to the ventilation design between FBC and construction. The response provides no assurance that the findings of the FBC KSAR have been reviewed and addressed by NHS A&A.

Documents referenced are:

- 01. File Note - No Change Ventilation

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 appears to be no trickle ventilation on the windows of the bedrooms. With the doors to the bedrooms being fire doors, allowing for no undercut or door transfer grille, it is unclear how make-up air will be provided to the negatively pressurised bedroom.
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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: As part of the KSAR response, NHS A&A provided details of 7 no. electrical operatives and advised that as a health board they were satisfied with their level of competence. NHS SA would note that 2 no. of the 7 no. operatives do not appear to have any specific healthcare experience, nor does the competency information provided specifically detail any training or qualifications specific to electrical installations. Where previous experience has been noted, it is not clear as to what this experience relates to (reference made only to project name, not role or responsibility). It is unclear as to how NHS A&A or the PSCP have assessed the competence of the operatives.</p> <p>There was no assurance provided as to how the site induction would cover any local electrical safety rules, including any interfaces with existing NHS A&A infrastructure.</p> <p>Documents referenced are: 04. File Note Competency Check 02. Arc-Tech Contractor Vetting List 01. NHS NSAIS – CV's. zip</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>

		Evidence that commissioning contractors have completed relevant test and commissioning courses.
		Evidence of trained operatives (AP and CP) to SHTM 06-02.

NHS Scotland Assure Observations:

Whilst NHS Ayrshire & Arran have provided documentation noting the electrical contractor’s healthcare experience (two specific projects referenced) and their site management structure, there is no assurance as to how the health board have assessed this as being relevant to the NSAIS project. The documentation provided is not clear as to how the individuals named in the management structure were involved in the reference projects. It is not clear from the documentation provided, which operatives were engaged on these identified projects.

No assurance was provided to demonstrate that site operatives have the required training, knowledge and experience of BS7671, SHTM 06-02 and the management obligations for the electrical safe system of works this puts on the electrical contractor.

Documents referenced are:

- 04. File Note Competency Check
- 02. Contractor Vetting List
- 01. NHS NSAIS – CV’s. zip
- Management Team Organogram
- Capability Statement
- Management NHSAA Inductions
- NSAIS - Hai-Scribe Training Email
- NHS- Health Facilities Scotland 15m_H264
- HAI Scribe DVD briefing Record Session 1
- HAI Scribe DVD briefing Record Session 2and3

Workbook Ref No.	Areas to probe	Evidence expected
4.3	How does the Health Board ensure that the electrical systems are being installed to the correct standard and reflect the agreed design?	Written, monthly evidence for the progress of work produced by a body which is independent of the contractor and which confirms compliance of the works to date. Photographic and written evidence for the progress of work produced by a body which is independent of the contractor (on a monthly basis).

NHS Scotland Assure Observations:

NHS Ayrshire & Arran have submitted a number of NEC Supervisor’s Site Inspection Reports, MEP progress reports, which cover the fabric and MEP installations. These offer assurance that regular inspections are being carried out. As noted previously in

the KSAR report, there are a number of quality observations being raised that do not appear to have been addressed.

As noted in KSAR Question 1.2 NEC 3 Supervisor's reports, that working drawings were not available on Viewpoint, whilst electrical services were in the process of being installed.

NHS SA observed during their site visit instances of flexible conduit dropping from high level and terminating into rigid steel conduits within the wall cavity of rooms. It is unclear whether this detail fully reflects the requirements of the designer's electrical specification document and NHS SA would recommend a further review of the installation detail is undertaken in conjunction with the site supervisor team and the designer.

Documents referenced are:

- 0.1 Quality Audit Inspection Table
- 20220803 MEP Site Inspection Report No 1
- 20221109 MEP Site Inspection Report No 2
- 20221123 MEP Site Inspection Report No 3
- NSAIS-HAK-XX-XX-SP-E-60-0001

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:

As noted in KSAR Question 2.5, NHS A&A have been engaging in reviews of the services design, including BIM fly-through meetings and issues have been identified in these meetings, including how services installed at height will be safely accessed and maintained. NHS SA also note at this time the access hatch strategy was still to be fully developed within the Education Wing.

