

# NHS Ayrshire & Arran National Treatment Centre Key Stage Assurance Review

**FBC KSAR Report  
V1.0**

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## Document Overview

### NHS Ayrshire and Arran, National Treatment Centre | Key Stage Assurance Review Report | FBC Stage

#### Prepared for:

NHS Ayrshire and Arran

#### Prepared by:

NHS Scotland Assure – Assurance Service

## Document Control Sheet

### Revision History

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d0.04	20/04/23	Factual Accuracy Draft for Review by NHS A&A	K Jackson	No
V1.0	25/08/23	Final Issue following NHS A&A factual accuracy review	NHS SA	No

### Approvals

This document requires the following signed approvals:

Version	Date	Name & Organisation	Role
V1.0	25/08/23	Karen Jackson, NHS SA	Principal Engineering Manager
V1.0	25/08/23	Thomas Rodger, NHS SA	Head of Engineering

## Distribution

This document has been distributed to:

Version	Date of Issue	Name	Role / Area
V1.0	25/08/23	[REDACTED] [REDACTED]	NHS A&A, Head of Capital Planning NHS A&A, Senior PM
V1.0	25/08/23	[REDACTED] [REDACTED] [REDACTED]	Scottish Government – Health Infrastructure, Investment and PPE – Health and Social Care Directorates  Scottish Government – Head of NHS Strategic Capital Investment  Scottish Government

# 1. Executive Summary

As a result of the Final Business Case (FBC) 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 A&A prior to the Construction Stage:

- The cold-water temperature management strategy detailed within the drawings and M&E Services Stage 4 report does not appear to have been approved by all NHS A&A stakeholders, with open comments remaining from the health board’s own internal review process. NHS SA would recommend as a matter of urgency that the cold-water management strategy approvals are fully ratified by NHS A&A prior to commencing Construction.
- NHS A&A to continue to develop their governance and control processes around the operating theatres and enhanced treatment room, to ensure that all stakeholders are clear on the proposed usage of the facilities, particularly around the use of the UCV canopy, the preparation of instruments and the specific clinical procedures undertaken within the enhanced treatment room. Should any aspect of the process change in future, this should undergo a full review.
- NHS SA have identified examples of conflicting information within the documents provided to demonstrate the governance processes for the project. NHS A&A to ensure that the governance documentation is reviewed, and any conflicting information addressed. It is recommended that the governance processes are consolidated and defined within an updated Project Execution Plan (PEP).
- NHS SA have identified examples where coordination issues with the MEP services design appear to be unresolved at that may impact on subsequent safe access and maintenance strategies, including development of HAISCRIBE strategies.
- There are aspects of the medical gas design, which have not been fully developed to a level of detail expected at FBC stage in accordance with Scottish Capital Investment Manual (SCIM). These include finalised medical gas plant locations and documentation to support the basis of design, such as risk assessments and detailed calculations.

- There is no evidence of a typical integrated plumbing system (IPS) design / services arrangement. The overall strategy has a consequential impact on IPC and clinical strategies and therefore NHS A&A should ensure that the principles are considered at this stage of the project.
- A Designer's Commissioning Brief document has not been provided that captures all of the requirements noted in '*SHTM 04-01 Part A (Clause 16.9 – 16.12)*' for domestic water systems, or '*SHTM 03-01 Part A (Clause 11.13)*' for ventilation systems. These should be developed by the designers, prior to the construction stage.
- NHS A&A have provided evidence that they have in place a procedure for agreeing and accepting derogations, however, there is limited evidence within the fire strategy to provide assurance that the variations from NHS Firecode meet or exceed the appropriate standard by an alternative means. NHS A&A to ensure that the fire strategy is updated to identify any variations from NHS Firecode.
- The fire strategy provided does not offer sufficient information to allow a determination to be made as to whether smoke control is fit for the purpose. The strategy quotes the technical requirements and states that it is '*understood that ventilation will be provided*', however, it is not clear what type of smoke control is to be installed. NHS A&A to ensure that the fire strategy is reviewed and updated to provide further detail on smoke control methods.
- The fire strategy does not detail the means of escape arrangements from the peri-op rooms, in particular the necessity for progressive horizontal evacuation. NHS A&A should ensure that the evacuation arrangements of patients within the peri-operative area are in accordance with '*SHTM 81 Part 1: Fire safety in the design of healthcare premises (version 5)*' and that they are fully included within the fire strategy.

We recommend that these are considered and addressed by NHS Ayrshire & Arran (NHS A&A) 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 A&A. 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 A&A under separate cover:

Review	No. of Issues per category				
	1	2	3	4	5
<b>Project Governance and General Arrangements</b>	0	0	10	12	3
<b>Water and Internal Plumbing / Drainage Systems</b>	0	1	7	16	4
<b>Ventilation</b>	0	0	17	8	2
<b>Electrical</b>	0	0	9	9	0
<b>Medical Gases</b>	0	3	13	6	0
<b>Fire Safety</b>	0	0	3	4	0
<b>Infection Prevention &amp; Control Built Environment</b>	0	0	2	5	1

The following categories were used in relation to the findings:

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

## 1.2 Project Overview

The NHS A&A National Treatment Centre comprises the refurbishment of the existing Carrick Glen Hospital site, which is located half a mile from the University Hospital of Ayr. The project development includes the refurbishment of the existing hospital building and the construction of a new extension.

The National Treatment Centre will provide:

- 2 no. laminar flow theatres to current standards including support accommodation, one focusing on arthroplasty work and the other on day case procedures.
- 1 no. enhanced treatment room to deliver local anaesthetic cases.
- 10 no. Rooms Peri operative suite
- 11 no. In-patient single room beds at 1st floor level.

The National Treatment Centre will offer extra capacity to patients in NHS A&A and aid the reduction in waiting lists, as well as other patients in NHS Boards across Scotland.



## 2. Review Methodology

### 2.1 Overview of NHS Scotland Assure & The KSAR Process

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

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

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

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

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

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

The purpose of the KSAR at Full Business Case (FBC) stage is to confirm there is a good and comprehensive understanding of the category of patient who will use the proposed facility and that the project team consider how appropriate quality and safety standards will influence the design. It looks to provide assurance that the project can proceed to the Construction phase. Additionally, the KSAR at FBC will carry out an appropriate level of checking of the design calculations and solutions adopted.

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

- 2.2.1 The FBC KSAR for NHS A&A National Treatment Centre project took place between 09 January 2023 and 21 April 2023.
- 2.2.2 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 FBC KSAR Workbook and FBC Deliverables list. The KSAR report includes an overview of the main findings of the review, with a further itemised list of detailed observations provided under separate cover to NHS A&A. The detailed observations are recorded in an action plan that should be adopted by NHS A&A following the review and subsequently monitored by them to ensure appropriate actions are completed in a timeous manner.
- 2.2.3 As part of the KSAR process, NHS A&A issued a document transmittal log which details the evidence provided in response to the KSAR Workbook and NHS SA recommended deliverables list. As part of an initial gap analysis, NHS SA reviewed the transmittal log to ensure all documents had been successfully received. The transmittal log provides a version history and audit trail of information reviewed.

## 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. This includes, amongst others, specific healthcare engineering guidance.

**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

A high-level summary of NHS A&A's FBC technical proposals for the facility is noted below:

### 2.4.1 Electrical

- The existing Scottish Power 11kV power supply serving the site will be extended and upgraded to provide power to the new NTC. 2 No. Scottish Power Energy Networks (SPEN) Ring Main Units (RMU's) will be provided to provide a ring main which will feed 2 new packaged substations (A&B) to serve the new NTC.
- The substations will comprise RMU's and 11kV/400V transformers and will be located in a purpose-built energy centre which will be located outside adjacent to the new NTC.
- A & B Low Voltage (LV) switch rooms will also form part of the new energy centre building and will provide the LV supplies to the new NTC on a N+1 basis. The switch rooms and substations will all be separate 2-hour fire rated rooms within the energy centre building.
- A single standalone low voltage generator will be provided to support the new NTC in the event of a mains failure.
- A & B supplies will be fed out from the respective switch rooms to supply A & B string distribution boards located throughout the building to provide resilience in the event of a mains or sub-mains failure.
- Medical IT Isolated Power supply units will be installed to protect final circuit socket outlets located within Group 2 areas of the building. They will be supported with UPS power.
- LED lighting will be provided throughout the facility and emergency lighting is provided throughout, with local battery packs utilised to provide initial emergency lighting in the event of a loss of mains power prior to the generators energising. A central battery static inverter system will be provided to group 2 locations.
- A nurse call system will be provided throughout.
- Security systems will be provided which include CCTV, access control and intruder alarm.
- A structured cabling system is to be provided throughout the new facility.
- A lightning protection system is to be installed.
- A Category L1 Fire Detection and Alarm system is to be utilised within the facility.

### 2.4.2 Mechanical

- The new NTC facility is primarily mechanically ventilated, with the exception of non-clinical spaces on the ground floor of the existing building which are naturally ventilated. Mechanical ventilation plant such as Air Handling Units (AHUs) and fans are located within a dedicated plantroom at first floor level within the new build element of the project.

- Low Temperature Hot Water (LTHW) and Chilled Water (CHW) to serve the ventilation plant is generated from an Air Source Heat Pump (ASHP) located externally at roof level.
- Low Temperature Hot Water (LTHW) for space heating requirements (radiant panels) is generated via electric boilers located within the first-floor plantroom.
- Refrigerant based direct expansion (DX) split systems will provide cooling to the comms room and cold-water storage tank plantroom.
- The incoming mains water supply is derived from the existing private water main located on the site. The water supply company (Scottish Water) have confirmed sufficient capacity within the local network.
- The cold-water services system consists of a bulk raw cold-water storage tank, filtered bulk water tank and filtration plant, and associated packaged booster sets. The water tanks and associated ancillary plant including filters and boosters are located within a dedicated plantroom on Level 01 within the new building.
- The proposed domestic cold-water system is a recirculating system which is proposed to be cooled via an air-cooled chiller and plate heat exchanger arrangement.
- Hot water is locally via electric point of use (POU) water heaters. There is no central hot water system or hot water storage.
- Above ground drainage (foul) is provided throughout the facility via a gravity system consisting of several primary, ventilated stacks distributed around the building, connecting to the new below ground drainage serving the new part of the facility. Pop-ups and the below ground drainage network within the existing part of the building are being retained and re-used as required. Stacks will be ventilated to atmosphere.
- Medical gas systems include oxygen, 4 Bar medical air and 7 Bar surgical air. The oxygen generation is via vacuum insulated evaporator (VIE) plant located externally. A medical gas bottle storage facility is also provided within the energy centre building, adjacent the to the Low Voltage (LV) switch rooms. An anaesthetic gas scavenging system (AGSS) is also provided to serve the facility and is located within the first-floor plantroom of the new build element. A medical vacuum system is also provided via fully automatic packaged medical vacuum plant located within the Level 02 plantroom.
- A building management system (BMS) including all necessary controls and cabling will be provided within the building. The BMS will integrate and interface with all Mechanical, Electrical and Public Health (MEP) systems and other Clinical support systems.

### 3. KSAR Review Summary

The following narrative relates directly to the FBC 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	Evaluation of changes detailed from previous KSAR.	Assessment of any substantive changes in highlighted areas from previous review stage and all actions have been implemented.
<p><b>NHS Scotland Assure Observations:</b> N/A – this is the first KSAR undertaken on the project.</p> <p><b>Documents referenced are:</b> N/A</p>		

Workbook Ref No.	Areas to probe	Evidence expected
1.2	Verification that CIG recommendations have been implemented with respect to prescribed in scope areas.	Review of the implementation of all CIG recommendations. Evaluation of any deviation from previous submissions or reviews.
<p><b>NHS Scotland Assure Observations:</b> NHS A&amp;A have advised that no evidence has been provided as it is not applicable to this project as there has been no previous submissions to CIG.</p> <p><b>Documents referenced are:</b> <i>Workbook Evidence folder 1.2- Verification that CIG recommendations have been implemented</i></p>		

Workbook Ref No.	Areas to probe	Evidence expected
1.3	Has cross-referencing with NDAP and AEDET recommendations been implemented?	An assessment if there is full compliance with the applicable recommendations and actions from the preceding step.
<p><b>NHS Scotland Assure Observations:</b>            At the time of the KSAR, the NHS Scotland Design Assessment Process (NDAP) was ongoing. Until such times as the NDAP status is confirmed there could be consequential impact on the strategies relevant to the KSAR topics. NHS SA recommend that as the NDAP and AEDET are progressed, NHS A&amp;A look to update their developed KSAR action plans to take cognisance of any interdependencies.</p> <p><b>Documents referenced are:</b>            20221118 AA04 NTC Carrick Glen OBC NDAP            Copy of 221207 501168 MB NHS AA NTC OBC NDAP Report Response Tracker V3 KA            20220311 National Treatment Centre IA AEDET            20220921 National Treatment Centre OBC AEDET            NHS A&amp;A NTC - OBC AEDET - Attendance report 21-09-22            Copy of 19012023 National Treatment Centre FBC AEDET v2            20220921 National Treatment Centre OBC AEDET            NHS AA National Treatment Centre - Design Statement 15.09.22            NHS AA National Treatment Centre - Design Statement 01112022</p>		

Workbook Ref No.	Areas to probe	Evidence expected
1.4	Does the Health Board continue to demonstrate service / clinical input into design decisions based on a current and comprehensive knowledge of patient cohorts?	Recorded and updated input taken from service lead(s) / clinician(s) about relevant patient cohort characteristics and their typical needs in terms of the accommodation's environment, safety and infection control standards.  Demonstrable expertise of service lead(s) / clinician(s) in providing this advice.
<p><b>NHS Scotland Assure Observations:</b>            Overall NHS A&amp;A provided assurance that service and clinical input into key decisions was being captured. NHS SA note a few examples where the formal recording of this input was not always apparent, with examples included below.</p> <p>A clinical output specification '<i>NTC NHS A &amp; A Orthopaedics Clinical Output Specification - Final 2021108</i>' has been provided by a third-party healthcare planner, which documents the key requirements of the project. The document, however, does</p>		

not confirm if NHS A&A clinicians have been involved in providing the information for the specification.

A Project Execution Plan (PEP) has been provided '22-12 Dec02 501168 NHSAA NTC PEP V5 with appendices' which states that "the PEP will be issued to the Core Group who will be asked to confirm that the information contained within the document is accurate and that no conflict occurs between the PEP and the project particulars, the project processes and procedures and the quality standards required by all parties". The distribution list, however, shows no formal distribution has been recorded to the core group or key stakeholders on the project.

The PEP provides a list of who the key stakeholders are involved in the project, however, the only roles where the responsibilities are described in detail are for the Senior Responsible Officer, Project Director and Project Manager.

A design stage action tracker has been provided which is the master document used to track all comments made during the design and technical workshops, such as the 1:50 reviews. NHS SA highlighted to NHS A&A during the weekly progress meetings that there are a significant number of design comments and queries which have not been formally responded to, with the latest comments on the tracker from a workshop held in July 2022 which still require to be closed out.

NHS A&A have provided an example of the sign-off of the 1:200 design information. Evidence of 1:200 sign off from other key stakeholders has been provided on '1-200 Design Review Approval Rev A Master', however, this only references the following documents:

- A237H-NOCO-XXXX-GF-D-A-00001 Rev P07
- A237H-NOCO-XXXX-01-D-A-00001 Rev P06
- A237H-NOCO-XXXX-ZZ-D-A-90001 Rev 04
- A237H-NOCO-ZZ-SH-00401 Rev06

It is therefore unclear to what extent other stakeholders, including clinical colleagues, have reviewed and signed-off the remainder of the FBC design.

NHS SA queried the design sign off process during the KSAR technical workshops and progress meetings. NHS A&A presented the process that has been followed, which showed key dates that the design packages were released on Business Collaborator, with a lead reviewer allocated against each package. It was advised that it was the lead reviewers' responsibility to collate and ensure that any comments from clinicians were addressed by the design team / PSCP prior to confirming final sign off of the design. Whilst the process above was presented to NHS SA and is summarised in 'NHS A&A NTC- Design Management Process', it is not referenced within the PEP.

**Documents referenced are:**

22-12 Dec02 501168 NHSAA NTC PEP V5 with appendices

NHS A&A NTC- Design Management Process

Design Stage Action Tracker Template

Design Workshop breakdown of sessions



Design Workshop Required Attendees Version 2  
 NHS A&A NTC - Further Design Review Workshop(s)  
 NTC - Project Directory - Oct 22 Rev 2  
 NTC NHS A&A Orthopaedics Clinical Output Specification - Final 2021108  
 NTC Operational Delivery Forum - Community Engagement NHSAA update Feb22  
 NTC Patient Engagement Log  
 NTC project governance and roles and responsibilities  
 Patient briefing - Jan 2022  
 Patient engagement supporting doc v 0.02 - 2021-12-14  
 timeline for NTC patient engagement v0.01 - 2021-12-24  
 A218H\_NTCA-NOCO-XXXX-XX-SA-A-00001  
 1-200 Design Review Approval Rev A Master  
 FW NTC-1 200 SIGN OFF (G. Rankin)  
 NDAP Workshop Attendees  
 Healthcare Planner CV 20221205  
 NHS AA NTC - IPC Involvement

Workbook Ref No.	Areas to probe	Evidence expected
1.5	Project team continues to demonstrate a unified and recorded understanding of needs of main users and patient cohorts of the proposed accommodation and how this has influenced the design of critical building, engineering and infection prevention and control quality and safety standards.	<p>Updated and current list available of all stakeholders, service users and patient cohorts impacted by this project, plus the identification of any high-risk groups and their specialist needs.</p> <p>Updated and recorded engagement on these designs issues having taken place between the project team and service lead(s) / clinician(s), infection prevention and control team, and other key stakeholders (e.g., Estates, Medical Physics, IPC, the AEDET, NDAP or other design briefing workshops).</p> <p>Details available of how service users / patient cohort needs, and their expected use of the accommodation are influencing the design brief, including critical building, engineering and infection prevention and control quality and safety standards.</p>

#### NHS Scotland Assure Observations:

NHS A&A have provided assurance that they have engaged with stakeholders throughout the project so far, however, there is limited evidence that the FBC design information has been signed off by NHS A&A. Clinicians and IPC have been involved in design discussions, including project derogations and risk assessments. IPC have been involved with the HAISCRIBE process throughout, along with the project team. The evidence provided notes the proposed patient groups and expected surgical procedures, confirmed as elective orthopaedic surgery for the

operating theatres and minor procedures requiring local anaesthetic within the enhanced treatment room.

NHS SA queried during the KSAR Technical Workshops whether high risk patient groups would be cared for within the NTC. NHS A&A advised that the patients will be pre-selected to ensure that there are no high-risk patients being treated as this facility. It was confirmed that there were no other high-risk patient areas on site, and the nearby Priory clinic is a low secure mental health facility.

A project directory '*NTC - Project Directory - Oct 22 Rev 2*' has been provided to evidence the current list of key stakeholders on the project for the NHS A&A and PSCP teams, along with a list of stakeholders involved in the technical meetings.

NHS A&A have provided attendance reports for 1:50 user engagement and minutes from the technical design workshops. This provides assurance that stakeholders have provided input during the workshops. The design stage action tracker captures any associated actions from the stakeholder engagement process. Whilst there is evidence of ongoing stakeholder input to the design, NHS SA have not seen any evidence of sign off of the 1:50 design information.

An environmental matrix has been provided for the project, with minutes from an associated workshop held on 17 June 2022. The workshop had representation from IPC, estates and clinical departments from within NHS A&A. Whilst confirmation of comments have been provided from Estates and the Authorising Engineers (AE) for ventilation and water, NHS A&A have not provided evidence to confirm if there are any further comments from AEs for other technical disciplines or clinicians on the latest environmental matrix.

