NHS Scotland Assure
Quality in the healthcare environment

NHS National Services Scotland

NHS Grampian
The Baird Family Hospital
Key Stage Assurance Review

Construction KSAR Report

Table of Contents

Document Overview

Key Stage Assurance Review Report | Construction Stage

Prepared for:

NHS Grampian

Prepared by:

NHS Scotland Assure – Assurance Service

Document Control Sheet

Revision History

Version	Date	Revision Details	Originator	Changes Marked
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1. Executive Summary

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

NHS Grampian have demonstrated, through the Baird Family Hospital Construction KSAR, key learning from previous KSARs undertaken by the health board, including the ANCHOR Centre Construction Stage KSAR. We acknowledge significant progress in the way the health board is managing engagement with their stakeholders, including Infection Prevention and Control colleagues. During the course of the Construction KSAR, the health board have not, however, been able to provide assurance that all key project strategies have been approved by the relevant stakeholders and a significant number of unresolved design related matters remain. NHS Grampian have intimated that these matters remain an ongoing priority for the health board.

As construction activities continue to progress, NHS Scotland Assure are concerned that should these matters not be addressed in a timely and satisfactory manner, this could lead to delays to the programme or potentially compromise the safety of the patients and staff.

NHSSA have identified a number of key themes that the health board should consider prioritising, in order to assure themselves that the project can be delivered safely:

- Ensure that all unresolved designs and strategies are reviewed and approved by the relevant NHS Grampian stakeholders. NHS Grampian should also ensure that a review of the existing site works is undertaken to ensure that they align with the health boards project requirements.
- NHS Scotland Assure also identified concerns in relation to the approvals processes being implemented by NHS Grampian. Whilst the health board was able to demonstrate the contractual mechanism for technical design approvals, there was a lack of assurance demonstrating that a full and co-ordinated review of the technical packages had been undertaken prior to the contractual acceptance. Examples of this included design packages that had been allocated a “Status C” by the Principal Supply Chain Partner (PSCP) design team (i.e. rejected) but had been allocated a “Status A” by the NHS Grampian health board team (i.e. approved) – in this example it was not clear what analysis had been undertaken to determine if the designers concerns had been addressed, with evidence indicating that these drawings were being used, potentially at risk, for construction.

  NHS Grampian have noted through the KSAR process, that they are currently undertaking a review exercise to establish if there is any disparity between

the “approved” 1:50 drawings and the “as-built” configurations. NHS Scotland Assure recommend that NHS Grampian consider expanding the scope of this review to include technical submittals that have been approved to date, with a supporting audit trail documented to maintain a record of key decisions.

- Ensure that the derogation schedule is fully updated to include an appropriate level of technical detail, inclusive of supporting risk assessments and proposed mitigation measures. Ensure technical and clinical stakeholder review and approval of derogations is documented and that any derogations accepted provide an equivalent (or better) level of safety/performance than if the relevant guidance been complied with in full.

- The KSAR has identified a number of potential non-compliances with electrical guidance and technical standards including BS 7671, BS 8519 and SHTM 06-01, which could compromise the integrity and resilience of the electrical power systems within the building, including critical areas of the hospital. In particular, we are concerned that diverse routing of life safety power supplies has not been maintained throughout the entirety of the electrical distribution system, which could potentially lead to a total loss of power to areas of the facility. We recommend that in addition to reviewing this from a resilience perspective, NHS Grampian also consider how the design and construction may impact on their ability to meet their statutory requirements under the Electricity at Work Regulations 1989 and the Scottish Technical Building Standards (Non-Domestic).

- Whilst NHS Grampian provided evidence that processes were in place to monitor the quality of the installation works, NHS Scotland Assure have concerns that the time and manner of addressing quality observations raised is not, in our opinion, being managed effectively. For example, concerns have been identified by NHS Grampian with respect to water ingress to the facility and despite a process for resolution being agreed, the KSAR identified that this was not being followed in all instances. Where “remedial works” have been undertaken, there is a lack of consistency with respect to provision of an audit trail of NHS Grampian stakeholder review and acceptance of the remedial works.

- Foil wrapping to the domestic water systems pipework has not been consistently installed in accordance with SHTM 04-01 and BS5970. In addition, we have concerns over the extent of supervision being applied to the domestic water pipework installation, as further examples were identified

during subsequent follow up inspections undertaken jointly by NHS Grampian and NHS Scotland Assure.

- NHS Grampian were unable to provide assurance that key services have been fully co-ordinated prior to installation works commencing and that safe and adequate access is provided for maintenance activities.

- It is noted that the fire strategy provided as part of NHS Grampian's KSAR response is out of date and there were several areas where information appeared to be incomplete or inconsistent with other technical details. There is a lack of assurance provided as to how NHS Grampian are monitoring the site works to ensure an appropriate fire strategy is being implemented.

- Whilst NHS Grampian were able to demonstrate they had commenced planning for the commissioning stage of the project, the KSAR identified concerns over a lack of supporting documents to support NHS Grampian in the management of commissioning, verification and validation works.

We recommend that NHS Grampian commence preparation of an action plan to address these points and any additional points raised within this report. NHS Grampian will be required to provide further assurance that these points have been addressed prior to commencement of the Commissioning Stage KSAR.

NHS Scotland Assure thank NHS Grampian for their continued support in undertaking the KSAR process and for the manner in which they engaged during the Construction KSAR.

1.1 Summary of Findings

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

Review	No. of Issues per category				
	1	2	3	4	5
Project Governance and General Arrangements	0	5	4	5	0
Water and Internal Plumbing / Drainage Systems	0	11	15	6	1
Ventilation	0	13	19	8	2
Electrical	6	10	20	9	14
Medical Gases	0	4	12	0	1
Fire	0	1	5	6	0
Infection Prevention & Control Built Environment	0	6	7	3	1

The following categories were used in relation to the findings:

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

1.2 Project Overview

The requirement to replace the existing Aberdeen Maternity Hospital (AMH) was included in the Maternity Strategy approved by the board of NHS Grampian in 2010. NHS Grampian have noted in their Project Execution Plan that "*There are significant problems with the existing Maternity Hospital in terms of its physical condition, compliance with statutory standards, space utilisation and functional suitability. The design and functional suitability of the existing building is no longer suitable for the provision of modern health services. Breast and Gynaecology services are currently located elsewhere on the Campus and are also in poor, non-compliant accommodation.*"

The Baird Family Hospital site is located on the existing Foresterhill Health Campus in Aberdeen. The Baird Family Hospital will replace the existing Aberdeen Maternity Hospital, including the Aberdeen Centre for Reproductive Medicine (ACRM) and Neonatal unit and includes a range of other services including gynaecology in-patients/ day cases/ outpatients, breast screening and outpatient and in-patient services.

The building will have undercroft parking with 4 floors of hospital accommodation containing both outpatient/ day patient and overnight accommodation within hospital wards. This includes Operating Theatres and MRI Scanning facilities along with both staff Admin and a Patient/ visitor hotel. The building will also be linked directly to the ARI and RACH by way of a covered link bridge to allow for emergency access to ITU units. It is anticipated that terraces and daylight courtyards will provide patients with the ability to connect with the outside.

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

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

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

The KSAR focuses on key topics, specifically: – IPC, water, ventilation, electrical, plumbing, medical gas installations and fire.

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

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

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

This report adds a layer of scrutiny and assurance to that process to address the above requirement from government.

2.2 KSAR Process

The Construction KSAR for NHS Grampian Baird Family Hospital took place between 20th February 2024 and 28th June 2024

2.2.1 To inform the findings of the KSAR, the health board were issued with key documents outlining the assurance question set and expected level of evidence and supporting documents in accordance with relevant legislation and guidance. This included the Construction KSAR Workbook and Construction Deliverables list.

2.2.2 The KSAR report includes an overview of the main findings of the review, with a further itemised list of detailed observations included within the appendices of the report. The detailed observations are recorded in an action plan that should be adopted by the health board following the review and subsequently monitored by them to ensure appropriate actions are completed in a timeous manner.

2.3 Application of Standards & Legislation

2.3.1 Health Facilities Scotland (HFS) currently provides a range of advisory and delivery services across a wide variety of topics from a portfolio which covers the built estate, engineering and environment and facilities management. With some exceptions these services are largely advisory in nature, identifying best practice and developing national guidance and standards.

2.3.2 Antimicrobial Resistance and Healthcare Associated Infection (ARHAI) Scotland currently provides advice and guidance on all aspects of infection

protection and control nationally in Scotland, inclusive of expert advice and guidance on the topic of Healthcare Associated Infections (HAI) and antimicrobial resistance. It maintains and continues to develop a practice guide (National Infection Prevention and Control Manual – NIPCM) as well as a HAI Compendium of all extant guidance and policy appropriate for use in NHS Scotland. Like HFS, these services are largely advisory in nature, identifying best practice and developing national guidance and standards. The NHS Scotland NIPCM was first published on 13 January 2012 as mandatory guidance, by the Chief Nursing Officer (CNO (2012)1), and updated by a second edition on 17 May 2012 (CNO(2012)01-update). The NIPCM provides guidance for all those involved in care provision and should be adopted for infection, prevention and control practices and procedures. The NIPCM is best practice guidance for NHS Scotland.

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

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

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

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

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

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

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

2.4 Project Technical Outline Summary

The project overview noted in Section 1.2 outlines the project works and the facilities being constructed at the Baird Family Hospital. A high-level summary of NHS Grampian's construction proposals for the facility is noted below:

Heating, Ventilation and Air Conditioning (HVAC) Systems

A mixture of natural and mechanical ventilation is provided throughout the building. Mechanical ventilation plant such as air handling units (AHUs) and extract fans are generally located within plant rooms at lower ground, third floor, and roof level. Dedicated specialist ventilation systems serve areas such as theatres and associated recovery areas, neonatal intensive care unit (NICU), special care baby unit (SBCU), and the Aberdeen Centre for Reproductive Medicine (ACRM).

The building connects to the existing medium temperature hot water (MTHW) heat network serving the Foresterhill Campus where it is distributed within the building as low temperature hot water (LTHW). A heat sub-station within the lower ground floor heating plantroom consists of three MTHW to LTHW plate heat exchangers. The LTHW is distributed to radiant panels via a dedicated variable temperature (VT) circuit, and to AHU heating coils, overdoor heaters, and other heating batteries via a constant temperature (CT) circuit.

Primary heating is provided to the domestic hot water (DHW) system from a dedicated constant temperature LTHW circuit serving via 3 no. plate heat calorifiers within the lower ground level heating plantroom.

Cooling is provided by three air-cooled chillers which are located externally at roof level. The chillers serve three chilled water (CHW) circuits, one is dedicated for AHU cooling coils, the second serves fan coil units (FCUs) for space cooling, and the third provides cooling to the domestic cold water tank. CHW FCUs are provided within a variety of spaces throughout the building, such as node rooms, consulting rooms, offices, and equipment rooms.

Water Services & Above Ground Drainage Systems

The incoming mains water is derived from the existing Scottish Water main within the campus site boundary. A second water supply is derived from the existing NHS Grampian reservoir water main.

The cold-water system consists of a bulk raw cold-water storage tank, filtration system, filtered water tank, associated packaged booster sets and plate heat exchangers (PHX) associated with a recirculating chilled cold-water system. Two PHX and circulation pumps at the filtered water tank, and two PHX's within the cold-water distribution system, connected to the CHW system, provide temperature control to the cold water storage volume and the re-circulating cold water network within the building.

Hot water is generated centrally via three plate heat calorifiers, each arrangement including a plate heat exchanger and a hot water storage vessel.

Above ground sanitary drainage is provided throughout the facility via a gravity system consisting of multiple primary ventilated stacks positioned around the building, connecting to the new below ground drainage system. The majority of stacks vent to atmosphere, with only a few stub-stacks at ground floor proposed

Medical Gas Systems

Medical gas systems within the building include oxygen (O2), nitrous oxide (N2O), entonox (N2O/02), medical air (MA4), medical vacuum (VAC) and anaesthetic gas scavenging systems (AGSS).

The building oxygen supply is extended from the existing Aberdeen Royal Infirmary dual primary & dual secondary vacuum insulated evaporators (VIE's) via the site wide ring main entering the hospital in two locations, one via the north east ground floor manifold room, the other via the north west lower ground floor plantroom. All other medical gas services originate from within the building.

Within the ground floor manifold room an emergency inlet point is provided for reserve oxygen supply. The ground floor manifold Room houses the nitrous oxide and entonox primary and secondary cylinder banks with automatic change-over manifold for both gases, each complete with emergency reserve manifolds. The manifold room also accommodates the oxygen and medical air reserve cylinder banks with automatic changeover, complete with a reserve manifold reserve cylinder bank.

Triplex vacuum pumps & vacuum vessel plant is located at the lower ground floor level including bacterial filters and exhaust to atmosphere at roof level, within its own dedicated plant room within the building thermal envelope.

Triplex medical air compressors, dryer and dual receiver plant with filter/regulators is located at the third floor theatre ventilation plant room, within its own dedicated secure plant room within the building thermal envelope.

AGSS pumps are located in the third floor theatre ventilation plant room to serve the six operating theatres, in the lower ground floor south east ventilation plant room for the ACRM and the third floor ventilation plant room for the MRI.

Building Management System

A building management system (BMS) controls the environmental conditions within the building by integrating and interfacing with all mechanical, electrical and public health (MEP) systems. The BMS communicates via a dedicated ethernet network to a front-end PC located in the facility managers office on the ground floor and touch

screens located on the mechanical control panels (MCPs). The BMS system consists of mechanical control panels in the lower ground floor plant room and within the roof plant room forming the backbone of the BMS.

Local outstation control panels are located throughout the building for the monitoring and control of AHUs, FCUs, radiant heating panels, electrical plant monitoring etc giving distributed intelligence within the building. The buildings BMS network will also interface with NHS Grampian's existing BMS campus network to enable remote monitoring.

Electrical Systems

The buildings electrical supply is provided from the existing Foresterhill Campus private high voltage (HV) network. The existing HV ring on site is extended to pick up the A & B transformer substations located at lower ground floor within the building.

The building will be backed up with 3 LV standby generators capable of supporting the full load of the hospital building. The 3 generators will operate in a N+1 arrangement. Only two are required to support the full load of the hospital with the 3rd generator available if one set fails. A & B LV switch rooms are provided to provide A & B LV supplies throughout the building. A & B UPS systems are provided to support critical LV supplies throughout the building. Medical IT (IPS) systems are provided to support electrical supplies within category 5 medical locations.

LED lighting will be provided throughout the facility and emergency lighting is provided throughout, with a combination of local battery packs and central battery systems utilised to provide initial emergency lighting in the event of a loss of mains power prior to the generators energising.

A nurse call system will be provided throughout. Nurse call stations are proposed to have multiple alarm handling capability for components such as, CCTV, access control, drug cabinets, pneumatic tube system and patient call systems. Follow me lighting will be provided to easily identify the source of a patient call.

Security systems will be provided which include CCTV, access control, intruder detection, panic alarms.

A category L1 fire detection and alarm system is to be utilised within the facility. The fire detection and alarm system interfaces with other electrical and mechanical systems such as ventilation plant and lifts. Gas suppression will be provided to all HV substations, LV switchrooms and UPS rooms.

3. KSAR Review Summary

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

3.1 Project Governance and General Arrangements

3.1.1 Project Governance and General Arrangements KSAR Observations

Workbook Ref No.	Areas to probe	Evidence expected
1.1	Has suitable plans and documentation been put in place for the project to manage and monitor Quality Management and Assurance?	Project Quality Plan Inspection and Test Plans Inspection and Test Schedule/Register

NHS Scotland Assure Observations:

NHS Grampian have provided documentation to evidence processes for quality management, however, there is no assurance that quality observations are being managed effectively or addressed in a timely manner. For example, concerns have been identified by NHS Grampian with respect to water ingress to the facility and despite a process for resolution being agreed, the KSAR identified that this was not being followed in all instances by the PSCP. Where “remedial works” have been undertaken, there is a lack of consistency with respect to provision of an audit trail of NHS Grampian stakeholder review and acceptance of the remedial works.

Quality issues have been identified through the KSAR process, which do not appear to have been picked up through the health board or PSCP processes, in relation to design issues (for example, potential non-compliances with electrical guidance and technical standards including BS 7671, BS 8519 and SHTM 06-01) and installation issues (for example, lack of consistency in approach to foil wrapping of stainless-steel pipework).

Whilst there is evidence to demonstrate that the Project Quality Plan has been reviewed and updated throughout the project, new quality management processes, including the use of the Snag-R system for electronic snagging, have been introduced by subcontractors and not recorded within the Project Quality Plan. During the demonstration provided during the KSAR site visit, a number of examples were observed where the status of the issue raised was unclear, and where observations has been signed off without supporting evidence of close out.

NHSG have provided a *'CVF Tracker'* dated December 2023 which documents the status of all MEP inspection, testing and commissioning on the project. This notes that the majority of the items / systems on the tracker still require to be signed off.

Key documents referenced are:
NHSGAS - GRA - XX-XX-RP-W-01300_Ver12
Quality Plan History from ASITE
N106H HSFM MEP CVF Tracker 101223xls
BC19-Quality Review MoM 04-10-23
BC19-Quality Review MoM 15-11-23
BC19-Quality Review MoM 16-08-23
BC19-Quality Review MoM 20-09-23
BC19-Quality Review MoM 25-10-23
BC19-Quality Review MoM 30-08-23

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

NHS Scotland Assure Observations:
NHS Scotland Assure have identified concerns in relation to the approvals processes being implemented by NHS Grampian. Whilst the health board was able to demonstrate the contractual mechanism for technical design approvals, there is a lack of assurance demonstrating that a full and co-ordinated review of the technical packages had been undertaken prior to the contractual acceptance. Examples of this include design packages that had been allocated a "Status C" by the Principal Supply Chain Partner (PSCP) design team (i.e. rejected) but had been allocated a "Status A" by the NHS Grampian health board team (i.e. approved) – in this example it was not clear what analysis had been undertaken to determine if the designers concerns had been addressed, with evidence indicating that these drawings were being used, potentially at risk, for construction. Detailed examples are provided

within ‘further observations’ sections 3.2.2, 3.3.2 and 3.5.2 for domestic water, ventilation and medical gas.

NHSG also verbally confirmed within the weekly KSAR progress meetings that all internal stakeholders do not have direct access to A-site, with comments from stakeholders being managed via the NHS G project team. It is, therefore, not clear as to the extent of the stakeholder engagement within the document review and approvals process.

Whilst documentation relating to the change control process has been provided, the change request tracker provided does not indicate associated timescales for each of the changes or details on who has approved the change. There is also a lack of supporting information in relation to the input from key stakeholders (for example, clinical teams, IPCT or Authorising Engineers etc).

NHS Grampian have noted through the KSAR process, that they are currently undertaking a review exercise to establish if there is any disparity between the “approved” 1:50 drawings and the “as-built” configurations. NHS Scotland Assure recommend that NHS Grampian consider expanding the scope of this review to include technical submittals that have been approved to date, with a supporting audit trail documented to maintain a record of key decisions.

At the time of the Construction KSAR, it was advised by NHS Grampian that a formal derogations process has not been followed on the project. Evidence of a new derogation process as defined in the *Derogations guide* dated December 2023 has been provided, however, this requires to be signed off internally by NHS Grampian. Whilst a derogations schedule (dated 8 November 2022) has been provided, this lacks supporting technical analysis, or details of the relevant stakeholders involved in the review and sign off. It is unclear how any derogations approved prior to the implementation of the new process are being reviewed and considered.

Key documents referenced are:
Change request form tracker – live
NHS Grampian – Baird ANCHOR PEP Stage 4 19-01-24
NHS Grampian summary review of evidence
Change control form
NHSGAS-GRA-XX-XX-PO-W-01102
Derogations guide DW Dec 23
Management of defect process and example

Workbook Ref No.	Areas to probe	Evidence expected
1.3	How has the health board approached Quality Assurance on the project to ensure processes and procedures are being adhered?	Evidence of regular Quality Assurance audits / reports undertaken on the project.

NHS Scotland Assure Observations:

Assurance has not been provided that NHSG have put suitable measures in place to ensure that quality processes and procedures are being adhered to. Whilst NHS Grampian have processes in place to review quality on the project, a number of examples have been found through the Construction KSAR review where the processes have not been carried out in a timely manner.

Evidence has been provided in the form of reports, meeting minutes and action trackers to demonstrate that quality audits are taking place on the project from NHS Grampian Clerk of Works, NEC supervisors (NHSG) and third party quality monitors (for MEP and building fabric) who have been appointed by NHS Grampian in addition to the other internal quality management roles.

Through the evidence submitted however there is a lack of assurance that the quality management processes are being adhered to on site. Within the NEC Supervisor report from November 2023 it states *"It has been noted that the water ingress procedure is not being followed in all cases and there are still concerns over the amount of time it takes to act on observations. PSCP operatives are generally fast to act and have been physically marking and signing plasterboard sheets that require to be removed. However, it has been noted that immediate action is not taken or recorded effectively and in some cases plasterboard which has been marked to be removed has remained in place for several weeks."*

NHSG advised that since this report was issued a new process for identifying and dealing with areas where water ingress has occurred has been implemented which has significantly improved the process however assurance has not been provided regarding assessment and any rectification for areas within the building where water ingress causing mould / dampness occurred prior to this process being in place.