NHS SA observed issues in relation to safe access to containment systems during the site walkround on Monday 06th February. It is also not clear how the conduit universal distribution boxes located above the secure bedroom ceilings will be

accessible, once the decoration is complete. This may impact on the ability rewire the system in future.

Documents referenced are:

01. NSAIS-HAK-XX-XX-RP-MEP-50-0006

02. NSAIS BIM Meeting 25.11.22

Working Drawings

MEP Stage 4 Drawings

Workbook Ref No.	Areas to probe	Evidence expected
4.5	How does the Health Board ensure that electrical services are installed in a fashion which will retain space for minor additions and modifications to services in the future?	<p>Evidence that the contractor has presented their co-ordination drawings (BIM model), with space for future flexibility identified, to the Health Board.</p> <p>Evidence that the design consultant has considered and agreed with the Health Board, space for future flexibility in the service installations.</p> <p>Evidence that the contractor has presented their co-ordination drawings (BIM model), with space for future flexibility identified, to the design consultant and that they have agreed them for construction.</p> <p>Evidence that the contractor has presented each of the main service runs plus plant rooms to the Health Board's FM team, to highlight space for future flexibility.</p> <p>Evidence that the Health Board has agreed a strategy (percentage) for spare capacity and a documented allowance to be incorporated into the design.</p> <p>Are sub stations, switch rooms, distribution board cupboards, horizontal distribution runs and risers appropriately sized for the equipment being installed and facilitate safe, adequate maintenance?</p>

NHS Scotland Assure Observations:

NHS A&A have not provided assurance that they have in place a fully coordinated and agreed strategy for retaining space for minor additions and modifications to

services in the future. The Employer's Requirements provided at the FBC KSAR stage, noted various requirements for spare capacity, including space for future flexibility. No assurance was provided as to how these are being monitored or whether this is still a project requirement.

The observations as noted in KSAR Question 2.5 are also relevant to this question.

Documents referenced are:

- MEP Stage 4 Drawings*
- NSAIS –Spatial Report*
- MEP Specifications*

Workbook Ref No.	Areas to probe	Evidence expected
4.6	How does the Health Board assure itself that all electrical materials are stored on site in an environment which protects them from deterioration and from the entry of contaminants into the operational parts of the component?	<p>Written, monthly and photographic evidence for the progress of work produced by a body which is independent of the contractor and which confirms inspection of the site storage of materials.</p> <p>Photographic evidence of the site storage of materials produced by a body which is independent of the contractor (on a monthly basis).</p>

NHS Scotland Assure Observations:

As noted previously within this report, NHS Ayrshire & Arran have appointed an NEC Supervisor to undertake regular site inspections and prepare reports. There is evidence, both written and photographic, to demonstrate that as part of the site inspections, materials storage containers have been inspected. The report samples provided appear to cover local materials storage within the site itself as well as external storage containers.

Whilst no issues with the storage of electrical materials was raised in the sample supervisor reports provided, we note that at the time of the NHS SA visit, the electrical store was untidy, with containment stored vertically within the container and other containment sections observed external to the storage compound unprotected. It is unclear whether the instances noted may be waste materials, however, we recommend that the site storage arrangement is reviewed to ensure full segregation of new and waste materials and that materials are stored appropriately at all times to avoid damage.

Documents referenced are:

- MEP Supervisor Report No. 1*
- MEP Supervisor Report No. 2*
- MEP Supervisor Report No. 3*
- Quality Audit Inspection Table*

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:

As noted in KSAR Question 1.4, full commissioning plans are still being developed.

As part of the KSAR response an electrical safety plan document was provided. This provides a high level overview of how sub-contractor plans to manage the electrical safety during the works. It makes reference to site induction processes, however, as noted in KSAR question 4.2, there was no assurance that this has been implemented. The document is dated Oct 2022 and has a section which notes that checks will be undertaken on site, to monitor its implementation and the checks recorded in the document. This section is blank. The document does not detail specific testing and commissioning activities, but does reference separate RAMS. Copies of these RAMS were not made available to NHS SA. There is therefore no assurance that the works are being monitored appropriately.