***Documents referenced are:***

*Action Log - Elective Orthopaedics Programme Project Group (2)*

*FW National Treatment Centre (NHS Ayrshire & Arran) - NDAP Design Statement – Draft Design Statement*

*HAI Scribe 2014 Stage 1*

*NHS A&A NTC - NDAP\_KSAR Fire*

*NHS A&A NTC - NDAP\_KSAR Theatres\_ M&E Strategy LL*

*NHS AA NTC - NDAP\_1\_200\_site plan - Attendance report 06-06-22*

*NHS AA NTC - NDAP- Theatres layout strategy\_lessons learnt - Attendance report 09-06-22*

*NHS AA NTC - NDAP\_KSAR Fire - Attendance report 07-06-22*

*NHS AA NTC - Theatre layout - Attendance report 22-08-22*

*NTC - HAI Scribe Meeting\_2022-06-28*

*NTC - HAI Scribe Meeting-20220628\_113339-Meeting Recording*

*NTC Ayr Environmental Matrix Latest Draft 18112022*

*RE\_ NHS AA NTC - Theatre layout*

*Schedule of Joint NDAP - KSAR Early Engagement Meetings*

*timeline for NTC patient engagement v0.01 - 2021-12-24*

*1-50 User Engagement Workshop - Entrance*

*1-50 User Engagement Workshop - Inpatient*

*1-50 User Engagement Workshop - Theatre Support*

*1-50 User Engagement Workshop - Peri-Op*

NTC Design Workshop 1 - Attendance report 18-02-22  
 NTC Design Workshop 3 (Dominique to Chair) - Attendance report 04-03-22  
 NTC Design Workshop 4 - Floorplan - Attendance report 11-03-22  
 NTC Design Workshop 11 - Peri-Op Suit AND Inpatient Ward - Attendance report  
 27-05-22 Environmental Matrix 1-200 Design review Approval. Rev A Master - Folder  
 1.05  
 HAISCRIBE 2014 Stage 1  
 NTC NHS AA Orthopaedics Clinical Output Specification - Final  
 NTC NHSAA Specific HAI Requirements - Folder 1.06 NHSAA NTC - IPC  
 Involvement  
 A218H\_NTCA-BBGL-XX-XX-PP-ICT001/002/003/004  
 NTC-1 200 SIGN off (IPC)  
 HAISCRIBE Part 2 - Design Rev 02 05 12 22 DS  
 HAISCRIBE meeting 2022 06 28  
 NTC Stage 2 HAISCRIBE - Attendance report 28 11 22  
 NTC Stage 2 HAISCRIBE 2022 11 28  
 A218H\_NTCA-NOCO-PSCS-XX01-DR-A-35001  
 A218H\_NTCA-NOCO-PSCS-XX00-DR-A-35000  
 NTC Technical meetings Contacts V2 (002)  
 Enhanced Treatment Room, NHS AA NTC - Risk assessment  
 NTC Technical workshops matrix (October)

Workbook Ref No.	Areas to probe	Evidence expected
1.6	Planned approach towards determining the necessary standards for this accommodation.	<p>Updated and current list of the relevant NHS and non-NHS guidance that is being used and adopted (see previous section of workbook FBC KSAR (Page 9) for examples of appropriate guidance).</p> <p>Updated and current list of all proposed derogations from NHS guidance with a detailed technical narrative on each derogation and/or list of known gaps in guidance that will need to be resolved in order to meet the needs of the patient / user cohort.</p> <p>Knowledge of the role of infection prevention and control advisors (IPCN and ICD) to be used throughout the final design stages, and details of the resource plan in place to ensure continuity into the construction phase.</p>

**NHS Scotland Assure Observations:**

NHS A&A have demonstrated that a process for agreeing and accepting derogations is in place, for projects undertaken by NHS A&A, however, NHS SA note that at this stage, the derogation schedule is incomplete and there is no evidence to demonstrate that any of the derogations have been agreed and formally approved by the Business Case Development/Operational Group, as required by the health boards own internal procedures. It is noted this is an ongoing process, however, NHS SA recommend NHS A&A should formally review and approve all derogations identified, prior to Construction commencing.

A range of documents were provided by NHS A&A, including the derogation schedule, the procedure for agreeing and accepting derogations, the NHS A&A risk management strategy and a risk assessment template. A Project Execution Plan (PEP) has been provided; however, it does not contain details associated with the processes and procedures in relation to these activities. NHS SA recommend the PEP is updated to provide a single comprehensive document, capturing all agreed processes and procedure for the NTC project going forward.

Evidence has been provided of NHS A&A implementing a process to identify applicable standards and a derogation schedule has been developed. This schedule covers Architecture, MEP, Fire, Healthcare and 'Other'. It has been developed through a series of meetings/workshops which generally demonstrates input from relevant personnel. It does not demonstrate formal approval of all proposed derogations. The submitted derogation schedule is not fully completed and therefore it is unclear if it contains all derogations proposed at this stage. It is noted many items of 'mitigation' and 'residual risk' remain to be populated.

An IPC Lead for NHS A&A has been involved in the project team from the outset of the design process and has provided support through the design phases, derogations and risk assessments, in accordance with the proposals laid out in the PEP. There has only recently been the appointment of an Infection Control Doctor (ICD) resource to the project, to support the IPC lead with the final design for the facility, through to construction, commissioning and handover.

It is clear from the evidence submitted that IPC have been involved throughout and have implemented the IPC requirements provided by the IPC lead as part of the design. Assurance has been provided to show that HAISCRIBE training had been arranged with NHS Scotland Assure. It is not clear what members of the team have undertaken training, as no list of attendees was provided.

**Documents referenced are:**

*1-200 Design Review Approval Rev A Master*  
*2022-09Sep07 NHS AA NTC – List of Applicable Guidance V01*  
*2022-11Nov23-NHS A&A NTC MEP Derogation Review*  
*2022-11Nov30-NHS A&A NTC Architectural Derogation Review*  
*2022-12-01 NTC BC Dev Op Group Joint Agenda with Steering Group*  
*Design Stage Action Tracker Template*  
*NHS AA Derogations Risk Assessment Template*  
*NHS AA NTC – IPC Involvement*  
*NHS AA NTC Derogation Schedule Combined 01.12.22*

NHS AA Procedure for agreeing and accepting derogations  
 NHS AA Risk management strategy  
 22-12 Dec02 501168 NHSAA NTC V5 with appendices Project Execution plan (PEP) - Folder 1.04  
 1-50 User engagement workshop (Entrance, Inpatient, Periop, Theatre support) - Folder 1.05  
 HAISCRIBE 2014 Stage 1 - Folder 1.05  
 NTC HAISCRIBE Meeting 2022 06 28 - Folder 1.05  
 NTC NHSAA Specific HAI Requirements - Folder 1.06

Workbook Ref No.	Areas to probe	Evidence expected
1.7	<p>How does the Health Board demonstrate that there is an effective infection prevention and control management structure in place and how does it relate to the development of the project?</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 and how does it relate to the design development?</p>	<p>Evidence IPC and clinical teams have been integrated into all decisions regarding any derogations through the design process and are satisfied this will not impact on patient safety such as, specific sign off, supporting meeting minutes, risk assessments, risk registers relating to IPC with evidence of escalation through the agreed NHS board governance process.</p>
<p><b>NHS Scotland Assure Observations:</b>            Evidence was provided regarding the IPC organisational structure within NHS A&amp;A which identifies the IPC lead supporting the project. The governance for IPC within the board was referenced, however, there was no evidence to describe the escalation process for IPC within the project or IPC governance structures. The IPC workplan was not submitted, to provide context as to how IPC is implemented, monitored and reported across the board and nationally. The workplan would also demonstrate the commitment by the IPC team to resource the project.</p> <p><b>Documents referenced are:</b>            NHSAA NTC - IPC Involvement - Folder 1.6</p>		

Workbook Ref No.	Areas to probe	Evidence expected
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1.8	Integration with Authority Policies and Operation How does the Board demonstrate implementation of evidence-based infection prevention and control measures?	The Health Board can demonstrate the current version of the National Infection Prevention and Control Manual has been adopted by the organisation and all staff are aware of how and where to access this. (Ask staff)  IPC are fully embedded in the project team and the FBC programme-taking cognisance of any actual or perceived risks identified provided.
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#### NHS Scotland Assure Observations:

Assurance was provided by NHS A&A to confirm the National Infection Prevention and Control Manual is embedded across the board as best practice; however, no assurance was provided to demonstrate how this was achieved, is monitored or where quality improvement is focused within the board or influences the NTC project.

The IPC lead for the project has been involved from the outset and evidence has been provided by NHS A&A to support this. This includes participation in HAISCRIBE reviews, derogation, and risk assessment meetings.

#### Documents referenced are:

*NHSAA NTC - IPC Involvement - Folder 1.6*

Workbook Ref No.	Areas to probe	Evidence expected
1.9	The Health Boards Infection Prevention and Control Strategy	Assessment of the Health Boards approach to all IPC related matters in relation to the development of the design, HAISCRIBE etc.

#### NHS Scotland Assure Observations:

HAISCRIBE documentation provided was a locally adapted document based on the SHFN 30 guidance document. The amended document did not contain all elements of the main guidance and therefore there is the potential that HAI risks are not being fully captured and managed through the risk assessment process.

The HAISCRIBE risk assessment has been revised during the FBC stage, most recently in December 2022, showing evidence of a regular review of the HAI risks for the project. The documents contained evidence of assessment and collaborative working, but because the local tool amalgamated a number of questions, it has lost the detail required for each of the questions contained in the document.

Evidence was provided which demonstrated engagement of the IPC lead to the project design development and associated risk assessments.

#### Documents referenced are:

*HAISCRIBE 2014 Stage 1 - Folder 1.05*

NTC HAISCRIBE Meeting 2022 06 28 - Folder 1.05  
 NTC NHSAA Specific HAI Requirements - Folder 1.06  
 NHSAA NTC - IPC Involvement - Folder 1.6  
 22-11 Nov 29 501168 NHSAA HAISCRIBE 2 Meeting minute MB V1 - Folder 1.08  
 22-12 Dec 05 501168 NHSAA HAISCRIBE 2 Meeting2 minute MB V1 - Folder 1.08  
 HAISCRIBE Part 2 - Design Rev 02 05 12 22 DS - Folder 1.08  
 HAISCRIBE meeting 2022 06 28 - Folder 1.08  
 NTC Stage 2 HAISCRIBE - Attendance report 28 11 22 - Folder 1.08  
 NTC Stage 2 HAISCRIBE 2022 11 28 - Folder 1.08

Workbook Ref No.	Areas to probe	Evidence expected
1.10	The Health Boards Monitoring and Records	Evidence that the Health Board integrating this project with wider IPC requirements within the context of the FBC. For example, evidence that the proposals for equipping incorporate IPC requirements?

#### **NHS Scotland Assure Observations:**

NHS Ayrshire and Arran have provided assurance that IPC requirements have been integrated into the project by providing an e-mail from the IPC team listing requirements for the NTC project. The minutes of IPC workshops, design workshops and HAISCRIBE meetings have also referenced the IPC requirements and discussions with the IPC lead.

No evidence was available as to the IPC requirements for equipping for the project or involvement in the overall procurement process for the NTC. NHS Ayrshire and Arran acknowledged at KSAR progress meetings that IPC would be invited to equipment meetings going forward.

#### **Documents referenced are:**

1-50 User engagement workshop (Entrance, Inpatient, Peri-op, Theatre support) - Folder 1.05  
 1-200 Design review Approval. Rev A Master - Folder 1.05  
 HAISCRIBE 2014 Stage 1 - Folder 1.05  
 NTC HAISCRIBE Meeting 2022 06 28 - Folder 1.05  
 NTC NHSAA Specific HAI Requirements - Folder 1.06  
 NHSAA NTC - IPC Involvement - Folder 1.6  
 A218H\_NTCA-BBGL-XX-XX-PP-ICT001/002/003/004 - Folder 1.07  
 NTC-1 200 SIGN off (IPC) - Folder 1.07  
 22-11 Nov 29 501168 NHSAA HAISCRIBE 2 Meeting minute MB V1 - Folder 1.08  
 22-12 Dec 05 501168 NHSAA HAISCRIBE 2 Meeting2-minute MB V1 - Folder 1.08  
 HAISCRIBE Part 2 - Design Rev 02 05 12 22 DS - Folder 1.08  
 HAISCRIBE meeting 2022 06 28 - Folder 1.08  
 NTC Stage 2 HAISCRIBE 2022 11 28 - Folder 1.08  
 Enhanced Treatment Room, NHS AA NTC - Risk assessment

Workbook Ref No.	Areas to probe	Evidence expected
1.11	Planned approach for managing the design process to ensure successful compliance with agreed and approved standards	<p>The project governance arrangements and resource plan in place to ensure that the necessary decision-making authority and technical expertise is available to take responsibility for and deliver the project as planned and agreed.</p> <p>Details of how gaps in expertise are being filled.</p> <p>Details of how compliance with the appropriate guidance, design brief and other standards are being agreed, signed off, monitored, reported against and if necessary escalated / adjudicated throughout the design, construction and commissioning stages.</p> <p>Details of how all stakeholders' interests are being agreed, signed off, monitored, reported against and if necessary escalated / adjudicated throughout the design, construction and commissioning stages.</p>
<p><b>NHS Scotland Assure Observations:</b></p> <p>NHS A&amp;A have provided a wide range of documents, as referenced below, to outline their approach to project governance processes. NHS SA have found a number of differences across the documents provided, resulting in a lack of clarity in the governance arrangements. For example, there are a number of separate documents describing the terms of reference (ToR) and the remit of the Programme Board and Business Case Development/Operational Group (BC/Ops Grp), as the documents aren't dated, it is not clear what document is most recent.</p> <p>The governance structure provided '<i>AA NTC Governance Structure v1.2</i>' describes five groups which report into the BC/Ops Grp. The 'Lead' individual for each group is also identified. Other documents, for example '<i>FBC Governance Key Roles and Groups Requirements v0.3</i>' identify a 'Digital Group' which is not referenced within the main governance structure noted above. Limited information is provided on the remit or membership of these groups. There is no clear evidence on how the groups relate to the user groups or technical workshops that have been separately described within the '<i>NHS A&amp;A NTC- Design Management Process</i>' and no evidence was provided of any meetings undertaken, minutes of meetings or reporting of these 5/6 groups to the BC/Ops Grp.</p> <p>Evidence has been provided of a design management process '<i>NHS A&amp;A NTC- Design Management Process</i>', including reference to design 'wrap up' sessions and the review of design packages. It is noted that specific stakeholders are selected by NHS A&amp;A to review specific design packages, however, it is not clear how parties</p>		



involved in this process were selected, nor the level of their expertise. A list of user group sessions and technical workshops are provided, but this does not give details of attendees or outputs. An example of 'sign off' of design information is provided but this does not demonstrate a comprehensive 'sign off' of all design packages at this stage, as noted in the response to KSAR question 1.4. It is also noted this process does not align clearly with the governance structure in that the BC/Ops Grp has responsibility to approve the design. No evidence has been provided that this approval has yet been undertaken by the group.

Compliance with appropriate guidance including derogations has been addressed by NHS A&A and is more fully described in the response to KSAR question 1.6, within this KSAR report.

A roles and responsibilities organogram is provided which does provide some additional clarity on parties involved and their roles. This document does not align fully with the main governance structure, as noted above, and should be updated to do so as part of an overall PEP update.

The Project Execution Plan (PEP) provided sets out information on the governance of the project, however, as noted previously NHS SA recommend that it is updated to fully define the governance processes in place. NHS SA have found limited evidence of progress reporting from the main governance groups, project manager, or PSCP team. The PEP describes a change control process, but NHS A&A have not provided any evidence of this operating in practice.

A Responsible Accountable Consulted and Information (RACI) matrix has been provided for the project which does allocate responsibilities across the team. This focuses on the main NHS team members but does not include the 'Informing & Engagement' group, nor 'Digital', as set out in '*FBC Governance Key Roles and Groups Requirements v0.3*'. It also lacks detail on PSCP design team and detailed design activities/responsibilities.

The PEP describes a high-level approach to risk management and sets out some high-level risks. This is supplemented by several other papers provided in response to this KSAR. A risk register is provided that indicates 3 risk workshops were held but with limited attendance. NHS SA have found that a risk management process is in place, but this should be defined within an updated PEP.

***Documents referenced are:***

*2021-12-17 C&B Feedback Letter*

*2022-03-21 AE Confirmation Letter Water Services (044)*

*20220330-Accept\_A&A\_Vent\_*

*2022-07-11 Duty Holder for Management of Lifts Apt Letter (Signed)*

*2022-11Nov23-NHSA&A NTC MEP Derogation Review*

*2022-11Nov30-NHSA&A NTC Architectural Derogation Review*

*221014 NHS AA NTC Risk register Rev 6*

*22-12 Dec02 501168 NHSAA NTC PEP V5 with appendices*

*Approach to Risk Management*

*NHS AA Risk Assessment detail template*

*NHS AA Risk Management Strategy*

AA NTC Governance Structure v1.2  
 AP letter  
 Signed Nominated Person Oct 2019  
 FBC Governance Key Roles and Groups Requirements v0.3  
 Project Manager CV  
 Healthcare Planner CV  
 NHS Letter of Appointment  
 NHS A&A NTC- Design Management Process  
 NHS A+A NTC MEP Contractor CV's  
 NHS AA Appointment of Healthcare Planner  
 NHS AA NTC Derogation Schedule Combined  
 NHA AA NTC RACI Matrix Rev B  
 NHS AA Procedure for reviewing and agreeing derogations  
 NHS Treatment Centre Ayrshire CDM SKE Confirmation  
 NTC (NHS AA) PM HLIP  
 NTC BC Dev Op Group ToR  
 NTC Finance Sub Group ToR  
 NTC Programme Board ToR  
 NTC project governance and roles and responsibilities  
 NTC Project Roles and Responsibilities Organogram  
 Quantity Surveyor – Quick Quote – Project EP  
 Project Manager CV  
 SG042-NHS AA AE Appointment Signed  
 Successful Letter QS RLF

Workbook Ref No.	Areas to probe	Evidence expected
1.12	The Health Boards approach on the procurement journey with evidence of the plans on how the Board will provide assurance, particularly emphasis on the critical system identified earlier.	<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 conceptual procurement approach to the design stage and future plans for project.</p> <p>Evidence that the Health Boards selected procurement route has gone through the Board's Governance channels.</p>
<p><b>NHS Scotland Assure Observations:</b>            NHS A&amp;A provided various documents to evidence the procurement processes they have undertaken in appointing the Principal Supply Chain Partner (PSCP). This provides assurance of the governance processes in place for the appointment of the PSCP, although no details were provided with regards to the appointment of the</p>		

PSCP's MEP subcontractor. NHS A&A have not provided any specific evidence to show how IPC have been involved with the procurement approach during the design stage. The PSCP was procured through Frameworks Scotland 3.

Evidence was not provided regarding the procurement of the MEP subcontractor, however, NHS A&A confirmed at the progress meeting 28 February 2023 that the MEP subcontractor was appointed by the PSCP, through a proposal as part of their tender offering. CV's were provided identifying appropriately experienced team members, no details of the assessment carried out by NHS A&A was provided as part of the KSAR review.

NHS A&A confirmed at the progress meeting 28 February 2023 that the Architect, MEP consultants and Civil and Structural Engineers (CSE) were appointed directly to the PSCP. No evidence was provided on the appointment of the Architect and CSE, refer to KSAR Question 2.1. for details of the assessment of the competency of the MEP consultants and MEP subcontractor.

NHS A&A provided documents confirming the Project Manager has been appointed under Framework Scotland 3 and provided limited documentation in relation to the procurement of other consultants, such as the Healthcare Planner.

NHS A&A have appointed a Health Care Planner to support the project through Hub South West. NHS A&A confirmed at the KSAR progress meeting 28 February 2023 that they have engaged the National HFS Equipping Service to support the health board.

**Documents referenced are:**

*NTC - NHSAA PSCP Open Day v0.1 20210924*

*NTC - Open Day ('PSCP')*

*NTC Tender Report PSCP appointment rev 1*

*PSCP Interview Questions*

*PSCP Tender scoring template*

*NTC (NHS AA) PM HLIP*

*XXXXXXXX CV*

*Healthcare Planner CV 20221205*

*NHS A+A NTC 'PSCP' MEP Contractor CVs*

*NHS AA Appointment of Healthcare Planner*

Workbook Ref No.	Areas to probe	Evidence expected
1.13	The Health Boards approach on those areas of design that the procurement route has provided identification as possibly being Contractors Designed Portions (CDP's).	<p>Evidence that the procurement of the lead designer will encompass these areas in their oversight and sign off of the complete design.</p> <p>Evidence that a clear demarcation of design responsibility is being developed.</p>

**NHS Scotland Assure Observations:**

NHS A&A have provided a design responsibility matrix for the project which identifies packages that will be CDP. The matrix also identifies all of the design information that the lead designer / architect will be responsible for such as fire compartmentation / escape routes. NHS SA recommends that NHS A&A continue to document and monitor all roles and responsibilities surrounding CDP through the life of the project. NHS A&A should also demonstrate any early engagement / dialogue that has been had or that is planned for any specialist CDP packages that need to be developed.