An issue raised within the Clerk of Works weekly report 109 (w.c 20.11.23) notes *"the mixing of two fire stopping manufacturers products from which one that was not tested by manufacturer to 'concrete to other substrate'*. NHS Grampian were asked by the PSCP not to raise a quality observation on this until the PSCP had provided a response. The formal response was not provided by the PSCP for several months after the issue was identified within the report. This does not provide assurance that quality observations raised by NHS Grampian are being dealt with promptly on site.

Key documents referenced are:
NEC3 Supervisor report Baird – Aug 23
NEC3 Supervisor report Baird – May 23
NEC3 Supervisor report Baird – July 23

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

NHS Scotland Assure Observations:

Whilst NHS Grampian were able to demonstrate they have commenced planning for the commissioning stage of the project, the Construction KSAR identified concerns over a lack of supporting documents to support NHS Grampian in the management of commissioning, verification and validation works.

NHS Grampian have provided high level documentation relative to the planning of the commissioning activities, such as commissioning reports, meeting minutes and a commissioning programme (*231110 - NHSGAS-GRA-XX-XX-RP-W-24400 - Main Works Commissioning BFH - Rev 40*). This shows that at the time of the Construction KSAR, commissioning activities have commenced for MEP services.

The PSCP has engaged with a specialist commissioning manager to review and manage the pre-commissioning and commissioning activities (and associated documentation) during the construction stages. The commissioning review process is documented within the '*Inspection, Testing and Commissioning Review and Sign Off schedule*'. As noted in section .3.2 and 3.3 of this report, the tracker indicates that the documentation for the majority of activities, including pre-commissioning activities for water, drainage and medical gas have yet to be submitted for review/approval despite the programme indicating that commissioning activities have commenced on the project.

There is no assurance that designer's commissioning briefs for water and ventilation have been developed in the line with the requirements of SHTM 03-01 (2014) Part A

and SHTM 04-01 (2014) Part A, or that pre-commissioning checks are being carried out in line with the requirements of relevant SHTM guidance for domestic water and ventilation prior to commissioning processes commencing.

During the KSAR IPC engagement workshops, concerns were identified by the NHS Grampian IPC team that IPC interfaces and engagement processes for the commissioning stage of the project had not been fully agreed with the wider NHS Grampian project team.

Specific concerns include the process for recording and reviewing IPC risks and how IPC were being engaged in the weekly commissioning meetings. Of note are concerns raised by the NHS Grampian IPC team around sequencing of commissioning activities, such as cleaning of ductwork, commissioning and validation works and the consequential impact on infection prevention control measures and progress made to date in planning for the Stage 4 HAI-SCRIBE.

Key documents referenced are:
N106H-NGB-XX-XX-QC-M-35110
N106H-NGB-XX-XX-QC-M-35114
N106H-NGB-XX-XX-QC-M-35116
N106H-NGB-XX-XX-QC-M-35122
NGB Comm Report 37
NGB Comm Report 36
231110 - NHSGAS-GRA-XX-XX-RP-W-24400 - Main Works Commissioning BFH - Rev 40
N106H HSFM MEP CVF Tracker 101223xls – 'Inspection, Testing and Commissioning Review and Sign Off schedule'

Workbook Ref No.	Areas to probe	Evidence expected
1.5	How does the health board assure itself that the management of defects have / are being developed and put in place to meet the project needs?	Systems and process for recording and management defects. Process for the rectification and close out of defects prior to handover. Plans have / are being developed for collating information and documents.

NHS Scotland Assure Observations:

NHS Grampian have provided documentation to demonstration how quality observations, non-conformances and defects are being recorded and managed, for example within the Project Quality Plan. As noted above in response to KSAR Question 1.2, however, NHSSA have noted our concerns that quality observations are not consistently being addressed in a timely manner, or with an appropriate audit

trail for NHS Grampian review and acceptance of remedial works. This extends to the MEP subcontractor and the use of their electronic snagging system Snag-R.

During the KSAR site visit on 20/21st March a sample review highlighted that 50% of the quality observations / non-conformances that were reviewed on Snag R which were marked as closed it was not clear from the photographic evidence what the original issue was to be rectified or how this had been closed out. It was also advised during the visit that the Snag R system had only been in place for around 6 weeks on the project, therefore it is unclear how the same level of quality management demonstrated to the NHSSA team was being implemented prior to this.

The BIM 360 process for snagging / inspections was also demonstrated during the site visit to the NHSSA team. This was explained as a 17-stage process that each room/space goes through as the installation moves from sub-contractor to sub-contractor eventually leading to final inspection by NHS Grampian in the final stage. There is a risk that there is an element of 'self-policing' involved in this process as each sub-contractor will confirm if room is considered ready for next trade to commence. The PSCP will only interject if there is a 'dispute' between sub-contractors and then undertake their own review at key stages in each room, it is therefore not clear the level of NHS Grampian's involvement in this process.

Key documents referenced are:
Supervisor notification of defects
NHSGAS - GRA - XX-XX-RP-W-01300_Ver12
NHS Grampian Summary Review Evidence 1.5

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

NHS Scotland Assure Observations:

Whilst NHS Grampian were able to provide assurance they had in place a plan to implement a Soft Landings-centric approach to handover, the KSAR identified a lack of supporting project specific information and potential gaps in the proposed handover processes.

The Soft Landings information provided covers topics, including training and the need for operating and maintenance related documentation. During the KSAR workshops NHS Grampian noted that there were potential gaps in the proposed training,

particularly with respect to the transfer of digital information between the contractor and NHS Grampian.

NHS Grampian noted as part of the KSAR response they have in place a functional commissioning service team to support the migration of services to the new hospital. Meeting minutes have been provided for migration of the various services / departments however these are dated January 2022 with no recent evidence of this being discussed.

NHS Scotland Assure have concerns that the ongoing uncertainty around project programme may impact on the planning and sequencing of activities undertaken to date by NHS Grampian. The NHS Grampian IPC team have also raised concerns regarding the migration of equipment that will move to the new facility and the proposed plans for how assessment and cleaning of the equipment would be operationalised, along with the involvement of IPC in the process. A stage 4 HAI-SCRIBE will be required as part of the planning and assessment of possible HAI risks but this had not commenced at the time of the construction KSAR. SHFN 30 (Parts A&B) notes *"HAI-SCRIBE aims to ensure that IPC measures are not only designed-in but also maintained throughout the lifetime of the healthcare facility. It also aims to highlight potential IPC risks so that these can be designed-out. This is achieved through identifying the infection control risk associated throughout each of the following stages of lifecycle of the healthcare facility. Development Stage 4 - Pre-handover check, ongoing maintenance and feedback."*

Key documents referenced are:
1.6 Client training – Preliminary strategy document
1.6 Lessons learned review programme 2023
B&A SL Action Tracker 231210
Baird Completion Criteria Rev 6 231211
NHSG BA Soft Landings Note 231115
Soft Landings_Lessons - LIVE Tracker
Bim Execution Plan - NHSGAS-GRA-XX-XX-RP-W-43100 Rev P15

Workbook Ref No.	Areas to probe	Evidence expected
1.7	How does the health board assure itself that the works are following the procedures as laid out in HAI-SCRIBE?	Evidence that the Contractor in charge of the works has read, understood and signed the HAI-SCRIBE. Evidence that Infection Control have carried out interim site inspections at points where setting out of the rooms are underway to pick up implications of any Contractor's onsite adjustments.

		For works inside of or adjacent to healthcare spaces which are in use, evidence that a task specific HAISCRIBE has been produced and that compliance is monitored by the board.

NHS Scotland Assure Observations:

Stage 2 and 3 HAI-SCRIBE processes for the project were provided including a signed statement of intent by the contractor. Signed versions were provided and any HAI issues captured have been reflected on the HAI Risk Matrix and noted to have been reviewed and updated regularly. This includes both risks to the facility being constructed and for the adjacent clinical facilities.

Assurance has not been provided, however, regarding a number of HAI issues raised by the NHS Grampian IPCT which remain unresolved. NHS Grampian have instructed a number of design reviews to consider the HAI issues, including a review of the recirculating domestic cold water system, a review of the ventilation design to the prep rooms within the operating theatres, recovery areas and neonatal ICU, a 1:50 room design review and a risk assessment regarding the management of historical water ingress incidents, all of which have not been concluded at the time of the Construction KSAR review.

The HAI risk matrix and NHS Grampian IPC site visit report notes regular observation of similar HAI risks over time, such as open pipes and sanitaryware outlets not protected, ventilation ducting not protected, water ingress and mould growth as well as inappropriate storage of materials and equipment. Therefore, despite the PSCP providing a signed HAI-SCRIBE statement of intent and education for contractors regarding the principles of IPC in construction, the evidence provided indicating ongoing non-compliance which does not provide assurance that HAI-SCRIBE processes are fully embedded by the PSCP and their subcontractors.

The Stage 4 HAI-SCRIBE (SHFN30 Part B (2014)) has not commenced. The NHS Grampian IPC team raised concerns at the KSAR site visit that the proposed commissioning plans did not allow for installation of clinical and support equipment for the facility, transfer of existing equipment and for undertaking the stage 4 HAI-SCRIBE before patients would transfer. No assurance was provided regarding when stage 4 would be undertaken, as commissioning plans have not been finalised or the engagement with key stakeholders such as facilities, IPC and clinical teams. SHFN 30 notes *"The successful implementation of HAI-SCRIBE requires input from a wide range of professionals including Managers, Facilities Staff, Planners, Infection Prevention and Control Staff and Clinical Staff. Overall responsibility for ensuring the implementation of HAI-SCRIBE is determined by the Development Stage as indicated in the following text. Some NHS boards may wish to give responsibility to another project team member. In such instances it is important that the responsible person for each stage is named. Stage 4: "Pre-handover check (carried out by the Project Team) and ongoing maintenance"* (carried out by the Estates team).

Key documents referenced are:

01326 Baird & Anchor - (XXXXXX) & Subcontractors Training Matrix 01.12.23
Baird Anchor - Specific Disciplines 2.1 to 2.7 Organograms 01.12.23

KSAR - NGB Training Induction List 23.10.23
KSAR Induction Sign Off Sht 19.9.23
KSAR Induction1 - Plumbing (Hot & Cold Water)
KSAR Induction2 - Plumbing (Drainage)
KSAR Induction3 - Ventilation (Ductwork)
KSAR Induction4 - Electrical (Elec Install)
KSAR Induction5 - Electrical (Modular Wiring)
KSAR Induction6 - Medical Gases (MGPS)
KSAR Induction7 - Duct & Pipe Protection
KSAR NGB Induction Procedure
Sample - Sign Induction Records
Baird Anchor HAI SCRIBE contractor endorsement certificate
Baird HAI Action Plan 231001
Baird HAI Scribe Stage 3 14.12.20
HAI Development stage 2 Baird Hospital 180123
HAI Scribe Risk Matrix no28 Jul 23
HAI Scribe Risk Matrix no30 Oct 23
HAI Scribe Risk Matrix no31 Nov 23
IPCT site VISIT BFH 10112023
Minute - Baird HAI Scribe Neonatal Unit 01.02.23
Minute - Baird HAI Scribe Operating Department 08.02.23 (2)
NHS Grampian KSAR Review Summary Evidence (1.7)
Note of Baird HAI Scribe 18th and 25th January 2023 (1)

Workbook Ref No.	Areas to probe	Evidence expected
1.8	How does the health board continue to assure itself that the clinical needs of the facility are clearly understood by each section of the client organisation?	Updated description of each department of the facility review process evidenced. All specifications are being related back to the Portfolio Document (PD). An updated and live Derogation document.

NHS Scotland Assure Observations:
Assurance has not been provided that the clinical needs of the facility are clearly understood. At the time of the Construction KSAR it was identified that there were a number of unresolved design decisions and potential disparities between the areas of the hospital that had been constructed and the 'NHS Grampian approved' 1:50 drawings. An example of an unresolved design decision includes the ventilation strategy in the operating theatres and clinical requirements for the theatre MDT prep rooms.

As a result of these issues, no assurance was provided by NHS Grampian that the requirements outlined in their clinical and non-clinical briefs were being achieved.

With respect to the discrepancies in the 1:50 room layout drawings, NHS Grampian have noted they are currently undertaking a review exercise for all 1100 rooms within the facility, with circa 80 rooms being reviewed every 2 weeks. This presents a significant risk that works are being progressed on site without a co-ordinated signed off design, which meets the client's requirements.

With respect to the unresolved design decisions NHS Grampian have identified that a selection of these will require feasibility studies to assist the board in resolving these. This also brings with it a level of uncertainty around the programme.

Please refer to section 1.3 within this report for comments on the derogation process.

Key documents referenced are:
ACRM clinical brief final July 2016
Baird Family Hospital Overarching Hospital Brief Final July 2016
Maternity Services clinical brief Final June 2016
Minute Baird project group 05.04.23
Minute Baird Theatre re-design group 11.10.23
Minute Breast re-design group 28.06.23

Workbook Ref No.	Areas to probe	Evidence expected
1.9	Are the Principal Designers regularly carrying out site inspections and providing reports to the board and Principal Contractor?	Regular (fortnightly) reports being provided to the clients' project management team, certifying installation is being provided in accordance with the CD. Regular comment on each of the installing contractors' quality safety plan and work delivered. If the Principal Designer is not employed to carry out site inspections, evidence that the board has alternative, adequate means of design / construction quality control in place.

NHS Scotland Assure Observations:
Assurance has been provided that the Principal Designers are regularly carrying out site inspections and reporting back to NHS Grampian. The PSCP is the designated Principal Designer on project. Monthly Principal Designer updates have been provided

which comments on communication with client team, status of F10 notification, construction phase health and safety plan, design hazards, health and safety file and O&M's. These actions are also detailed within the Main Contractors monthly reports which have been submitted as part of the evidence.

NHS Grampian have employed a CDM advisor on the project to advise them on CDM duties with monthly CDM advisor reports provided as evidence between June and November 2023. The reports confirm that the CDM advisor is reviewing the construction phase plan during each visit to ensure this is being updated in line with the works on site and they are also meeting regularly with the Principal Designer / Health and Safety teams to discuss any issues relating to CDM.

Key documents referenced are:
AECOM CMDA Report Aug 23
AECOM CMDA Report July 23
AECOM CMDA Report June 23
AECOM CMDA Report Nov 23
AECOM CMDA Report Oct 23
AECOM CMDA Report Sept 23
NHS-Grampian-Baird-Anchor Site Visit 12.12.2023
NHS-Grampian-Baird-Anchor Site Visit 21.09.2023
NHS-Grampian-Baird-Anchor Site Visit 08.06.2023

Workbook Ref No.	Areas to probe	Evidence expected
1.10	The health boards approach on the procurement journey with evidence of the plans on how the board will provide assurance, particularly emphasis on the critical system identified earlier.	Evidence on how this requirement is being managed and how it fits with the project governance arrangements Plans to identify any gaps in the procurement approach that may require to be addressed. Evidence on how Infection Prevention and Control are involved with the procurement approach to future plans for project. Evidence that the health boards selected procurement route has gone through the board's Governance channels.

NHS Scotland Assure Observations:
NHS Grampian provided assurance in relation to the adoption of Framework Scotland to appoint a Principal Supply Chain Partner (PSCP) and other core project team roles.

NHS Grampian have advised that there is a service level agreement (SLA) process in place between NHS Grampian and National Services Scotland (NSS) for the purposes of equipping.

Within the KSAR response, limited assurance was provided as to how IPCT observations raised in the various equipping groups were being addressed and fed back to the NHS Grampian IPCT. NHS Grampian have acknowledged this within the KSAR evidence provided and are currently developing a process to ensure that a clear feedback mechanism is in place and reflective of both historic and any future IPC advice provided and feedback on decisions taken.

Key documents referenced are:

2016 04 04 Procurement Options_Post NPD_v5 (3) Used in OBC
Appendix 1 - Procurement Options
Appendix 2 - Option Appraisal (3)
Appendix 3-4 - Fees and Costs
Appendix 5 - Programme
Project Board Meeting - Minutes 15-04-16 (2)
04.00-Board-Minute-06-02-20-unapproved
IPC Involvement in procurement /equipping (Multiple documents)
BA Equip with PSCP action tracker_14.4.2023
BA Equip with PSCP action tracker_22.6.2023
DRAFT - Minute of B&A Equipment Group, 3rd October 2023
Draft- MEM with PSCP 14TH APRIL 2023
draft minute MEM 09.06.23
E-MAIL 120623
E-Mail 251023
E-Mail 290923
EQUIP ACTION TRACKER Nov 23
EQUIP ACTION TRACKER OCT 23
Equipment group action tracker Sep 2023
Equipment Group, 051223
Meeting note G1S queries with estates and IPCT 18.08.022
Minute equipment Group 02.05.23
Minute of Baird and ANCHOR Equipment Group, 5th September 2023
Terms of Reference - Equipment Commissioning Group v1.3
1.10 Evidence Overview Procurement

Workbook Ref No.	Areas to probe	Evidence expected
1.11	Evaluation of the health boards commissioning plan.	Evidence that the health board has recorded plans that are comprehensive and adequate to address the needs of the project and that they are fully resourced.

		Evidence that the board has had all pre-commissioning checks audited and approved by an independent organisation.

NHS Scotland Assure Observations:

As noted in the response to KSAR question 1.4 whilst NHS Grampian were able to demonstrate they have commenced planning for the commissioning stage of the project, the Construction KSAR identified concerns over a lack of supporting documents to support NHS Grampian in the management of commissioning, verification and validation works. There is no evidence that pre-commissioning checks have been undertaken in line with the requirements of SHTM guidance for domestic water or ventilation, or that any relevant documentation associated with pre-commissioning check have been reviewed by the health board.

The concerns noted in response to KSAR question 1.6 are also relevant to this question in relation to the functional commissioning.

Key documents referenced are:

CV's for Commissioning Leads (Multiple Documents)

Refer to key documents referenced in response to KSAR question 1.4 / 1.6.

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

NHS Scotland Assure Observations:

Assurance has been provided that the required roles and governance structure is in place on the project.

A project execution plan has been provided dated January 2024 detailing the various key stakeholders on the project however this does not go into detail for roles such as the NHS Grampian technical supervisors. This document also includes an

organogram for NHS Grampian and the PSCP illustrating internal structures within both organisations on the project. A RACI matrix has been provided which demonstrates the roles and responsibilities for the relevant parties throughout the RIBA stages.

A statement has been provided by NHS Grampian which details the level of experience for each of the project leads noted within the documents above on both the clinical and technical departments within NHS Grampian.

Governance papers have been provided as evidence to demonstrate that where the project has been lacking in specific project resources such as quality, cost and project management, these roles have been identified by the board and funding has been made available in order to fill the gaps.

As a result of issues described within this report such as 1:50's review, feasibility studies, quality issues, access and maintenance and commissioning input there are concerns whether the levels of resource through NHS Grampian are adequate to manage and close out these issues.

Whilst information has been provided, this doesn't fully reflect the team structure encountered through the KSAR process, particularly in relation to technical decision making on the project.

Key documents referenced are:
NHS Grampian KSAR Review Summary Evidence (1.12)
1.12a4 Completed RACI Matrix B&A 181220
1.12b.2 Stage 4 Resource Arrangements_021121_v5
1.12a.2 B&A Team Structure January 2024

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	**Approval and Confirmation of MRI Scanning Equipment** At the time of the KSAR the final MRI equipment selection had not been completed. NHS Grampian have advised that the technical design has the capacity to accept a 3T scanner, however, NHS SA recommend that a full review of the technical design associated with the MRI is undertaken once a final equipment selection has been made.

3.1.2.2	**Environmental Matrix** There is no evidence provided to confirm the contractual status of the environmental matrix or how the document is controlled and managed during the construction stage.

3.2 Water and Internal Plumbing / Drainage Systems

3.2.1 Water and Internal Plumbing / Drainage Systems: KSAR Observations

Workbook Ref No.	Areas to probe	Evidence expected
2.1	How does the health board assure itself that all plumbers are trained to understand the needs (including special requirements) for the installation of water and plumbing/drainage systems in the healthcare environment?	Evidence of a vetted list of site plumbers which confirms qualifications and healthcare experience. Evidence that the site induction with respect to working on water and plumbing/drainage services has been developed, implemented and agreed with the board. Where anyone does not have previous healthcare experience, evidence should be provided of the relevant onsite training which was provided to them before they commence work on site. Evidence that all contractors and sub-contractor competency checks have been completed and signed off.

NHS Scotland Assure Observations:

Assurance has not been provided that plumbers are being trained to understand the needs for the installation of water and plumbing/drainage systems in the healthcare environment.

The documentation provided by NHSG includes evidence of skills and competence in plumbing works in the form of a training matrix, skills card registrations, general site and plumbing specific inductions, and pipework manufacturer training certificates. The documentation provided, however, does not confirm the plumbing sub-contractors and their installers have been vetted by the health board. As detailed within the board's *Water Safety Plan* and *BS 8680:2020 Water Quality – Water Safety Plans – Code of Practice*, checking of competency of all those employed to work on water systems (including individuals involved in commissioning etc.) is of critical importance. There is no documented evidence detailing the vetting process followed, the level of competency checks undertaken, or that the competency of the sub-contractors and their operatives has been signed off by NHSG.

An '*Operative Induction Procedure'* document details the process that the MEP Sub-contractor is adopting to vet operatives but there is no evidence to support that this has been implemented.

Evidence has been provided in the form of project specific induction and example attendance records; however, no evidence has been provided to confirm that these inductions have been developed and agreed with the board.