At the time of the KSAR, through discussions held with NHS A&A during the KSAR workshops, NHS SA understand that full validation of the electric characteristics of the existing site infrastructure, to which NSAIS will be connected to, had yet to be completed. Prior to energisation of the new supply, NHS SA recommend that the existing electrical characteristics are validated and reviewed against the proposed NSAIS design, to ensure they are safe. This includes but is not limited to, earthing arrangements, fault characteristics and condition of installation and applies to both the mains supply and generator supply.

There is no evidence of any factory acceptance testing or site testing undertaken on this switchgear.

The FBC KSAR highlighted there was no strategy in place for electrical isolations or break-in works to accommodate the new supply from the existing substation. The project BCRs note the importance of maintaining power to other areas of the site during the works at all times. NHS SA note that whilst NHS A&A were able to evidence that further dialogue had taken place with respect to the strategy, the strategy itself had not yet been defined.

The documents provided indicate that NHS A&A are still reviewing whether the works can be done without an electrical isolation, as several buildings/services have been identified that would be impacted by an electrical shutdown. NHS SA recommend that the strategy is finalised as soon as possible, and that NHS A&A take cognisance of HSE guidance on live electrical working when considering

switching processes. We also recommend that all activities are undertaken in accordance with SHTM 06-02 and that suitable safety documents, such as permits, are in place for the works.

Documents referenced are:

- A&A NASIS CON-3001a ITP Schedule
- Various fabric ITPs
- 22021121 NSAIS Soft Landings Meeting 01 Agenda
- 22021121 NSAIS Soft Landings Meeting 01 Minutes
- 22021121 NSAIS Soft Landings Delivery Plan
- Commissioning Soft Landings
- Commissioning Master Plan
- File Note – Commissioning Strategy
- 20230120 NSAIS – AECOM PM Comment on T&C Plan
- Testing & Commissioning Programme NSAIS Draft Revision
- NHS NSAIS - Electrical Connection Report 23.11.22
- Commissioning Plan NSAIS – Draft Revision

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 the each variation / derogation has a detailed technical analysis and has been referred to the Health Board and agreed with their clinical, Estates, infection control and FM teams.

NHS Scotland Assure Observations:

NHS A&A have provided information relating to required changes to the procurement of specialist security sub-contractor services. This was an enforced change as a result of the initial provider no longer being able to provide services on the project. NHS A&A have provided assurance that they continue to engage with their wider stakeholder group to review and update the works information as required. At the time of the KSAR these works were ongoing and we would recommend that NHS A&A continue to monitor any consequential impact on other services whilst the security proposals are being finalised.

NHS SA note that a derogation schedule is now in place, however, assurance that this has been fully reviewed and approved by all relevant stakeholders was not provided. NHS SA also note that a number of derogations relate to the configuration of the incoming supply arrangement, and associated level of resilience, with several clauses of SHTM 06-01 deemed as not applicable to the project. There was no evidence provided of a full resilience risk assessment having been carried out in accordance with SHTM 06-01

Documents referenced are:

- Clinical Output Specification

NACH – Clinical Brief Document v14
Needs Assessment
NSAIS Design Tracker v20
Environmental Matrix (Foxgrove) v3.0
HFS Comment H&K Response 160620
MA Derogation Schedule P02
SHTM Derogation Clarification Schedule 240620
Draft Notes – NSAIS Construction & Commissioning – 03.05.22
Draft Notes – NSAIS Construction & Commissioning – 25.05.22