**Documents referenced are:**

*NHS A&A NTC - Design Management Process*

*NHS AA NTC RACI Matrix Rev B*

*DRM- NHS A&A Landscape Update - 25.08.22*

Workbook Ref No.	Areas to probe	Evidence expected
1.14	Evaluation of the Health Boards commissioning plan.	Evidence that the Health Board has recorded plans that are comprehensive and adequate to address the needs of the project and that they are fully resourced.

**NHS Scotland Assure Observations:**

The health board have provided information on their commissioning proposals, although, at this stage, there remain elements to be developed in detail, and until this detail is developed full assurance cannot be demonstrated. NHS A&A provided the PSCP's commissioning statement and NHS A&A statement which describes the commissioning process. NHS A&A have not produced a detailed commissioning brief for the project, nor have they provided Designer's Commissioning Brief's for water and ventilation as required by SHTM guidance, refer to KSAR Question 2.6.

NHS A&A have identified the need to appoint an Independent Validator for Theatre Ventilation systems, as well as an independent appointed M&E Specialist as Commissioning Manager to manage Testing and Commissioning. Both these appointments are to be made in the next stage.

NHS A&A have provided the PSCP's current version of the detailed construction programme dated 06.12.2022, which incorporates specific timescales and dates for building fabric (fire stopping checks) and all technical commissioning activities to take place over 30 weeks.

NHS A&A have not evidenced their assessment of internal resources required from Estates, Authorising Engineers, Authorised Persons etc. to support the commissioning plan. Details of the precise resourcing arrangements and scope of services for commissioning to be undertaken by the PSCP, with input from NEC Supervisors, AEs, APs, and Estates etc. are still to be developed and documented.

NHS A&A provided their Soft Landings (SL) Plan within the '*Soft Landings Approach v01*' document, and their '*2022-10Oct27 NHS AA -SL Action Tracker v03*' which indicates several actions remain open.

**Documents referenced are:**

S21029 NHS AA Mini Elective CP01 06Dec22 Detailed Construction Programme (1)  
 NHS AA NTC RACI Matrix Rev B  
 Soft Landings Approach v01  
 2022-10Oct27 NHS AA -SL Action Tracker v03  
 NHS A+A NTC Technical Commissioning statement  
 NHS AA NTC KSAR Testing Commissioning

Workbook Ref No.	Areas to probe	Evidence expected
1.15	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:**

Whilst NHS A&A have set out the roles required through the design and construction stages, there is a lack of detail on the responsibilities of stakeholders, except for a few key roles. NHS A&A have not provided assurance as to how they will ensure they have an appropriate number of competent/qualified staff to carry out specific duties once the facility is operational.

NHS A&A have provided a RACI matrix that sets out roles and responsibilities of various members of the project team for the design and construction stages. This matrix contains limited detail, with a focus on senior members of the NHS A&A team. It has no detail on the individual members of the PSCP team. It is noted the clinical leads in the RACI matrix differs to that noted in other documents such as the main governance organogram. This role needs clarified, and NHS A&A should ensure consistency across the governance documentation.

NHS A&A have also provided a 'project roles and responsibilities' organogram which focuses on the NHS A&A team members who will be responsible for managing the design and construction phases of the project. This illustrates a structure different to the main governance structure, as set out in 'AA NTC Governance Structure v1.2'. It gives names and roles of individuals including Authorising Engineers (AE), IPC etc. It does not detail specific responsibilities, outline the input required, or define the resource required in relation to the NTC project.

Information in relation to appointment of AE's is provided and generally reflects the AE's noted in the project roles and responsibilities organogram. NHS SA note that clarity is required on the organogram as to who is the Electrical AE. It is also noted that the appointment documents provided for two of the AEs suggest that their appointment requires renewal, as the three-year period noted in the document has lapsed.

***Documents referenced are:***

*22-12 dec02 501168 NHSAA NTC PEP V5 with Appendices*

*NHS AA NTC RACI Matrix Rev B*

*NTC Project Roles and Responsibilities Organogram*

*XXXXXXXX Sodexo NHS letter of appointment*

*XXXXXXXX Signed Nominated Person Jan 2019*

*XXXXXXXX Signed Nominated Person Oct 2019*

*AP letter XXXXXXXX*

*SGSO42 – NHS AA AE Appointment Signed*

*2022-03-21 AE XXXX CONFIRMATION LETTER WATER SERVICES (004)*

*20220330 – Accept A&A\_Vent\_XXXXXXXX*

### 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

#### Planning Permission Application

At the time of the KSAR NHS A&A noted that the planning permission application had not been approved by the local council. NHS A&A should ensure that planning consents are in place as soon as possible to ensure there are no consequential impacts on the developed strategies detailed as part of their KSAR response. NHS A&A should also ensure that any specific risks are captured as part of the project specific risk register.

***Documents referenced are:***

*Planning\_Permission-2*

*Post\_Submission\_Additional\_Docum-2*

*ufm5\_Acknowledgement\_Validation*

*ufm17\_18\_-\_Ack\_Let\_(Email)*

## 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	Has the Health Board completed competency checks on the water and drainage consultant designers?	<p>Recorded evidence that the design team are experienced and have a comprehensive knowledge of the relevant design standards.</p> <p>Where anyone does not have a record of extensive health care experience what recorded plans are to be put in place by the Consultant Designers?</p> <p>Recorded evidence that input from the Health Authorising Engineer for Water (AE(W)) has been requested.</p> <p>Evidence that all contractors and sub-contractor competency checks have been completed and signed off.</p>

#### NHS Scotland Assure Observations:

Whilst the information submitted by the health board provides a level of assurance on the competency of the building services consultant designers, NHS SA would highlight that there is limited evidence to confirm how the competencies, specific to the water and drainage design consultants, have been assessed by NHS A&A.

The evidence provided by the health board primarily relates to the tender process undertaken to appoint their Principal Supply Chain Partner (PSCP) via the Framework Scotland 3 procurement route. Documents provided for review include aspects of the PSCP's technical and quality submissions that demonstrates their extensive expertise within the healthcare sector including Curriculum Vitae's (CV's) for their building services designers. NHS A&A have also provided correspondence confirming the appointment of their PSCP and the supporting quality scoring undertaken as part of the tender process.

The health board have also provided a letter from their PSCP that confirms their selection of their Mechanical, Electrical & Public Health (MEP) subcontractor in accordance with their obligations under the Construction Design and Management (CDM) regulation 8 as designers/principal contractor. This correspondence also includes CV's from key personnel from the PSCP and their MEP subcontractor demonstrating relevant healthcare project experience.

Whilst the submitted documentation provides assurance that the key personnel within the PSCP team have extensive healthcare experience there is no detail in relation to the building services consultants overall team structure, such as a project organogram, that confirms the number of public health engineers working on the project, their respective roles and their relevant experience and qualifications. The



health board has provided no assurance as to whether training plans are in place to address any deficits in healthcare experience.

**Documents referenced are:**

2.2 Key Personnel Project Experience

2.3 Key Personnel Project Allowance

2021-10-28 BB Feedback Letter

NHS A+A NTC 'PSCP' MEP Contractor CVs

NHS Treatment Centre Ayrshire CDM SKE Confirmation

NTC NHS A&A - HLIP Submission 'PSCP'

Workbook Ref No.	Areas to probe	Evidence expected
2.2	How does the Health Board ensure that water services are designed in a fashion, which will retain space for minor additions and modifications to services in the future?	<p>Evidence that the engineers are 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 designers have 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 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:**

Whilst the documentation provided by the health board would appear to show space is available for minor additions and modifications to the water services in the future, there is no evidence to confirm an agreed level of spare capacity, and acceptance of the provision from the relevant stakeholders. NHS SA would note that there are aspects of the water and drainage design that will require further review and approval by the relevant stakeholders.

The health board have provided documentation in response to this question to demonstrate the water and drainage technical design strategies at FBC stage

including multiple layout drawings, co-ordinated sections, plant access & maintenance strategy report, and a Building Information Model (BIM).

Minutes from RIBA Stage 3 and 4 MEP design workshops and specific water safety technical design workshops undertaken by NHS A&A confirm engagement with relevant stakeholders including Estates, Authorising Engineers (AE), Authorised Persons (AP) and Infection Prevention & Control (IPC).

Whilst this documentation demonstrates that the technical design has been discussed and presented to the relevant key stakeholders there is no evidence provided that clearly details any spare capacity (if applicable) allocated within the water and drainage design (e.g. pipework, booster sets, etc) including ceiling voids, risers, plantrooms etc. or how the spare capacity allowances for future flexibility have been agreed, documented and signed off by the health board's Estates team and wider stakeholders.

NHS A&A advised during the KSAR process that there are constraints within the roof/attic space of the existing building and that they have organised a further workshop with key stakeholders including the Estates/FM team to present the technical design strategies via a fly-through of the BIM model.

A '*Plant Access and Maintenance Strategy*' report has been provided that details the maintainable items of MEP plant and the means of installing, maintaining and replacing plant in future. The report details the anticipated means of accessing plant and equipment for both routine maintenance, inspection and future lifecycle replacement. The design includes for an external landing zone at roof level where larger items of plant and equipment can be craned off. Cranes are noted as being located on the adjacent access road; however, no evidence has been provided to confirm the potential locations for crane access or whether crane weights and vehicle tracking exercises have been undertaken.

Hot water is being generated at point of use, thus eliminating the distribution of domestic hot water supply and return pipework, providing coordination space benefits and omitting a potential source of heat transfer to the cold-water system. However, some of the section drawings show cold water pipework located within close proximity to, and in some instances directly above, low temperature hot water distribution pipework.

It is also unclear from the section drawings taken through the existing part of the building whether sufficient void space for services distribution and crossovers is available, as there are instances which appear to suggest coordination clashes with other services and the building structure. No detailed, fully coordinated cold water tank room layout is provided to confirm sufficient space for equipment and access.

The drawings also show intent to provide intake louvres and a wall mounted DX unit. NHS A&A confirmed during the Water and Drainage KSAR Technical Workshop held on 9th February that these were to prevent overheating in the space and consequent heat transfer to the cold-water tanks. NHS SA raised concerns for potential freezing during winter months with fixed open louvres and this should be considered by the health board as part of their action plan review.

There is no evidence of a typical integrated plumbing system (IPS) design / services arrangement. The overall strategy does have a consequential impact on IPC and clinical strategies and therefore NHS Scotland recommend that the principles should be considered at this stage of the project. A review of the architectural and drainage layouts highlight that the majority, if not all, ensuite IPS will only be accessible through bedroom spaces. SHPN 04-01 para. 4.30 notes: *“Provision for inspection, rodding and maintenance should ensure ‘full bore’ access; also, these inspection points should be located outside user accommodation.”* This requirement should be considered when developing the drainage design and given the impact this requirement may have on the architectural layouts it must be supported by a HAISCRIBE risk assessment.

The drainage layout drawings show that there are no first-floor stacks passing through clinical areas, with drainage within the ancillary spaces off the Operating Theatres dedicated to that space only. However, there are instances of stacks clashing with IPS, partitions, doors etc that will require further review.

The PSCP have provided a statement noting that offsite fabrication has been considered, however, due to the speed of build, bespoke nature of the project (refurbishment and extension) and the scale of the project, any pre-fabrication opportunities from a modular or large component perspective have been discounted.

The PSCP have also noted that following market testing of the RIBA Stage 4 information they will be exploring offsite fabrication of services modules, plantroom pipework and cladding components. It is unclear if any space allowances have been incorporated into the design to facilitate off-site manufacturing opportunities.

**Documents referenced are:**

*Water Services Layout & Schematic Drawings (multiple)*

*Drainage Services Layout & Schematic Drawings (multiple)*

*Reflected Ceiling Plans (multiple)*

*Mechanical & Electrical Typical Coordinated Sections (multiple drawings)*

*A218H\_NTCA-HUKI-XXXX-XX-RP-M-009 – Plant Access & Maintenance Strategy*

*2022-11Nov11 - NHS A&A Stage 3 MEP Design Workshop Minutes*

*2022-12Dec 05 - NHS A&A Stage 4 Design Workshop Minutes*

*Stakeholder Water Safety Design Technical Workshop Minutes (multiple)*

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

**NHS Scotland Assure Observations:**

Whilst the information submitted for review by the health board provides assurance that there is a formal derogations process and that water systems derogations have been recorded, no evidence has been provided to confirm that the proposed derogations have been appraised, risk assessed and sign-off by the relevant parties in accordance with the NHS A&A derogations process. NHS A&A have confirmed during the KSAR process that their final governance reviews for the FBC submission are still being finalised.

NHS A&A provided an '*NHS AA Procedure for Agreeing and Accepting Derogations*' document. This document summarises all derogation specific workshops that have been held, detailing the process to take the Stage 4 design derogations forward, including risk assessing each derogation, followed by presentation to the Business Case Development / Operational Group for approval.

NHS A&A have also provided a '*Risk Management Strategy*' document and '*Risk Assessment Template*', however no specific risk assessments have been provided for review.

'*Derogation Schedule 01-12-2022*' lists three derogations relating to water and drainage systems (12hr cold water tank storage capacity; omission of the cold-water tank internal ladder; BREEAM not being targeted), however '*Water Workshop 2 Minutes*' notes that water softening relevant to section 4 of SHTM 04-01, Part A was also to be added to the schedule. Additionally, there are elements of the design proposals submitted for review that may not be compliant with relevant guidance, with no recorded review of potential non-compliances by NHS A&A. These include but are not limited to:

- Domestic cold-water storage duration of 24 hour proposed. HSE HGS274 Part 2 guidance (clause 2.36) recommends 12-hour storage.
- Single source of mains water supply to site (2.3 of SHTM 04-01, Part A)
- Ability for 'full bore' inspection, rodding and maintenance outside user accommodation in theatres (HBN 26, clause 7.77)
- Drainage access points located within user accommodation (4.30 of SHPN 04-01)
- The use of strainers (9.56 of SHTM 04-01, Part A)
- Feed to LTHW/CHW quick fills (Fig. 2 SHTM 04-01)
- Bib-taps and Wash Hand Basins in plantrooms (SHTM 03-01)

**Documents referenced are:**

*NHS AA NTC Derogation Schedule Combined 01.12.22*

*NHS AA Procedure for Agreeing and Accepting Derogations*

*NHS AA Risk Management Strategy*

*NHS AA Risk Assessment Detail Template*

*NHS AA Derogations Risk Assessment Template*

*2022-11Nov23 – NHS A&A NTC MEP Derogation Review*

**Workbook  
Ref No.**

**Areas to probe**

**Evidence expected**

2.4	Water Management Strategy	<p>Assessment of Board proposed water management strategy and how this relates to the specification, guidance and project requirements.</p> <p>What involvement has there been from the water management group?</p>
<p><b>NHS Scotland Assure Observations:</b></p> <p>NHS A&amp;A have provided an M&amp;E stage 4 Report, drawings, water storage /consumption estimates, and minutes from design workshops demonstrating liaison with the health board's wider water management stakeholders including the Authorising Engineer (AE), Estates and IPC Lead.</p> <p>The health board have also provided a copy of their '<i>Water Safety Plan</i>' and included correspondence that confirms the design will follow the requirements of the water safety plan and that the designers are in receipt of these documents.</p> <p>During the Water and Drainage KSAR Technical Workshop held on 9 February 2023, NHS A&amp;A's AE (water) confirmed design reviews have been carried which will supplement the production of project specific water safety risk assessments prior to handover. The reviews undertaken by the AE are also evidenced in a series of Consultancy Memorandums completed and signed by the AE. The memorandums follow three NHS A&amp;A technical workshops (25th April 2022; 23rd June 2022; 30th August 2022), Stage 3 sign-off (11th November 2022) and Stage 4 sign-off (5th December 2022). At the same workshop, NHS A&amp;A also confirmed that the IPC lead and IPC doctor have attended Water Safety Group meetings to date.</p> <p>NHS A&amp;A also provided a Technical Query /Request for Information (TQ/RFI) document ('<i>PSCP Business Collaborator TQRFI-Water</i>'), detailing water system specific queries. The document evidenced the queries being raised and the responses received from NHS A&amp;A stakeholders, capturing items such as the proposal and approval to adopt point of use (POU) electric water heaters in lieu of a central hot water system. This included responses from the Water AE and NHS Estates.</p> <p>Following the Water and Drainage KSAR Technical Workshop held on 9 February 2023, NHS A&amp;A provided an email with a stakeholder's attendees list for the technical workshops included (<i>NTC Technical Meetings Contacts V2</i>). This document detailed the name and title / roles of all relevant stakeholders, including both technical advisors (<i>AE / IPC</i>) and technical consultants. A second document included also summarises the appointments of key personnel including AE's / CP's etc. (<i>CAP_AP_CP Appointments South</i>). NHS A&amp;A confirmed during the KSAR process that their intention is for the already appointed AP and CP's to be responsible for the new NTC facility.</p> <p><b>Documents referenced are:</b></p> <p><i>WSP Book 0 Introduction (January 2021)</i></p> <p><i>WSP Book 1 General Considerations (January 2021)</i></p> <p><i>WSP Book 3 Capital Procedures (January 2021)</i></p> <p><i>WSP Book 4 Contingency Measures (January 2021)</i></p>		

WSP Book 5 Associated Processes (January 2021)  
 AE Consultancy Memorandum (multiple)  
 'PSCP' Business Collaborator TQRFI-Water  
 NTC Technical Meetings Contacts V2  
 CAP\_AP\_CP Appointments South

Workbook Ref No.	Areas to probe	Evidence expected
2.5	Water governance arrangements	Has the Board commenced its planning and recorded how it will ensure appropriate numbers of trained staff (AP and CP) and AE(W) will be appointed, is there an established project water management group that ensures the water management strategy is adhered to for the Board and is it clear how this project will interface with this existing group?

#### **NHS Scotland Assure Observations:**

The Board has provided assurance that they have commenced its planning to ensure there are appropriate number of trained staff to support the new NTC facility. As noted in question 2.4, NHS A&A have detailed their existing water management structure. The health board advised during the KSAR weekly progress meeting on 14 February 2023 they intend to manage the NTC facility using their existing Estates team at the nearby Ayr Hospital. NHS A&A also advised during the KSAR process that their existing AE(W) will act as AE(W) for this facility. Whilst evidence has been provided to confirm the Board's formal appointment of their AE(W) and their ongoing involvement in the NTC project there is no evidence to confirm that the AE(W) has been formally appointed to support the NTC project.

In addition to the evidence noted in question 2.4, letters confirming the Board's Estates Team appointments to their Water Safety Group have been included. This includes the Head of Estates as chair, and the Estates Manager for the South Sector as the Estates Department representative on the Boards Water Safety Group.

The minutes (unapproved) from the Board Water Safety Group meeting held on 8 December 2022 has been provided by NHS A&A. To accompany this a Situation, Background, Assessment, Recommendation (SBAR) document has been produced as part of papers and documentation submitted to the health board's WSG. The minutes confirm that papers have been shared with the WSG including the water systems design information and is noted that the WSG had no comments to make and agreed the proposals are acceptable to be taken forward to the next stage.

#### **Documents referenced are:**

XXXXX Signed Nominated Person Oct 2019  
 XXXXX Signed Nominated Person Jan 2019  
 CAP\_AP\_CP Appointments South  
 2022-08-12 BWSG Unapproved Minutes  
 2022-11-24 BWSG Paper 0 (NTC CWS Design)

Copy of 2022-10-24 ISS Operational Costs V1.6\_FINAL  
 2022-09-07 Estates Department Management Structure  
 NTC Project Roles and Responsibilities Organogram  
 WSP Book 0 Introduction (January 2021)  
 WSP Book 1 General Considerations (January 2021)  
 WSP Book 3 Capital Procedures (January 2021)  
 WSP Book 4 Contingency Measures (January 2021)  
 WSP Book 5 Associated Processes (January 2021)

Workbook Ref No.	Areas to probe	Evidence expected
2.6	Evidence that the Health Board is developing commissioning proposals.	Evaluation of the suitability of the proposed plans in the context of the FBC, are these sufficient to meet the requirements of the project, guidance and the design of the system.  Evidence that the design has considered the commissioning of the water system including: <ul style="list-style-type: none"> <li>• Safe storage of materials</li> <li>• Agreed type of chemical (to avoid warranty and corrosion issues)</li> <li>• Adequate time scale</li> <li>• Competency checks on all contractors</li> <li>• Water sampling scope</li> </ul> Water sampling test results and approval process.

#### NHS Scotland Assure Observations:

NHS A&A have provided assurance that the development of commissioning proposals is under development. The mechanical technical specification document does include a commissioning section covering the general inspection, testing and commissioning requirement for the mechanical building services including the requirements for an independent commissioning specialist, some of the test certification required to be produced by the commissioning specialist and clauses in relation to commissioning activities and processes including the safe storage of materials.