Sample records of attendance at the general site induction have also been provided, which highlights several operatives have not previously had healthcare experience. During the Water & Drainage KSAR Technical Workshop on 16 April 2024 the health board confirmed that all operatives undertake manufactures training on the crimped pipe fittings being used, with samples of this training provided as evidence. The health board also noted at the technical workshop that dedicated Quality Assurance (QA) / Quality Control (QC) procedures are followed. These QA/QC procedures include a requirement that no more than 10 operatives would work under a single supervisor, however, no evidence has been provided as part of the KSAR review to confirm the implementation and adoption of these processes, or if any additional training has been implemented for operatives that have no previous healthcare experience.

Key documents referenced are:
KSAR Plumbing Induction (Hot & Cold Water Services) Issue No 6
KSAR Plumbing Induction (Drainage Services) Issue No 3
KSAR Induction 7 – Duct & Pipe Protection
Operative Training Certification – Drainage Manufacturers Product Installation Training (Multiple Documents)
Pegler Training Cards Sheet 1 & 2 Jan 2025 (Two Documents)
Induction Records (Multiple Documents)
KSAR NGB Induction Procedure
01326 Baird & Anchor - (XXXXXX) & Subcontractors Training Matrix 01.12.23
N106H-NGB-XX-XX-QP-M-00009 Construction Phase Water Management Plan

Workbook Ref No.	Areas to probe	Evidence expected
2.2	How does the health board assure itself that the plumbing contracting company have the relevant experience to direct and manage their staff on the site for a healthcare environment?	Evidence of similar, previous healthcare projects by the contractor. Evidence of site management structure. Evidence of HAI and SHPN 30 training.

NHS Scotland Assure Observations:
The evidence that has been submitted by NHSG for review does not provide assurance that the plumbing contracting company have the relevant experience to direct and manage their staff on the site for a healthcare environment.

The observations noted in response to question 2.1 are also applicable to this question.

Evidence provided by NHSG includes a summary document listing previous healthcare projects by the MEP Sub-contractor. Additionally, project and discipline specific organograms, capturing the management structure of the project delivery teams overseeing the water and drainage systems installations, have also been provided, however no detail on the key personnel's experience and competency (e.g. curriculum vitae) have been included.

A statement provided by the NHSG Technical Supervisor in relation to this question noted that *'the company working on this project is a major MEP provider known to NHS Grampian through the Scottish Framework governance and has satisfactorily undertaken other major plumbing installations on significant projects previously'*. This was reiterated by NHSG during the KSAR technical workshop on 16 April 2024, noting that they relied upon the overall appointment process of the Principal Supply Chain Partner (PSCP) through the framework as a means of demonstrating competency, however, no evidence has been provided to confirm that NHSG have vetted and approved the plumbing contracting company for this project.

A signed Contractors Endorsement Certificate / Statement of Intent has been provided as evidence. This is a declaration from the Contractor agreeing to the HAI-SCRIBE Implementation Strategy as detailed in SHFN 30 Parts A and B, however, no evidence of specific HAI and SHPN 30 training undertaken by the plumbing contracting company has been provided.

Key documents referenced are:
Baird CON KSAR (2.2) SHFN 30 Baird & Anchor HAI SCRIBE contractor endorsement certificate
Baird CON KSAR Review Summary Evidence Water 2.2 NHSG Technical Supervisor Statement
(XXXXXX MEPH Subcontractor) – NHS Projects Undertaken
Baird Anchor - Specific Disciplines 2.1 to 2.7 Organograms 01.12.23

Workbook Ref No.	Areas to probe	Evidence expected
2.3	How does the health board ensure that the water and plumbing / drainage systems are being installed to the correct standard and reflect the agreed design?	Written and photographic, monthly evidence for the progress of work produced by a body which is independent of the contractor and which confirms compliance of the works to date.

NHS Scotland Assure Observations:
Assurance has not been provided that the water and plumbing/drainage systems are being installed to the correct standard and reflect the agreed design.

Evidence has been provided by NHSG in relation to the PSCP's BIM360/Asite review process that the design team and wider NHS stakeholders adopt for

commenting on installation documentation prior to construction issue. Whilst there is an example of the Asite process being applied to a water/drainage document, NHSSA's review of documentation on Asite highlighted several examples where the process is not being adhered to. For further specific detail reference should be made to the additional observations noted in '*3.2.2 Water and Internal Plumbing / Drainage Systems: Further Observations*'.

During the site visit on 20 and 21 March 2024 a presentation was provided around the adoption of BIM 360 and Asite for recording site observations and managing the defects process. General observations are recorded on BIM 360 by the Contractors, Sub-Contractors and NHSG stakeholders with Asite used to record contractual defects and non-conformance reports (NCRs). The presentation provided an overview of a multiple-stage room sign-off approach using BIM360. NHS SA note that this approach is reliant on individual sub-contractors to self-police, with the PSCP only interjecting if there is a dispute between sub-contractors. Whilst a presentation of this approach was provided no specific examples of this process being implemented, with respect to water and drainage, have been provided as part of the KSAR review.

During the NHS SA site visit the M&E sub-contractor also demonstrated their own snagging process (SNAG-R) which is the sub-contractors cloud-based quality control system for recording of installation quality observations. During the on-site presentation NHS SA selected a sample range of observations from the SNAG-R system. Of the 4 items reviewed there was issues identified with the application of the process for 2 of the examples. The observations included the status of the issue raised being unclear, or items being signed off without any supporting narrative / photograph included to evidence close out of the observation and final sign off.

From the evidence submitted, the health board have confirmed they are fulfilling the role of NEC Supervisor on the project, via their Technical Supervisor staff, who are independent of the Contractor. Several Technical Supervisor monthly reports have been provided for review. The reports capture site progress, including site observations in relation to the water and drainage systems installation, material storage, and general quality matters. Whilst the observations noted include photographs and reference items raised on the BIM360 system, there is no evidence provided to demonstrate the implementation of the BIM360 process. No evidence is provided to confirm the relevant BIM360 water/drainage observations raised, when the initial observations were raised, by who and how/when the observations were closed out. The reports also raise a number of consistent quality related concerns in relation to the water and drainage installation. These include incorrectly stored booster pumps being used as workbenches, unprotected pipe ends and rainwater outlets, unprotected connections on plate heat exchangers and tanks, and no evidence of foil wrapping being applied to pipework prior to applying load bearing blocks.

During the NHS SA site visit on 20 and 21 March 2024 NHS SA noted observations that relate to elements of the water/drainage systems not being installed to the correct standard such as aluminium foil wrapping of stainless steel pipework. For further detail refer to '*3.2.2 Water and Internal Plumbing / Drainage Systems: Further Observations*'.

Key documents referenced are:
Baird CON KSAR Water 2.3 NHSG Technical Supervisor Statement
Baird CON KSAR Review Gap Analysis Water 2.3 NHSG Technical Supervisor Statement
NEC 3 Supervisor Reports (Multiple Documents)
Asite Protocol Documents (Multiple documents)

Workbook Ref No.	Areas to probe	Evidence expected
2.4	How does the health board ensure that precautions are taken throughout the works to avoid open pipe ends for a period beyond the time needed to make a joint on that pipe end?	Photographic and written evidence for the progress of work produced by a body which is independent of the contractor (on a monthly basis).

NHS Scotland Assure Observations:
Assurance has not been provided that the necessary precautions are being taken during the construction works to avoid open pipe ends.

Whilst the storage of plumbing materials and capping of pipework was considered satisfactory for the areas observed during the site visit carried out by NHS SA on 20 and 21 March 2024, no assurance has been provided in relation to historical observations raised and the robustness of the quality management process being adopted with respect to open pipe ends. Unprotected open pipe ends, and tape being used instead of pipe caps are recurring themes within the monthly Technical Supervisor reports dating back to May 2023. The reports also note that these observations are being recorded on BIM360, however, no evidence has been provided to show the BIM 360 process, including confirmation that observations raised are being closed out in a timely manner. NHSG confirmed during the Water & Drainage KSAR Technical Workshop on 16 April 2024 that the MEP services contractor has a dedicated quality control team monitoring BIM360 daily, addressing material storage and open pipe/duct ends observations as a priority, however again no evidence has been provided to support this statement.

Evidence has been provided to confirm the importance of good storage of plumbing materials and capping of pipe ends has been communicated to the operatives through

a series of site inductions / toolbox talks. A Training Matrix confirms operative attendance at KSAR Plumbing Inductions, with additional samples of signed induction records also provided, however it is noted that none of the samples include plumbing operatives.

Key documents referenced are:
KSAR Induction 1 – Plumbing (Hot & Cold Water)
KSAR Induction 2 – Plumbing (Drainage)
KSAR Induction 7 – Duct & Pipe Protection
01326 Baird & Anchor - (XXXXXX) & Subcontractors Training Matrix 01.12.23
Sample – Sign Induction Records
NEC 3 Supervisor Reports (Multiple Documents)
Baird CON KSAR Water 2.4 – NHSG Technical Supervisor Statement

Workbook Ref No.	Areas to probe	Evidence expected
2.5	How does the health board ensure that water services are installed in a fashion which will provide ease of access for future maintenance?	Evidence that the contractor has presented their co-ordination drawings (BIM model) to the board. Evidence that the contractor has presented their co-ordination drawings (BIM model) to the design consultant and that they have agreed them for construction. Evidence that the contractor has presented each of the main service runs plus plant rooms to the board's FM team. Evidence that the plant access strategy is being adhered too.

NHS Scotland Assure Observations:
There is no assurance that the water services and drainage systems are installed in a fashion which will provide ease of access for future maintenance. Assurance has not been provided with respect to demonstrating that the design consultant and health board's FM team have been fully engaged in the development of the access and maintenance proposals. There is also no assurance provided with respect to the current construction stage access and maintenance strategy or how access and maintenance issues are being tracked, monitored and agreed resolutions with the relevant stakeholders.

As noted in response to 2.3, evidence has been provided detailing the document review process, however, NHSSA have noted that NHSG have not provided assurance around the application of this process.

There is a lack of documented evidence that confirms the current access and maintenance strategy for the project. There is no assurance that access issues are being addressed in a timeous manner in advance of installation works progressing and are instead being addressed in a reactive manner.

Two video recordings of co-ordination workshops between the PSCP, the M&E sub-contractor and NHSG includes a review of the BIM model via 3D design review software (Navisworks). The first workshop recording provided is dated 28 July 2022 (*NHSGB&~1.MP4*) however the most recent video recording provided (*NHSGB&~2.MP4*) dated 29 February 2024 is for the ANCHOR Centre project and is not specific to the Baird Family Hospital.

The video recording dated 28 July 2022 discusses access and maintenance approaches to one zone of the ground floor area of the building and flags a number of issues and constraints in relation to future access to the building services installations. However, there is no supporting evidence that provides assurance on how these issues are being tracked, monitored and agreed with the board.

During the NHS SA site visit on 20 and 21 March 2024 the M&E sub-contractor confirmed they have recently adopted a process to formally document access and maintenance issues and an associated sign-off process, however, no information has been provided as part of the KSAR review evidence that details this process or how it has been adopted on the project.

Minutes of BIM coordination meetings have also been provided, however the attendance records highlight that neither the design consultant or NHSG were represented. During the Water & Drainage KSAR Technical Workshop on 16 April 2024, NHSG clarified that coordination meetings take place every two weeks, with attendance from the design team and contractor BIM coordinators, with a separate BIM model review workshop every two weeks with NHSG facilities team in attendance however no records of these meetings have been provided as evidence.

NHSG also confirmed during the Water & Drainage KSAR Technical Workshop on 16 April 2024 that weekly walk rounds with members of NHSG facilities team are undertaken to identify any issues in relation to access and maintenance, with agreed amendments being captured in model updates. However, no evidence has been provided to demonstrate how these discussions are documented nor is there evidence of a clear process for tracking, monitoring and closing out the agreed actions from site walk rounds.

An *M&E Health & Safety Risk Assessment and Plant Access & Maintenance Strategy* (*June 2022*) document has also been provided. A statement provided by the NHSG Technical Supervisor in relation to this question notes that *'this document is under consistent review and revision'*, however the document provided by NHSG is the designer's RIBA Stage 4 access and maintenance strategy and is noted as being a draft version. NHSG confirmed during the KSAR Technical Workshop that the access and maintenance strategy is a live document, reviewed every 4 to 6

weeks to reflect site progress, which will feed into the 'as constructed' drawings package. No evidence of this document and its subsequent development during the construction stage has been provided for review.

Key documents referenced are:
N106H-MML-ZZ-ZZ-RP-M-20001_P02
BIM Model Coordination Workshop Video Recording (NHSGB&~1.mp4)
BIM Model Coordination Workshop Video Recording (NHSGB&~2.mp4)
BIM Coordination Meeting Minutes (Multiple Documents)
Baird CON KSAR Review Gap Analysis Water 2.5 NHSG Technical Supervisor Statement

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

NHS Scotland Assure Observations:
Assurance has not been provided to demonstrate that the water services and drainage systems are installed in a fashion which will retain space for minor additions and modifications to services in the future.

The observations noted in response to question 2.5 are also applicable to this question.

No evidence has been provided to confirm that a strategy and allowance for future spare capacity has been agreed and documented by the board. During the Water and Drainage KSAR Technical Workshop on 16 April 2024, NHSG confirmed there was no recorded agreement for spare capacity in plantrooms, risers, and distribution routes to facilitate future additions and modifications of the building services. NHSG did confirm that there is no spare capacity on pipework and cold-water tank sizing of the domestic water system to avoid the risk of introducing stagnation issues, however acknowledged an element of flexibility of the stored water volume in the tanks, with the ability to lower the tank water level in response to a reduced water demand.

A statement provided by the NHSG Technical Supervisor in relation to this question noted that *'NHSG have recently arranged for a Colleague, from Maintenance and Technical Services, to join the Project Team on a full-time basis, with a view to co-ordinating access and maintenance and expansion provision. This Colleague is scheduled to begin the new full-time post from the 7th of February'*. Given current construction progress and lack of documented spare capacity and future flexibility allowances any interventions at this stage of the project will be limited and constrained by the current design proposals and advancing installation.

Key documents referenced are:
N106H-MML-ZZ-ZZ-RP-M-20001_P02
BIM Model Coordination Workshop Video Recording (NHSGB&~1.mp4)
BIM Model Coordination Workshop Video Recording (NHSGB&~2.mp4)
BIM Coordination Meeting Minutes (Multiple Documents)
Baird CON KSAR Water 2.6 – NHSG Technical Supervisor Statement

Workbook Ref No.	Areas to probe	Evidence expected
2.7	How does the health board assure itself that all plumbers materials are stored on site in an environment which protects them from deterioration and from the entry of contaminants into the parts of the component which will be in contact with the water?	Written, monthly evidence for the progress of work produced by a body which is independent of the contractor and which confirms inspection of the site storage of materials. Photographic evidence of the site storage of materials produced by a body which is independent of the contractor (on a monthly basis).

NHS Scotland Assure Observations:

Overall, from the evidence provided by NHSG, assurance has been provided with regards to taking the necessary precautions to ensure all plumbing materials are stored on site in an environment which protects them from deterioration and from the entry of contaminants.

There are however areas, as noted in 2.4 with respect to pipework open ends, where NHSSA have identified further assurance is required.

As noted in response to question 2.4, the Technical Supervisor reports identified regular instances of open ended pipework and inappropriate use of tape to seal off pipe open ends. However, it is unclear from the observations noted in the NEC Supervisors whether these observations related to installed pipework or stored pipework materials.

Key documents referenced are:

KSAR Induction 1 – Plumbing (Hot & Cold Water)
KSAR Induction 2 – Plumbing (Drainage)
KSAR Induction 7 – Duct & Pipe Protection
01326 Baird & Anchor - (XXXXXX) & Subcontractors Training Matrix 01.12.23
Sample – Sign Induction Records
Baird CON KSAR Water 2.4 – NEC 3 Supervisor Reports (Multiple Documents)
Baird CON KSAR Water 2.4 – NHSG Technical Supervisor Statement

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

NHS Scotland Assure Observations:

The evidence that has been submitted by NHSG does not provide assurance that all pre-commissioning inspections are being completed in accordance with SHTM 04-01.

The health board has submitted a series of documents including a commissioning workbook, a sample set of minutes from a project commissioning meeting, a commissioning manager's report and an '*Inspection, Testing and Commissioning Review and Sign Off schedule*'. Whilst these documents provide assurance that the commissioning review process and the respective commissioning roles are being considered, there is limited evidence provided in relation to the pre-commissioning checklists and activities associated with the water and drainage systems.

NHSG have confirmed that PSCP have their own 'independent' commissioning manager appointed who is responsible for undertaking a review of all pre-commissioning documentation and activities. The commissioning review process by the commissioning manager is also documented within the '*Inspection, Testing and Commissioning Review and Sign Off schedule*' however currently notes that all water/drainage related pre-commissioning activities including Inspection and Test Plans (ITPs) have yet to be submitted for review/approval.

NHSG also have confirmed that their Technical Commissioning Manager supports the health board, with input from external third-party consultants with respect to reviewing, tracking and reporting on commissioning activities. Whilst examples of Technical Commissioning Manager weekly reports have been provided as evidence, there are no records within the evidence submitted to confirm review or acceptance of any water/drainage pre-commissioning information.

Within *Annex B* of NHSG's *Water Safety Plan* (WSP), referenced within the *Construction Phase Water Management Plan (CPWMP),* there are checklists that cover pre-commissioning requirements. However, no project specific pre-commissioning check sheets for the water and drainage have been provided for review.

Whilst the *Construction Phase Water Management* has been submitted as evidence, including evidence of review by NHSG and their third-party consultants, this is an initial preliminary issue which NHSG confirmed at the Water and Drainage KSAR Technical Workshop on 16 April 2024 is still currently awaiting board approval.

There is no assurance that the commissioning documentation has been reviewed and approved ahead of drainage / water commissioning activities commencing in July 2024, as per the Baird Family Hospital commissioning programme (*231110 NHSGAS-GRA-XX-XX-RP-W-24400 Main Works Comm BFH Rev 40*).

During the Water and Drainage KSAR Technical Workshop on 16 April 2024 NHSG confirmed that a designers commissioning brief has not been prepared therefore there is no assurance that the commissioning objectives associated with the water and drainage design have been conveyed to the commissioning specialist.

For further detail on other observations specific to the pre-commissioning of the water and drainage systems, such as the status of the Construction Phase Water Management plan, refer to '*3.2.2 Water and Internal Plumbing / Drainage Systems: Further Observations*'.

Key documents referenced are:
Baird CON KSAR Water 2.8 - Comm Workbook P02 20240109
Baird CON KSAR Water 2.8 Baird & Anchor - Commissioning Meeting No 42 090124
Baird CON KSAR Water 2.8 NGB Comm Report 37 - 09.01.24
Baird CON KSAR Water 2.8 NHSG Technical Supervisor Statement
N106H HSFM MEP CVF Tracker 101223.xls - '*Inspection, Testing and Commissioning Review and Sign Off schedule*'

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

NHS Scotland Assure Observations:
The evidence that has been submitted by NHSG does not provide assurance that all variations and derogations which may be required to the plumbing and drainage systems after tender have been investigated and agreed by all relevant stakeholders before they are instigated.

The documentation provided by NHSG includes a *Derogation Guide*, which details the workflow process for managing, reviewing, recording and acceptance of a derogation. NHSG acknowledged during the KSAR weekly progress meeting on 4 April 2024 that this is a new derogations process that has yet to be signed off by the health board and would be retrospectively applied, where possible. A derogations schedule dated 8 November 2022 has also been provided, with 3no. water and drainage associated derogations captured. The derogations schedule provides a high-level summary of each derogation noting; the reason for the derogation, proposed mitigation, residual risks, and whether the derogation has been accepted by the health board and associated stakeholders. No evidence has been provided to confirm a detailed technical analysis of each derogation has been referred to the relevant stakeholders for review and sign off, or that the workflow review process for approval, as detailed within the *Derogation Guide*, has been followed.

During the Water & Drainage KSAR Technical Workshop on 16 April 2024, the health board acknowledged some challenges associated with evidencing the historical management of derogations and that their new process is now being implemented to review key issues on the derogation schedule, and to provide evidence of stakeholder engagement through a series of workshops. No evidence has been provided to confirm the engagement of stakeholders or that workshops have been undertaken.

Evidence has been provided to confirm that NHSG are discussing changes / variations during the construction stage. Information relating to two specific changes (drainage above theatres and the recirculating cold water system) has been provided. The information provided includes minutes from an HAI meeting discussing the risks associated with the recirculating cold water system and a report on the recirculating cold water system produced by the IPC team. Email correspondence and presentation slides prepared by the Contractor in relation to the mitigation measures proposed in relation to the drainage pipework above theatres have also been provided. However, there is a lack of assurance around the robustness of the process adopted to review and document changes and variations to date and there appears to be a lack of any overarching governance procedures.

Similarly, there is a lack of documented evidence in relation to change control / variation forms demonstrating that a full technical analysis for all associated variations has been undertaken. NHSG confirmed during the KSAR Technical Workshop that change control processes for dealing with both Client and Contractor variations are being followed, however no evidence has been provided to support this.

There are significant risks associated with construction works progressing with no assurance provided that all derogations and changes are being appropriately reviewed, risk assessed and mitigation measures in place with the necessary input from all relevant stakeholders.