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	SHTM 06-01 clause 14.35 states “it is best practice to use metallic trunking and/or conduit”. During the site visit of 06 th February 2023, plastic conduit was visible adjacent to flexible conduit systems.
3.4.2.2	Electrical CDPs and tech subs were discussed during the KSAR technical workshop on the 14 th February 2023 however no evidence was submitted of the formal process for review and sign off.
3.4.2.3	It is not clear from the evidence provided how continuity of electrical supply will be achieved, particularly when breaking into the site wide infrastructure within the submission. There are reports that describe the connection into existing infrastructure, however, are silent on any impact or temporary solutions required upstream.
3.4.2.4	A generator connection point was discussed during the electrical workshop on 14 th February 2023. This will allow a temporary generator to connect to the main panel for the building. This is not part of the original currently installed main panel or design. No evidence has been presented how the additional connection will be managed in relation to the installation and testing under site conditions, including taking account of what connections have already been made and environmental conditions.

3.5 Medical Gases

3.5.1 Medical Gases: KSAR Observations

This section is not included as there are no piped medical gases provided as part of the NSAIS facility.

3.6 Fire Safety

3.6.1 Fire safety: KSAR Observations

Workbook Ref No.	Areas to probe	Evidence expected
6.1	How does the Health Board assure itself that all fire stopping specialists are trained to understand the needs (including special requirements) for the installation of fire stopping systems in the healthcare environment?	<p>Evidence of a vetted list of site fire stopping specialists which confirms qualifications and healthcare experience.</p> <p>Evidence that the site induction with respect to working on fire stopping services has been developed, implemented and agreed with Board.</p> <p>Evidence that all contractors and sub-contractor competency checks have been completed and signed off.</p>
<p>NHS Scotland Assure Observations: NHS Ayrshire & Arran have provided documents in relation to the fire stopping sub-contractor.</p> <p>The documentation provides details of the fire stopping specialist’s previous healthcare experience and details of similar past healthcare projects. This information was detailed and provided assurance to the suitability of the named individuals.</p> <p>NHS Ayrshire & Arran have included within its evidence, fire stopping sub-contractor qualifications. A FIRAS certificate, valid until September 2023, was provided for the sub-contractor themselves. This document did note that the sub-contractor complies with the certification scheme for “<i>Application of passive fire resisting products using intumescent coating, Boards, Penetrating Sealing Systems and Cavity Barriers.</i>” In addition to the above document, a certificate of membership for the Association of Specialist Fire Protection. They are noted as a Contractor Member. It is noted that the certificate is valid until 21st November 2023.</p> <p>The fire stopping sub-contractor has not started on site and no evidence of the process of site inductions, with respect to fire stopping, were provided to NHS Scotland Assure for review.</p> <p>Documents referenced are: <i>FIRAS ‘Fire Stopping Contractor’ Issue 6</i> <i>ASFP - ‘Fire Stopping Contractor’ (2022)</i> <i>‘Fire Stopping Contractor’ – Vetting List</i></p>		

Workbook Ref No.	Areas to probe	Evidence expected
6.2	How does the Health Board assure itself that the fire stopping contracting company have the relevant experience to direct and manage their staff on the site for a healthcare environment?	Evidence of similar, previous healthcare projects by the contractor. Evidence of site management structure.
<p>NHS Scotland Assure Observations: NHS Ayrshire & Arran have provided documentation in relation to the fire stopping sub-contractor. NHS Scotland Assure have reviewed the documentation provided and have no concerns regarding the experience and management structure.</p> <p>As detailed above, within the documentation provided, named individual's CVs were provided. Details on the CV's included their qualifications as well as past healthcare projects. This information was detailed and provided assurance of the suitability of the named individuals.</p> <p>The documentation provided also had evidence of the management structure of the chosen specialist's team.</p> <p>Documents referenced are: '<i>Fire Stopping Contractor</i>' Organisation Chart</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: In terms of written evidence, NHS Ayrshire & Arran have provided only a file note at this time.</p> <p>The file note states "<i>As per 'PSCP' programme, Fire Stopping works aren't due to commence on site until February 2023. However, when this install commences the material storage and quality of the install will be reviewed closely by the NEC Supervisors. Written and photographic evidence will be included within the NEC Supervisor Inspection Reports.</i>"</p>		

NHS Scotland Assure have reviewed the documentation and have a number of concerns in relation to the assurance of the installation of the fire stopping.