However, there is no specific designers commissioning brief document that captures all of the requirements noted in SHTM 04-01 (16.9 – 16.12) such as relevant design data (temperatures, flow rates and pressures) and commissioning procedures for thermostatic mixing valves. There is also no detail provided at this stage that confirms the agreed types of chemicals that are suitable for use with the proposed pipework materials and fittings or any details in relation to the water sampling scope, frequency and associated approval process.

The PSCP's RIBA Stage 4 construction programme includes a high-level breakdown of the commissioning and testing activities and shows a period of 20 weeks for

mechanical technical commissioning of the MEP systems, including the domestic water and above ground drainage systems. The programme has high level timescales allocated to activities such as fill & hydraulic pressure testing, leachate flushing, domestic water sterilisation, laboratory sampling and water management flushing regimes.

The health board have provided their PSCP's Inspection and Testing Plan Template which reference the water and drainage systems to be tested, including detail on the inspection and witnessing requirements and the responsibilities of the various parties involved, including sub-contractors, designers and NHS. In addition to this document a Commissioning Responsibilities Matrix is included within the mechanical specification that further details the commissioning roles and responsibilities.

Whilst this demonstrates that the commissioning processes are beginning to be developed the documents provided do not detail the interfaces with other relevant parties such as NEC Supervisor, Clerk of Works etc. NHS A&A advised during the KSAR process that they intend to procure an NEC Supervisor and Clerk of Works for the project who will undertake inspection, witnessing and validation activities on behalf of the health board along with the health board's APs however the scope and procurement of these roles is still to be progressed.

The mechanical specification details the requirement for a commissioning manager to be engaged on the project. During the KSAR process, NHS A&A confirmed there has been an allowance to appoint an independent Commissioning Manager, however, from the documentation provided it is unclear how the commissioning management role will interface with the Contractor.

**Documents referenced are:**

*S21029 NHS AA Mini Elective CP01 06Dec22 Summarised Construction Prog with Commissioning Prog Shown*

*A218H\_NTCA-HUKI-XXXX-XX-SP-M-001 – Mechanical Services Technical Specification*

*ITP-NTC-M-01 - Inspection and Test Plan Detailed Template Form*

*NHS A+A NTC Technical Commissioning statement*

*NHS AA NTC KSAR Testing Commissioning*

*Ayr Hospital - Interventional - August 2022 – SHTM 03-10 Critical Ventilation Annual Verification & Inspection Interventional Theatre*

*Ayr Hospital - Theatre 6 SHTM 03-10 Critical Ventilation Annual Verification & Inspection Theatre 6*

*Ayr Hospital Day Care Unit Theatre Ventilation Survey & Pressure Regime*

*LT130922-10 Ayr Theatre 6 Air Environmental Monitoring Report*

*2636 – Theatre 6 – Airborne Microbiological Monitoring.*

**Workbook  
Ref No.**

**Areas to probe**

**Evidence expected**



2.7	Evaluation of the Health Boards planned preventative maintenance (PPM) proposals.	<p>Has the health board commenced its planning and recorded the PPM requirements and approach to ensure appropriate levels of maintenance, comprehensive statutory compliance and robust management processes, including:</p> <ul style="list-style-type: none"> <li>• Adequate numbers of staff</li> <li>• Water management PPM including all outlets, TMT &amp; TMV, plumbing and Drainage systems, etc.?</li> </ul>
<p><b>NHS Scotland Assure Observations:</b>  NHS A&amp;A have commenced their evaluation of the PPM proposals for the NTC facility. Exemplar PPM logbooks have been provided for water systems which include scheduled tasks, associated frequencies, and includes template forms for completion of the water system PPM activities.</p> <p>As noted in response to KSAR question 2.5, NHS A&amp;A have confirmed that they intend to provide maintenance support from their existing Estates team base at University Hospital Ayr and have provided an initial resource estimate to assist in establishing maintenance/PPM staffing requirements. NHS A&amp;A acknowledged during the KSAR process that these forecasts are still under review following completion of the RIBA Stage 4 design proposals and will require further development.</p> <p>An Asset Information Requirements schedule has been provided that details the maintainable assets for the project and the information requirements in relation to the assets including the requirements for Construction Operations Building Information Exchange (COBie) data from the BIM model. The schedule lists maintainable assets for the various engineering systems including water and drainage systems however does not fully detail all water outlets, TMT's, TMV's etc. During the KSAR weekly progress meeting on 14 February 2023 NHS A&amp;A provided further clarity on the status of their development of the PPM. NHS A&amp;A confirmed this is the first project NHS A&amp;A Estates intend to use COBie data for Asset management and PPM purposes. NHS A&amp;A acknowledged that the full requirements are still under development and that the NHS A&amp;A Estates team will continue to liaise with the PSCP team to ensure their data requirements and interfaces with their existing Asset Management tools are captured.</p> <p><b>Documents referenced are:</b>  2022-09-07 Estates Department Management Structure  NHS AA PPM Exemplar Logsheets  Exchange Information Requirements Appendix  Copy of 2022-10-24 ISS Operational Costs V1.6_FINAL</p>		

### 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.

### Cold Water Temperature Management

The cold-water temperature management strategy detailed within the drawings and M&E Services Stage 4 report appears to conclude and accept a recirculating system, including the provision of cooling. There is evidence of some passive measures being adopted to assist with cold-water temperature management including:

- Increased thermal insulation thickness
- Pipework routing remote from other heat emitting sources
- Utilising electric point of use water heaters, eliminating a source of heat emitting pipework from distribution routes & void spaces
- Facade louvres to naturally ventilate and prevent overheating of the cold-water tank room
- Installation of a wall mounted DX unit to provide cooling to prevent overheating of the cold-water tank room (active measure)

NHS A&A noted during the Water & Drainage KSAR Technical Workshop on 9 February 2023 that due to the number of variables associated with dynamic thermal modelling of ceiling void temperatures, any analysis is considered unreliable. There is therefore there is no assurance as to how NHS A&A have considered and documented the potential risks of overheating within the ceiling voids, or the potential impact on domestic cold-water temperatures in the development of the cold-water design.

#### 3.2.2.1

Within the minutes provided for the project water technical meeting (no. 03 on 30 August 2022) the AE (water) states *“that a cold-water return overcomplicates the systems and put unnecessary risk into it and that the SHTM denotes that the system should be designed to control the water without the need for a return”*. Comments are also provided from Head of Estates questioning the requirement, specifically when considering the size of the building and the intention to utilise point of use heaters. It is also within ‘*Stage 3 MEP Design Workshop Minutes*’ and Consultancy Memorandums (*Authored by AE: Version 2 – 24/06/2022*) that the AE *‘does not agree that the cold-water return loop is required’*

HSE L8 Clause 75 (b) notes, *‘Provide adequate information for the user about the risk and measures necessary to ensure that the water system will be safe and without necessary risk to health when used at work.’* The current design proposals do not appear to reference or consider water hygiene considerations that have influenced their design such as, contamination, amplification, transmission, exposure or susceptibility of patients.

	<p>It is unclear as to whether NHS A&amp;A have undertaken a feasibility study for the cold-water temperature management strategy, including consideration of any associated risks associated with the cold-water system and tabled this with the Water Safety Group.</p> <p>This was confirmed during the KSAR FBC Water &amp; Drainage Technical Workshop on 9 February 2023, stating that <i>'the board / clinical team agree that it should be removed from the design'</i>, however acknowledged that this should <i>'not be before a risk assessment takes place and is tabled at the Water Safety Group'</i>.</p> <p>A value and risk assessment of the cold-water recirculating system was agreed to be completed, as noted in <i>'2022-12Dec 05 - NHS A&amp;A Stage 4 Design Workshop Minutes'</i> from 5<sup>th</sup> Dec 2022, however we note that this action is still outstanding.</p>
3.2.2.2	<p><b>New Scottish Water Connection</b></p> <p>A Pre-Development Enquiry (PDE) has been submitted to Scottish Water, with a PDE Response from Scottish Water confirming available capacity in the local network. Drawing <i>'A218H_NTCA-HUKI-XXXX-XXXX-D-M-50001 Incoming Mechanical Services'</i> shows a new 125ø connection coming off an existing 100ø water main within the site (noted as an <i>'existing private water main'</i> within <i>A218H_NTCA-HUKI-XXXX-XX-RP-M-012 MEP Resilience Strategy</i>). It is unclear whether this has been discussed and agreed with Scottish Water, or whether upgrade works will be necessary to increase the existing 100ø section of pipe back to its connection off the 200ø Scottish Water main on the A713.</p>
3.2.2.3	<p><b>Emergency Bowser Fill</b></p> <p>A bowser connection is the intended back-up in event of an emergency ie. loss of mains water supply. This is documented within <i>'A218H_NTCA-HUKI-XXXX-XX-RP-M-012 MEP Resilience Strategy'</i> and <i>'A218H_NTCA-HUKI-XXXX-XX-RP-M-014 M&amp;E Services Stage 4' Report</i>, and also confirmed during the Water &amp; Drainage KSAR Technical Workshop on 9 February 2023. No details of this arrangement are identified on the water layouts, although a connection is shown on: <i>'A218H-NTCA-HUKI-XXXX-XXXX-D-M-53001 Water Services Schematic'</i>.</p> <p>The information available however is limited in detail. It is unclear where the fill-point is located; whether the bowser tank site access route has been considered; how the fill-point is intended to operate; whether it is a permanent fixed pipe installation, or hose connection; what the pre-fill maintenance procedures are; and what is involved in the procurement / purchase of a bowser water fill, including guaranteeing water quality.</p>

## 3.3 Ventilation

### 3.3.1 Ventilation: KSAR Observations

Workbook Ref No.	Areas to probe	Evidence expected
3.1	Has the Health Board completed competency checks on the ventilation consultant designers?	<p>Recorded evidence that the design team are experienced and have a comprehensive knowledge of the relevant design standards.</p> <p>Where anyone does not have a record of extensive health care experience what recorded plans are to be put in place by the Consultant Designers?</p> <p>Recorded evidence that input from the Health Boards Authorising Engineer for Ventilation (AE(V)) has been requested.</p> <p>Evidence that all contractors and sub-contractor competency checks have been completed and signed off.</p>

#### NHS Scotland Assure Observations:

The observations noted in response to KSAR Workbook question 2.1 apply to this question with respect to ventilation consultant designers.

#### Documents referenced are:

*2.2 Key Personnel Project Experience.pdf*

*2.3 Key Personnel Project Allowance.pdf*

*2021-10-28 BB Feedback Letter.pdf*

*NHS A+A NTC 'PSCP' MEP Contractor CVs.pdf*

*NHS Treatment Centre Ayrshire CDM SKE Confirmation.pdf*

*NTC NHS A&A - HLIP Submission 'PSCP'.pdf*

Workbook Ref No.	Areas to probe	Evidence expected
3.2	How does the Health Board ensure that ventilation services are designed in a fashion, which will retain space for minor additions and modifications to services in the future, and there is an appropriate plant access strategy?	<p>Evidence that the design engineers have 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 design engineers have presented each of the main service runs plus plant rooms to the Board's Estates team and / or FM team, to highlight space for future flexibility.</p> <p>Evidence that the ventilation solution has been agreed with clinical and IPC colleagues.</p> <p>Evidence that the Board has agreed a strategy (percentage) for spare capacity and a documented allowance to be incorporated into the design.</p> <p>Are plant rooms, horizontal distribution runs and risers appropriately sized for the equipment being installed and facilitate safe adequate maintenance?</p> <p>Evidence that a plant access strategy for the entire ventilation system has been provided to ensure safe, adequate access, including access for cleaning.</p>
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#### **NHS Scotland Assure Observations:**

NHS A&A have provided ventilation services layout drawings, co-ordinated sections, equipment schedules, a BIM model and a mechanical specification document that details the technical design strategies at FBC stage.

The general MEP building services observations noted in response to KSAR Workbook question 2.2 also apply to this question. In addition to these general observations NHS SA also note the following observations with respect to ventilation services:

- NHS A&A verbally confirmed that spare capacity provision is typically of the order of 10-15%, although there is no evidence provided that clearly documents the spare capacity allocated within the ventilation design (e.g., ductwork, flow rates, pressure drops etc.) and within ceiling voids, risers, plantrooms etc. or how the spare capacity allowances for future flexibility have been agreed with the health board's Estates team and wider stakeholders.
- Whilst co-ordinated sections have been provided NHS A&A acknowledged the during the KSAR process that services distribution, particularly ductwork distribution, within the roof space of the existing building is constrained. No evidence has been provided, therefore constraints have yet to be fully demonstrated to the health board's Estates team and how any residual access and maintenance / buildability risks have been documented.

#### ***Documents referenced are:***

*Ventilation Layout Drawings (multiple)*  
*Mechanical & Electrical Typical Coordinated Sections (multiple drawings)*  
*A218H\_NTCA-HUKI-XXXX-XX-RP-M-009 – Plant Access & Maintenance Strategy*  
*2022-11Nov11 - NHS A&A Stage 3 MEP Design Workshop Minutes*  
*2022-12Dec 05 - NHS A&A Stage 4 Design Workshop Minutes*  
*Stakeholder Ventilation Design Technical Workshop Minutes (multiple)*

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

#### **NHS Scotland Assure Observations:**

Whilst the information submitted for review by the Health Board provides assurance that there is a formal derogations process and that ventilation system derogations have been recorded, no evidence has been provided to confirm that the proposed derogations have been appraised, risk assessed and signed-off by the relevant parties, in accordance with the NHS A&A derogations process. NHS A&A have confirmed during the KSAR process that their final governance reviews for the FBC submission are still being finalised.

'Derogation Schedule 01-12-2022' lists twelve derogations relating to ventilation systems. Additionally, there are elements of the design proposals submitted for review that may not be compliant with relevant guidance, with no recorded review of potential non-compliances by NHS A&A. These include but are not limited to:

- Peri-Op rooms, which are considered to be Stage 1 recovery spaces do not have low level extract ventilation in accordance with SHTM 03-01 Part A Clause 5.59, which notes the following for recovery spaces.
- 'The philosophy of establishing a clean airflow path – from the air-supply point, past the breathing zone of the staff, on to the patient or other source of airborne hazard, and out via a low-level extract – would also apply in recovery rooms, birthing rooms, bronchoscopy rooms, laboratories and post-mortem rooms.'
- The proposed hybrid ventilation systems to four areas within the ground floor area of the existing building were noted as having air intakes and exhausts in close proximity and may risk exhaust air re-entrainment. SHTM 03-01 Part A Clause 9.35 states that:
- "The discharge from an extract system will be located so that vitiated air cannot be drawn back into the supply air intake or any other fresh air inlet.

Ideally, the extract discharge will be located on a different face of the building from the supply intake(s). At all times, there has to be a minimum separation of 4 m between them, with the discharge mounted at a higher level than the intake.”

For further observations on the derogations process, refer to the response to KSAR question 2.3.

**Documents referenced are:**

*NHS AA NTC Derogation Schedule Combined 01.12.22*

*NHS AA Procedure for Agreeing and Accepting Derogations*

*NHS AA Risk Management Strategy*

*NHS AA Risk Assessment Detail Template*

*NHS AA Derogations Risk Assessment Template*

*2022-11Nov23 – NHS A&A NTC MEP Derogation Review*

Workbook Ref No.	Areas to probe	Evidence expected
3.4	Does the Health Board have a strategy for ventilation (for rooms where this is permitted within the SHTM/SHPN guidance)?	<p>Evidence of agreed environmental matrix.</p> <p>Evidence that the Dynamic thermal modelling confirms what the design must include (e.g., structure, solar shading/protection, orientation, equipment optimisation, etc.) to ensure that room temperatures comply with SHTM guidance, in naturally ventilated rooms.</p> <p>Floor plans with associated plant locations highlighted plus simple schematic of strategy. This must also identify the air intake and exhaust strategy / locations.</p>

**NHS Scotland Assure Observations:**

NHS A&A have provided ventilation layout and strategy drawings, a mechanical specification, ventilation system reports, a BIM model and associated equipment schedules to demonstrate the ventilation strategy for the NTC facility.

This information is further supplemented by an environmental matrix document. The environmental matrix details the proposed ventilation strategies and associated design criteria relevant to each individual room. NHS A&A have provided minutes from stakeholder workshops confirming discussions and review of the environmental matrix. These workshops included representation from Clinical staff, IPC and Estates. Correspondence has also been provided confirming review and comment on the environmental matrix from various stakeholders including Estates and the AE (V).

Whilst the evidence confirms representation and consultation with a selection of stakeholders when reviewing the Environmental Matrix there is no evidence to

confirm formal acceptance and sign-off of the Environmental Matrix nor is there evidence to document any comments made by Clinical staff and IPC.

The health board have provided evidence that dynamic thermal modelling has been undertaken in the form of a series of reports relating to thermal comfort, climate-based daylight analysis and detailed energy analysis.

CIBSE TM52, SHTM 03-01 and SDaC requirements for overheating have been considered for naturally ventilated ground floor areas and CIBSE TM59 analysis for sleeping accommodation. Overall assurance was provided that the pre-requisite requirements have been achieved, however there are caveats within the information provided with respect to window sizes/solar gains. It is also noted that future weather scenarios for 2080 highlights some marginal fails.

There is no evidence to confirm that the health board has accepted the findings of the analysis undertaken. Whilst the naturally ventilated spaces are within non-clinical areas, there is no evidence to confirm that IPC have been consulted and accepted the proposed natural ventilation strategies.

The ventilation strategy drawings and layouts confirm the various ventilation strategies to each space. Whilst an '*Operating Theatre Ventilation Philosophy Schematic*' has been provided that confirms room design data such as air volumes, room design pressures, air change rates etc. no other schematics for the ventilation systems have been provided.

The ventilation air intakes and exhausts are indicated on the layout drawings. NHS A&A have confirmed the ventilation louvres form part of the architectural specification and that the Building Services consultant is undertaking further ongoing co-ordination with the architectural package, particularly with regards to the maintenance access required to facilitate cleaning of louvres from both sides, in accordance with SHTM 03-01 Part A requirements.

During the ventilation KSAR technical workshop on 7 February 2022 the proposed hybrid ventilation systems to four areas within the ground floor area of the existing building were discussed. NHS A&A noted that the air intakes and exhausts were in close proximity and may risk exhaust air re-entrainment. NHS A&A noted that the proposed solutions were driven by the spatial constraints of the existing building and that the systems served non-clinical spaces that were unlikely to change function at a later date.

Dedicated air handling plant are proposed to serve each theatre suite. NHS A&A confirmed during the KSAR progress meeting of 7 March 2023 that the operating theatre ventilation systems will only operate in UCV (Ultra Clean Ventilation) mode and will not operate on low-speed mode, as a 'conventional' theatre, this is a change in operational design intent compared to the strategy documented in the evidence provided. The health board acknowledged at this meeting that their documentation will require to be updated to note consistently that the theatres will only operate in UCV mode.

The evidence is not clear around the intent to use HEPA filters with the prep rooms. This should be considered in accordance with the principles set out in SHTM 03-01,



particularly with regards to the requirements as noted in Clause 8.35 also notes that: *'The system must include constant volume and variable speed controls to ensure that the air flow rates remain constant as the HEPA filter soils.'*

The ventilation layouts and 'Operating Theatre Suite & ETR Vent Strategy' report acknowledges that the design requirements for an Enhanced Treatment Room are not specifically defined within current healthcare guidance. The proposal is for the ventilation strategy to follow similar principles as the Operating Theatre suites in terms of room air flow and pressure regimes. Reference should be made to KSAR Question 7.2 in relation to any observations NHS SA have in relation the Enhanced Treatment Room.