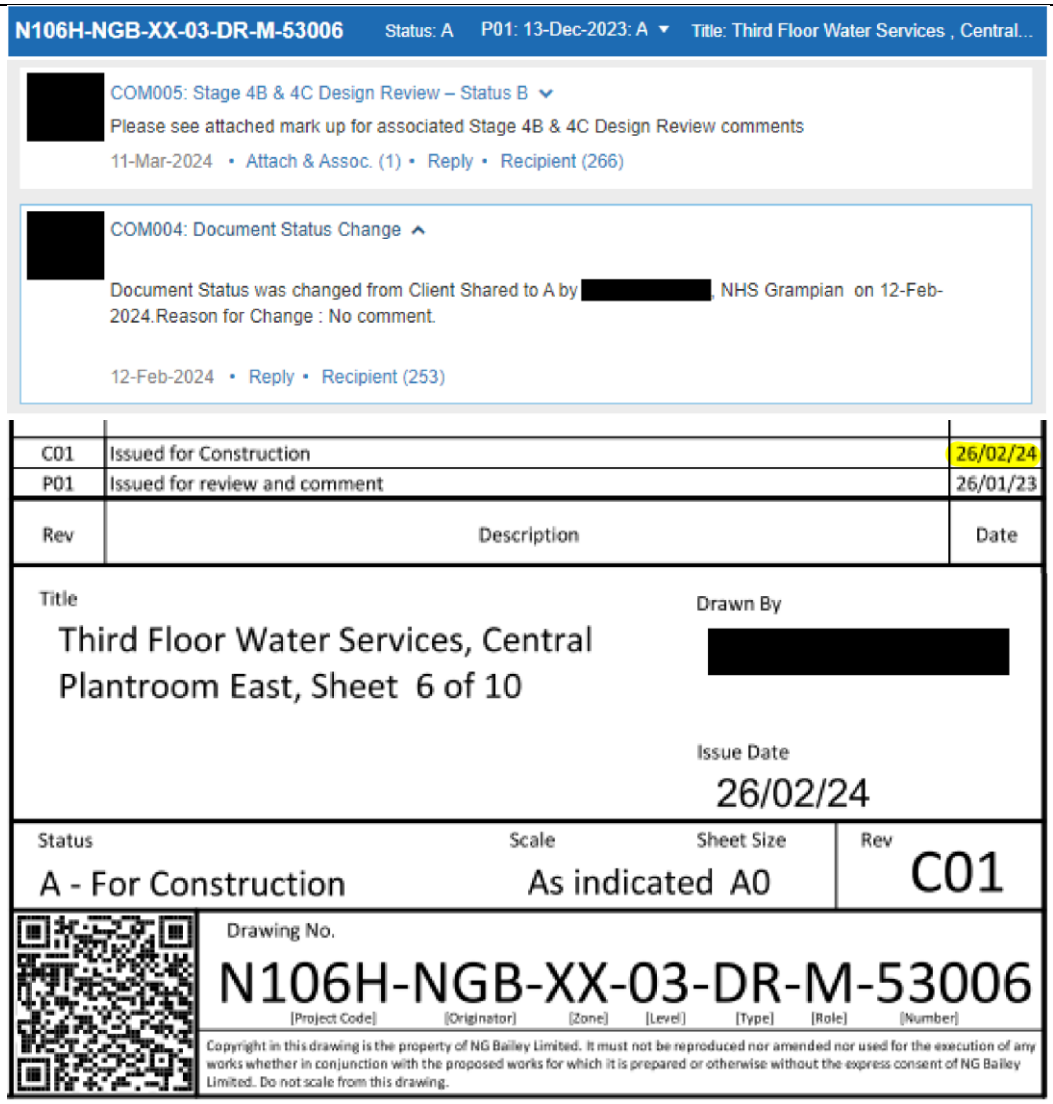
Key documents referenced are:
NHSGAS-GRA-XX-XX-RP-W-11300 – Baird Derogations
Baird CON KSAR Water 2.9 – Derogation Guide DW Dec 23
Baird CON KSAR Water 2.9 – Theatres Drainage Emails (Multiple Documents)

Baird CON KSAR Water 2.9 – Theatres above ceiling drain pres NGB
Baird CON KSAR Water 2.9 – IPC Report Circulating Water
Baird CON KSAR Water 2.9 - DRAFT - Minute of Baird & ANCHOR HAI Session - Water System Design Risk Assessment Review, 14th November 2023

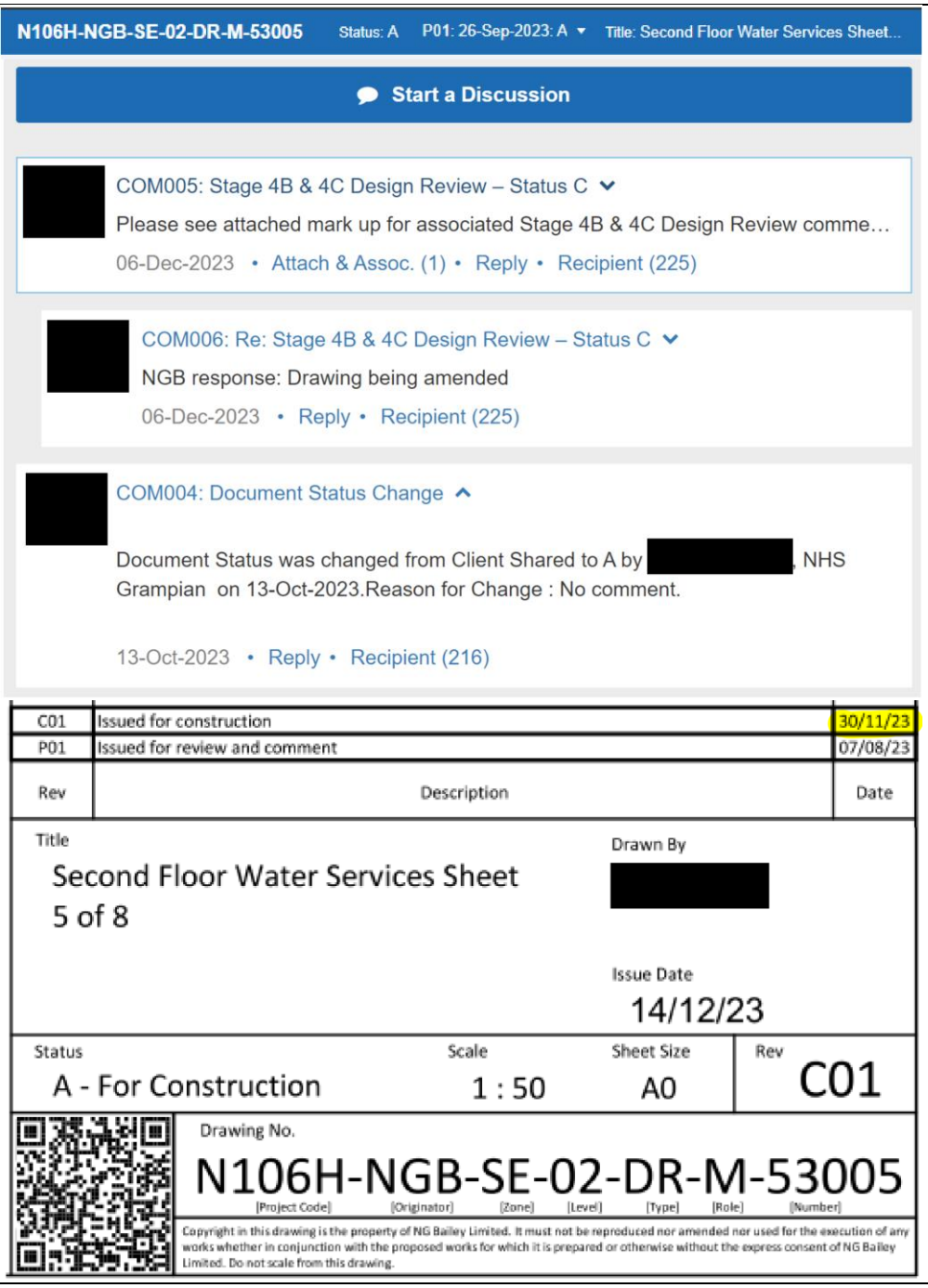
3.2.2 Water and Internal Plumbing / Drainage Systems: Further Observations

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

3.2.2.1	**Aluminium Foil Wrapping of Stainless Steel Pipework** NHS SA observed an inconsistent approach to the application of aluminium foil wrap to stainless steel pipework during the site visit on 20 and 21 March 2024, resulting in a lack of assurance with regards to compliance with SHTM 04-01 Part E clause 3.9. A further site visit was undertaken by NHSSA on 1 May 2024 where installed insulation was removed from pipework in multiple areas and there was a significant number of instances where it was noted that foil wrapping of pipework have been incorrectly applied (e.g. foil applied to the inner surface of the insulation rather than being directly applied and wrapped round the pipework).
3.2.2.2	**Pipework wall sleeves** During the NHS SA site visit on the 01 May 2024, we noted that the pipework is insulated as they pass through walls, and that no pipe sleeves had been applied. This is not in compliance with SHTM 04-01 Part E Clauses 2.28 to 2.31
3.2.2.3	**Asite Water/Drainage Document Review Process** NHS SA observed instances where the Asite review process had not been followed. An example is drawing number N106H-NGB-XX-03-DR-M-53006_Third Floor Water Services, Central Plantroom East - Sheet 6 of 10_Ver2, Revision P01, which was assigned Status A with no comment from the health board on 12 February 2024, the construction issue drawing is dated 26 February 2024. However, the design team subsequently assigned Status B to the P01 revision of the drawing on 11 March 2024.



A second example is drawing number N106H-NGB-SE-02-DR-M-53005_Second Floor Water Services Sheet 5 of 8_Ver3, revision P01, which was assigned Status A with no comment from the board on 13 October 2023, the construction issue drawing is dated 30 November 2023. However, the design team assigned Status C to the original P01 revision of the drawing on 6 December 2023 with comments that have not been picked up on the construction issue drawing, even though there is a response from the contractor that the drawing is being amended.



3.2.2.4	**Construction Phase Water Management Plan (CPWMP)** The CPWMP has not been signed-off for acceptance, with NHSG confirming during the Water & Drainage KSAR Technical Workshop on 16 April, that the intention is to update the document upon approval of the CPWMP for the ANCHOR project. NHSG also confirmed that the process for approval includes further consultation and input from key NHS stakeholders including IPC, AE etc. to agree the content, prior to presenting the document to the Water Safety Group for final sign-off.

3.2.2.5	**Water Safety Plan** NHS Grampian's current Water Safety Plan (WSP) was approved by the Water Safety Group in October 2022. However, it is unclear whether the WSP requires to be updated to reflect the specifics of the Baird facility and any additional requirements a recirculating cold water system may introduce, as well as capturing revised guidance within *BS 8580-2 (2022) Water Quality Risk Assessments for Pseudomonas*, including the requirements for a multidisciplinary risk assessment team approach that includes input from microbiologists, IPC, AE(W) etc.
3.2.2.6	**Pressure Testing of Pipework Prior to Insulation Being Applied** During the site visit on 20 and 21 March, NHS SA noted that insulation of the water services pipework has commenced. However, it is unclear whether the pipework has been pressure tested prior to the insulation being applied, or whether prior agreement confirmed in writing with the client's representative has been obtained, as per SHTM 04-01 Part E clauses 2.27 and 2.49.
3.2.2.7	**Connection of Domestic Water Services Infrastructure to Existing Aberdeen Royal Infirmary (ARI) Reservoir** As part of the domestic water services installation, a connection from the existing ARI reservoir is being derived for the Baird Family Hospital. At the time of the KSAR, no assurance was provided that IPC risks had been fully detailed (for example through a HAI-SCRIBE). There was also no evidence of a risk review in relation to any isolations that may be required to the site wide water infrastructure and their impact on wider clinical services/buildings within the ARI site

3.3 Ventilation

3.3.1 Ventilation: KSAR Observations

Workbook Ref No.	Areas to probe	Evidence expected
3.1	How does the health board assure itself that all duct and plant installers are trained to understand the needs (including special requirements) for the installation of ventilation systems in the healthcare environment?	Evidence of a vetted list of duct and plant installers which confirms qualifications and healthcare experience. Evidence that the site induction with respect to working on ducts and plant services has been developed, implemented and agreed with the board. Evidence that all contractors and sub-contractor competency checks have been completed and signed off.

NHS Scotland Assure Observations:

Assurance has not been provided that ventilation installers are being trained to understand the needs for the installation of ventilation systems in the healthcare environment.

The observations noted in response to question 2.1 apply to this question with respect to ventilation systems. Evidence provided includes ventilation operative workplace inductions, ventilation operative skills cards, and operative attendance at ventilation trade and manufacturer toolbox talks.

There is no evidence provided to confirm that the duct and plant installers have been vetted by the health board, nor is there evidence to demonstrate that the site inductions specific to ventilation have been developed, implemented and agreed with the health board.

There is also no evidence provided to confirm that competency checks for all ventilation systems sub-contractors have been completed and signed off by the health board. There is also no evidence that the vetting of operatives from specialist sub-contractors responsible for ventilation installations, such as the cleanroom areas within the Centre for Reproductive Medicine department, has been undertaken by the board.

Key documents referenced are:

17-KSAR Induction training Ventilation 19.04.22
19-SPIT Toolbox Talk 170522
Induction Records (Multiple Documents)
Skills Cards Records (Multiple Documents)
Baird CON KSAR Review Summary Evidence Ventilation 3.1 NHSG Technical Supervisor Statement

Workbook Ref No.	Areas to probe	Evidence expected
3.2	How does the health board assure itself that the ventilation contracting company and their plant installers have the relevant experience to direct and manage their staff on the site for a healthcare environment?	Evidence of similar, previous healthcare projects by the contractor. Evidence of site management structure.

NHS Scotland Assure Observations:

The evidence that has been submitted by NHSG does not provide assurance that the ventilation contracting company has the relevant experience to direct and manage their staff on the site for a healthcare environment.

The observations noted in response to question 2.1 are also applicable to this question with respect to ventilation.

Evidence provided by NHSG is similar to question 2.1 and includes an organogram detailing the management structure of the ventilation installation sub-contractor however no detail on the key personnel's experience and competency (e.g. curriculum vitae) have been included. Whilst evidence of previous healthcare projects has been provided for the M&E sub-contractor there is no similar evidence provided for the ventilation installation sub-contractor.

There is no assurance provided with respect to the relevant experience of other specialist sub-contractors responsible for ventilation installations, such as the cleanroom areas within the Centre for Reproductive Medicine department.

Overall, no assurance has been provided to confirm that NHSG have vetted and approved the ventilation contracting companies responsible for the ventilation installations for this project.

Key documents referenced are:

*3.2 (XXXXXX MEPH subcontractor**)** – NHS Projects Undertaken*
Baird Anchor HAI SCRIBE contractor endorsement certificate
Baird Anchor - Specific Disciplines 2.1 to 2.7 Organograms 01.12.23
KSAR – NGB Training Induction List 23.10.23
KSAR Induction3 – Ventilation (Ductwork)
KSAR NGB Induction Procedure
01326 Baird & Anchor - (XXXXXX) & Subcontractors Training Matrix 01.12.23
Baird CON KSAR Review Summary Evidence Ventilation 3.2 NHSG Technical Supervisor Statement

Workbook Ref No.	Areas to probe	Evidence expected
3.3	How does the health board ensure that the ventilation systems are being installed to the correct standard and reflect the agreed design?	Written, monthly evidence for the progress of work (including photographs) produced by a body which is independent of the contractor and which confirms compliance of the works to date.

NHS Scotland Assure Observations:

The evidence that has been submitted by NHSG for review does not provide assurance that the ventilation systems are being installed to the correct standard and reflect the agreed design.

The observations noted in response to question 2.3 are also applicable to this question with respect to ventilation. NHS SA have identified issues associated with the process and protocols for document approval not being followed which includes designers rejecting submitted drawings, whilst the drawing has been approved by NHSG and subsequently revised to Construction status by the Contractor. For further specific detail, reference should be made to the observations noted in '*3.3.2 Ventilation Systems: Further Observations*'.

As per question 2.3, whilst evidence has been provided in the form of NEC monthly supervisor progress reports, that confirm the ongoing independent review of the ventilation installations, the reports provided have raised a number of consistent quality related concerns in relation to the ventilation installations. These include incorrectly stored fan coil units (FCUs) with evidence of dirt ingress, air handling units (AHUs) in plantrooms not properly protected, open ended ventilation ducts, damage to cooling coils, ductwork and FCUs being used as workbenches and incorrectly stored ductwork including instances of water ingress to ducts.

During the KSAR Ventilation Technical Workshop on 18 April 2024 the updated interim SHTM 03-01 guidance issued in February 2022 was discussed. NHSG confirmed that the contractual guidance was the 2014 version of SHTM 03-01 and that they would not look to incorporate the new guidance into the current design, unless absolutely necessary. NHS SA recommend that NHS G ensure they are using the most appropriate guidance to ensure safe patient outcomes and where a decision is reached not to use current extant guidance, that a documented risk assessment is captured with input from key stakeholders, including Clinicians and IPCT.

In arriving at this position, it is unclear if NHSG have undertaken an appraisal of the SHTM updates against the current guidance, to determine if any aspects of this updated guidance was considered appropriate to be implemented within the design and installation. It is also unclear how the risk of adopting a hybrid approach by incorporating elements of the new SHTM guidance within the building design and

installation would be managed and recorded through a derogations and variation process.

NHSG advised at the KSAR Ventilation Technical Workshop on 18 April 2024 that the ventilation design for the specialist cleanroom package within the Centre for Reproductive Medicine had been developed by the PSCP's specialist sub-contractor from RIBA Stage 2 onwards. There is no assurance provided by NHSG that they have the required technical expertise within their project team to undertake independent reviews of the design and installation information associated with this specialist package. This includes ensuring compliance with the board's User Requirements Specification (URS), ISO 14644, Good Manufacturing Practice (GMP) regulations and any Human Fertilisation & Embryology Authority (HFEA) licensing requirements.

During the NHS SA site visit on 20 and 21 March 2024 NHS SA also noted observations that relate to elements of the ventilation systems installation such as the proximity of the car park exhaust system to openable windows within clinical areas. For further detail refer to '3.3.2 Ventilation Systems: Further Observations'.

Key documents referenced are:
3.3 Baird KSAR Ventilation Ductwork bends
NEC 3 Supervisor Reports (Multiple Documents)
Baird CON KSAR Vent 3.3 DRAFT Min Baird HAI Sess NNU Risk Asses 050923 GT 2509
Asite Protocol Documents (Multiple Documents)
Baird CON KSAR Ventilation 3.3 NHSG Technical Supervisor Statement

Workbook Ref No.	Areas to probe	Evidence expected
3.4	How does the health board ensure that precautions are taken throughout the works to avoid open duct or plant ends for a period beyond the time needed to make a joint on that duct / plant end?	Photographic and written evidence for the progress of work produced by a body which is independent of the Contractor (on a monthly basis).

NHS Scotland Assure Observations:
The evidence that has been submitted by NHSG for review does not provide assurance that the necessary precautions are being taken during the construction works to avoid open duct or plant ends.

The observations noted in response to question 2.4 and 3.3 are also applicable to this question with respect to ventilation.

Whilst the storage of ventilation plant and materials and the sealing of open-ended ducts was considered satisfactory during the site visit carried out by NHS SA on 20 and 21 March 2024, there is no assurance provided in relation to numerous historical observations and the robustness of the quality management process being adopted with respect to open duct and plant ends.

As noted in question 3.3, within the various NEC Supervisor reports provided there are multiple observations in relation to unsealed and open-ended ductwork including examples of unsealed ductwork adjacent to animal excrement (October 2023 Supervisor Report).

Key documents referenced are:
NEC 3 Supervisor Reports (multiple)
Baird CON KSAR Ventilation 3.4 NHSG Technical Supervisor Statement
Baird CON KSAR Ventilation 3.4 - PSCP Duct & Pipe Protection - Tool Box Talk

Workbook Ref No.	Areas to probe	Evidence expected
3.5	How does the health board ensure that ventilation services are installed in a fashion which will provide ease of access for future maintenance?	Evidence that the Contractor has presented their co-ordination drawings (BIM model) to the board. Evidence that the Contractor has presented their co-ordination drawings (BIM model) to the Design Consultant and that they have agreed them for construction. Evidence that the Contractor has presented each of the main service runs plus plant rooms to the board's FM team. Safe and adequate access has been provided.

NHS Scotland Assure Observations:
The evidence that has been submitted by NHSG for review does not provide assurance that the ventilation systems are installed in a fashion which will provide ease of access for future maintenance.

The observations noted in response to question 2.5 are also applicable to this question with respect to ventilation.

The video recording of the BIM Model Coordination Workshop from 28 July 2022 highlights a number of concerns with respect to ventilation co-ordination including observations that due to the depth of voids any working platform access would need to be at ceiling level to enable access to ventilation services in the upper areas of voids. In some instances, it was noted that due to fixed furniture in rooms an A-frame or ladder access would be the only possibly means of access.

The video recording flagged issues with access to ductwork access panels, restricted access to fire smoke damper actuators and five specific examples where access was very restricted or not possible. As noted in response to question 2.5, there is no assurance provided by the health board around how these issues are being tracked and how solutions, mitigation measures or alternative approaches have been agreed and signed off by the relevant stakeholders. There is also no assurance provided with respect to the practical implications of implementing these access and maintenance requirements in a live clinical environment and the associated HAI-SCRIBE considerations.