To date, no design information has been received by the Principle Supply Chain Partner (PSCP) on the fire stopping including intended products, suitability and compliance of products, compatibility of products. Subsequently, with no standards, compliance of design information, there was no evidence of an agreed design between the relevant parties.

It was confirmed at weekly progress meeting dated 2nd February 2023 that fire stopping information submission to the Board would be available mid-February 2023. At the time of the last weekly progress meeting, 23rd February 2023, this had not been completed.

During the course of this KSAR, the PSCP has confirmed that a fire stopping sub-contractor and manufacturer had been chosen and those products were intended to be used throughout. It was advised by the PSCP during the site visit on 6th February 2023, that the fire stopping sub-contractor and manufacturer were also on site to review the project.

Whilst no example reports have been provided which review the fire stopping works (as this work has not commenced) example reports for other disciplines were reviewed for layout and general content.

Documents referenced are:

01. File Note – Fire Stopping Supervision

Workbook Ref No.	Areas to probe	Evidence expected
6.4	How does the Health Board ensure that precautions are taken throughout the works to avoid openings in fire barriers to occupied spaces during the works?	Written and photographic evidence for the progress of work produced by a body which is independent of the contractor (on a monthly basis).
<p>NHS Scotland Assure Observations: N/A – this is a standalone building.</p> <p><i>Documents referenced are:</i> N/A</p>		

Workbook Ref No.	Areas to probe	Evidence expected
6.5	How does the Health Board ensure that fire stopping systems are installed on ventilation, electrical, plumbing and drainage services where they penetrate fire barriers?	Photographic and written evidence for the progress of work produced by a body which is independent of the contractor (on a monthly basis).
<p>NHS Scotland Assure Observations: Please refer to 6.3 above.</p> <p>Documents referenced are: Please refer to 6.3 above</p>		

Workbook Ref No.	Areas to probe	Evidence expected
6.6	How does the Health Board ensure that fire stopping is installed in electrical containment (trunking / tray systems) systems where they penetrate fire barriers?	Photographic and written evidence for the progress of work produced by a body which is independent of the contractor (on a monthly basis).
<p>NHS Scotland Assure Observations: Please refer to 6.3 above.</p> <p>Documents referenced are: Please refer to 6.3 above</p>		

Workbook Ref No.	Areas to probe	Evidence expected
6.7	How does the Health Board assure itself that all fire stopping materials are stored on site in an environment which protects them from deterioration?	Written, monthly evidence for the progress of work produced by a body which is independent of the contractor and which confirms inspection of the site storage of materials. Photographic evidence of the site storage of materials produced by a body which is independent of the contractor (on a monthly basis).

NHS Scotland Assure Observations:

On the day of the site visit, 6th February 2023, the PSCP confirmed that a separate container will be used for storage of fire stopping materials and all other fire safety related materials.

Documents referenced are:

N/A

Workbook Ref No.	Areas to probe	Evidence expected
6.8	How does the Health Board assure itself that all fire detection and alarm systems are installed in the correct locations and are easily maintained?	Written evidence for the progress of work produced by a body which is independent of the contractor (on a monthly basis). Demonstration by the contractor that any detectors which are above 3m from floor level or in ceiling voids, to the Board's FM team, have suitable access for maintenance.

NHS Scotland Assure Observations:

The fire alarm layout drawings show the proposed location of fire detection and manual call points. During the NHS SA site visit on 6th February 2023, fire detectors and manual call points, within the area sampled, were correctly sited.

It was noted from the fire alarm layout drawings that some fire alarm zones do not have a manual call point. SHTM 82 states that 'manual call points should be sited on both sides of main doorways between detection zones.

Documents referenced are:

NSAIS-HAK-XX-00-DR-E-68-0001

Workbook Ref No.	Areas to probe	Evidence expected
6.9	How does the Health Board assure itself that all variations which may be required to fire stopping systems after tender are investigated and agreed by all parties before they are instigated?	Evidence that each variation has been referred to the Health Board and agreed with their clinical, engineering, infection control and FM teams.