**Documents referenced are:**

*Ventilation Layout Drawings (multiple)*

*Mechanical & Electrical Typical Coordinated Sections (multiple drawings)*

*2022-11Nov11 - NHS A&A Stage 3 MEP Design Workshop Minutes*

*2022-12Dec 05 - NHS A&A Stage 4 Design Workshop Minutes*

*A218H\_NTCA-HUKI-XXXX-XX-RP-M-003 – Thermal Comfort Analysis*

*A218H\_NTCA-BBGL-XX-XX-MI-PP-EM001 – Environmental Matrix Stakeholder Workshop*

*NTC Ayr Environmental Matrix Latest Draft 18112022*

*NHS A&A NTC - Design Management Process*

*Stakeholder Ventilation Design Technical Workshop Minutes (multiple)*

*FW\_ NTC Environmental Matrix Update*

*RE\_ NTC Stage 3 Design Review Sign Off*

*RE\_ NTC Stage 4 Design Review - Medical Gas*

Workbook Ref No.	Areas to probe	Evidence expected
3.5	Is there evidence of stakeholder input to ventilation strategies?	Addition to or supplement to the Environmental Matrix which confirms the following, on a room-by-room basis: <ol style="list-style-type: none"> <li>The type of ventilation (to SHTM 03-01)</li> <li>Patient group and / or function related to the space.</li> <li>Name of the Consultant, Clinical Lead or Department Lead who has agreed to the room requirements.</li> <li>Name of the Infection Prevention and Control Doctor or equivalent who has agreed to the room requirements.</li> <li>Name of the Infection Prevention and Control Nurse who has agreed to the room requirements.</li> </ol>

		<p>f) Name of the Estates / FM team representative who has agreed to the room requirements.</p> <p>g) Name of the NHS Project Manager who has agreed to the room requirements.</p> <p>Name of the Decontamination Manager who has agreed to the room requirements (where this is part of the project).</p>
<p><b>NHS Scotland Assure Observations:</b></p> <p>As noted in response to KSAR question 3.4, evidence has been provided that confirms stakeholder input into the ventilation strategies. NHS A&amp;A have demonstrated engagement and input from multiple stakeholders including clinical staff, IPC, Estates and their AE (V), however, there is no formal sign off by clinical staff and IPC.</p> <p>The '<i>Design Management Process</i>' document clearly sets out the governance requirements around stakeholder input and sign-off of the ventilation strategies. Whilst this document provides assurance that there is a process in place, no evidence has been provided to confirm the final sign-off of the ventilation strategies including the environmental matrix and associated design documents (drawings, specifications etc) has been undertaken, in accordance with the governance procedures set out in the '<i>Design Management Process</i>' document.</p> <p><b>Documents referenced are:</b></p> <p><i>A218H_NTCA-BBGL-XX-XX-MI-PP-EM001 – Environmental Matrix Stakeholder Workshop</i></p> <p><i>2022-11Nov11 - NHS A&amp;A Stage 3 MEP Design Workshop Minutes</i></p> <p><i>2022-12Dec 05 - NHS A&amp;A Stage 4 Design Workshop Minutes</i></p> <p><i>PSCP Business Collaborator_ TQRFI-Ventilation</i></p> <p><i>NTC Project Roles and Responsibilities Organogram</i></p> <p><i>Stakeholder Ventilation Design Technical Workshop Minutes (multiple)</i></p> <p><i>FW_ NTC Environmental Matrix Update</i></p> <p><i>RE_ NTC Stage 3 Design Review Sign Off</i></p> <p><i>RE_ NTC Stage 4 Design Review - Medical Gas</i></p> <p><i>FW NTC Environmental Matrix (Multiple Email Correspondence)</i></p> <p><i>NHS A&amp;A NTC - Design Management Process</i></p>		

Workbook Ref No.	Areas to probe	Evidence expected
3.6	Is there evidence of the Health Board developing Ventilation Commissioning Proposals?	Evaluation of the suitability of the proposed plans in the context of the FBC, are these sufficient do they meet the requirements of the project, guidance and the design of the system?

		<p>What plans have been made for independent validation of the ventilation systems?</p> <p>What plans have been made for independent verification of the ventilation system?</p> <p>What plant and ductwork cleaning has been specified?</p> <p>What safe adequate access has been allowed for access to dampers?</p>
<p><b>NHS Scotland Assure Observations:</b></p> <p>NHS A&amp;A have provided various documents, as noted in response to KSAR question 2.6, that detail the technical design commissioning strategies developed for FBC stage, however, there is no reference to SHTM 03-01 within there is no specific ventilation commissioning brief in accordance with SHTM 03-01 Part A Clause 11.13.</p> <p>The general MEP building services observations noted in response to KSAR question 2.6 also apply to this question. In addition to these general observations NHS SA also note the following observations with respect to the ventilation services commissioning proposals:</p> <ul style="list-style-type: none"> <li>• Examples of validation and verification reports for ventilation systems at University Hospital Ayr are provided, however, are not relevant to the NTC project. There is no evidence confirming that plans have been developed for the independent validation and verification of the ventilation systems.</li> <li>• The requirements for ductwork cleaning, in accordance with BESA TR/19 standards and requirements for cleaning of plant such as AHU's have been detailed within the mechanical technical specification.</li> <li>• Whilst drawings have been provided confirming the locations of dampers, including fire / smoke dampers, there is limited information on the sectional drawings provided that confirms and demonstrates the means of safe access to the dampers.</li> </ul> <p><b>Documents referenced are:</b></p> <p><i>S21029 NHS AA Mini Elective CP01 06Dec22 Summarised Construction Prog with Commissioning Prog Shown</i></p> <p><i>A218H_NTCA-HUKI-XXXX-XX-SP-M-001 – Mechanical Services Technical Specification</i></p> <p><i>ITP-NTC-M-01 - Inspection and Test Plan Detailed Template Form</i></p> <p><i>NHS A+A NTC Technical Commissioning statement</i></p> <p><i>NHS AA NTC KSAR Testing Commissioning</i></p> <p><i>Ayr Hospital - Interventional - August 2022 – SHTM 03-01</i></p>		

Workbook Ref No.	Areas to probe	Evidence expected
3.7	Has the Health Board started developing its ventilation governance arrangements?	Has the Health Board commenced its planning and recorded how it will ensure appropriate numbers of trained staff (AP and CP) staff and appointment of AE(V) for the project and is it clear how this project will interface with the Health Boards existing arrangements for management of the ventilation installations?
<p><b>NHS Scotland Assure Observations:</b></p> <p>NHS A&amp;A have provided documents as noted below, that relate to the development of ventilation governance arrangements. The general MEP building services observations noted in response to KSAR question 2.5 also apply to this question. In addition, from a ventilation perspective, evidence of the appointment of the AE to act as the health board's independent expert has been provided, along with evidence of engagement with the AE (V) throughout RIBA Stage 3 and 4, and stakeholder workshop minutes.</p> <p>Whilst evidence has been provided to confirm the board's formal appointment of their AE(V) and their ongoing engagement in the NTC project there is no evidence to confirm that the AE(V) has been formally appointed to support the NTC project.</p> <p>The health board have confirmed that currently there is no board-wide Ventilation Safety Group (VSG) in line with the requirements of SHTM 03-01 and that this group is currently in the process of being established. NHS A&amp;A noted during the KSAR process that any ventilation related issues associated with the project will be referred to the infection prevention control group which a Terms of Reference (TOR) document has been provided.</p> <p><b>Documents referenced are:</b></p> <p><i>A218H_NTCA-BBGL-XX-XX-MI-PP-VENT003 – Ventilation Stakeholder Design Workshop</i></p> <p><i>20220330-Accept_A&amp;A_Vent_XXXXX</i></p> <p><i>2022-11Nov11 - NHS AA Stage 3 MEP Design Workshop Minutes</i></p> <p><i>2022-12Dec 05 - NHS A&amp;A Stage 4 Design Workshop Minutes</i></p> <p><i>CAP_AP_CP Appointments South</i></p> <p><i>Copy of 2022-10-24 ISS Operational Costs V1.6_FINAL</i></p> <p><i>2022-09-07 Estates Department Management Structure</i></p> <p><i>NTC Project Roles and Responsibilities Organogram</i></p> <p><i>NHS AA NTC RACI Matrix Rev B</i></p> <p><i>PCOIC TOR May 21</i></p>		

Workbook Ref No.	Areas to probe	Evidence expected
3.8	Evaluation of the Health Boards planned preventative maintenance (PPM) proposals.	Has the Health Board commenced its planning and recorded the PPM requirements and approach to ensure appropriate levels of maintenance, comprehensive statutory compliance and robust management processes?
<p><b>NHS Scotland Assure Observations:</b>  NHS A&amp;A have provided various documents, as noted in response to KSAR question 2.7, that provides evidence of the initial development of their PPM proposals for the project. The general MEP building services observations noted in response to KSAR question 2.7 also apply to this question.</p> <p>Whilst PPM logbook templates have been provided by NHS A&amp;A for water systems, in response to KSAR question 2.7, no evidence has been provided to confirm similar documentation is proposed to be utilised and developed for the ventilation systems.</p> <p><b>Documents referenced are:</b>  2022-09-07 Estates Department Management Structure  NHS AA PPM Exemplar Logsheets  Exchange Information Requirements Appendix  Copy of 2022-10-24 ISS Operational Costs V1.6_FINAL</p>		

### 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	<p><b>UCV Screenless Canopy Specification</b></p> <p>The Operating Theatre Ventilation strategy proposes the use of fully recessed UCV canopies with no down stand / diffuser screens. During the ventilation KSAR Technical Workshop on 7 February 2023 NHS A&amp;A confirmed that the use of this type of UCV canopy was a clinically driven requirement.</p> <p>NHS A&amp;A have advised that the specification of the screenless UCV canopy are still currently under development with the clinical stakeholders via their Equipping Group and would be a Group 1C item that is specified by the Clinical team but supply and installed by the PSCP.</p> <p>It is unclear how the development of the UCV canopy specification has informed the ventilation design strategies within the theatre particularly with respect to services interfaces, co-ordination and access / maintenance considerations.</p>
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3.2.2.2	<p><b>Terminal HEPA Filtration in Prep-Rooms</b></p> <p>The minutes from the Stage 3 Design Review Workshop note that terminal HEPA filters have been included on the supply grilles to the theatre 1 prep-room as it is classified as a 'lay-up'. Terminal HEPA filters have also been specified to the theatre 2 prep-room which NHS A&amp;A have advised would not be used as a 'lay-up'. It is unclear why terminal HEPA filters have been included within the prep-room to theatre 2 that is not proposed to be used as a 'lay-up'.</p> <p>SHTM 03-01 (Clause 8.35) notes that <i>'Where the unpacking of the instruments involves not only the removal of the protective packing but also the opening of the sterile barrier, the supply air to the room must be delivered via a terminal HEPA filter (H12 grade). The system must include constant volume and variable speed controls to ensure that the air flow rates remain constant as the HEPA filter soils'</i>.</p> <p>No evidence has been submitted that provides assurance that the above requirements have been considered and implemented.</p>
3.3.2.3	<p><b>Disposal Hold - Door Interlock Strategy</b></p> <p>The <i>'Operating Theatre Suite &amp; ETR Vent Strategy'</i> report confirms that the proposed theatre suite consists of a shared disposal hold that is noted as 'non-standard' with respect to the layouts noted in Appendix 7 of SHTM 03-01 Part A (2022).</p> <p>A door interlock strategy has been proposed within the report, however, the double doors located on the external wall of the disposal hold are fire exit doors within the <i>Fire Strategy</i> report. It is unclear how the fire strategy may impact on the proposed interlocking strategy and the associated impact on the adjacent theatre suites.</p>
3.3.2.4	<p><b>AHU Specification</b></p> <p>The AHU schedules submitted for review are not sufficiently detailed to demonstrate compliance with SHTM 03-01 Part A. Omissions include on/off coil temperatures, specific fan powers, acoustic data, filter classifications, electrical data, fan &amp; drive type. In the absence of this information, it is unclear how NHS A&amp;A will ensure the PSCP, and supply chain will provide a compliant specification.</p>
3.3.2.5	<p><b>Air Source Heat Pump – Resilience</b></p> <p>The heating (low temperature hot water) and cooling (chilled water) requirements for the ventilation plant (including critical ventilation systems such as the operating theatres and enhanced treatment room) are satisfied by a single simultaneous, bivalent Air Source Heat Pump (ASHP).</p> <p>The ASHP consists of two compressors with associated refrigeration circuit. In the event of a compressor failure the ASHP will only be capable of provided 50% capacity.</p>

	<p>NHS A&amp;A have provided no evidence to confirm that the system resilience proposals have been reviewed by the relevant stakeholders and that an appropriate risk assessment has been undertaken.</p>
<p><b>3.3.2.6</b></p>	<p><b>Peri-op Rooms - Clean Air Flow Paths</b></p> <p>The minutes from the RIBA Stage 3 MEP design review workshop note that the Peri-Op rooms are classed as Stage 1 recovery areas and provided with supply and extract terminals at high level. No low-level extract is currently provided within the peri-op rooms.</p> <p>SHTM 03-01 (paragraph 5.59) notes for recovery areas.</p> <p><i>'The philosophy of establishing a clean airflow path – from the air-supply point, past the breathing zone of the staff, on to the patient or other source of airborne hazard, and out via a low-level extract – would also apply in recovery rooms, birthing rooms, bronchoscopy rooms, laboratories and post-mortem rooms.'</i></p>
<p><b>3.3.2.7</b></p>	<p><b>Enhanced Treatment Rooms</b></p> <p>The Enhanced Treatment Rooms ventilation design adopts a similar 'hierarchy of cleanliness' principles and functionality to operating theatres, however, the layouts and ventilation principles are not aligned with any specific layout or process flows detailed within SHTM 03-01 guidance.</p>

## 3.4 Electrical

### 3.4.1 Electrical: KSAR Observations

Workbook Ref No.	Areas to probe	Evidence expected
4.1	Has the Health Board completed competency checks on the electrical consultant designers?	<p>Recorded evidence that the design team are experienced and have a comprehensive knowledge of the relevant design standards.</p> <p>Where anyone does not have a record of extensive health care experience what recorded plans are to be put in place by the Consultant Designers?</p> <p>Recorded evidence that input from the Health Boards Authorising Engineer for Electrical (AE(E)) has been requested.</p> <p>Evidence that all contractors and sub-contractor competency checks have been completed and signed off.</p>
<p><b>NHS Scotland Assure Observations:</b> The observations noted in response to KSAR question 2.1 apply to this question with respect to electrical consultant designers.</p> <p><b>Documents referenced are:</b>            2.2 Key Personnel Project Experience            2.3 Key Personnel Project Allowance            2021-10-28 BB Feedback Letter            NHS A+A NTC 'PSCP' MEP Contractor CVs            NHS Treatment Centre Ayrshire CDM SKE Confirmation            NTC NHS A&amp;A - HLIP Submission 'PSCP'</p>		

Workbook Ref No.	Areas to probe	Evidence expected
4.2	How does the Health Board ensure that electrical services are being designed in a fashion which will provide ease of access for future maintenance, and which will retain space for minor additions and	<p>Evidence that the designers have presented their co-ordination drawings (BIM model) to the Board.</p> <p>Evidence that the designers have presented each of the main service runs plus plant rooms to the Health Board's FM team.</p>



	modifications to services in the future?	<p>Evidence that the Board has agreed a strategy (percentage) for spare capacity and a documented allowance has been incorporated into the design.</p> <p>Are sub stations, switch rooms, distribution board cupboards, horizontal distribution runs and risers appropriately sized for the equipment being installed and facilitate safe, adequate maintenance.</p>
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### **NHS Scotland Assure Observations:**

NHS A&A have provided electrical containment services layout drawings, electrical equipment layout drawings, co-ordinated sections, equipment schedules and a specification that details the technical design strategies at FBC stage.

The general MEP building services observations noted in response to KSAR question 2.2 also apply to this question. In addition to these general observations NHS SA also note the following observations with respect to electrical services.

From the evidence provided on the electrical systems it is unclear if NHS A&A and the PSCP designers have agreed the final strategy for spare capacity on the electrical systems. The project brief document stated a requirement for 25% spare capacity on all electrical systems including, transformers, LV switchboards, standby generators, lighting and small power distribution boards and containment systems. This was also discussed during some of the MEP design workshops and noted in the minutes. The current design information provided by the PSCP designers states a spare capacity allowance of 20%. This was discussed during the KSAR electrical workshop of the 6 February 2023 where the PSCP's designers agreed to review with NHS A&A what, if any, implications there would be to providing the 25% spare capacity.

Electrical equipment layout drawings have been provided for the substations, LV switch rooms, UPS switchboard and equipment rooms, distribution board cupboards and risers. It is unclear from the drawings provided on what basis the rooms and equipment have been sized. There are no dimensions on any of the equipment and no access and maintenance zones are indicated on the drawings. It is unclear if the rooms have been sized based on 'rules of thumb' or based on actual equipment sizes. There is no evidence to confirm that NHS A&A have reviewed the spatial allowances within the electrical rooms to ensure that they are adequately sized for the equipment and to provide safe access for maintenance purposes.

NHS SA note concerns around some of the typical coordinated section details produced in relation to location of services. Several examples of piped services running very close and directly above electrical containment systems are shown. Any leaks from the pipework could impact on the electrical systems. Further examples include main containment runs directly above main ductwork runs. There are no details of the support systems for the services in these situations and in some instances, it would be difficult to maintain access to the cable tray and trunking systems. NHS A&A should ensure that these distribution strategies have been

coordinated to ensure safe access and maintenance is provided to all services and that the design has been reviewed, agreed and signed off by NHS A&A estates.

**Documents referenced are:**

*A218H\_NTCA-HUKI-XXXX-B100-D-E-62101 – B1 Ground Floor Electrical*

*Equipment Locations*

*A218H\_NTCA-HUKI-XXXX-B102-D-E-62101 – B1 First Floor Electrical Equipment*

*Locations*

*A218H\_NTCA-HUKI-XXXX-B200-D-E-62101 – B2 Ground Floor Electrical*

*Equipment Locations*

*A218H\_NTCA-HUKI-XXXX-B201-D-E-62101 – B2 First Floor Electrical Equipment*

*Locations*

*A218H\_NTCA-HUKI-XXXX-B300-D-E-62101 – B3 Energy Centre Electrical*

*Equipment Locations*

*A218H\_NTCA-HUKI-XXXX-B100-D-E-61001 – B1 Ground Floor Containment*

*Layout*

*A218H\_NTCA-HUKI-XXXX-B102-D-E-61001 – B1 First Floor Containment Layout*

*A218H\_NTCA-HUKI-XXXX-B200-D-E-61001 – B2 Ground Floor Containment*

*Layout*

*A218H\_NTCA-HUKI-XXXX-B201-D-E-61001 – B2 First Floor Containment Layout*

*A218H\_NTCA-HUKI-XXXX-B202-D-E-61001 – B2 Plant Level Containment Layout*

*A218H\_NTCA-HUKI-XXXX-B300-D-E-61001 – B3 Energy Centre Containment*

*Layout*

*A218H\_NTCA-HUKI-XXXX-XXXX-D-M-50003 – 500013 Mechanical and Electrical  
Typical Coordinated Sections*

*NHS A&A NTC - Design Management Process Report*

*2022-11Nov11 - NHS A&A Stage 3 MEP Design Workshop Minutes*

*2022-12Dec 05 - NHS A&A Stage 4 Design Workshop Minutes*

*A218H\_NTCA-HUKI-XXXX-XX-RP-M-009 – Plant Access & Maintenance Strategy*

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

**NHS Scotland Assure Observations:**

There are currently nine derogations listed within the derogations schedule relating to electrical systems. The rationale and mitigations have been incorporated into the schedule and a meeting has taken place with NHS A&A where it has been recorded that each of the nine items should remain as derogations. Final outcomes and any residual risks have still to be recorded and formal sign-off of each derogation is still required by NHS A&A.

During the KSAR electrical workshop discussions there were some other aspects of the electrical design identified, which could be considered as derogations or

departures/non-compliance from the latest guidance and standards on electrical systems installations, noted as follows:

The use of Arc Flash Detection Devices (AFDD's) in accordance with BS7671 18<sup>th</sup> Edition Amendment 2 clause 710.421.1.17

Routing of services within escape route corridors against requirements of BS 7671 18<sup>th</sup> Edition Amendment 2 clause 422.2.

Provision of Medical IT systems in Group 1 locations in accordance with SHTM 06-01 sections 12.5, 13.25, 16.28, 16.36, 16.38, 16.42, 16.43.

Medical IT equipment located with 30m of final outlets in accordance with SHTM 06-01 clause 16.34.

Compliance with BS7671 and BS 8519 on Fire Rating of incoming cables.

Stacking of containment systems in accordance with SHTM 06-01.

During the KSAR electrical workshop on 6 February 2023 NHS A&A designers advised that they had not fully considered their strategy to the provision of AFDD's and that a risk assessment had not been carried out for the Group 0 locations in accordance with the requirements of BS 7671. Once the final strategy has been agreed there may be a requirement to raise a derogation for parts of the design.

NHS A&A are still to confirm their strategy in relation to BS 7671 18<sup>th</sup> Edition Amendment 2 Regulation 422.2. Electrical services are currently routed within the protected escape route, with no supporting evidence as to how this meets the requirements of the above regulation.