During the NHS SA site visit on 20 and 21 March 2024 NHS SA noted observations that relate to access and maintenance of the installed ventilation systems including extremely limited access to ventilation fans within the lower ground floor hot water storage plantroom. For further detail refer to '*3.3.2 Ventilation Systems: Further Observations*'.

Key documents referenced are:
Baird CON KSAR Ventilation 3.5 NHSG Technical Supervisor Statement
BIM Co-ordination Meeting Minutes (Multiple Documents)
Future Maintenance Ventilation
Health & Safety Risk Assessment & Plant Access & Maintenance Strategy
BIM Model Coordination Workshop Video Recording (NHSGB&~1.mp4)
BIM Model Coordination Workshop Video Recording (NHSGB&~2.mp4)
Asite Protocol Documents (Multiple Documents)
Baird CON KSAR Review Gap Analysis Vent 3.5 NHSG Technical Supervisor Statement
3.5 Baird KSAR Construction Gap Analysis

Workbook Ref No.	Areas to probe	Evidence expected
3.6	How does the health board ensure that ventilation services are installed in a fashion which will retain space for minor additions and modifications to services in the future?	Evidence that the contractor has presented their co-ordination drawings (BIM model), with space for future flexibility identified, to the board. Evidence that the design consultant has considered and agreed with the board, space for future flexibility in the service installations. Evidence that the contractor has presented their co-ordination drawings (BIM model), with space for future flexibility identified, to the design consultant and that they have agreed them for construction.

		Evidence that the contractor has presented each of the main service runs plus plant rooms to the board's Estates team and / or, to highlight space for future flexibility. Evidence that the ventilation solution has been agreed with clinical and IPC colleagues. Evidence that the board has agreed a strategy (percentage) for spare capacity and a documented allowance to be incorporated into the design. Are plant rooms, horizontal distribution runs and risers appropriately sized for the equipment being installed and facilitate safe adequate maintenance?

NHS Scotland Assure Observations:

The evidence that has been submitted by NHSG for review does not provide assurance that the ventilation systems are installed in a fashion which will retain space for minor additions and modifications to services in the future.

The observations noted in response to questions 2.5 and 2.6 are also applicable to this question with respect to ventilation.

There is no evidence provided that confirms a documented allowance for spare capacity has been incorporated into the ventilation design. As noted in question 2.6, assurance has not been provided with respect to how access and maintenance provisions would facilitate minor additions or modifications to ventilation systems in future.

Key documents referenced are:

Baird CON KSAR Ventilation 3.6 NHSG Technical Supervisor Statement
Future Maintenance Ventilation
BIM Co-ordination Meeting Minutes (Multiple Documents)
BIM Model Coordination Workshop Video Recording (NHSGB&~1.mp4)
BIM Model Coordination Workshop Video Recording (NHSGB&~2.mp4)
Asite Protocol Documents (Multiple Documents)

Workbook Ref No.	Areas to probe	Evidence expected
3.7	How does the health board assure itself that all ventilation materials are stored on site in an environment which protects them from deterioration and from the entry of contaminants into the parts of the component which will be in contact with the air flow?	Written and photographic, monthly evidence for the progress of work produced by a body which is independent of the contractor and which confirms inspection of the site storage of materials. Photographic evidence of the site storage of materials produced by a body which is independent of the contractor (on a monthly basis).

NHS Scotland Assure Observations:

The evidence that has been submitted by NHSG for review does not provide assurance that the ventilation materials are stored on site in an environment which protects them from deterioration and from the entry of contaminants into the part of the components which will be in contact with the air flow.

The observations noted in response to question 3.3 and 3.4 are also applicable to this question with respect to ventilation.

Whilst the storage of ventilation materials was satisfactory during the site visit carried out by NHS SA on 20 and 21 March 2024, due to the number of historical observations raised, no assurance has been provided regarding the robustness of the quality management process being adopted with respect to the storage of ventilation materials.

As noted in response to question 3.3, within the NEC Supervisor reports there are numerous observations relating to material storage including FCUs not stored in the correct manner and evidence of dirt ingress, air handling units (AHUs) in plantrooms not properly protected, damage to equipment such as cooling coils, air handling units located externally that are not suitable for an external environment and incorrectly stored ductwork including instances of material being submersed in water and water ingress to ducts.

From the evidence submitted, NHSG have not provided assurance around how ventilation materials are stored on site and how any risks associated with potential contamination will be addressed prior to completing installations and progressing to commissioning.

Key documents referenced are:

Ventilation Storage
NEC 3 Supervisor Reports (Multiple Documents)
Baird CON KSAR Ventilation 3.7 - PSCP Duct & Pipe Protection - Tool Box Talk
Baird CON KSAR Ventilation 3.7 NHSG Tech Supervisor Statement

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

NHS Scotland Assure Observations:

The evidence that has been submitted by NHSG for review does not provide assurance that all pre-commissioning inspections are being completed and recorded before commissioning can commence.

The observations noted in response to question 2.8 are also applicable to this question with respect to ventilation.

The documentation submitted provides some evidence of the ongoing pre-commissioning process, clarifies associated roles and responsibilities and provides some evidence of early-stage pre-commissioning activities that have been undertaken and witnessed by NHSG, such as ductwork pressure testing. However, there is no evidence of pre-commissioning checks being carried out in line with the requirements of SHTM 03-01 Part A for the ventilation systems and that they have been audited and signed off by an independent organisation.

This documentation has yet to be reviewed and approved ahead of ventilation commissioning activities commencing in February 2024, as per the Baird Family Hospital commissioning programme (*231110 NHSGAS-GRA-XX-XX-RP-W-24400 Main Works Comm BFH Rev 40*).

As per the response to question 2.8, there is no evidence that NHSG's designers have prepared a commissioning brief for the ventilation systems, therefore, there is no assurance that the commissioning objectives associated with the ventilation design have been conveyed to the commissioning specialist.

During the KSAR Ventilation Technical Workshop on 18 March 2024 the requirement for independent validation of critical or specialist ventilation systems was discussed. NHSG confirmed that the critical or specialist ventilation systems within the building are yet to be fully defined and discussions are ongoing around validation of these systems. There is therefore no assurance around any pre-commissioning activities associated with the undefined critical/specialist ventilation systems.

Key documents referenced are:

N106H HSFM MEP CVF Tracker 101223.xls
Baird CON KSAR Ventilation 3.8 - N106H-NGB-XX-XX-QC-M-35008_Ver1
Baird CON KSAR Ventilation 3.8 Baird & Anchor - Commissioning Meeting No 42 090124
Baird CON KSAR Ventilation 3.8 - Commissioning Workbook P02 - 2024-01-09
Baird CON KSAR Ventilation 3.8 NGB Comm Report 37 - 09.01.24
Baird CON KSAR Ventilation 3.8 NHSG Technical Supervisor Statement
Baird CON KSAR Ventilation 3.8 - wc 27.11.23 Technical Manager Commissioning Weekly Report Baird 29

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

NHS Scotland Assure Observations:

The evidence that has been submitted by NHSG for review does not provide assurance that all variations and derogations which may be required to the ventilation systems after tender, have been investigated and agreed by all relevant stakeholders before they are instigated.

The observations noted in response to question 2.9 are also applicable to this question with respect to ventilation.

NHSG have provided examples of changes implemented after tender that relate to the ventilation systems. The evidence provided includes meeting minutes discussing changes to the ventilation within the MRI suite, including support change control request form and associated drawings. Other information provided includes minutes of a risk assessment review meeting in relation to the design of the ventilation systems within the neo-natal unit and a technical file note in relation to the neo-natal ventilation design from the board's designers. However, as per the response to question 2.9, assurance has not been provided in relation to governance procedures for change management and control of derogations, including associated sign off by the respective stakeholders.

There are also a number of unresolved design matters with no defined timeline to address and conclude the proposed changes. Evidence was provided by NHSG to highlight a number of the design issues that at the time of the KSAR are being reviewed by the health board and the PSCP;

1. Change in use of the MRI prep room, due to NHSG stakeholder concerns around the ventilation design.
2. The use of FCU's in clinical areas
3. The location of supply and extract grilles within the NICU

It is also noted in the *'Baird CON KSAR Ventilation 3.9 NHSG Technical Supervisor Statement'* that; *"that there are other early-stage ongoing discussions into the suitability of some ventilation regimes within the Baird Family Hospital. These are also subject to the same collaborative discussions and risk assessment decision making, however, have not been included within this document or associated evidence."*

During the KSAR Ventilation Technical workshop on 18 April 2024 NHS G confirmed there are a several areas of the design that require feasibility studies to be undertaken to assess the impact of proposed changes and the associated impact on the ventilation systems. These areas include the shared MDT prep within the theatres, changing the Sterile Pack Store (SPS) to a lay-up prep and a review of the theatre recovery area air change rates.

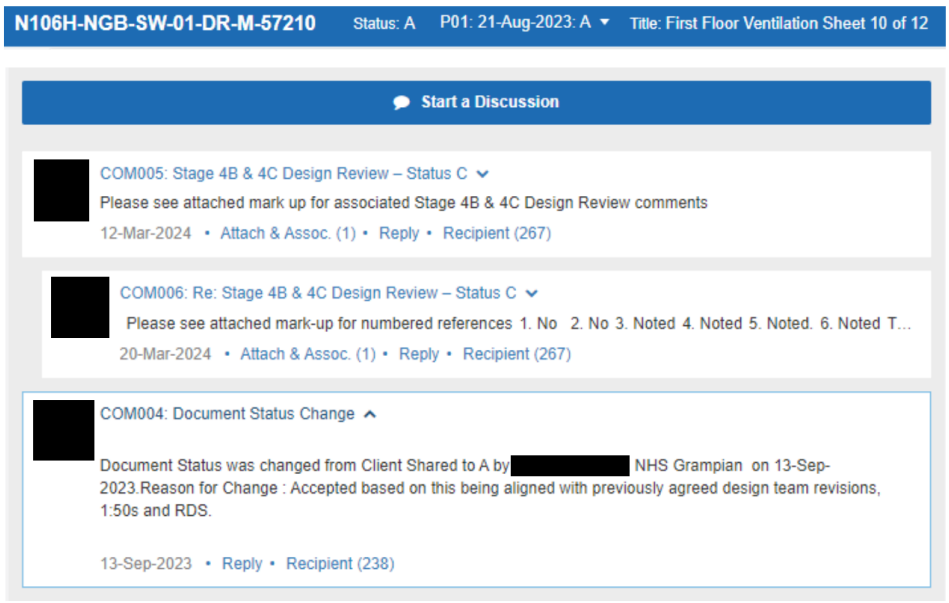
For further detail on other observations specific to the changes to the ventilation systems, such as the theatres, NICU/SCBU and the use of fan coil units in clinical areas, refer to '*3.3.2 Ventilation Systems: Further Observations*'.

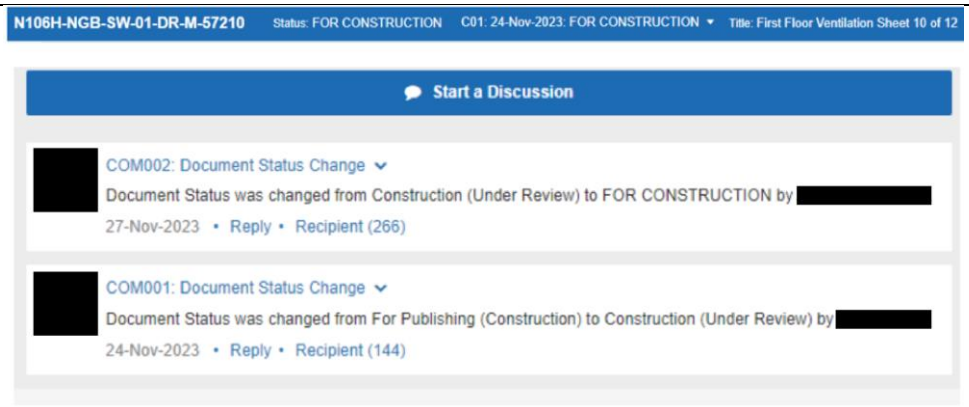
Key documents referenced are:

Baird CON KSAR Water 2.9 - Derogation guide DW Dec 23
Baird CON KSAR Ventilation 3.9 - Change form Baird MRI Prep
Baird CON KSAR Ventilation 3.9 - Document 7 IPCT Redesign advice Fan Coil Units BFH Dec 2023
Baird CON KSAR Ventilation 3.9 – Minute of Baird MRI Meeting 251023
Baird CON KSAR Ventilation 3.9 - SR - MRI020 Prep N106H-NOR-MR-00-DR-A-72020 (5)
Baird CON KSAR Ventilation 3.9 – The Baird Family Hospital NNU & SCBU Ventilation Rev DRAFT
Baird CON KSAR Ventilation 3.9 NHSG Technical Supervisor Statement
Baird CON KSAR Ventilation 3.9 -SR - MRI022 Recovery N106H-NOR-MR-00-DR-A-72022 (4)
Baird CON KSAR Ventilation 3.9 - DRAFT - Minute of Baird HAI Session, Draft NNU Risk Assessment, 5th September 2023 GT 25th Sept
The importance of temperature control in neonatology (1)
Asite Protocol Documents (Multiple Documents)
Baird CON KSAR Review Gap Analysis Ventilation 3.9 NHSG Technical Supervisor Statement
NHSGAS-GRA-XX-XX-RP-W-11300 - Baird Derogations

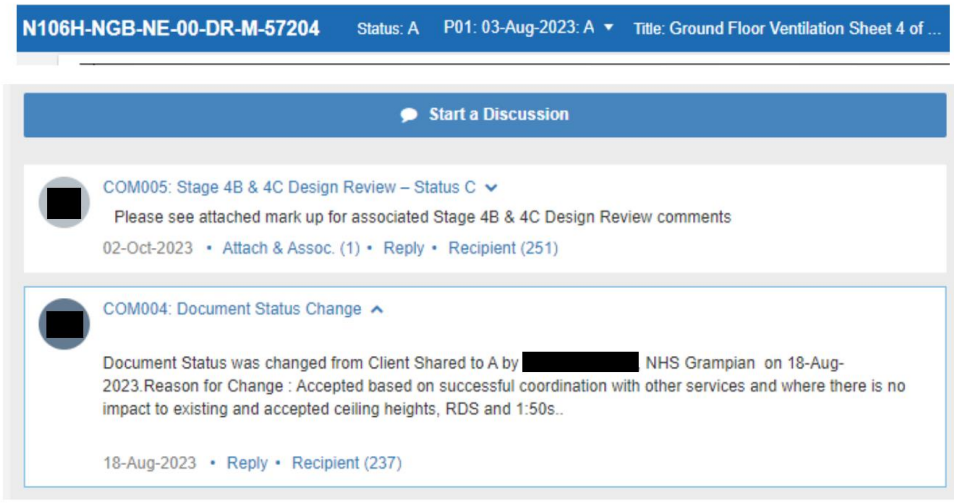
3.3.2 Ventilation: Further Observations

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	**Asite Ventilation Document Review Process** NHS SA observed instances where the Asite review process had not been followed. For example, drawing number *N106H-NGB-SW-01-DR-M-57210_First Floor Ventilation Sheet 10 of 12_Ver2, revision P01* was assigned Status A and approved with comments from the board on 13 September 2023 on the basis of the drawing '*being aligned with previously agreed design team revisions, 1:50s and RDS*'. The construction issue drawing (Revision C01) is dated 29 November 2023. However, the designer has subsequently assigned a Status C (Rejected) to the original P01 drawing on 12 March 2024. There is no evidence provided to confirm that the designers comments have been accepted. Responses provided to a number of the comments by the M&E sub-contractor notes *'Late request. This duct is installed. Instruction required.*' 



Further similar examples include drawing *N106H-NGB-NE-00-DR-M-57204_Ground Floor Ventilation Sheet 4 of 12_Ver2*, which was assigned Status A by the board on 18 August 2023 noting it was accepted '*based on successful coordination with other services and where there is no impact to existing and accepted ceiling heights, RDS and 1:50s*'. The construction issue drawing is dated 29 November 2023, and the designer has subsequently assigned Status C (Rejected) to the P01 revision of the drawing on 2 October 2023.



3.3.2.2	**Non-Standard Theatre Layouts** NHSG have confirmed the theatre layouts are non-standard and derogates from the guidance noted SHTM 03-01, Part A – Appendix 3 and HBN 26 3.22. The derogations relate to a common shared MDT prep room between two theatres and the omission of anaesthetic rooms. No assurance has been provided regarding the review and sign off process for these derogations, including documented evidence of the process followed (including the technical calculation appraisal in accordance with SHTM 03-01, Part A – Appendix 3) and the stakeholders involved in the derogation decision making process. In each pair of theatre suites, the MDT prep area is currently served by each theatre's respective air handling unit. There is no assurance to confirm that the hierarchy of cleanliness and associated theatre pressure regimes would be maintained in the event of an AHU failure or during AHU maintenance activities.
3.3.2.3	**Changes to Theatre MDT Prep and Sterile Pack Store** NHSG have advised during the KSAR Ventilation Technical Workshop of potential changes to the theatre layout including the sub-division of the MDT prep and the sterile pack store changing to a lay-up prep. The board have advised that feasibility of these proposed changes is ongoing and anticipated to be completed in the coming months however there is no timeline on the conclusion of these proposed changes. No assurance has been provided in relation to the programme risks these potential changes introduce and associated clinical implications whilst the installation works continue to proceed.
3.3.2.4	**Theatre Recovery Air Change Rate** The guidance within SHTM 03-01, Part A (7.86) recommends that 15 air changes per hour (ACH) for theatre recovery areas. From the information provided for review (*drawing N106H-NGB-XX-XX-DR-M-37029_AHU 29 Recovery_Ver1, Rev P01*) the air volumes noted equate to circa 11 ACH. There is currently no derogation noted within the derogations schedule (*NHSGAS-GRA-XX-XX-RP-W-11300 – Baird Derogations.xls*) in relation to this. As noted in 3.3.2.3 above, NHS G have advised on ongoing feasibility studies which also include the Theatre Recovery area. There is currently no timeline for the conclusion of these proposed changes. No assurance has been provided in relation to the programme risks and

	associated clinical implications these potential changes introduce whilst the installation works continues to proceed.
3.3.2.5	**NICU/SCBU Air Distribution** During the KSAR Ventilation Technical Workshop on 18 April 2024, the grille layout and direction of airflow within the NICU and SCBU areas was discussed. It was noted that these areas rely on the dilution of air using a mixed airflow distribution approach. The importance of grille selection, placement and spacings to avoid draughts and ensure effective 'scouring' of the space was noted. NHSG confirmed that spacings were defined by reflected ceiling plans and manufacturers rules of thumb however the information provided for review does not provide assurance that grille technical selections and spacings have considered temperatures and associated temperature differentials, air velocities and potential draughts including consideration of incubator locations and the potential impact of medical equipment on airflows. Whilst NHSG noted that the M&E sub-contractor had undertaken a technical appraisal in relation to the above the current construction information has yet to go through a final approval by NHSG and their IPC team.
3.3.2.6	**Fan Coil Units within Clinical Areas** NHSG have provided a document titled '*Baird CON KSAR Ventilation 3.9 - Document 7 IPCT Redesign advice Fan Coil Units BFH Dec 2023*' which reviews the Healthcare Associated Infection (HAI) risk levels associated with rooms where FCU's are installed. *SHTM 03-01, Part A (4.73)* notes auxiliary FCU's should not be installed in ceilings above occupied spaces. *SHTM 03-01, Part A (2.43)* also notes that recirculation of room air may increase the risk of HAI's and therefore FCUs should not be used in critical patient areas. There is currently no derogation noted within the derogations schedule (*NHSGAS-GRA-XX-XX-RP-W-11300 – Baird Derogations.xls*) in relation to this. As noted in 3.3.2.3 above, NHS G have advised on ongoing feasibility studies which also include a review of the FCU provision within the building. There is currently no timeline for the conclusion of these proposed changes. No assurance has been provided in relation to the

	programme risks and associated clinical implications these potential changes introduce whilst the installation works continues to proceed.
3.3.2.7	**Car Park Ventilation Exhaust Location** The exhaust ventilation outlet from the car park ventilation system is in close proximity (circa 6m) to openable windows within clinical areas (e.g. birthing suites on Level 01). No assurance has been provided to confirm if the risks associated with re-entrainment of contaminated air from the car park exhaust into clinical areas has been considered and if this results in operational constraints (e.g. removing the ability to open windows) and impact on the environmental strategies for the impacted spaces.
3.3.2.8	**Access & Maintenance Concerns – Extract Fan Access** Within the lower ground floor hot water plantroom pipework has been installed below an extract ventilation fan preventing access to the fan. Assurance has not been provided in relation to appropriate co-ordination review processes being followed prior to installation works commencing.
3.3.2.9	**AHU Specification – Non-compliance with SHTM 03-01** A number of AHU's on the project are non-compliant with the requirement of SHTM 03-01. These AHUs are recorded within the derogations schedule (*NHSGAS-GRA-XX-XX-RP-W-11300 – Baird Derogations.xls*) as serving areas that are deemed to be non-clinical. However, there is no evidence to confirm how this derogation has been reviewed and appraised with all relevant stakeholders including clinical staff, IPC and Estates. There is also no documentation available that provides clarity and formally records what guidance the AHUs serving the various areas of the building have been designed to comply with including any recent design changes being investigated (e.g. SHTM 03-01 (2014), SHTM 03-01 (2022) or no compliance)**.**
3.3.2.10	**Fire Rated Ductwork Technical Submittal** The certification of all fire resisting ductwork (e.g. Declaration of Performance, Fire Classification Report in accordance with BS EN 13501-3/BS EN 13501-4 as appropriate, third-party certification scheme certificates) have not been provided. An example job

	completion certificate of conformity for an unrelated project has been provided, however no specific examples for the Baird project have been submitted for review. From a further review of the documentation on Asite, NHSSA noted a fire rated ductwork submittal *(NHSGAS-NGB-XX-XX-TS-M-00022_Ventilation Fire Rated Ductwork_Ver1, Rev P01)* which appears to be applicable to both the Anchor and Baird Hospitals. Some of the documentation noted above has been included within the technical submittal. Whilst the submission has been approved by NHSG on 25 January 2023 noting 'No Comment', the designers have subsequently provided this submittal a Status C on 4 February 2022 (e.g. rejected and requires to be resubmitted responding to queries/comments raised). There is no record of a response to the Status C comments provided by the Designers. Fire rated ductwork installation is ongoing on site with no record of an approved technical submittal.