NHS Scotland Assure Observations:

N/A – NHS A&A advised that there were no variations.

Documents referenced are:

N/A

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:

During the site visit on 6th February 2023, several fire/smoke dampers were noted as being inaccessible due to the installation of cable trays directly under service access hatches. As noted in the response to KSAR Question 3.5, NHS Ayrshire & Arran have also raised comments specific to access to fire dampers. This resulted in a site visit by the Estates team and a follow up workshop was scheduled to discuss the access and maintenance concerns. Non-conformance review/report (NCR) documentation was issued by the PSCP to their relevant supply chain members in order to rectify any issues raised.

Documents referenced are:

01. NSAIS-HAK-XX-XX-RP-MEP-50-0006

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>

NHS Scotland Assure Observations:

The fire strategy states that 'kitchen ductwork, which will be fire resistant where it passes through fire-rated construction'. Access was not possible to allow NHS SA to view this item during the site visit.

Documents referenced are:

Fire Engineering Report Ref FS1836/R1 Issue 5

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:

In accordance with the fire strategy, each enclosed stair will be provided with a 1m² manually openable vent at the head of the stair. At the time of the site visit the construction of this item was not completed.

Documents referenced are:

Fire Engineering Report Ref FS1836/R1 Issue 5

Workbook Ref No.	Areas to probe	Evidence expected
6.13	How does the Health Board assure itself that all pre-commissioning inspections are completed and recorded before commissioning can commence?	Evidence that the Health Board has had all pre - commissioning checks audited and approved by an independent organisation.

NHS Scotland Assure Observations:

NHS Ayrshire & Arran provided a File Note in regard to the pre-commissioning. NHS SA have reviewed the document and have some minor concerns in the lack of written evidence for this aspect. However, noted that the below comment is from the NHS Ayrshire & Arran directly.

The document states “NHS A&A have employed appropriate technical assistance in order to complete and sign off pre-commissioning checks. This will include the technical AE’s for each discipline and the NEC Supervisor, as per the provisions of the contract. Upon receiving the commissioning strategy from the PSCP, commissioning meetings will commence in order to mutually agree the Pre-Commissioning inspections. This will ensure that these are in line with SHTM 04-01 Part A.”

Documents referenced are:

01. File Note – Pre-Commissioning Inspection

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	NHS SA has been provided with the latest version of the fire strategy – Issue 7. No fundamental changes have occurred between Issue 4 (relevant at FBC KSAR) and Issue 7.
3.6.2.2	<p>The previous KSAR (FBC KSAR) has some points that remain outstanding, these are detailed below and require further development and discussion with Board:</p> <ul style="list-style-type: none"> a) Management and Evacuation Plan: This is still outstanding but understood to be an ongoing process to ensure that the evacuation plan takes into account the locking strategy of the building. b) Scottish Fire & Rescue Service (SFRS) access: Whilst the PSCP confirmed that a swept path analysis has been undertaken and demonstrated sufficient access for fire tenders, the laybys which are to be used to allow the vehicles to turn are still at the design stage. c) Cause and Effect Matrix: The cause-and-effect matrix is still in draft form and is an ongoing process. d) Fire Detection and Alarm System – Decibel (dB) of sounders: The design information of the fire detection and alarm system is still to be reviewed and approved by NHS Ayrshire & Arran. e) Manual Call Points: Design information to include for additional manual call points as required has not been completed.