SHTM 06-01 states in a number of parts that Medical IT systems (referred to as IPS within current version of SHTM 06-01) should be considered within Category 4 rooms. The current NHS A&A strategy is proposed to install dual circuits within Category 4 rooms, from alternative distribution boards, rather than utilise UPS/IPS in these rooms. There is no supporting assessment from NHS A&A to review compliance with SHTM 06-01 in this respect or how it impacts on the resilience of the facility.

***Documents referenced are:***

*NHS AA NTC Derogation Schedule Combined 01.12.22*

*NHS A&A NTC MEP Derogation Review 23/11/22022*

*NHS AA Derogation Risk Assessment Template*

*NHS AA Procedure of agreeing and accepting derogations.*

**Workbook  
Ref No.**

**Areas to probe**

**Evidence expected**

4.4	Has the Health Board assured itself of availability of adequate supply from the local utility infrastructure?	<p>Confirmation from the Regional Electricity Company as to how the supply will be provided from their network and if single or dual supplies are being made available.</p> <p>What is the Health Board's resilience strategy for the electrical infrastructure (including dual supplies, renewables, generators, UPS, etc.)?</p>
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#### **NHS Scotland Assure Observations:**

NHS A&A have stated that the supply to the NTC will be provided from the existing SPEN ring circuit currently serving the hospital site. They have stated in the derogation schedule that a single supply only will be provided and that providing a second supply from a different part of the grid would not be practical given the distances this supply would need to come from, and the capital costs and timescales involved.

No evidence has been provided as part of the KSAR submission to demonstrate that discussions with SPEN have taken place and that the option for a second supply has been considered in detail including any cost and programme implications. During the KSAR weekly meetings this item was raised, and NHS A&A advised that early discussions did take place where they were advised by SPEN that it would be cost prohibitive and very difficult to provide the second supply. NHS A&A confirmed this was a verbal confirmation only and the matter was not taken any further.

Evidence has been provided that an application for the new supply and the connection of on-site generation has been submitted to SPEN. Confirmation that the supply capacity is available has not been provided.

NHS A&A have advised that a new ring will be established on site which will serve 2No. new packaged substations providing N+N resilience. A&B transformers will supply A&B LV switch rooms which will be located within an energy centre building within separate 2-hour fire rated rooms and will allow dual resilient A&B supplies to be served throughout the building.

NHS A&A have advised that a single generator will be provided to support the load of the new NTC in the event of a main failure. Refer to section 4.5 for more details on the generator system.

NHS A&A have advised that UPS backed Medical IT equipment will be provided to support and protect final circuit socket outlets within group 2 locations. Refer to KSAR questions 4.5 and 4.8 for more details on the UPS and Medical IT systems.

#### **Documents referenced are:**

*2022-11Nov11 - NHS A&A Stage 3 MEP Design Workshop Minutes*

*2022-12Dec 05 - NHS A&A Stage 4 Design Workshop Minutes*

*NHS A+A NTC - Electrical utility contact*

*NHS AA NTC Derogation Schedule Combined 01.12.22*

*A218H\_NTCA-HUKI-XXXX-XX00-D-E-62001 – Main Electrical Services Schematic*

A218H\_NTCA-HUKI-XXXX-XX00-D-E-62002 – UPS/IPS Distribution Schematic  
A218H\_NTCA-HUKI-XXXX-XX00-D-E-62003 – Standby Generator Schematic  
A218H\_NTCA-HUKI-XXXX-XX-RP-M-012 – MEP Resilience Strategy Report

Workbook Ref No.	Areas to probe	Evidence expected
4.5	Evidence of provisions for emergency supplies during loss of the utility incoming supply.	Floor plans with standby generator locations highlighted plus simple schematic.

#### **NHS Scotland Assure Observations:**

NHS A&A have stated that a single standalone generator will be provided to support the full load of the new NTC. They have stated in the derogation schedule that with the limited space available on site it would be extremely challenging to provide space for two generators, as well as significantly adding to costs and ongoing future servicing and maintenance. In addition, they state that this would also add to the carbon emissions for the site. They have stated in the derogation schedule that the single generator solution is accepted, noting that it will be suitable for full load and that the item should remain as a derogation. NHS SA note that this is a single point of failure, and that NHS A&A should carry out a full risk assessment as part of the derogation process.

During the KSAR electrical workshop on 6<sup>th</sup> February 2023 the load estimates for the building were discussed and it was mentioned that the generator may not be able to support the full load of the building, if the estimated building load including any spare capacity was realised in the future. NHS A&A designers advised that in that instance non-essential loads could be shed, and the generator would continue to support the building essential loads. The main electrical schematic drawing 'A218H\_NTCA-HUKI-XXXX-XX00-D-E-62001' identifies the motorised breakers which would be used for the load shedding and sequence of operations to restore power in the event of a total mains failure. The sequence of operation is also noted on the drawing. NHS A&A designers advised that the load allowances within the load estimates also contained contingency. Whilst NHS SA acknowledge these points, it is essential that NHS A&A satisfy themselves that the proposed generator is suitably sized to meet their requirements. Particularly as it is a requirement for the derogation schedule to support the full load of the building. Also, if the generator was being used in a catastrophic event for a long period of time it may not be suitable to have some non-essential loads switched off.

NHS A&A have confirmed that the generator will be located outside adjacent to the energy centre, within a fire rated, weatherproof, acoustic enclosure. The generators initial step load will be capable of supporting critical loads within the maximum interruption times required by SHTM 06-02. Lighting and small power loads to be re-energised within 15 seconds. A 200 hour bulk fuel store shall be provided within a DEFRA compliant dual skinned tank with duty standby fuel transfer system to meet the requirements of SHTM06-02.

A layout plan showing the location of the generator and fuel tank has been provided for the KSAR review. The main electrical schematic drawing shows the generator feeding onto the A&B LV switchboards and also shows a spare way for a temporary generator to be connected. There is also a separate generator schematic drawing showing the connection details for the generator system. This also shows a connection point for a load bank system for testing purposes if required.

Drawing 'A218H\_NTCA-HUKI-XXXX-XXXX-D-E-61001 – Energy Centre Primary Cable routes' shows the generator supply cables to the LV switchboard A routed through the cable trench with the A substation room. NHS SA have concerns that any major issue within the substation room or with the transformer supply cables could have an impact on the generator supply cables. This item was raised during the KSAR electrical workshop on the 6 February 2023. NHS A&A advised that the area in and around the energy centre building was congested and that routing the cables externally would be difficult, however they did acknowledge the risk and agreed it should be reviewed in more detail. NHS SA recommend NHS A&A review the strategy and any potential risks associated with running both sets of cables within the same trench and agree and sign off the final design intent. We also recommend that NHS A&A review if routing both sets of cables in the same trench would require a derogation from SHTM 06-01 in relation to diverse routing of supplies.

NHS A&A have advised that 2No. A&B UPS systems will be provided to support the critical loads of the building in the event of a mains failure. Each system will be located within separate 2-hour fire rated rooms which are detailed on the electrical equipment location drawings provided. Each UPS system is sized at 60kVA and will be provided with 60 minutes autonomy in accordance with SHTM 06-01.

A UPS/IPS distribution schematic has also been provided for the KSAR review showing the system configuration and connection to the critical loads and the Medical IT systems.

Whilst NHS A&A have provided evidence of provisions for emergency supplies during loss of the utility incoming supply, the items around completing the derogation schedule and the routing of the cables through the substation should be closed out.

***Documents referenced are:***

*2022-11Nov11 - NHS A&A Stage 3 MEP Design Workshop Minutes*

*2022-12Dec 05 - NHS A&A Stage 4 Design Workshop Minutes*

*NHS AA NTC Derogation Schedule Combined 01.12.22*

*A218H\_NTCA-HUKI-XXXX-XX00-D-E-62001 – Main Electrical Services Schematic*

*A218H\_NTCA-HUKI-XXXX-XX00-D-E-62002 – UPS/IPS Distribution Schematic*

*A218H\_NTCA-HUKI-XXXX-XX00-D-E-62003 – Standby Generator Schematic*

*A218H\_NTCA-HUKI-XXXX-XX-RP-M-012 – MEP Resilience Strategy Report*

*A218H\_NTCA-HUKI-XXXX-B100-D-E-62001 – B1 Ground Floor Small Power Layout*

*A218H\_NTCA-HUKI-XXXX-B100-D-E-62101 – B1 Ground Floor Electrical Equipment Locations*

*A218H\_NTCA-HUKI-XXXX-B102-D-E-62101 – B1 First Floor Electrical Equipment Locations*

A218H\_NTCA-HUKI-XXXX-B200-D-E-62101 – B2 Ground Floor Electrical Equipment Locations  
A218H\_NTCA-HUKI-XXXX-B201-D-E-62101 – B2 First Floor Electrical Equipment Locations  
A218H\_NTCA-HUKI-XXXX-B300-D-E-62101 – B3 Energy Centre Electrical Equipment Locations  
A218H\_NTCA-NOCO-XXXX-XXXX-D-A-90010 – Site Plan Proposed

Workbook Ref No.	Areas to probe	Evidence expected
4.6	Is there a strategy for locating substations?	Floor plans with substation locations highlighted plus simple schematic of strategy.
<p><b>NHS Scotland Assure Observations:</b>  NHS A&amp;A have advised that they will provide a dedicated energy centre building which will house 2 new substation rooms, 2 new LV switch rooms and a Medical Gas room. The energy centre will be located external to the south of the new NTC building. This is shown on the layout drawing provided for review.</p> <p>The drawings also show the proposed location for a new SPEN enclosure which will house 2No. SPEN RMU's which will provide the supply to the new substations.</p> <p>NHS A&amp;A have advised that they have asked SPEN to provide the RMU's within 2 separate fire rated enclosures. This has still to be confirmed by SPEN.</p> <p>Drawing 'A218H_NTCA-HUKI-XXXX-XXXX-D-E-61001 – Energy Centre Primary Cable routes' shows the 11kV cable connecting the two substations running through the LV switch rooms and the Medical Gas room at high level. NHS SA asked during the KSAR electrical workshop on the 6 February 2023 if this had been agreed with NHS Estates and also if it would require to be boxed in a 4 sided 2-hour fire rated enclosure to comply with BS 8519.</p> <p>Whilst NHS A&amp;A have demonstrated a strategy for locating substations, there are a few issues which still need resolved and closed out to provide the full assurance that the strategy is fully coordinated, agreed and signed off by the NHS A&amp;A Board.</p> <p><b>Documents referenced are:</b>  A218H_NTCA-HUKI-XXXX-XX00-D-E-62001 – Main Electrical Services Schematic  A218H_NTCA-HUKI-XXXX-B300-D-E-62101 – B3 Energy Centre Electrical Equipment Locations  A218H_NTCA-HUKI-XXXX-XXXX-D-E-61001 – Energy Centre Primary Cable routes</p>		

Workbook Ref No.	Areas to probe	Evidence expected
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4.7	Is there a strategy for locating switch rooms?	Floor plans with switch room locations highlighted plus simple schematic.
<p><b>NHS Scotland Assure Observations:</b></p> <p>NHS A&amp;A have advised that the 2 new LV switch rooms will be located within the external energy centre building located to the south of the new NTC building. This is shown on the layout drawing provided for review.</p> <p>The LV switch rooms will house the main LV switchboards serving the NTC. A &amp; B switch rooms will be provided. They will be separate rooms each with a 2-hour fire rating. A &amp; B switchboards will be connected via a 2-hour fire rated busbar system.</p> <p>NHS A&amp;A have noted in the derogation schedule that SHTM 06-01 advises that LV switch rooms should have a minimum 0.8m clearance on all sides of equipment. NHS A&amp;A intended to provide Main LV Switchboards that only require front and top access so boards can be installed against a wall to save space and construction costs. This has been accepted by NHS A&amp;A on the derogation and noted as to remain on the schedule. The layout drawings provided show u-shaped LV switchboards around the perimeter of the LV switch room. There are no dimensions shown on the drawings or access and maintenance zones. NHS A&amp;A should ensure that sufficient space is provided in front of the panels for safe access and maintenance including any withdrawable elements of the switchgear. NHS SA recommend that these spaces are highlighted on the layout drawings and in the access and maintenance strategy report.</p> <p>NHS A&amp;A advised that the LV cables serving the NTC will be routed from the LV switch rooms in the energy centre to the main building via a fully accessible concrete trench. Once they reach the building the “B” cables enter into the ground floor plantroom and the “A” cables rise up on the outside of the building to enter into the first-floor plant room.</p> <p>The electrical calculations noted in Document ‘A218H_NTCA-HUKI-XXXX-XX-CA-E-62001’ have derating factors based on BICC Data – In underground single way ducts, however, the installation detail on Drawing ‘A218H_NTCA-HUKI-XXXX-XXXX-D-E-61001’ depicts the sub-mains cabling to be installed on cable tray within a 1m x 1m deep cable trench.</p> <p>NHS SA have concerns around the derating factors applied to the cables and how the temperature variations might affect the cables. The cables will be subject to very cold temperatures in the winter and very high temperatures in the summer, particularly those cables running up the south façade of the new building contained within some form of enclosure.</p> <p>NHS A&amp;A should review the calculations and verify that appropriate derating factors have been applied and that subsequently the cable trench details, containment sizes, entry into the building plantrooms etc can be demonstrated.</p> <p>Whilst NHS A&amp;A have demonstrated a strategy for locating switch rooms, there are a few issues which still need resolved and closed out to provide the full assurance</p>		



that the strategy is fully coordinated and agreed and signed off by the NHS A&A Board.

**Documents referenced are:**

A218H\_NTCA-HUKI-XXXX-XX00-D-E-62001 – Main Electrical Services Schematic

A218H\_NTCA-HUKI-XXXX-XX00-D-E-62002 – UPS/IPS Distribution Schematic

A218H\_NTCA-HUKI-XXXX-XX-RP-M-012 – MEP Resilience Strategy Report

A218H\_NTCA-HUKI-XXXX-B100-D-E-62001 – B1 Ground Floor Small Power Layout

A218H\_NTCA-HUKI-XXXX-B100-D-E-62101 – B1 Ground Floor Electrical Equipment Locations

A218H\_NTCA-HUKI-XXXX-B102-D-E-62101 – B1 First Floor Electrical Equipment Locations

A218H\_NTCA-HUKI-XXXX-B200-D-E-62101 – B2 Ground Floor Electrical Equipment Locations

A218H\_NTCA-HUKI-XXXX-B201-D-E-62101 – B2 First Floor Electrical Equipment Locations

A218H\_NTCA-HUKI-XXXX-B300-D-E-62101 – B3 Energy Centre Electrical Equipment Locations

A218H\_NTCA-HUKI-XXXX-XXXX-D-E-61001 – Energy Centre Primary Cable routes

A218H\_NTCA-HUKI-XXXX-XX-CA-E-62001 - Trimble ProDesign calculations

Workbook Ref No.	Areas to probe	Evidence expected
4.8	Is there a strategy for locating Medical IT distribution equipment?	<p>Floor plans with Medical IT board locations highlighted plus simple schematic.</p> <p>Compliance with BS7671 section 710</p> <p>Compliance with SHTM 06-01</p>

**NHS Scotland Assure Observations:**

Layout drawings highlighting the locations of the Medical IT equipment have been produced and provided for the KSAR review. A UPS/IPS system distribution schematic drawing has also been provided showing the system configuration.

NHS A&A have advised that Medical IT equipment will be provided to group 2 locations only, which for the NTC will be Theatres, Enhanced Treatment Room and Peri-op rooms.

The Medical IT equipment locations identified on the drawings for the Theatre and Enhanced treatment rooms are currently shown in open corridor spaces adjacent trolley bays between the theatre rooms. This was discussed with NHS A&A during the KSAR electrical workshop of 6 February 2023. NHS A&A confirmed that they were working with the project architects and departmental operations teams to coordinate final locations for the equipment. NHS A&A confirmed that 2-hour fire rated cupboards would be formed to house the units and that separate cupboards would be provided for A & B systems. Environmental conditions within medical IT equipment locations shall comply with SHTM 06-01-part A, Clause 16.3.4.

NHS A&A also advised that the location of the Medical IT equipment currently shown on the drawings for the Peri-op spaces was also being changed. The equipment was being moved to a more central location within the Peri-op department.

NHS A&A also advised that although they were locating the equipment as centrally as possible to the departments being served by the equipment, they would probably not be able to fully comply with the requirements of SHTM 06-01 which requires equipment to be housed within 30m of the room sockets outlets served. NHS A&A advised they would be adding this to the derogation schedule and agreeing this derogation with NHS A&A estates.

**Documents referenced are:**

*A218H\_NTCA-HUKI-XXXX-XX00-D-E-62001 – Main Electrical Services Schematic*

*A218H\_NTCA-HUKI-XXXX-XX00-D-E-62002 – UPS/IPS Distribution Schematic*

*A218H\_NTCA-HUKI-XXXX-XX-RP-M-012 – MEP Resilience Strategy Report*

*A218H\_NTCA-HUKI-XXXX-B100-D-E-62001 – B1 Ground Floor Small Power Layout*

*A218H\_NTCA-HUKI-XXXX-B100-D-E-62101 – B1 Ground Floor Electrical Equipment Locations*

*A218H\_NTCA-HUKI-XXXX-B102-D-E-62101 – B1 First Floor Electrical Equipment Locations*

*A218H\_NTCA-HUKI-XXXX-B200-D-E-62101 – B2 Ground Floor Electrical Equipment Locations*

*A218H\_NTCA-HUKI-XXXX-B201-D-E-62101 – B2 First Floor Electrical Equipment Locations*

Workbook Ref No.	Areas to probe	Evidence expected
4.9	Is there a strategy for distribution?	Floor plans with containment distribution routing (horizontal and vertical).

**NHS Scotland Assure Observations:**

NHS A&A have produced a detailed HV / LV schematic drawing which shows the main electrical distribution strategy for the building.

NHS A&A have also produced 2-D containment drawings which highlight the main electrical primary distribution routes. NHS A&A have also produced multi-service typical coordinated section drawings showing coordination and stacking of services within main service routes.

The current strategy routes all the main services through the main corridors of the building. This includes ventilation ductwork, water services pipework and electrical cabling and containment systems.

BS7671 18<sup>th</sup> Edition Amendment 2 Regulation 422.2 states “Cables or other electrical equipment shall not be installed in protected escape routes unless part of:

- (i) *an essential fire safety or related safety system*
- (ii) *general needs lighting*

(iii) *socket-outlets provided for cleaning or maintenance.”*

The current distribution strategy routes all main electrical services through the main corridors. NHS SA raised this with NHS A&A in the KSAR electrical KSAR workshop of 6<sup>th</sup> February 2023 as this could have a significant risk to the routing of services and spatial coordination of services throughout the building.

NHS A&A advised that this would be risk assessed. NHS SA noted that this will also need to be reviewed with Building Control and other relevant stakeholders such as the local fire officer and fire engineer.

The electrical distribution strategy proposed for the building provides resilient via A and B supplies. A+B substations will feed A+B LV switch rooms and A+B LV strings will be distributed around the building. NHS A&A have confirmed that diverse routing of A+B LV cables will be provided. These are generally routed on different floors of the building.

NHS A&A stated during the KSAR electrical workshop on the 6 February 2023 that, in general, they are stacking the electrical containment systems in the opposite order to those highlighted within SHTM 06-01 and that they would add this to the derogation schedule. NHS A&A should ensure that they review this strategy and ensure it is agreed and signed off by all relevant parties.

Refer to note in KSAR question 4.2 relating to the coordinated services drawings.