3.4 Electrical

3.4.1 Electrical: KSAR Observations

Workbook Ref No.	Areas to probe	Evidence expected
4.1	How does the health board assure itself that all electricians are trained to understand the needs (including special requirements) for the installation of electrical systems in the healthcare environment?	Evidence of a vetted list of site electricians which confirms qualifications and healthcare experience. Evidence that the site induction with respect to working on electrical services has been developed, implemented and agreed with the board. Evidence that all contractors and sub-contractor competency checks have been completed and signed off.

NHS Scotland Assure Observations:

The evidence that has been submitted by NHSG for review~~,~~ does not provide assurance that all electricians have been trained to understand the specific requirements for the installation of electrical systems in the healthcare environment.

The documentation provided by NHSG includes evidence of skills and competence in electrical works in the form of a training matrix, skills card registrations, general site and electrical specific inductions. Certificates have been provided for Health & Safety training and site safety plus training undertaken by operatives. Other documentation includes records of site safety talks and toolbox talks carried out by the contractor.

The induction records provided are signed by the operatives but have not been signed off by the manager / supervisor. There are no CV's provided which confirm previous healthcare project experience of operatives and site managers / supervisors.

The documentation provided does not confirm the electrical sub-contractors and their installers have been vetted by the health board. There is no documented evidence detailing the vetting process followed, the level of competency checks undertaken, or that the competency of the sub-contractors and their operatives has been signed off by NHSG.

Key documents referenced are:

01326 Baird & Anchor - (XXXXXX) & Subcontractors Trg Mat 011223
KSAR – NGB Training Induction List 23.10.23
KSAR Electrical Induction (Electricians) Issue No 6
KSAR Induction Sign Off Sht 19.9.23
KSAR Induction4 - Electrical (Elec Install)
KSAR NGB Induction Procedure
Baird CON KSAR Review Summary Evidence Electrical 4.1 NHSG Technical Supervisor Statement

Operative individual induction records (Multiple Documents)
Operative individual Health & Safety Training records and CSCS cards (Multiple Documents)

Workbook Ref No.	Areas to probe	Evidence expected
4.2	How does the health board assure itself that the electrical contracting company have the relevant experience to direct and manage their staff on the site for a healthcare environment?	Evidence of similar, previous healthcare projects by the contractor. Evidence of site management structure. Electricians completed approved current BS 7671 training course. Evidence that commissioning contractors have completed relevant test and commissioning courses. Evidence of trained operatives (AP and CP) to SHTM 06-02.

NHS Scotland Assure Observations:

The evidence that has been submitted by NHSG for review, does not provide assurance that the electrical contracting company has the relevant experience to direct and manage their staff on the site for a healthcare environment.

The observations noted in response to question 2.2 are also applicable to this question in relation to electrical services.

No evidence has been provided that operatives (AP and CP) have been trained to the requirements of SHTM 06-02.

Key documents referenced are:
(XXXXXX MEPH subcontractor) - NHS Projects Undertaken
Baird Anchor – Specific Disciplines 2.1 to 2.7 Organograms 01.12.23
Baird Organogram 11.12.23
CCTV Organogram 03.03.22
KSAR – NGB Training Induction List 23.10.23
KSAR NGB Induction Procedure
Baird CON KSAR Review Summary Evidence Electrical 4.2 NHSG Technical Supervisor Statement

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

NHS Scotland Assure Observations:

The evidence that had been submitted by NHSG for review, does not provide assurance that the electrical systems are being installed to the correct standard and reflect the agreed design.

The observations noted in response to question 2.3 are also applicable to this question in relation to electrical services.

During the Construction KSAR review and the KSAR site visit of 20th and 21st March 2024 NHSSA have identified potentially significant non-compliances with electrical standards SHTM 06-01 (2015), BS 7671 18th Edition 2018 & BS 8519 2010 & 2020 which could compromise the integrity of the power supply to the building and to critical areas of the hospital. This includes single points of failure to primary, secondary and tertiary power supplies and single points of failure to critical power supplies and Medical IT socket outlets within Theatres.

These single points of failure could have significant consequences to patient safety and the ongoing operation of the facility in the event of a fire within these areas.

These points are covered in more detail in Further Observations sections 3.4.2.1 – 3.4.2.6 below.

Key documents referenced are:

Baird CON KSAR Electrical 4.3 - NEC 3 Supervisor Report Baird - Oct 23 V2 DW & MW
Baird CON KSAR Electrical 4.3 NEC 3 Supervisor Report Baird – Nov 23
Baird CON KSAR Electrical 4.3 NHSG Technical Supervisor Statement
Baird HV Cable Pressure Test
Baird HV Switchgear Inspection
Baird Transformer Inspection
Baird Cable Termination Inspection
Baird HV Client Training
NGB Baird Electrical HV Energisation Programme

Workbook Ref No.	Areas to probe	Evidence expected
4.4	How does the health board ensure that electrical services are installed in a fashion which will provide ease of access for future maintenance?	Evidence that the contractor has presented their co-ordination drawings (BIM model) to the health board. Evidence that the contractor has presented their co-ordination drawings (BIM model) to the design consultant and that they have agreed them for construction. Evidence that the contractor has presented each of the main service runs plus plant rooms to the health board's FM team.

NHS Scotland Assure Observations:

The evidence that has been submitted by NHSG for review does not provide assurance that the electrical services are installed in a fashion which will provide ease of access for future maintenance.

The observations noted in response to question 2.5 are also applicable to this question in relation to electrical services.

From an electrical perspective there is no assurance that access to smoke detectors in some of the heavily congested corridor ceiling voids for testing and maintenance purposes is achievable.

Key documents referenced are:
N106H-MML-ZZ-ZZ-RP-M-20001_P02
BIM Model Coordination Workshop Video Recording (NHSGB&~1.mp4)
BIM Model Coordination Workshop Video Recording (NHSGB&~2.mp4)
BIM Coordination Meeting Minutes (Multiple Documents)
Future Electrical Services – Statement
Baird CON KSAR Electrical 4.4 NHSG Technical Supervisor Statement

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

		board, space for future flexibility in the service installations. Evidence that the contractor has presented their co-ordination drawings (BIM model), with space for future flexibility identified, to the design consultant and that they have agreed them for construction. Evidence that the contractor has presented each of the main service runs plus plant rooms to the health board's FM team, to highlight space for future flexibility. Evidence that the health board has agreed a strategy (percentage) for spare capacity and a documented allowance to be incorporated into the design. Are sub stations, switch rooms, distribution board cupboards, horizontal distribution runs and risers appropriately sized for the equipment being installed and facilitate safe, adequate maintenance?

NHS Scotland Assure Observations:

Overall, the evidence that has been submitted by NHSG for review does provide assurance that the electrical services systems are installed in a fashion which will retain space for minor additions and modifications to services in the future.

The observations noted in response to question 2.5 and 2.6 in relation to governance and access and maintenance are still also applicable to this question.

Evidence has been provided that the health board has agreed a strategy for spare capacity for the electrical systems. This states that the PSCP shall incorporate 25% spare capacity to the main distribution switchgear, and distribution boards etc. within the facilities and size the installations including all distribution panels, containment, risers etc. to accommodate additional future spare capacity requirements. This spare capacity allowance has been shown on the electrical subcontractors drawings.

This was also demonstrated during the site visit on the 20th & 21st March 2024. Spare capacity had been included within switchrooms, risers, main switchboards, main containment runs, distribution boards and modular wiring distribution points. Risers were accessible and appeared to have sufficient space for cable terminations and future installation of tap-off units and submain cables.

Key documents referenced are:

N106H-NGB-XX-XX-DR-E-41004 Rev C02 Main LV Distribution Schematic sheet 1
N106H-NGB-XX-XX-DR-E-41005 Rev P01 Main LV Distribution Schematic sheet 2
N106H-NGB-XX-XX-DR-E-41006 Rev C01 UPS Switchboard A Schematic
N106H-NGB-XX-XX-DR-E-41007 Rev C02 UPS Switchboard B Schematic
4.5 KSAR Evidence
Baird CON KSAR Electrical 4.5 NHSG Technical Supervisor Statement
NHSGB&~1

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

NHS Scotland Assure Observations:
NHSSA are satisfied that the evidence submitted for review provides assurance that NHSG are taking the necessary precautions to ensure all electrical materials are stored on site in an environment which protects them from deterioration and from the entry of contaminants.

This was also witnessed and recorded during the KSAR site visit on 20th & 21st March 2024.

Key documents referenced are:
Baird CON KSAR Electrical 4.6- NEC 3 Supervisor Report Baird - Oct 23 V2 DW & MW
Baird CON KSAR Electrical 4.6 – NEC 3 Supervisor Report Baird – Nov 23
Baird CON KSAR Electrical 4.6 – NHSG Technical Supervisor Statement

Workbook Ref No.	Areas to probe	Evidence expected
4.7	How does the health board assure itself that all pre-commissioning inspections are completed and recorded before commissioning can commence?	Evidence that adequate pre-commissioning check sheets (e.g. SHTM 06-01 Part A, BS7671, etc.) have been completed and signed off. Evidence that the health board has had all pre-commissioning checks audited and

		approved by an independent organisation.

NHS Scotland Assure Observations:

NHSSA are satisfied that the evidence submitted for review provides assurance that NHSG are assuring themselves that all pre-commissioning inspections are completed and recorded before commissioning can commence.

Evidence provided includes a CVF Tracker document produced by the independent Commissioning Manager. This tracker covers the inspection, testing and commissioning review and sign off for all MEP systems on the project. This includes pre-commissioning checks, installation completeness and readiness for commissioning.

For the electrical systems inspection, testing and commissioning plans have been provided by the electrical subcontractor. These include pre-commissioning inspection checks.

Regular commissioning meetings are held which NHSG technical staff attend. Minutes of these meetings have been provided.

NHSG are attending pre-commissioning witnessing events. Record of attendance for HV cable pressure testing has been provided and signed off by the NHSG HV AP.

Key documents referenced are:

N106H HSFM MEP CVF Tracker 101223xls
Baird CON KSAR Electrical 4.7 - Baird & Anchor - Commissioning Meeting No 42 090124
Baird CON KSAR Electrical 4.7 - HV documentation 1
Baird CON KSAR Electrical 4.7 – HV documentation 2
Baird CON KSAR Electrical 4.7 - NGB Comm Report 37 - 09.01.24
Baird CON KSAR Electrical 4.7 – NHSG Technical Supervisor Statement
Baird CON KSAR Electrical 4.7- Commissioning Workbook P02 - 2024-01-09
Baird HV Cable Pressure Test
231215 - NHSGAS-GRA-XX-XX-RP-W-24400 - Main Works Commissioning BFH - Rev 41
N106H-NGB-XX-XX-QC-E-00005_Ver1
N106H-NGB-XX-XX-QC-M-00001_Ver1
N106H-NGB-XX-XX-QP-E-00004_Ver6 (1)
Overall commissioning plan V1
NHS Grampian KSAR Review Summary Evidence (12)

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

NHS Scotland Assure Observations:

The evidence provided by NHSG for review does not provide assurance that all variations and derogations which may be required for the electrical systems have been fully investigated and agreed by all parties before they are instigated.

The comments noted in response to question 2.9 are also relevant to this question.

There are 4 derogations related to electrical systems within the project Derogations Schedule dated 8th November 2022 which was issued for review. Supporting evidence has been provided in relation to one of the derogations raised for the reduction in fuel storage capacity for the generators. The reason for the derogation, proposed mitigation and residual risks have been reviewed by NHSG and the derogation has been accepted and signed off. There is no supporting evidence provided for the other 3 derogations.

For the derogation raised in relation to the location of the IPS panels within the building, there is no assurance that the derogation has been fully considered. The derogation has highlighted a departure from SHTM 06-01 that the circuit lengths will exceed the 30m permitted by the standard. This appears to have been accepted by NHSG but the risks have not been fully understood or reviewed. NHSG have not considered the resilience issues and single point of failure for all theatre IPS sockets by having the IPS panels all in a single location and also having all cables to each theatre in a single containment system.

There are also other non-compliances and departures from BS7671, BS8519 and SHTM 06-01 which have been identified during the KSAR review process and noted in section 3.4.2 below. These have not been picked up during the design stage and have not been identified or highlighted during the transition to construction stage. No assurance has been provided to show the robustness of the review process and how the implication of each derogation is being considered and assessed.

Key documents referenced are:

Baird CON KSAR - Electrical 4.8 - Risk Assessment MEP 02 Fuel storage
Baird CON KSAR Electrical 4.8 – Derogation guide DW Dec 23
Baird CON KSAR Electrical 4.8 - NHSG Technical Supervisor Statement
Baird CON KSAR Electrical 4.8 - SBAR Standby Generator Fuel Supply reduction
Change Request Form Tracker – live

NHSGAS-GRA-XX-XX-RP-W-11300 – Baird Derogations *NHSGAS-GRA-XX-XX-PO-W-01100 – 01106 – Asite Protocols*

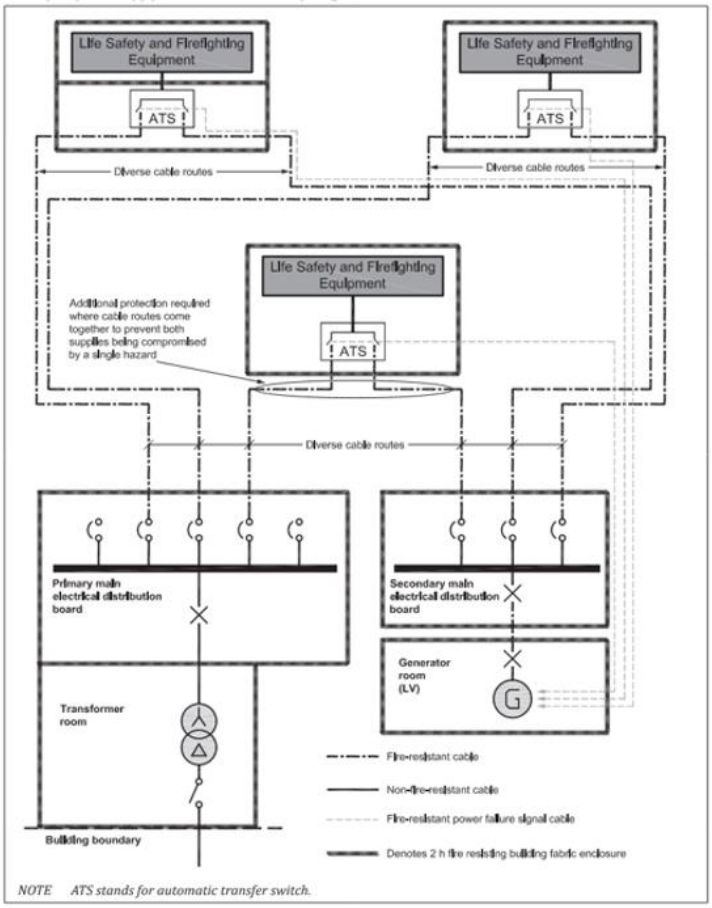
3.4.2 Electrical: Further Observations

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

3.4.2.1	**Incoming HV Supplies** The Baird FH has two HV cables entering the building and routed through the building at high level within the lower ground plant rooms and lower ground car park area. The cables form a ring circuit and are routed on different trays and run along different routes within the car park. The cables are not fire rated and are not protected against the risk of damage by exposure to fire. The car park area is also a single fire compartment. Therefore, a fire within the car park area could affect both HV supply cables to the building. This is a departure and non-compliance from BS 8519 which states the following: ***6.2 primary supply*** *"The incoming utility supply cables should, where practicable, enter directly the HV/LV switchrooms and not pass through the building. Where HV supply cables need to be routed through the building, the HV cable routes should be fire protected for 120 min".* *Key documents referenced are:* *N106H-NGB-XX-XX-DR-E-60002 rev C01 – HV West Ring Proposed Layout*
3.4.2.2	**Essential and Non-essential LV switchboard locations** The Baird FH installation has the UPS Essential Services LV Switchboards located within the same room as the main electrical distribution system LV switchboards. Therefore, essential and non-essential circuits are not contained within separate fire rated enclosures. This is a departure and non-compliance with BS 8519 which states the following:

	8.0 Fire-resisting building fabric enclosures *"Switchrooms, substations and plant rooms containing any of the following equipment feeding the life safety, fire-fighting and other critical system equipment should be separated from other non-fire-fighting building services and the rest of the building by a fire-resisting enclosure classified REI or EI 120 in accordance with BS EN 13501-2:2016:"* • *high-voltage switchgear;* • *transformers;* • *low-voltage switchgear;* • *distribution boards;* • *motor control panels;* • *smoke control/clearance plant;* • *pressurization plant;* • *communication equipment;* • *automatic changeover devices, with their associated switchgear; and* • *any other equipment associated with life safety and fire-fighting systems.* *Documents referenced are:* *Lower Ground Floor Containment drawings Sheets 1 – 8 Rev C02* *The installation was witnessed during KSAR site visit of 20th March 2024.*
3.4.2.3	**Diverse routing of A & B LV submain cables** A&B LV switchrooms have been provided to incorporate A&B resilient supplies throughout the building. The A&B submain cable supplies exit the A&B switchrooms at lower ground floor level and enter into the same services distribution corridor. The main services distribution corridor which both sets of cables are routed through is a single fire compartment and as such is a single point of failure for both A&B supplies. If there was a fire within the main service corridor both sets of supplies could be lost effectively losing the whole supply to the hospital. This is a departure and non-compliance with BS 8519 which states the following: *7.3 LV Power Supplies*

"When designing diverse cable routes, any fire risks located within the area of the cable route should be identified. Where the diverse routes come together in the same area (external to the fire-resisting and water-protected building fabric enclosure housing the life safety and fire-fighting equipment), they should be separated by fire compartmentation with a fire resistance period of at least the fire survival time in Clause 5 for the appropriate system. In the case of two low-voltage cables (i.e. 400 V 3-phase), the cables should be selected for the appropriate fire survival time (see Clause 11 for cable selection and Clause 5 for the fire survival times). The life safety, fire-fighting and other critical system cables should be installed on a dedicated cable support system, independent of other cable support systems and designed to maintain its circuit integrity when exposed to fire conditions for a period of at least the survival time in Clause 5 for the appropriate system that it supports."