3.6.2.3	The Fire alarm layout drawing 'NSAIS-MAA-XX-XX-M3-A-XX-0001' states that the detectors are ' <i>Multifunction detectors (smoke, heat, carbon monoxide.</i> ' However, there is no detail of the type of detector heads to be installed within the fire strategy.
3.6.2.4	<p>Whilst on site on 6th February 2023, NHS SA witnessed items (later confirmed by the PSCP, as steel screw rods) penetrating the compartment wall. It was noted by the PSCP that the desktop assessment confirmed this was acceptable. However, following a review of the desktop assessment, NHS SA notes that the assessment does not discuss any steel penetrating the compartment wall.</p> <p>The fire strategy states '<i>Compartment/sub-compartment walls will continue up to the junction with the roof; or, where the compartment/sub-compartment walls will not be continued to roof level, the First Floor will be fire rated to maintain compartmentation, i.e. 60-minute or 30-minute fire rating, respectively.</i>'. The construction was not finished at the time of the site visit and therefore, NHS SA was unable to ascertain if the construction works were following the fire strategy detail.</p>
3.6.2.5	During the site visit on 6th February 2023, it was noted that there were areas of damage to the plasterboard that formed sub-compartment and compartment walls, NHS A&A informed NHS SA that they were aware of this damage and that rectification would form part of the snagging works.

3.7 Infection Prevention & Control Built Environment

3.7.1 Infection Prevention & Control Built Environment: KSAR Observations

Workbook Ref No.	Areas to probe	Evidence expected
7.1	<p>How does the Health Board demonstrate that there is an effective infection prevention and control management structure in place?</p> <p>How does the Health Board demonstrate leadership and commitment to infection prevention and control to ensure a culture of continuous quality improvement throughout the organisation and that there is an effective IPC structure in place?</p>	<p>The Health Board provides evidence that there is an IPC Management Structure with the necessary expertise and leadership skills to support the organisation:</p> <p>The Health Board provides evidence that there is an IPC Management Team with the necessary expertise and leadership skills to support the project. The board are compliant with content of HDL (2008) role of the ICM / CNO 22.12.16.</p> <p>Executive board reports or minutes. Risk registers or equivalent, Minutes from operational and governance groups, (and action points). Structure of infection prevention and control team (IPCT) and qualifications held, previous experience supporting new build projects.</p> <p>Evidence IPC and clinical teams have been involved with any derogation through the build process and are satisfied this will not impact on patient safety, evidence could be through meeting minutes, risk assessments, risk registers relating to IPC with evidence of escalation through the agreed NHS board governance process.</p> <p>Evidence the Executive Board Member assigned to lead on IPCT has been kept informed of IPC risks identified and associated with the project this can be demonstrated by the board.</p> <p>Evidence IPCT advice has been followed, such as IPCT walk round audits during the construction process. Evidence that fixtures fitting and equipment have not been incorporated</p>

		<p>into the project that would represent an identified IPC risk.</p> <p>Evidence that all contractors and sub-contractor competency checks have been completed and signed off.</p>
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NHS Scotland Assure Observations:

NHS A&A have provided assurance that they have considered IPC resource within the project, however, NHS SA note that within the IPC team structure, the role of Built Environment Team Lead is currently vacant, with a Senior Nurse IPC Built Environment supporting the project. NHS A&A have noted that IPC staffing in the board is a risk across the health board.

Draft notes of NSAIS Construction & Commissioning Project Group meetings show IPC attendance at meetings at which the derogation schedule was discussed. As documented, approval of derogations appears to be implied by lack of response or comment rather than explicit approval by the IPCT. NHS Ayrshire & Arran should ensure that there is a process for explicit approval of relevant derogations by the IPCT.

The IPCT Executive Lead is the Nurse Director and is included in the document detailing IPC engagement with the project. No reports on the project to the Infection Prevention and Control Committee (IPCC) or other evidence of IPC governance in relation to the project were seen. NHS Ayrshire & Arran should ensure that there is a clear route for reporting on the project to the IPCC such as including it as a standing agenda item.

No evidence was provided of IPCT site visits or walk round audits. Evidence was reviewed in relation to IPCT engagement in procurement of furniture and equipment through the Furniture & ICT workstream.

Evidence was provided of the transfer of training materials on HAI-SCRIBE from NHS Ayrshire & Arran to the main contractor. Other evidence of contractor competency with respect to infection prevention and control was not provided. NHS Ayrshire & Arran should ensure that there is a process in place to provide assurance of contractor and sub-contractor competency in this area.