***Documents referenced are:***

*A218H\_NTCA-HUKI-XXXX-XX00-D-E-62001 – Main Electrical Services Schematic*

*A218H\_NTCA-HUKI-XXXX-B100-D-E-61001 – B1 Ground Floor Containment Layout*

*A218H\_NTCA-HUKI-XXXX-B102-D-E-61001 – B1 First Floor Containment Layout*

*A218H\_NTCA-HUKI-XXXX-B200-D-E-61001 – B2 Ground Floor Containment Layout*

*A218H\_NTCA-HUKI-XXXX-B201-D-E-61001 – B2 First Floor Containment Layout*

*A218H\_NTCA-HUKI-XXXX-B202-D-E-61001 – B2 Plant Level Containment Layout*

*A218H\_NTCA-HUKI-XXXX-B300-D-E-61001 – B3 Energy Centre Containment Layout*

*A218H\_NTCA-HUKI-XXXX-XXXX-D-E-61001 – Energy Centre Primary Cable routes*

*A218H\_NTCA-HUKI-XXXX-XXXX-D-M-50003 – 500013 Mechanical and Electrical Typical Coordinated Sections*

<b>Workbook Ref No.</b>	<b>Areas to probe</b>	<b>Evidence expected</b>
<b>4.10</b>	Is there evidence of the Health Board developing electrical commissioning proposals?	Evaluation of the suitability of the proposed plans in the context of the FBC, are these sufficient do they meet the

		requirements of the project, guidance and the design of the system?  Has sufficient time been allocated for a full commissioning program?
<p><b>NHS Scotland Assure Observations:</b> NHS A&amp;A have provided various documents, as noted in response to KSAR question 2.6, that details the technical design commissioning strategies developed for FBC stage.</p> <p>The general MEP building services observations noted in response to KSAR Workbook question 2.6 also apply to this question. In addition to these general observations NHS SA also note the following observations with respect to the electrical services commissioning proposals:</p> <ul style="list-style-type: none"> <li>NHS A&amp;A have not produced a detailed commissioning brief for the project. The electrical specification document includes a few generic clauses around testing and commissioning and inspection and testing.</li> <li>SHTM 06-01 describes the Validation and Commissioning procedures required to be covered in the brief document. It includes sample test record sheets which cover the main electrical systems witnessing and testing requirements. SHTM 06-01 also refers to the CIBSE Commissioning Manual which contains guidance on commissioning techniques for building services and general commissioning strategies.</li> </ul> <p><b>Documents referenced are:</b> A218H_NTCA-HUKI-XXXX-XX-SP-E-001 – Electrical Specification ITP-NTC-E-01 – Inspection and Test Plan Detailed Template Form S21029 NHS AA Mini Elective CP01 06Dec22 Summarised Construction Prog with Commissioning Prog Shown</p>		

Workbook Ref No.	Areas to probe	Evidence expected
4.11	Has the Health Board starting on its early thinking for the electrical governance arrangements for the operational phase?	Has the Health Board commenced its planning and recorded how it will ensure appropriate trained staff and appointment of AE for the project and is it clear how this project will interface with the Health Board existing arrangements for management of the electrical installations, inclusive of third-party providers?
<p><b>NHS Scotland Assure Observations:</b> NHS A&amp;A have provided various documents, as noted in response to question 2.5, that provides assurance on the development of electrical governance arrangements. The general MEP building services observations noted in response to KSAR Workbook question 2.5 also apply to this question.</p>		

In addition to this evidence, other documentation that has been provided in relation to specific electrical governance matters includes evidence of the appointment of the AE to act as the health board's independent expert, engagement with the AE (E) throughout RIBA Stage 3 and 4, and stakeholder workshop minutes.

NHS A&A have provided evidence that they have appointed an Electrical AE for the project. They have included details of the scope of the appointment and the roles and responsibilities of the AE.

NHS A&A have submitted minutes from the electrical systems design workshops for the new NTC. These demonstrate that the appointed AE for the project was in attendance at the workshops and has reviewed the electrical systems design for the building.

NHS A&A have produced '*PN23 – Health & Safety Manual - Electricity at Work*' for the project. This report has been produced to support a commitment made by NHS A&A to ensure that the risks to staff and others of death, danger or personal injury from exposure to electrical hazards at work are adequately controlled and that all electrical systems are maintained to a high standard. This report does not preclude the requirements on the Estates Department to have their own clearly defined electrical safety procedures for the operation and servicing of electrical systems and equipment.

**Documents referenced are:**

*PN23 – Health & Safety Manual - Electricity at Work*

*A218H\_NTCA-BBGL-XX-XX-MI-PP-HV001 – HV/LV Design Workshop 25/05/22*

*A218H\_NTCA-BBGL-XX-XX-MI-PP-HV003 – HV/LV Design Workshop 15/08/22*

*Xxxx Xxxxx XXXXX\_NHS Letter of Appointment*

*Ayrshire Arran Off site support New Project Aug 22*

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

**NHS Scotland Assure Observations:**

NHS A&A have provided various documents, as noted in response to question 2.7, that provides detail on the development of their PPM proposals for the project.

The general MEP building services observations noted in response to KSAR Workbook question 2.7 also apply to this question. In addition to these general observations NHS SA also note the following observations with respect to the electrical services PPM proposals.

Whilst PPM logbook templates have been provided by NHS A&A for water systems, in response on question 2.7, no evidence has been provided to confirm similar documentation is proposed to be utilised and developed for the electrical systems.

**Documents referenced are:**

2022-09-07 Estates Department Management Structure

NHS AA PPM Exemplar Logsheets

Exchange Information Requirements Appendix

Copy of 2022-10-24 ISS Operational Costs V1.6\_FINAL

### 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.

<b>3.4.2.1</b>	<p><b>Gas suppression systems to LV switch rooms / UPS room.</b></p> <p>Although SHTM 06-01 does not specifically call for gas suppression in LV switch rooms or UPS rooms, it states that the fire strategy for these spaces must be agreed with the fire engineers and fire officers. There is no evidence of this within the information provided, that the board has considered gas suppression as recommended in SHTM 81. This should be recorded on either the derogation schedule or risk register and supported by a risk assessment. Refer to 3.6.2.4 of the Fire safety section of the report.</p>
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## 3.5 Medical Gases

### 3.5.1 Medical Gases: KSAR Observations

Workbook Ref No.	Areas to probe	Evidence expected
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5.1	Has the Health Board completed competency checks on the medical gases consultant designers?	<p>Recorded evidence that the design team are experienced and have a comprehensive knowledge of the relevant design standards.</p> <p>Where anyone does not have a record of extensive health care experience what recorded plans are to be put in place by the consultant designers?</p> <p>Recorded evidence that input from the Health Boards Authorising Engineer for Medical Gases (AE(MG)) has been requested.</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:**

The observations noted in response to KSAR Workbook question 2.1 apply to this question with respect to medical gas consultant designers.

**Documents referenced are:**

2.2 Key Personnel Project Experience

2.3 Key Personnel Project Allowance

2021-10-28 BB Feedback Letter

2022-11Nov11 - NHS A&A Stage 3 MEP Design Workshop Minutes

2022-12Dec 05 - NHS A&A Stage 4 Design Workshop Minutes

A218H\_NTCA-BBGL-XX-XX-MI-PP-MG001

A218H\_NTCA-BBGL-XX-XX-MI-PP-MG002

A218H\_NTCA-BBGL-XX-XX-MI-PP-MG003

AC12308429 XXX

AE (MGPS) NHS AA NTC Stage 3 Support Fee Proposal

'PSCP' Business Collaborator\_ TQRFI-medical gases

NHS A+A NTC 'PSCP' MEP Contractor CVs

NHS Treatment Centre Ayrshire CDM SKE Confirmation

NTC NHS A&A - HLIP Submission 'PSCP'

RE\_ NTC Stage 3 Design Review Sign Off

SGS042 - NHS AA AE Appointment Signed

Workbook Ref No.	Areas to probe	Evidence expected
5.2	How does the Health Board assure itself that all variations / derogations' which may be required to medical gas systems are	Evidence that each variation / derogation has a detailed technical analysis and has been referred to the Board and agreed with their medical gases management

	being investigated and agreed by all parties before they are instigated?	group, clinical, Estates, infection control and FM teams.
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### **NHS Scotland Assure Observations:**

Whilst the information submitted for review by the health board provides assurance that there is a formal derogations process and that medical gas system derogations have been recorded, no evidence has been provided to confirm that the proposed derogations have been appraised, risk assessed and sign-off by the relevant parties in accordance with the NHS A&A derogations process. NHS A&A have confirmed during the KSAR process that their final governance reviews for the FBC submission are still being finalised.

'Derogation Schedule 01-12-2022' lists two derogations relating to medical gas systems. Additionally, there are elements of the design proposals submitted for review that may not be compliant with relevant guidance, with no recorded review of potential non-compliances by NHS A&A. These include but are not limited to:

- Medical Air 4 bar not provided to in-patient ward bedrooms

For further observations on the derogations process, refer to the response to question 2.3.

### **Documents referenced are:**

*2022-11Nov23 - NHS A&A NTC MEP Derogation Review*

*2022-11Nov30 - NHS A&A NTC Architectural Derogation Review*

*A218H\_NTCA-HUKI-XXXX-B100-D-M-544001*

*A218H\_NTCA-HUKI-XXXX-B102-D-M-544001*

*A218H\_NTCA-HUKI-XXXX-B200-D-M-544001*

*A218H\_NTCA-HUKI-XXXX-B201-D-M-544001*

*A218H\_NTCA-HUKI-XXXX-B202-D-M-544001*

*A218H\_NTCA-HUKI-XXXX-XX-SP-M-002*

*A218H\_NTCA-HUKI-XXXX-XXXX-D-M-544001*

*A218H\_NTCA-HUKI-XXXX-XXXX-D-M-544002*

*A218H\_NTCA-HUKI-XXXX-XXXX-D-M-544003*

*A218H\_NTCA-HUKI-XXXX-XXXX-D-M-544004*

*A218H\_NTCA-HUKI-XXXX-XXXX-D-M-544005*

*A218H\_NTCA-HUKI-XXXX-XXXX-D-M-544006*

*NHS AA Derogations Risk Assessment Template*

*NHS AA NTC Derogation Schedule Combined 01.12.22*

*NHS AA Procedure for agreeing and accepting derogations*

*NHS AA Risk Assessment detail template*

*NHS AA Risk Management Strategy*



Workbook Ref No.	Areas to probe	Evidence expected
5.3	How does the Health Board ensure that medical gas services are designed in a fashion, which will provide ease of access for future maintenance, and which will retain space for minor additions and modifications to services in the future	<p>Evidence that the designers have presented their co-ordination drawings (BIM model) to the Board.</p> <p>Evidence that the designer has presented each of the main service runs to the Board's FM team.</p>

#### NHS Scotland Assure Observations:

NHS A&A have provided medical gas layout drawings, coordinated services drawings, BIM model, schematics and alarm drawings that provide the technical design strategies at FBC stage.

The general MEP building services observations noted in response to KSAR Workbook question 2.2 also apply to this question. In addition to these general observations NHS SA also note the following observations with respect to medical gas services.

- With reference to coordinated drawing 'A218H\_NTCA-HUKI-XXXX-XXXX-D-M-50003' it appears medical gas pipework is installed within a concrete slab. It is unclear if NHS A&A have risk assessed these proposals as this servicing arrangement is not permitted within SHTM 02-01 (paragraph 13.9).

#### Documents referenced are:

*Medical Gas Layout Drawings (multiple)*

*Medical Gas Schematic Drawings (multiple)*

*Mechanical & Electrical Typical Coordinated Sections (multiple drawings)*

*2022-11Nov11 - NHS A&A Stage 3 MEP Design Workshop Minutes*

*2022-12Dec 05 - NHS A&A Stage 4 Design Workshop Minutes*

*A218H\_NTCA-BBGL-XX-XX-MI-PP-MG001*

*A218H\_NTCA-BBGL-XX-XX-MI-PP-MG002*

*A218H\_NTCA-BBGL-XX-XX-MI-PP-MG003*

*A218H\_NTCA-HUKI-XX-XX-M2-ME-00001*

*NHS A+A NTC - BIM model Access*

*RE\_ NTC Stage 3 Design Review Sign Off*

Workbook Ref No.	Areas to probe	Evidence expected
5.4	Is there evidence of the Health Board developing medical gases commissioning proposals?	Evaluation of the suitability of the proposed plans in the context of the FBC are these sufficient do they meet the requirements of the project, guidance and the design of the system?

**NHS Scotland Assure Observations:**

NHS A&A have provided various documentation, as noted in response to KSAR question 2.6, that details the technical design commissioning strategies developed for FBC stage.

The general MEP building services observations noted in response to KSAR question 2.6 also apply to this question. In addition to these general observations NHS SA also note the following observations with respect to the medical gas services commissioning proposals:

- A medical gas specification covers the system commissioning requirements however there is no evidence confirming that plans have been developed for the independent inspection and verification (by the health boards AP/CSO) and validation by the Quality Controller (QC) for the medical gas systems.

**Documents referenced are:**

*ITP-NTC-M-01*

*NTC Ayr Environmental Matrix Latest Draft 18112022*

*NHS A+A NTC - BIM model Access*

*S21029 NHS AA Mini Elective CP01 06Dec22 Detailed Construction Programme*

*S21029 NHS AA Mini Elective CP01 06Dec22 Summarised Construction Prog with Commissioning Prog Shown*

*S21029 NHS AA Mini Elective CP01 06Dec22 Summarised Construction Programme*

*NHS A+A NTC Technical Commissioning statement*

*NHS AA NTC KSAR Testing Commissioning*

Workbook Ref No.	Areas to probe	Evidence expected
5.5	Has the Health Board started developing its medical gases governance arrangements for the operational phase?	Is the Health Board considering how it will ensure appropriate numbers of trained staff (AP and CP) and AE(V) for the project? And is it clear how this project will interface with the Board existing arrangements for management of the medical gases installations?

**NHS Scotland Assure Observations:**

NHS A&A have provided various documents, as noted in response to question 2.5, that provides evidence on the development of medical gas governance arrangements. In addition to this evidence other documentation that has been provided in relation to specific medical gas governance matters includes evidence of the appointment of the AE to act as the health board's independent expert, engagement with the AE (MG) throughout RIBA Stage 3 and 4, and stakeholder workshop minutes.

The general MEP building services observations noted in response to KSAR question 2.5 also apply to this question. In addition to these general observations, NHS SA also note the following observations with respect to medical gas governance arrangements:

- A medical gas terms of reference (TOR) document has been provided for the health board's Medical Gas Committee (MGC). Whilst there is evidence to confirm that members of the MGC committee have been consulted on the proposed medical gas solutions there is no evidence to confirm how the project interfaces with the MGC.

**Documents referenced are:**

2021-06-01 LOP MGPS UHA

2022-09-07 Estates Department Management Structure

CAP\_AP\_CP appointments SOUTH

Copy of 2022-10-24 ISS Operational Costs V1.6\_FINAL

MGC ToR August 2020

Workbook Ref No.	Areas to probe	Evidence expected
5.6	Is there recorded evidence of a strategy for bulk gas and bottle gas storage?	<p>Floor plans with vacuum insulated evaporator (VIE) locations highlighted plus simple schematic of strategy.</p> <p>Confirmation that the medical gas strategy is adequate.</p> <p>Floor plans with pipework distribution routing and manifold locations.</p>

**NHS Scotland Assure Observations:**

NHS A&A have provided information for the medical gas systems in the form of layouts, schematics and a specification.

The level of detail provided for review at this stage does not fully demonstrate the verification of the VIE and manifold capacities. Future spare capacity has also not been provided.

NHS A&A have described their strategy for locating the oxygen VIE and gas bottle store / manifold room, however, the location is not fully defined and has not been identified on masterplan or landscape drawings. No assurance has been provided that the safety distances from the VIE have been considered in line with 'SHTM 02-01 Part A' Clauses (6.54 - 6.59) and as specified in the British Compressed Gases Association's (BCGA) 'Code of Practice 19 (CP19): Bulk liquid oxygen storage at users' premises'. NHS A&A to ensure that the final position of the VIE and bottle store / manifold room is reviewed, in line with relevant guidance and identified within the design drawings.

NHS A&A have not provided evidence that they have carried out a detailed risk assessment to evaluate the required separation safety distances and evaluate gas supply capacities.

It is noted that gas bottle manifolds are supplying the MA4 system. SHTM 02-01 suggests where ventilators are used then air compressors are provided. There is no evidence provided to confirm that NHS A&A have risk assessed this system for resilience where ventilators might be used now or in the future.

It is noted that SA7 air is supplied via a manifold. No assurance has been provided to confirm that the manifold system is sufficient to supply surgical tools.

It is noted on drawing 'A218H\_NTCA-HUKI-XXXX-B200-D-M-544001' that MA4 and SA7 is in same trench. There is no supporting risk assessment provided to support this installation proposal.

The medical gas layout drawings also do not currently show the room labelling or fixed furniture and equipment (FFE) layouts.

**Documents referenced are:**

*Medical Gas Layout Drawings (multiple)*  
*Medical Gas Schematic Drawings (multiple)*  
*A218H\_NTCA-HUKI-XXXX-XX-SP-M-002*  
*SGS042 - NHS AA AE Appointment Signed*

Workbook Ref No.	Areas to probe	Evidence expected
5.7	Evaluation of the Health Boards planned preventative maintenance (PPM) proposals	Has the Health Board commenced its planning and recorded the PPM requirements and approach to ensure appropriate levels of maintenance, comprehensive statutory compliance and robust management processes?
<p><b>NHS Scotland Assure Observations:</b></p> <p>NHS A&amp;A have provided various documents, as noted in response to KSAR question 2.7, that provides evidence on the development of their PPM proposals for the project. The general MEP building services observations noted in response to KSAR question 2.7 also apply to this question. In addition to these general observations NHS SA also note the following observations with respect to the ventilation services commissioning proposals.</p> <ul style="list-style-type: none"> <li>A generic statement (<i>NHS A&amp;A NTC KSAR MG PPM</i>) has been provided by NHS A&amp;A for medical gas systems. The '<i>Exchange Information Requirements</i>' schedule has a single line item for "medical and laboratory gas supply systems"; however, it is noted that there are no project maintainable assets. The PPM proposals for medical gases requires further development.</li> </ul> <p><b>Documents referenced are:</b></p> <p><i>NHS AA NTC KSAR MG PPM</i>  <i>2022-09-07 Estates Department Management Structure</i>  <i>2021-06-01 LOP MGPS UHA</i>  <i>NHS AA PPM Exemplar Logsheets</i>  <i>Exchange Information Requirements Appendix</i></p>		

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### 3.5.2 Medical Gases: 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.

3.5.2.1	<p><b>Medical Gas Supply Risk Assessment</b></p> <p>No evidence of a risk assessment being undertaken for the medical gas systems that confirms the final capacities &amp; calculations, resilience and VIE/manifold compound locations. The risk assessment should consider all issues concerning the safety and continuity of the medical gas supplies. Identified risk factors and criteria should be evaluated using both qualitative and quantitative measures, and all results recorded in a logical manner that supports the decisions being made including change control procedures. The record of the risk assessment will also need to act as a reference document when the system is reviewed.</p>
3.5.2.2	<p><b>AGSS Pump Control</b></p> <p>A bypass header arrangement has been introduced on the AGSS pump system. The evidence provided does not detail the individual pump control and integration with theatre control panels.</p>

## 3.6 Fire Safety

### 3.6.1 Fire Safety: KSAR Observations

Workbook Ref No.	Areas to probe	Evidence expected
6.1	Has the Health Board completed competency checks on the Fire Engineering consultant designers?	<p>Recorded evidence that the design team are experienced and have a comprehensive knowledge of the relevant design standards applicable to healthcare premises.</p> <p>Recorded evidence that input from the Health Boards Fire Advisors has been requested.</p> <p>Evidence that all contractors and sub-contractor competency checks have been completed and signed off.</p>
<p><b>NHS Scotland Assure Observations:</b>            NHS A&amp;A has carried out competency checks that demonstrate the lead fire engineer has the relevant qualifications and healthcare experience.</p> <p><b>Documents referenced are:</b>            NHS Ayrshire &amp; Arran Ref: FS3/A&amp;A/01 Appendix 2.2   Key Personnel Project Experience Pro-Forma            NHS Ayrshire &amp; Arran Ref: FS3/A&amp;A/01 Appendix 2.3   Key Personnel Project Allowance</p>		

Workbook Ref No.	Areas to probe	Evidence expected
6.2	Has a written fire strategy been completed, and does it provide evidence, where there is a variance from statutory and mandatory guidance, that an equivalent level of safety has been achieved by alternative means?	<p>Is there documented evidence that fire suppression systems have been considered for life safety and property protection?</p> <p>Is progressive horizontal evacuation available for all patient areas that continuously moves away from the fire area?</p> <p>Does the design considerations of the fire and detection system, for in-patient facilities, provide L1 coverage including voids?</p> <p>Does the design provide for a compliant emergency lighting system?</p>

		<p>Are free swing arm self-closers fitted to all leafs of doors serving sleeping accommodation?</p> <p>Have escape lifts been considered for the evacuation of patients and others with mobility issues?</p> <p>Are multi sensor fire detectors installed to reduce the occurrence of unwanted fire alarm signals?</p> <p>Are there adequate storage facilities to ensure escape routes are not used for this purpose?</p> <p>Are measures in place to provide safe charging of electrical and personal electronic equipment?</p> <p>In addition to the prescribed list in the Building Standards Technical Handbook, have fire hazard rooms been designated based on fire load?</p> <p>Where there is a mechanical ventilation system - have all compartments, sub-compartments and corridors serving sleeping accommodation been designed to be fitted with fire and smoke dampers?</p>
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**NHS Scotland Assure Observations:**

The fire strategy provided by the Board, the document titled '7628 – NHS Ayrshire & Arran, National Treatment Centre 'FIRE STRATEGY REPORT FEBRUARY 2023' is, in general, a replication of building standards and does not detail how these standards will be applied to the healthcare facility.