***Key documents referenced are**:*

Lower Ground Floor Containment drawings Sheets 1 – 8 Rev C02
N106H-NGB-XX-XX-DR-E-41004 Rev C02 Main LV Distribution Schematic sheet 1

	N106H-NGB-XX-XX-DR-E-41005 Rev P01 Main LV Distribution Schematic sheet 2 *N106H-NGB-XX-XX-DR-E-41006 Rev C01 UPS Switchboard A Schematic* *N106H-NGB-XX-XX-DR-E-41007 Rev C02 UPS Switchboard B Schematic* *The installation was witnessed during KSAR site visit of 20th March 2024.*
3.4.2.4	**Secondary Supply from Generator** At Baird FH the generators are housed external to the building. There are 3 generators contained with the external generator enclosure. IP68 cast resin fire rated busbar systems are provided connecting the generators to the generator LV distribution panel located within the building at lower ground floor level. From the generator LV switchroom busbar connections are provided to the A&B LV switchboards located at lower ground floor level. These busbars are not fire rated. The busbars are routed through the same main lower ground floor service corridor as the A&B LV submain cables. Any fire occurring in this corridor could impact the A&B supplies to the building and the potential for use of the generator secondary supply. This is a departure and non-compliance with BS 8519 which states the following: *6.3 Secondary Supplies* *"Where both the primary and secondary supplies are located on the ground floor or roof level, the designer should ensure that they are suitably protected such that the risk of a fire affecting both supplies is minimized as far as practicable. This should be achieved by enclosing each within a 120 min fire-resisting enclosure (REI, EI or ESa in accordance with BS EN 13501-2:2016) or by separation if it can be shown by a fire safety engineering analysis by a suitably qualified fire safety engineer that fire or smoke will not spread from one to the other."* The figure above in 3.4.2.3 also shows the secondary supply from the generator as fire rated. The busbar technical submission N106H-NGB-XX-XX-TS-E-00017 Rev P01 states that the runs from the generator distribution panel to the A&B

	LV switchboards will be by IP68 Cast Resin busbar. This is not reflected in the installation on site. NHSG have not highlighted this non-compliance or raised a derogation for it. ***Key documents referenced are:*** *N106H-NGB-XX-XX-TS-E-00017 Rev P01 – Busbar Technical Submission* *N106H-NGB-XX-XX-DR-E-41004 Rev C02 Main LV Distribution Schematic sheet 1* *N106H-NGB-XX-XX-DR-E-41005 Rev P01 Main LV Distribution Schematic sheet 2* *N106H-NGB-NE-LG-DR-E-66002_Lower Ground Floor Containment Sheet 2 of 8_Ver3* *N106H-NGB-SE-LG-DR-E-66003 Rev C02 – Lower Ground Containment Sheet 3 of 8* *N106H-NGB-SE-LG-DR-E-66004 Rev C02 – Lower Ground Containment Sheet 4 of 8*
3.4.2.5	**Fire Rating of LV Submain Cables** The main LV distribution schematic drawings (note 11) for the project state which cables are to be fire rated. The corresponding MEP consultant cable schedule does not reflect this. Some of the cables noted on the schematic drawing as being fire rated e.g. the supplies to the main rising busbar systems are shown as standard grade cable on the MEP consultant schedule. The UPS distribution schematic drawings state that all cables are to be fire rated. All fire rated cables noted on the MEP consultant cable schedule are noted as “Prysmian FP400 Fire Resistant Cable”. This cable has a 1-hour fire rating. It may be appropriate to use a 1-hour fire rated cable for some applications within the building, however there are some systems within the building e.g. car park smoke extract systems which require cables of a 2-hour fire rating. This may require the main distribution cables upstream of these systems to also be wired in 2-hour fire rated cables. NHSG to carry out a full review of the cable requirement to ensure suitably fire rated cables are used throughout the building. This should also include fire rating of cables to life safety critical systems such as supplies to theatres and other patient critical areas. ***Key documents referenced are:***

	N106H-NGB-XX-XX-DR-E-41004 Rev C02 Main LV Distribution Schematic sheet 1 *N106H-NGB-XX-XX-DR-E-41005 Rev P01 Main LV Distribution Schematic sheet 2* *N106H-NGB-XX-XX-DR-E-41006 Rev C01 UPS Switchboard A Schematic* *N106H-NGB-XX-XX-DR-E-41007 Rev C02 UPS Switchboard B Schematic* *N106H-MML-ZZ-ZZ-SH-E-41002 Rev P09 – XXXXXXXX (MEP Consultant) LV Cable Schedule*
3.4.2.6	**Medical IT equipment locations and supply distribution** The LV and UPS schematic drawings state that Clinical Risk 5 areas of the building will be provided with dual unified distribution and final circuits with UPS and IPS systems. SHTM 06-01, section 6.44 states that for dual unified circuits the first single point of failure shall be at the point of use. This is repeated throughout the standard. SHTM 06-01, section 16.34 also states final circuit lengths from IPS panels should be within 30m. At Baird FH the IPS panels feeding all theatres are located within a single central plantroom. The A&B circuits appear to be contained on the same single containment system from the plantroom to each theatre. It would also appear that the circuit lengths to the furthest away theatres will exceed the 30m limit. The panel locations and cable routes represent a single point of failure upstream of the point of use and are therefore a departure from the SHTM 06-01 guidance. NHSG have not highlighted these non-compliance issues or raised a derogation for them. ***Key documents referenced are:*** *N106H-NGB-XX-XX-DR-E-41004 Rev C02 Main LV Distribution Schematic sheet 1* *N106H-NGB-XX-XX-DR-E-41005 Rev P01 Main LV Distribution Schematic sheet 2* *N106H-NGB-XX-XX-DR-E-41006 Rev C01 UPS Switchboard A Schematic* *N106H-NGB-XX-XX-DR-E-41007 Rev C02 UPS Switchboard B Schematic* *N106H-NGB-NW-01-DR-E-66002 Rev C02 – First Floor Containment Sheet 2 of 9*

N106H-NGB-NE-01-DR-E-66003 Rev C02 – First Floor Containment Sheet 3 of 9

3.5 Medical Gases

3.5.1 Medical Gases: KSAR Observations

Workbook Ref No.	Areas to probe	Evidence expected
5.1	How does the health board assure itself that all medical gas installers are trained to understand the needs (including special requirements) for the installation of medical gas systems in the relevant healthcare environment?	Evidence of a vetted list of site medical gas installers which confirms qualifications and healthcare experience. Evidence that the site induction with respect to working on medical gas services has been developed, implemented and agreed with the board. Evidence that all contractors and sub-contractor competency checks have been completed and signed off.

NHS Scotland Assure Observations:
The evidence that has been submitted by NHSG for review does not provide assurance that medical gas installers are being trained to understand the needs for the installation of medical gas systems in the healthcare environment.

The observations noted in response to question 2.1 apply to this question with respect to medical gas systems.

Evidence provided includes a medical gas operative training matrix, records of site specific inductions, medical gas operative training certification, and skills cards. However, there is no evidence provided to confirm that the medical gas installers have been vetted by the health board, nor is there evidence to demonstrate that the site inductions specific to medical gases have been developed, implemented and agreed with the health board.

Key documents referenced are:
Operative Name – All Certs (Multiple Documents)
KSAR NGB Induction Procedure
NHSG Sign Induction Records (Multiple Documents)
Algas Training Matrix ALGAS-SHTM-02-01-TM
01326 Baird & Anchor - (XXXXXX) & Subcontractors Training Matrix 01.12.23
5.1.4 Safe Contractor Certificate – 11012022
5.1.2 BSI Registration FS 549767
KSAR Induction6 - Medical Gases (MGPS)
KSAR - NGB Training Induction List 23.10.23

Workbook Ref No.	Areas to probe	Evidence expected
5.2	How does the health board assure itself that the medical gas contracting company have the relevant experience to direct and manage their staff on the site for the relevant healthcare environment?	Evidence of similar, previous healthcare projects by the contractor. Evidence of site management structure. AP and CP training to SHTM 02-01 for operatives.

NHS Scotland Assure Observations:

Overall, the evidence that has been submitted by NHSG for review provides assurance that the medical gas contracting company has the relevant experience to direct and manage their staff on the site for a healthcare environment.

The evidence provided by NHSG includes an organogram detailing the site management structure for the medical gas installation sub-contractor. However, there is no evidence that details the healthcare experience of the individuals noted within the organogram (e.g. curriculum vitae).

Evidence of the medical gas specialist contractor's previous healthcare experience on various projects has also been provided.

The training matrix and medical gas operatives training certification provided in response to question 2.1 confirms that AP and CP training to SHTM 02-01 has been undertaken.

Key documents referenced are:

01326 Baird & Anchor - (XXXXXX) & Subcontractors Training Matrix 01.12.23
5.1.2 BSI Registration FS 549767
KSAR Induction6 - Medical Gases (MGPS)
KSAR NGB Induction Procedure
Algas Ltd - NHS Scotland - Projects Undertaken
Baird Anchor - Specific Disciplines 2.1 to 2.7 Organograms 01.12.23

Workbook Ref No.	Areas to probe	Evidence expected
5.3	How does the health board ensure that the medical gas systems are being installed to the correct standard and reflect the agreed design?	Written and photographic, monthly evidence for the progress of work produced by a body which is independent of the contractor and which confirms compliance of the works to date.

NHS Scotland Assure Observations:

The evidence that had been submitted by NHSG for review, does not provide assurance that the medical gas systems are being installed to the correct standard and reflect the agreed design.

The observations noted in response to question 2.3 are also applicable to this question in relation to medical gas services.

During the Construction KSAR review and the KSAR site visit of 20 and 21 March 2024 NHSSA have identified areas where the medical gas system installation and design are not to the correct standards and discrepancies between design information have been carried through to construction with no further evidence to demonstrate these have been reviewed and addressed. For further detail refer to '*3.5.2 Medical Gases: Further Observations*'

Key documents referenced are:

NEC 3 Supervisor Reports (Multiple Documents)
Baird CON KSAR Mg 5.3 - NHSG Technical Supervisor Statement
Baird CON KSAR Mg 5.3 - NEC 3 Supervisor Report Baird Oct23 V2 DW & MW
Baird CON KSAR Mg 5.3 - TMWR Baird 40
Baird CON KSAR Mg 5.3 - TMWR Baird 41
Baird CON KSAR Mg 5.3 - TMWR Baird 44
Baird CON KSAR Mg 5.3 - TMWR Baird 45
Baird CON KSAR Mg 5.3 NEC 3 Supervisor Report Baird - Nov 23

Workbook Ref No.	Areas to probe	Evidence expected
5.4	How does the health board ensure that precautions are taken throughout the works to avoid open pipe ends for a period beyond the time needed to make a joint on that pipe end?	Photographic and written evidence for the progress of work produced by a body which is independent of the contractor (on a monthly basis).

NHS Scotland Assure Observations:

The evidence that has been submitted by NHSG for review does not provide assurance that the necessary precautions are being taken during the construction works to avoid open pipe ends.

The observations noted in response to question 2.4 and 5.3 are also applicable to this question with respect to medical gas.

During the site visit carried out by NHS SA on 20 and 21 March 2024 a number of pipework fittings were observed as having been installed but joints were yet to be brazed, with certain joint locations located near already insulated ductwork presenting a potential risk of brazing being required to be undertaken in close proximity to potentially flammable materials.

SHTM 02-01 notes that prepared joints will pick up surface tarnish or moderate oxidation if left and can influence the quality of braze particularly when the permitted depth of braze is 3mm. SHTM 02-01 also notes that failure to braze within a day can be accepted, however any delay should not extend beyond the third day. No assurance was provided to confirm that these requirements were being followed.

Key documents referenced are:
NEC 3 Supervisor Reports (Multiple Documents)
Baird CON KSAR Mg 5.3 - NHSG Technical Supervisor Statement

Workbook Ref No.	Areas to probe	Evidence expected
5.5	How does the health board ensure that medical gas services are installed in a fashion which will provide ease of access for future maintenance?	Evidence that the contractor has presented their co-ordination drawings (BIM model) to the board. Evidence that the contractor has presented their co-ordination drawings (BIM model) to the design consultant and that they have agreed them for construction. Evidence that the contractor has presented each of the main service runs plus plant rooms to the health board's FM team.

NHS Scotland Assure Observations:
The evidence that has been submitted by NHSG for review does not provide assurance that the medical gas systems are installed in a fashion which will provide ease of access for future maintenance.

The observations noted in response to question 2.5 are also applicable to this question with respect to ventilation.

During the NHS SA site visit on 20 and 21 March 2024 NHS SA noted observations that relate to access and maintenance of the installed medical gas systems. For

example, the clearance between medical gas pipework and other services was found to be less than 150 mm. Also, medical gas pipework was found installed between electrical services.

Pipework within the corridors is predominantly installed beneath other services. Some pinch points exist where medical gas piping intersects with other services, with medical gases piping installed less than 150 mm from other services, making access difficult. Piping was also observed to be located in between electrical services above 60 minute fire rated doors, which is not permitted under SHTM 02-01.

Key documents referenced are:
NHSGAS-NGB-XX-XX-TS-M-00007
MGPS-ITP-B&A-1250
N106H-NOR-XX-XX-MN-A-43401_Rev 16
NHSGAS-GRA-XX-XX-PO-W-01100 to 01106

Workbook Ref No.	Areas to probe	Evidence expected
5.6	How does the health board ensure that medical gas services are installed in a fashion which will retain space for minor additions and modifications to services in the future?	Evidence that the contractor has presented their co-ordination drawings (BIM model), with space for future flexibility identified, to the health board. Evidence that the design consultant has considered and agreed with the board, space for future flexibility in the service installations. Evidence that the contractor has presented their co-ordination drawings (BIM model), with space for future flexibility identified, to the design consultant and that they have agreed them for construction. Evidence that the contractor has presented each of the main service runs plus plant rooms to the health board's FM team, to highlight space for future flexibility.

NHS Scotland Assure Observations:
The evidence that has been submitted by NHSG for review does not provide assurance that the medical gas systems are installed in a fashion which will retain space for minor additions and modifications to services in the future.

The observations noted in response to questions 2.5, 2.6 and 5.5 are also applicable to this question with respect to ventilation.

NHSG have confirmed that there is a current design provision of 25% spare capacity for future expansion and flexibility. Flow calculations undertaken by the medical gas specialist has been provided that confirm that this spare capacity allowance has been incorporated into the medical gas design and installation. However, as noted within the observations in response to questions 2.5 and 5.5 there is no assurance around how the current access and maintenance provisions would facilitate minor additions or modifications to the medical gas systems in future.

Key documents referenced are:

NHSGAS-NGB-XX-XX-TS-M-00007 P02_Ver2
5.6 Future expansion flexibility
Medical Gas KSAR Evidence
MGPS-ITP-B&A-1250
N106H-NOR-XX-XX-MN-A-43401_Rev 16
NHSGAS-GRA-XX-XX-PO-W-01100 to 01106
BIM Co-ordination Meeting Minutes (Multiple Documents)
BIM Model Coordination Workshop Video Recording (NHSGB&~1.mp4)
BIM Model Coordination Workshop Video Recording (NHSGB&~2.mp4)
Baird CON KSAR Mg 5.6 - NHSG Technical Supervisor Statement

Workbook Ref No.	Areas to probe	Evidence expected
5.7	How does the health board assure itself that all medical gas materials are stored on site in an environment which protects them from deterioration and from the entry of contaminants into the parts of the component which will be in contact with the gas?	Written, monthly evidence for the progress of work produced by a body which is independent of the contractor and which confirms inspection of the site storage of materials. Photographic evidence of the site storage of materials produced by a body which is independent of the contractor (on a monthly basis).

NHS Scotland Assure Observations:

Overall, from the evidence provided by NHSG assurance has been provided with regards to taking the necessary precautions to ensure all medical gas materials are stored on site in an environment which protects them from deterioration and from the entry of contaminants.

As noted in response to question 5.4, the storage of medical gas materials was considered satisfactory during the site visit carried out by NHS SA on 20 and 21 March

2024 with a secure storage facility within the basement car park area allocated to medical gas materials. Furthermore, within the NEC Technical Supervisors weekly reports the storage of medical gas materials is consistently noted as being satisfactory with photographic records to support this view. However, there were some observations on the Medical Air Compressor on level 3 plantroom noting that it was wrapped but the piping to the equipment remained uncapped, leaving it vulnerable to debris ingress.

Key documents referenced are:
NEC 3 Supervisor Reports (Multiple Documents)
Baird CON KSAR Mg 5.7 - NEC 3 Supervisor Report Baird - Nov 23
Baird CON KSAR Mg 5.7 - NHSG Technical Supervisor Statement

Workbook Ref No.	Areas to probe	Evidence expected
5.8	How does the health board assure itself that all pre-commissioning inspections are completed and recorded before commissioning can commence?	Evidence that adequate pre-commissioning check sheets (e.g. SHTM 02-01 Part A) have been completed and signed off. Evidence that the health board has had all pre-commissioning checks audited and approved by an independent organisation.

NHS Scotland Assure Observations:
Overall, NHSSA are satisfied that the evidence submitted for review provides assurance that NHSG are ensuring all pre-commissioning inspections are completed and recorded before commissioning can commence.

As noted in question 2.8, evidence provided includes a '*CVF Tracker'* document produced by the Contractor's Commissioning Manager. This tracker covers the inspection, testing and commissioning review and sign off for all medical gas systems on the project. This includes pre-commissioning checks, installation completeness and readiness for commissioning in accordance with SHTM 02-01.

Medical gas systems inspection, testing and commissioning plans have also been provided by the medical gas subcontractor and include pre-commissioning inspection checks. In addition to this evidence of factory acceptance tests (FAT) for medical gas plant has been provided demonstrating attendance and sign of by the medical gas specialist, Contractor, and the Medical Gas Contract Supervising Officer (CSO).

Evidence that NHSG are attending pre-commissioning witnessing events has also been provided including records for medical gas piping pressure testing that have been signed off by medical gas AP.

Key documents referenced are:

Baird CON KSAR Mg 5.8 NHSG Technical Supervisor Statement
N106H HSFM MEP CVF Tracker 101223xls
Baird CON KSAR Mg 5.8 - N106H-NGB-XX-XX-QC-M-25003_Ver1
Baird CON KSAR Mg 5.8 - N106H-NGB-XX-XX-QC-M-25002_Ver1
Baird CON KSAR Mg 5.8 - Commissioning Workbook P02 - 2024-01-09
Baird CON KSAR Mg 5.8 - Baird & Anchor - Commissioning Meeting No 42 090124
Baird CON KSAR Mg 5.8 - NGB Comm Report 37 - 09.01.24

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

NHS Scotland Assure Observations:
The evidence that has been submitted by NHSG for review does not provide assurance that all variations and derogations which may be required to the medical gas systems after tender, are investigated and agreed by all relevant stakeholders before they are instigated.

The observations noted in response to question 2.9 are also applicable to this question with respect to medical gas pipeline systems.

NHSG have provided an example of changes to the medical gas system (removal of nitrous oxide) implemented after tender. The information provided includes some evidence in relation to a technical appraisal and analysis however, as per the response to question 2.9, assurance has not been provided in relation to governance procedures for change management and control of derogations including associated sign off by the respective stakeholders.

Therefore, assurance has not been provided to demonstrate that each variation / derogation has a detailed technical analysis and has been referred to the board and agreed with their medical gas safety group.

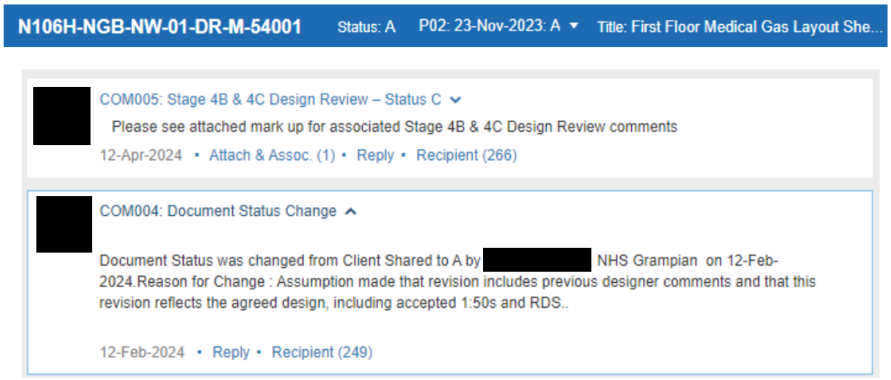
Key documents referenced are:
Baird CON KSAR Mg 5.9 - NHSG Technical Supervisor Statement
Baird CON KSAR Mg 5.9 - Derogation guide DW Dec 23
N106H HSFM MEP CVF Tracker 101223xls
NHSGAS-GRA-XX-XX-PO-W-01100 to 01106

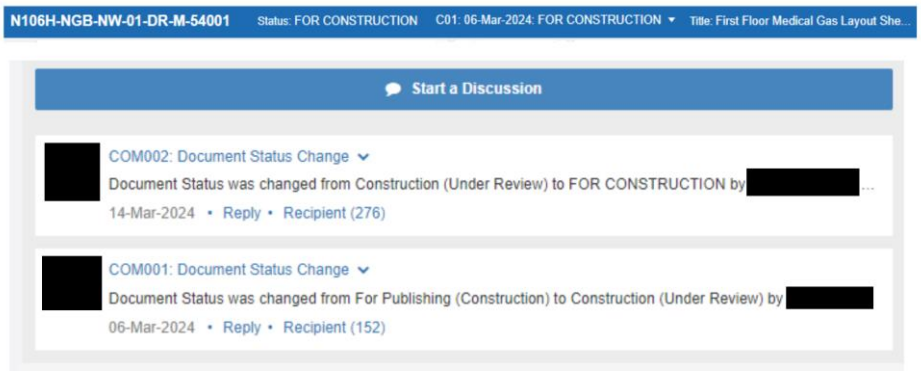
3.5.2 Medical Gases: Further Observations

3.5.2.1

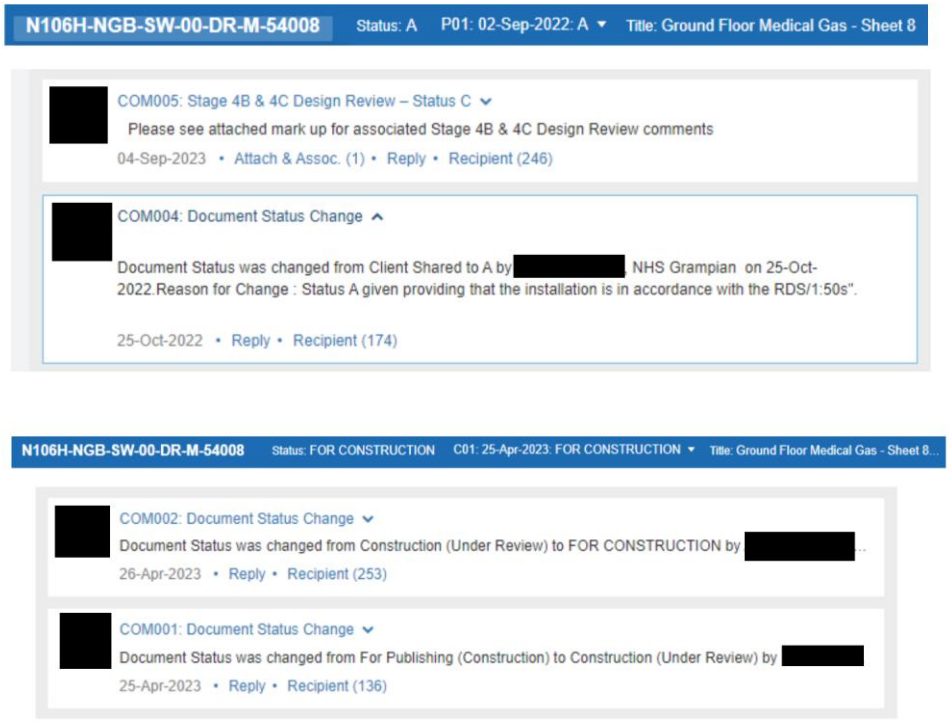
Asite Medical Gas Document Review Process

NHS SA observed instances where the Asite review process had not been followed. For example, drawing number N106H-NGB-NW-01-DR-M-54001_First Floor Medical Gas Layout Sheet 1 of 9, revision P02 was assigned Status A and approved with comments from the board on 12 February 2024 noting that '*Assumption made that revision includes previous designer comments and that this revision reflects the agreed design, including accepted 1:50s and RDS*. The construction issue drawing (Revision C01) is dated 15 March 2024. However, the designer has subsequently assigned a Status C (Rejected) to the original P02 drawing on 12 April 2024. There is no evidence provided to confirm that the designers comments have been addressed.