Documents referenced are:

IPCT Assurance and Accountability Framework – v4.0 - Final

NHS AA NSAIS – IPC Involvement

IPCT Risk 811

2023-02-07 NHS AA001 KSAR IPC workshop mtg notes d0.01

Terms of Reference – Furniture & ICT – March 22 (V2)

NSAIS – Hai-Scribe Training Email

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:

NHS Ayrshire & Arran provided their Infection Control Audit and Standard Infection Control Precautions (SICPs) Monitoring Framework as evidence of the implementation of the NIPCM throughout the Board, and it is clear from discussion with the Board’s IPC team that the requirements of the NIPCM are being considered during the construction process; however, no documentary evidence of this was provided. The Board should ensure that the Project Team are familiar with the NIPCM and that it is being taken into consideration in all areas.

No evidence of walk rounds of the site by IPCT members was provided. NHS SA was informed at the IPC Workshop that there are monthly site visits for stakeholders, including the IPCT. NHS Ayrshire & Arran should ensure that there are regular site visits by the IPCT and a clear process for escalating and resolving any issues identified.

Documents referenced are:

2019-10-23 FL-LN SICPs Monitoring Framework

2023-02-07 NHS AA001 KSAR IPC workshop mtg notes d0.01

Workbook Ref No.	Areas to probe	Evidence expected
7.3	How does the Health Board assure itself that the contractors have a proper understanding of the infection prevention and control procedures required by the CD and that the contractors work is being rigorously managed in this respect?	<p>The Health Board evidences that: All relevant staff within the contractors' organisation are provided with clear guidance on roles and responsibilities in relation to infection prevention and control.</p> <p>The contractors' organisation provides an education programme that meets the need of staff which includes mandatory induction, training and updates on HAI guidance, policies and procedures.</p>
<p>NHS Scotland Assure Observations: In discussion at the IPC Workshop, NHS SA was informed that discussions had taken place to show contractors how to deal with IPC and HAI-SCRIBE requirements, and that an IPC-specific video is shown during toolbox talks. NHS Ayrshire & Arran should ensure that contractors' and sub-contractors' training addresses potential risks to future patients, for example from contaminated water or ventilation systems, and their roles in minimising them.</p> <p>Documents referenced are: <i>2023-02-07 NHS AA001 KSAR IPC workshop mtg notes d0.01</i></p>		

Workbook Ref No.	Areas to probe	Evidence expected
7.4	How does the Health Board assure itself that equipment meets the required IPC standards?	The IPC Team are involved and IPC advice followed in all procurement decisions for new equipment prior to purchase. IPCT are satisfied that all equipment purchased can be decontaminated safely in line with National Guidance and manufacturer's instructions.
<p>NHS Scotland Assure Observations: There is an IPC representative to the Furniture and ICT Workstream, which is responsible for ensuring the effective involvement of all stakeholders in equipping the unit and determining how equipping requirements will be dealt with through the procurement process</p> <p>Documents referenced are: <i>Terms of Reference – Furniture & ICT – March 22 (V2)</i></p>		

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 paragraph 1.7, NHS Ayrshire & Arran have used a bespoke HAI-SCRIBE documents for this project, that does not completely correlate with SHFN 30 Part B. As a result, some key elements appear not to have been considered through the HAI-SCRIBE process. These include special interventions for legionella control; intended sinks and taps and associated fixtures and fittings; and access for maintenance.

There is no assurance that elements that would normally be included within the HAI-SCRIBE process are reviewed elsewhere, or that the HAI-SCRIBE document in use has been reviewed and approved by the IPCC. At the IPC Workshop the Senior Nurse IPC Built Environment stated that they are working with colleagues to re-establish the Board's Built Environment Group and that the document is due for review in the coming weeks. NHS Ayrshire & Arran should expedite this review and ensure that any bespoke HAI-SCRIBE documentation used in the Board is aligned with SHFN 30 and approved by the IPCC at the earliest opportunity.

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](#)