A KSAR Fire Safety Workshop was held on 08/02/2023 and the Fire Engineer talked NHS SA through the fire strategy and proposed amendments, in principle the proposed changes appeared to meet the technical requirements, however, further clarification is required for some specific elements, which will require to be reviewed by NHS SA and the board fire safety advisor.

***Documents referenced are:***

*'7628 – NHS Ayrshire & Arran, National Treatment Centre 'FIRE STRATEGY REPORT JANUARY 2023'*

Workbook Ref No.	Areas to probe	Evidence expected
6.3	How does the Health Board assure itself that all variations / derogations, which may be required to fire systems, are investigated and agreed by all parties before they are instigated?	Evidence that each variation / derogation and any fire engineering proposals are being referred to the Board and agreed with their fire safety advisors, NDAP group, clinical, engineering, Infection Prevention and Control, FM teams and regulatory authorities.
<p><b>NHS Scotland Assure Observations:</b>  The Board have provided assurance that they have in place a '<i>procedure for agreeing and accepting derogations</i>', however, there is limited evidence within the fire strategy to provide assurance that the variations from NHS Firecode meet or exceed the appropriate standard by an alternative means.</p> <p><b>Documents referenced are:</b>  '7628 – NHS Ayrshire &amp; Arran, National Treatment Centre 'FIRE STRATEGY REPORT JANUARY 2023'</p>		

Workbook Ref No.	Areas to probe	Evidence expected
6.4	How does the Health Board assure itself that all fire dampers and fire/smoke dampers are designed to allow for inspection, resetting and maintenance?	Safe and adequate access has been allocated on both sides of all fire dampers for maintenance.
<p><b>NHS Scotland Assure Observations:</b>  Drawing number '<i>A218H_NTCA-HUKI-XXXX-B200-D-M-57001.pdf</i>' states that inspection access will be provided.  As noted in the response to KSAR question 3.6, whilst drawings have been provided confirming the locations of dampers, including fire / smoke dampers, there is limited information on the sectional drawings provided that confirms and demonstrates the means of safe access to the dampers.</p> <p><b>Documents referenced are:</b>  <i>A218H_NTCA-HUKI-XXXX-B200-D-M-57001.pdf</i></p>		

Workbook Ref No.	Areas to probe	Evidence expected
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6.5	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 is being designed by an accredited Fire Engineer.</p> <p>Evidence that Building Control are being consulted.</p> <p>Confirmation that the Health Boards fire advisors and NDAP team are satisfied with the design proposal.</p>
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**NHS Scotland Assure Observations:**

The fire strategy provided does not offer sufficient information to allow a determination to be made as to whether smoke control is fit for the purpose. The strategy quotes the technical requirements and states that it is '*understood that ventilation will be provided*'. However, it is not clear what type of smoke control is to be installed. The Board has agreed to review the existing fire strategy and once completed NHS SA will be provided a copy of the most current version.

**Documents referenced are:**

'7628 – NHS Ayrshire & Arran, National Treatment Centre 'FIRE STRATEGY REPORT JANUARY 2023'

Workbook Ref No.	Areas to probe	Evidence expected
6.6	Has the Health Board started the development of the fire system outline commissioning proposals?	Is there an established fire management group that will ensure the fire strategy is adhered to?

**NHS Scotland Assure Observations:**

As noted earlier in the KSAR, the health board do not yet have in place an overarching commissioning plan. NHS A&A should ensure that when developing their overarching strategy that fire safety systems are appropriately considered and detailed, including any interdependencies with any other engineering system.

Workbook Ref No.	Areas to probe	Evidence expected
6.7	Has the Health Board started its early thinking for the Fire Safety arrangements for the operational phase?	Has the Health Board commenced its planning and recorded how it will ensure appropriate trained staff and appointment of Fire Officers for the project in the operational phase and is it clear how this project will interface with

		the Health Boards existing arrangements for management of the Fire Safety?
<p><b>NHS Scotland Assure Observations:</b> NHS A&amp;A have provided assurance that they have commenced consideration of fire safety arrangements for the operational phase, NHS SA do not have any significant observations at this stage.</p> <p><b>Documents referenced are:</b> <i>'7628 – NHS Ayrshire &amp; Arran, National Treatment Centre 'FIRE STRATEGY REPORT JANUARY 2023'</i> <i>NHS A&amp;A NTC – Response to 6.7.pdf</i></p>		

### 3.6.2 Fire Safety: 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 audit.

3.6.2.1	<p><b><u>Actions from previous NDAP / KSAR Fire Safety Workshop</u></b></p> <p>An NDAP/KSAR fire safety workshop was held on the 7th of June 2022 and various fire safety points were brought to the attention of the Board, there is limited evidence to demonstrate that these points have been considered within the design and in particular the fire strategy. NHS SA recommend that NHS A&amp;A fully consider these points and ensure that supporting documentation is in place to demonstrate how these points have been addressed.</p> <p><b>Documents referenced are:</b> NHS Ayrshire and Arran - National Treatment Centre Location: MS Teams Date 7 Jun 2022 4:00 pm Purpose: NDAP/KSAR Fire workshop</p>
	<p><b><u>Fire Strategy item 3.51 - Bedroom separation.</u></b></p> <p>The fire strategy does not detail the means of escape arrangements from the peri-op rooms, in particular the necessity for progressive horizontal evacuation.</p>

3.6.2.3	<p><b><u>Emergency Fire Action Plan</u></b></p> <p>An Emergency Fire Action Plan (EFAP) has not been fully developed.</p> <p>It is not expected that the emergency fire action plans and standard operating procedures would be fully developed at this stage, however, the Board should ensure suitable draft versions are formed prior to the construction stage as elements of the plans and procedures may depend on structural elements of the build.</p>
3.6.2.4	<p><b><u>Fire Strategy item 14 – Automatic fire suppression.</u></b></p> <p>The fire strategy details that automatic fire suppression is not to be included. The Board should ensure that a risk assessment has been completed, that includes the considerations for suppression as recommended in SHTM 81, to support the decision not to include automatic suppression.</p>
3.6.2.5	<p><b><u>Access and Maintenance</u></b></p> <p>There are a number of areas where suitable evidence has not been provided with respect to access for maintenance of fire safety systems and evacuation arrangements. The Board should ensure that access for maintenance is integral to the construction.</p>

## 3.7 Infection Prevention & Control Built Environment

### 3.7.1 Infection Prevention & Control Built Environment: KSAR Observations

Workbook Ref No.	Areas to probe	Evidence expected
7.1	<p>How does the Health Board demonstrate that there is an effective infection prevention and control management structure in place?</p> <p>How does the Board demonstrate leadership and commitment to infection prevention and control to ensure a culture of continuous quality improvement throughout the organisation and that there is an effective IPC structure in place; inputting into the design process?</p>	<p>The Health Board provides evidence that there is an IPC Management Structure with the necessary expertise and leadership skills to support the design work</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.</p> <p>Executive board reports or minutes. Risk registers or equivalent, Minutes from operational and governance groups, (and action points).</p> <p>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 design process and are satisfied this will not impact on patient safety. This can be meeting minutes, risk assessments, and risk registers.</p> <p>There is IPC 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 that fixtures fitting and equipment have not been proposed for the project that would represent an identified IPC risk. Evidence that all contractors and sub-contractor</p>

		competency checks have been completed and signed off.
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### **NHS Scotland Assure Observations:**

NHS A&A have provided evidence regarding the organisational structure and management for the Infection Prevention and Control service. This document noted as the IPC team lead for the built environment with day-to-day contact for the National Treatment Centre (NTC) project. Evidence has been provided regarding IPC support to the project since the outset and has been consulted throughout each of the project stages, e.g., technical design workshops (Ventilation, Medical Gas, Water etc), design review workshops and derogations having input into key decisions. The IPC lead has participated in all HAISCRIBE meetings relative to the design stage and the derogations workshops held to date.

Evidence was provided regarding competence and experience of contractors involved in the project. No evidence was provided by NHS A&A regarding the qualifications or experience of the IPC lead or recently appointed infection control doctor (ICD) supporting the project.

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 provided. NHS A&A 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.

Limited evidence was provided regarding equipping for the facility. Equipment is referenced within the local HAISCRIBE document in term of the expectations for cleaning and storage of equipment, however, there is no reference to involvement of the IPC lead with the equipping team for the project. NHS A&A should ensure IPC are linked to the local and national equipping team for the NTC projects to ensure procurement is appropriate.

### **Documents referenced are:**

*1-50 User engagement workshop (Entrance, Inpatient, Periop, Theatre support) - Folder 1.05*  
*1-200 Design review Approval. Rev A Master - Folder 1.05*  
*HAISCRIBE 2014 Stage 1 - Folder 1.05*  
*NTC HAISCRIBE Meeting 2022 06 28 - Folder 1.05*  
*NTC NHSAA Specific HAI Requirements - Folder 1.06*  
*NHSAA NTC - IPC Involvement - Folder 1.6*  
*A218H\_NTCA-BBGL-XX-XX-PP-ICT001/002/003/004 - Folder 1.07*  
*NTC-1 200 SIGN off (IPC) - Folder 1.07*  
*22-11 Nov 29 501168 NHSAA HAISCRIBE 2 Meeting minute MB V1 - Folder 1.08*  
*22-12 Dec 05 501168 NHSAA HAISCRIBE 2 Meeting2-minute MB V1 - Folder 1.08*

Workbook Ref No.	Areas to probe	Evidence expected
7.2	How does the Health Board demonstrate implementation of evidence-based infection prevention and control measures during the design process?	<p>The Health Board provides evidence</p> <ul style="list-style-type: none"> <li>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 design process. The board can demonstrate IPC advisors have been included within the design phase and development of HAISCRIBE.</li> </ul>

### NHS Scotland Assure Observations:

The IPC involvement document also stated the IPCT support for the organisation in the implementation of the national IPC Standards and National Infection Prevention and Control Manual and that it is performed through processes of monitoring and surveillance, audit, and education programmes. However, no IPC work programme was provided to support this statement.

IPC Lead engagement has been evidenced for the project since the beginning showing participation in numerous stakeholder meetings and the IPC advice provided. It is also noted the involvement with IPC in the derogation and risk processes and overall, this has been effective. Some initial design concerns were identified with the design of the changing rooms, theatre 02 (03/THE/009-2009) and the enhanced treatment room which were clarified throughout the course of the KSAR review.

The current design of the facility notes a shared changing space for both the theatre and non-theatre staff for the facility. Theatres generally have a separate changing area with theatre attire, which is protected. A shared changing area could risk non-theatre staff inappropriately using the area and risking the theatre attire stored in the area. NHS A&A should ensure robust processes are put in place to segregate the theatre and non-theatre staff within the shared facility.

The design documentation provided indicates that the ventilation system for the operating theatres would operate in UCV mode and 'conventional' mode (with the ventilation rate set-back to a reduced rate), it was also not clear on the use of the prep room, as a lay-up prep or sterile pack store (SPS). NHS Ayrshire and Arran have confirmed through the KSAR process that the proposed use of both operating theatres will be used in UCV ventilation mode only. It is no longer planned to be used in 'conventional' ventilation mode for any procedure. NHS Ayrshire and Arran should ensure all project documentation reflects the changes regarding the ventilation strategy for the theatre and the changes recorded through project governance channels.

Further discussions were held at KSAR progress meetings regarding the proposed design and use of the Enhanced Treatment Room. A risk assessment was provided by the board '*Enhanced Treatment Room, NHS AA NTC - Risk assessment*' which

detailed the design decisions regarding the facility which provided assurance to NHS Ayrshire and Arran of the design intent. NHS Ayrshire and Arran should develop a list of approved procedures which will be performed in the enhanced treatment room, and a change control procedure should clinicians wish to undertake non-listed procedures within the treatment room. The process should ensure clinicians, estates and IPC are included as a minimum to ensure robust consideration of the proposal is undertaken.

Through discussions at KSAR meetings, NHS A&A confirmed that all clinical colleagues had been consulted with regard to the proposed design but could not confirm if pros and cons to the proposed design had been considered or that the designs were accepted. NHS Ayrshire and Arran should ensure design proposals are fully described with pros and cons fully explained. The design discussions should be documented as part of the design approvals process.

**Documents referenced are:**

*Project Execution plan (PEP) - Folder 1.04*  
*1-50 User engagement workshop (Entrance, Inpatient, Periop, Theatre support) - Folder 1.05*  
*1-200 Design review Approval. Rev A Master - Folder 1.05*  
*HAISCRIBE 2014 Stage 1 - Folder 1.05*  
*NTC HAISCRIBE Meeting 2022 06 28 - Folder 1.05*  
*NTC AA Derogation Schedule combined - Folder 1.06*  
*NTC NHSAA Specific HAI Requirements - Folder 1.06*  
*NHSAA NTC - IPC Involvement - Folder 1.6*  
*Process for agreeing and accepting derogations - Folder 1.06*  
*A218H\_NTCA-BBGL-XX-XX-PP-ICT001/002/003/004 - Folder 1.07*  
*NTC-1 200 SIGN off (IPC) - Folder 1.07*  
*22-11 Nov 29 501168 NHSAA HAISCRIBE 2 Meeting minute MB V1 - Folder 1.08*  
*22-12 Dec 05 501168 NHSAA HAISCRIBE 2 Meeting2 minute MB V1 - Folder 1.08*  
*HAISCRIBE Part 2 - Design Rev 02 05 12 22 DS - Folder 1.08*  
*HAISCRIBE meeting 2022 06 28 - Folder 1.08*  
*NTC Stage 2 HAISCRIBE - Attendance report 28 11 22 - Folder 1.08*  
*NTC Stage 2 HAISCRIBE 2022 11 28 - Folder 1.08*  
*A218H\_NTCA-NOCO-PSCS-XX01-DR-A-35001 - Deliverables - Folder 28*  
*A218H\_NTCA-NOCO-PSCS-XX00-DR-A-35000 - Deliverables - Folder 28*  
*Enhanced Treatment Room, NHS AA NTC - Risk assessment*

Workbook Ref No.	Areas to probe	Evidence expected
7.3	How does the Health Board assure itself that the designers have a proper understanding of the infection prevention and control procedures required?	The Health Board evidences that: <ul style="list-style-type: none"> <li>All relevant staff within the designers' organisation are provided with clear guidance on roles and responsibilities in relation to infection prevention and control. The contractors' organisation will provide evidence of education in relation to infection prevention in the</li> </ul>

		built environment for all staff involved in the project.
<p><b>NHS Scotland Assure Observations:</b>  It was evident from the evidence provided by NHS A&amp;A that IPC advice had been taken on board for the design of the proposed NTC facility. Minutes of HAISCRIBE meetings and design workshop meetings noted IPC requirements for construction which were referenced and actioned within the documents provided.</p> <p>Assurance has been provided to show that HAISCRIBE training had been arranged with NHS Scotland Assure. It is not clear as to the extent of training undertaken by the wider design and contractor team (including operatives on site), as no list of attendees was provided. Documents were provided regarding CVs and prior experience for the designers and contractors only.</p> <p><b>Documents referenced are:</b>  1-50 User engagement workshop (Entrance, Inpatient, Periop, Theatre support) - Folder 1.05  1-200 Design review Approval. Rev A Master - Folder 1.05  HAISCRIBE 2014 Stage 1 - Folder 1.05  NTC HAISCRIBE Meeting 2022 06 28 - Folder 1.05  NTC NHS AA Orthopaedics Clinical Output Specification - Final - Folder 1.05  NTC NHSAA Specific HAI Requirements - Folder 1.06  NHSAA NTC - IPC Involvement - Folder 1.6  A218H_NTCA-BBGL-XX-XX-PP-ICT001/002/003/004 - Folder 1.07  22-11 Nov 29 501168 NHSAA HAISCRIBE 2 Meeting minute MB V1 - Folder 1.08  22-12 Dec 05 501168 NHSAA HAISCRIBE 2 Meeting2-minute MB V1 - Folder 1.08  HAISCRIBE Part 2 - Design Rev 02 05 12 22 DS - Folder 1.08  HAISCRIBE meeting 2022 06 28 - Folder 1.08  NTC Stage 2 HAISCRIBE - Attendance report 28 11 22 - Folder 1.08  NTC Stage 2 HAISCRIBE 2022 11 28 - Folder 1.08  Key Personnel Project Experience - Folder 7.03  NTC Technical meetings Contacts V2 (002)  NTC Technical workshops matrix (October)</p>		

Workbook Ref No.	Areas to probe	Evidence expected
7.4	How does the Health Board assure itself that equipment being proposed meets the required IPC standards?	The IPC Team are involved, and IPC advice followed in all procurement decisions for new equipment prior to purchase. IPCT are satisfied that all equipment purchased can be decontaminated safely in line with National Guidance and manufacturers' instructions.
<p><b>NHS Scotland Assure Observations:</b>  No evidence was provided by NHS A&amp;A regarding equipping for the project. At KSAR progress meetings it was confirmed by the board that the national NTC programme procurement team has been in contact with the NHSA&amp;A equipping</p>		



team to deliver the equipping requirements for the facility and that IPC would be involved with the equipping meeting when established. Reference to the cleaning and storage of equipment was noted in the HAISCRIBE document but no reference to equipping for the facility.

**Documents referenced are:**

*HAISCRIBE Part 2 - Design Rev 02 05 12 22 DS - Folder 1.08*

Workbook Ref No.	Areas to probe	Evidence expected
7.5	Evaluation of the Health Boards planned preventative maintenance (PPM) proposals for equipment issues and the Built Environment in relation to IPC issues.	<p>Has the Health Board considered how they will undertake assessment of and report cleanliness of the proposed facility and equipment within the healthcare environment, this is inclusive of planned programmes of maintenance?</p> <p>Does the Health Board plan to seek feedback from patients, staff and visitors for their views?</p> <p>Is it clear how the work for this project will interface with the Health Board existing arrangements for management of the IPC in the Built Environment in the wider estate?</p>

**NHS Scotland Assure Observations:**

NHS A&A have not provided any evidence to outline the proposed PPM for the facility or for equipment. HAISCRIBE documents do reference soft facilities resource to ensure cleaning of and waste management for the facility is undertaken. Resourcing for all services within the facility was raised at the KSAR progress meeting of 6<sup>th</sup> March 2023 and confirmed by NHS A&A that the business case submitted for the project did include those for estates and medical physics. NHS A&A should ensure all PPM; soft and hard FM requirements are fully assessed in advance of operation.

IPC within the IPC involvement document referenced their audit schedule and that the NTC would be added to the IPC audit schedule when operational. An example of the environmental audit procedure was provided.

**Documents referenced are:**

*HAISCRIBE 2014 Stage 1 - Folder 1.05*

*NHSAA NTC - IPC Involvement - Folder 1.6*

*HAISCRIBE Part 2 - Design Rev 02 05 12 22 DS - Folder 1.08*

### 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.

<b>3.7.2.1</b>	HAISCRIBE document used by NHS A&A is amended from the original SHFN 30 guidance document. From review the NHS A&A document amalgamates a number of questions which, by grouping, loses much of the detailed assessment required by the HAISCRIBE process. NHS A&A should undertake a full HAISCRIBE review using the full SHFN 30 tool.
<b>3.7.2.2</b>	The HAISCRIBE documentation did not consider any vermin control procedures required for the construction of the facility and operational function. NHS A&A should ensure vermin control considerations are planned for the facility when the HAISCRIBE is next reviewed.
<b>3.7.2.3</b>	Governance in relation to IPC escalation processes was not evident from the information provided by NHS A&A as was how the NIPCM is implemented across the board and the NTC project. Providing the terms of reference and minutes for the infection prevention and control committee and the current IPC work programme could have satisfied this element of the review.
<b>3.7.2.4</b>	IPC resource is dedicated to the project however the IPC lead is also responsible for all other healthcare-built environment projects within NHS A&A. The IPC team is a small team with a very limited resource with the specialist healthcare-built environment. NHS A&A should ensure IPC resource is captured on the project risk assessment and what mitigations can be deployed should the IPC resource have to be re-prioritised for clinical work or not be available either in a short or long term.

## 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](#)