Further similar examples include drawing N106H-NGB-SW-00-DR-M-54008_Ground Floor Medical Gas - Sheet 8 of 9, which was assigned Status A by the board on 25 October 2023 noting '*Status A given providing that the installation is in accordance with the RDS/1:50s*'. The construction issue drawing is dated 26 April 2024,

	and the designer has subsequently assigned Status C (Rejected) to the P01 revision of the drawing on 4 September 2023. 
3.5.2.2	**AVSU locations/alignment with fire strategy** It was unclear from the information submitted for review that the Area Valve Service Unit (AVSU) locations have been agreed between the fire engineer and the medical gas installer and co-ordinated with the building fire strategy and compartmentation. The review has identified AVSU's that are located outside the fire compartment and sub circuit valves that have not been located outside of horizontal evacuation fire compartment. For example, the AVSU serving the ground floor EPAU Treatment ward appears to be located outwith the ward and at a convergence of other corridors and may cause confusion as to which area it is serving. During the KSAR Fire Technical Workshop on 25 April 2024 it was confirmed that the fire strategy documentation submitted for review was not current and therefore it is unclear if any resultant changes to the fire strategy would require the valve positioning to be reviewed to ensure compliance with SHTM 02-01.
3.5.2.3	**Alarm and interface with BMS Systems** The medical gas schematics provided for review indicate the areas that interface with the medical gas alarms, however the extent of any

	BMS interfaces with the main equipment in the medical plant rooms is unclear. It is also unclear if manifold status and real time monitoring of cylinder capacity has been included, as per the requirements of SHTM 02-01. It is also unclear if all necessary alarms and interfaces have been captured within the BMS provision and how identification of critical alarms has been agreed by the board.
3.5.2.4	**Consistency between Medical Gas Schematic, Environmental Matrix/RDS/1:50 room layouts.** It was noticed that there is inconsistency/ discrepancy between the number of terminal units shown in the flow assessment calculations versus the remit sheet and 1:50 layouts and the latest RDS, C-sheets.
3.5.2.5	**Medical gas pipe welding/ brazing method statement** During the site visit undertaken by NHSSA on 20 and 21 March 2024 a grease residue was observed on installed pipework (suggesting non-degreased pipework) in close proximity to brazed joints leading to a concern about potential contamination. No associated method statement has been provided in relation to pipe/ joint brazing processes.
3.5.2.6	**Medical Air Flow Rate – Resus areas** It was noted during the KSAR Medical Gas workshop on 23 April 2024 that a patient safety action notice has been issued which requires the removal of medical air flowmeters, particularly in intensive care areas. There is no evidence that NHS G have considered this notice and the impact on the current strategy in these areas. Patients safety action notice; Eliminating the risk of inadvertent connection to medical air via a flowmeter (nhs.scot)
3.5.2.7	**Medical Air Plantroom** A dedicated room for the Medical Air Plant has not been provided. It is unclear whether cognisance has been given to adjacencies to other noise sensitive spaces and if acoustic treatment would be required, as per 7.9 and 7.10 of SHTM 02-01, Part A. A dedicated plant room restricts non-authorised personnel from accessing the medical gas plant and provides resilience from a fire

	resistivity perspective. The plantroom should also have adequate ventilation as per 7.11 to 7.13. The medical air plant currently sits within a shared plantroom space with other MEP plant. It is unclear from the information submitted if these aspects have been considered.

3.6 Fire

3.6.1 Fire: KSAR Observations

Workbook Ref No.	Areas to probe	Evidence expected
6.1	How does the health board assure itself that all fire stopping specialists are trained to understand the needs (including special requirements) for the installation of fire stopping systems in the healthcare environment?	Evidence of a vetted list of site fire stopping specialists which confirms qualifications and healthcare experience. Evidence that the site induction with respect to working on fire stopping services has been developed, implemented and agreed with board. Evidence that all contractors and sub-contractor competency checks have been completed and signed off.

NHS Scotland Assure Observations:

NHS Grampian have provided assurance to demonstrate that the fire-stopping specialists are suitably trained for the healthcare environment. This has been provided in the form of a 'signed' training attendance record, copies of the induction PowerPoint training presentation, and toolbox talks.

Key documents referenced are:
Anchor and Baird Quality Induction Sign Off PDF Document
Quality Induction PowerPoint presentation
TBT Quality W1-W7 Toolbox presentations (Multiple Documents)

Workbook Ref No.	Areas to probe	Evidence expected
6.2	How does the health board assure itself that the fire stopping contracting company have the relevant experience to direct and manage their staff on the site for a healthcare environment?	Evidence of similar, previous healthcare projects by the contractor. Evidence of site management structure.

NHS Scotland Assure Observations:

NHS Grampian have provided assurance to demonstrate that the fire-stopping specialists have relevant experience in the healthcare environment. This has been provided in the form of a record of previous healthcare projects and includes property

details, type of environment, and the initials of the relevant fire-stopping specialist who completed the work.

NHS Grampian have provided a fire-stopping specialist organogram that demonstrates the management controls.

Key documents referenced are:
Hospital Experience Excel document.
Organogram Anchor and Baird. Pdf Document.

Workbook Ref No.	Areas to probe	Evidence expected
6.3	How does the health board ensure that the fire stopping systems are being installed to the correct standard and reflect the agreed design?	Written, monthly evidence for the progress of work produced by a body which is independent of the contractor and which confirms compliance of the works to date.

NHS Scotland Assure Observations:
NHS Grampian have not provided assurance that the fire stopping materials are being installed to the correct standard and reflect the agreed design.

NHS Grampian has provided evidence to demonstrate that the fire-stopping work is regularly monitored, and the findings are recorded. This evidence includes weekly inspection reports completed by the technical supervisors.

NHS SA noted various minor points concerning the labelling of fire-stopping and acoustic sealing, and NHS Grampian have verbally confirmed that the labelling is a secondary element of recording and that all fire-stopping details and locations are recorded on an electronic system. On completion of fire-stopping works a final certificate of compliance will be issued from the fire-stopping contractor to NHS Grampian.

NHS SA also noted that within the weekly reports there is an observation – '*Observation relating to mixing two fire stopping manufacturers products from which one that was not tested by manufacturer to 'concrete to other substrate' application was raised. The Quelfire foam and Rockwool mastic were used to cavity fire stopping at slab edge all around the building. It was observed one month ago but NHSG was asked to not raise any observations on the system as XXXXXX (PSCP) promised to get back to NHSG with the satisfactory solution for this issue. After the months of awaiting the response, the observation has been raised. It was reported by XXXXX, the observation was passed directly to XXXXXX (PSCP) to respond. (JK-00647).'*. NHS Grampian have not provided any evidence to demonstrate that this observation has been responded to, and there is no confirmation to evidence that it is permissible to mix two fire-stopping manufacturer's products.

Key documents referenced are:
Baird CON KSAR Fire 6.3 - NHSG Technical Supervisor Statement.
Baird CON KSAR Fire 6.3 - 103. wc 09.10.23 Technical Manager Weekly Report Baird.
Baird CON KSAR Fire 6.3 - 110. wc 27.11.23 Technical Manager Weekly Report Baird.
Baird CON KSAR Fire 6.3 - 114. wc 15.01.24 Technical Manager Weekly Report Baird.
Baird CON KSAR Fire 6.3 - NEC 3 Supervisor Report Baird - Nov 23
Baird CON KSAR Fire 6.3- NEC 3 Supervisor Report Baird - Oct 23 V2 DW & MW

Workbook Ref No.	Areas to probe	Evidence expected
6.4	How does the health board ensure that precautions are taken throughout the works to avoid openings in fire barriers to occupied spaces during the works?	Written and photographic evidence for the progress of work produced by a body which is independent of the contractor (on a monthly basis).

NHS Scotland Assure Observations:
NHS Grampian have provided assurance that precautions are taken to avoid openings in fire barriers to occupied spaces during the works.

NHS Grampian has provided a written statement that includes instructions that they shall '*carry out visual confirmation that the installation of any fire barriers or fire-stopping systems are carried out as part of the construction works. This shall be recorded through weekly or monthly report format and coordinated with the PSCP.*'

Key documents referenced are:
Baird CON KSAR Fire 6.4 NHSG Technical Supervisor Statement

Workbook Ref No.	Areas to probe	Evidence expected
6.5	How does the health board ensure that fire stopping systems are installed on ventilation, electrical, plumbing and drainage services where they penetrate fire barriers?	Photographic and written evidence for the progress of work produced by a body which is independent of the contractor (on a monthly basis).

NHS Scotland Assure Observations:

NHS Grampian have provided assurance to demonstrate that they have appointed a specialist fire-stopping contractor to ensure that where services penetrate a compartment, sub-compartment, cavity barrier, or fire-resisting construction protecting escape routes (including corridors serving sleeping accommodation), they will be fire and smoke stopped to ensure that they maintain at least the same level of fire resistance of the surrounding structure. Progress of this work will be recorded by NHS Grampian using photographic and written evidence.

Key documents referenced are:
6.5.1 FIRE Baird KSAR Construction
6.5.2 FIRE Baird KSAR Construction

Workbook Ref No.	Areas to probe	Evidence expected
6.6	How does the health board ensure that fire stopping is installed in electrical containment (trunking / tray systems) systems where they penetrate fire barriers?	Photographic and written evidence for the progress of work produced by a body which is independent of the contractor (on a monthly basis).

NHS Scotland Assure Observations:

NHS Grampian has provided assurance in response to KSAR question 6.5 that addresses this point.

Key documents referenced are:

Evidence noted in section 6.5

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

NHS Scotland Assure Observations:
NHS Grampian have provided partial assurance that fire stopping materials are stored on site in an environment which protects them from deterioration.

NHS Grampian has provided details of the type of materials, where they are stored, and confirmation that they are stored safely to protect them from deterioration. Note further assurance in relation to any materials that may have been impacted by water ingress is still to be provided.

Key documents referenced are:
Anchor and Baird Material Storage Check 01 03 24 PDF Document.
6.7 Statement
Baird CON KSAR Fire 6.7 - NHSG Technical Supervisor Statement

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

NHS Scotland Assure Observations:

NHS Grampian has provided a void detection risk assessment; however, this assessment does not provide assurance, regarding the omission of fire detection in voids. It details items contained within the voids that are not listed as permissible in SHTM 82 ‘Fire alarm and detection systems’ section 3.6. It does not provide evidence that the items are low risk or that the standard is being met by an alternate means.

Key documents referenced are:

N106H-MML-ZZ-ZZ-RP-E-47001_Ver1

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

NHS Scotland Assure Observations:

NHS Grampian have provided assurance in relation to changes to fire stopping systems after tender.

NHS Grampian has provided a schedule of work for fire-stopping, they have also provided evidence to demonstrate that where any variances occur, there is a process to allow a change of works to be completed.

Key documents referenced are:

220808-Astute-FSR-Baird Anchor-Rev02 DRAFT

Workbook Ref No.	Areas to probe	Evidence expected
6.10	How does the health board assure itself that all fire dampers and fire/smoke dampers can be accessed for inspection, resetting and maintenance?	Evidence that the contractor has presented their co-ordination drawings (BIM model) to the health board. Evidence that the contractor has presented their co-ordination drawings (BIM model) to the design consultant and that they have agreed them for construction. Evidence that the contractor has presented each of the fire dampers and smoke / fire dampers to the health board's FM team.

NHS Scotland Assure Observations:

NHS Grampian have not provided assurance that fire dampers and fire/smoke dampers can be accessed for inspection, resetting and maintenance.

NHS Grampian has responded to this subject; however, the response does not confirm that the health board is satisfied that all fire and smoke dampers can be accessed for inspection, resetting, and maintenance, it was also observed, during the

NHSSA fire safety site visit, that several fire and smoke dampers could be difficult to access.

Key documents referenced are:
Baird CON KSAR Fire 6.10 - NHSG Technical Supervisor Statement Word document.

Workbook Ref No.	Areas to probe	Evidence expected
6.11	How does the health board assure itself that any fire rated ductwork is correctly installed?	Evidence that the system is certificated and that the installation follows the installation details which were used for the certification. Written confirmation from the design consultant.

NHS Scotland Assure Observations:

NHS Grampian have provided partial assurance that fire rated ductwork will be correctly installed and have confirmed that further assurance will not be able to be provided till a later KSAR stage.

NHS Grampian has provided a technical specification and drawings for the installation of fire-rated ductwork at the Baird Hospital, together with evidence that the installation is in accordance with the specifications and drawings.

Refer to 'further observations' in ventilation section for further observations on the fire rated ductwork technical submittal.

Key documents referenced are:
Baird Family Hospital Stage 4 Fire Strategy N106H-MML-XX-XX-RP-F-02001 (P17) 14 November 2023
1.4 Ductform Fire Duct Install & Repair Procedure PDF document
D09 F.R Inspection PDF document
D10 F.R Inspection PDF document
D17 F.R Inspection PDF document
N106H-NGB-NE-00-DR-M-57204_Ver2
N106H-NGB-NE-01-DR-M-57205_Ver2

Workbook Ref No.	Areas to probe	Evidence expected
6.12	How does the health board assure itself that any smoke control and / or clearance systems are fit for purpose?	Evidence that the smoke system has been designed by an accredited Fire Engineer. Evidence that Building Control have accepted the solution. Confirmation from the Building Services Design Consultant that the operating sequence for the smoke system has been agreed and integrated into the control of other building systems.

NHS Scotland Assure Observations:
NHS Grampian have provided assurance in relation to smoke control systems for the project.

NHS Grampian have provided smoke control system details in the fire strategy, approved building warrant, and technical drawings.

Key documents referenced are:
Stamped Drawings - Colt Controls
Approval-Docs-2of2-Warrant-Ref-190413_W Amend
N106H-MML-XX-XX-RP-F-02001 Fire Strategy

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

NHS Scotland Assure Observations:
NHS Grampian have provided assurance that all pre-commissioning inspections in relation to fire safety systems are completed and recorded.

NHS Grampian have provided meeting notes to demonstrate that they have employed an independent M&E consultant to undertake pre-commissioning checks, these notes also demonstrate that regular commissioning meetings are held in which NHS Grampian technical staff are in attendance.

Key documents referenced are: *NHSG Technical Supervisor Statement* *Baird & Anchor - Commissioning Meeting No 42 090124* *Baird - Commissioning Workbook P02 - 2024-01-09* *N106H HSFM MEP CVF Tracker 101223xls*

3.6.2 Fire: Further Observations

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

3.6.2.1	NHS Scotland Assure Further Observations: NHSSA have been provided with the most recent fire strategy, presented as '*Baird Family Hospital Stage 4 Fire Strategy N106H-MML-XX-XX-RP-F-02001 (P17)'* It is noted that there are several areas where information appears to be incomplete or not consistent with other technical details. *Documents referenced are:* *Baird Family Hospital Stage 4 Fire Strategy N106H-MML-XX-XX-RP-F-02001 (P17) 14 November 2023*
3.6.2.2	NHS Scotland Assure Further Observations: The Fire Strategy section 5.4 'External Wall Construction Fire Requirements' states that '*In some areas the extremal finish will consist of a high pressure laminate (HPL) rain screen system. The HPL system will consist of Trespa Meteon FR Grade EDF. The proposed panels will be 10mm thick and from the fire test to EN 13501-1 & EN 438-7 achieves Class B-S1-d0'.* NHS Grampian have discussed this with NHSSA at the fire technical workshop held on 25/04/2024 and has verbally confirmed that the HPL panels detailed in the fire strategy have now been superseded with a panel that conforms to the standard detailed in the most recent technical handbook non-domestic. At the time of concluding this report, NHSSA has not been provided with evidence to support this. *Documents referenced are:* *Baird Family Hospital Stage 4 Fire Strategy N106H-MML-XX-XX-RP-F-02001 (P17) 14 November 2023*
3.6.2.3	NHS Scotland Assure Further Observations: The Fire Strategy details 6 instances where the external wall cannot be protected at a junction. NHS Grampian has discussed this with NHSSA at the fire technical workshop held on 25/04/2024 and has verbally

	confirmed that the information contained in the fire strategy is inaccurate and that there are 6 instances where the protected junction incorporates the use of fire-resistant glazing to allow the junction to provide the requisite fire protection. At the time of concluding this report, NHSSA has not been provided with evidence to support this. *Documents referenced are:* *Baird Family Hospital Stage 4 Fire Strategy N106H-MML-XX-XX-RP-F-02001 (P17) 14 November 2023*
3.6.2.4	NHS Scotland Assure Further Observations: The fire strategy states '*Hydrants will be capable of delivering a minimum of 1500 litres per minute. This is subject to a flow rate assessment of the area*.' NHSSA has not been provided with evidence to demonstrate that the flow assessment has been carried out. *Documents referenced are:* *Baird Family Hospital Stage 4 Fire Strategy N106H-MML-XX-XX-RP-F-02001 (P17) 14 November 2023*
3.6.2.5	NHS Scotland Assure Further Observations: The fire warning system design will require a change in audibility levels at level 3, where the appropriate standard from BS5839-1 should be applied to the hotel area, NHSSA has not seen any detail as to the proposed sound pressure limits.
3.6.2.6	NHS Scotland Assure Further Observations: NHSSA has been made aware of fire-stopping defects logged through the '*Snag R* ' system, for example - '*B-CMU009', a birthing room on the ground floor, the error initially picked up was that a cable penetration passes too close to the bottom of the 'letterbox' opening'* however, NHSSA have not received any evidence to demonstrate that the defects have been addressed.
3.6.2.7	NHS Scotland Assure Further Observations: The fire strategy notes that photovoltaic panels are to be installed on the roof, however, it does not provide technical detail. *Documents referenced are:* *Baird Family Hospital Stage 4 Fire Strategy N106H-MML-XX-XX-RP-F-02001 (P17) 14 November 2023*
3.6.2.8	NHS Scotland Assure Further Observations: During the NHSSA fire safety site visit, it was not clear whether the fire-resistant glazing installed within the north-facing window from '*B-SOU004'*

	(OPD waiting) was secured by screw fixings in accordance with the manufacturer's specification. *Visual inspection carried out by NHSSA*

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	How does the health board demonstrate that there is an effective infection prevention and control management structure in place? How does the health board demonstrate leadership and commitment to infection prevention and control to ensure a culture of continuous quality improvement throughout the organisation and that there is an effective IPC structure in place?	The health board provides evidence that there is an IPC Management Structure with the necessary expertise and leadership skills to support the organisation: The health board provides evidence that there is an IPC Management Team with the necessary expertise and leadership skills to support the project. The board are compliant with content of HDL (2008) role of the ICM / CNO 22.12.16. Executive board reports or minutes. Risk registers or equivalent, Minutes from operational and governance groups, (and action points). Structure of infection prevention and control team (IPCT) and qualifications held, previous experience supporting new build projects. Evidence IPC and clinical teams have been involved with any derogation through the build process and are satisfied this will not impact on patient safety, evidence could be through meeting minutes, risk assessments, risk registers relating to IPC with evidence of escalation through the agreed NHS board governance process.

		Evidence the Executive board Member assigned to lead on IPCT has been kept informed of IPC risks identified and associated with the project this can be demonstrated by the board. Evidence IPCT advice has been followed, such as IPCT walk round audits during the construction process. Evidence that fixtures fitting and equipment have not been incorporated into the project that would represent an identified IPC risk. Evidence that all contractors and sub-contractor competency checks have been completed and signed off.

NHS Scotland Assure Observations:

Assurance has been provided demonstrating an effective IPC structure is in place within the organisation generally and the path for escalation to the HAI executive lead and health board.

Previous KSARs undertaken on NHS Grampian projects identified concerns in relation to how IPC were being integrated and involved in the decision-making processes. Improvements have been noted in this respect, however, concerns remains that the project feedback processes are not fully closing out observations raised by the local NHS Grampian IPC team. This includes resolution of key water and ventilation design decisions and IPC input to the planning of the commissioning stages of the project. NHS Grampian advised they have in place an escalation pathway for resolving open observations / risks, however, at the time the KSAR was undertaken, no outputs from this group were evident. Further assurance that these matters have been fully addressed will be required from NHS Grampian as part of their KSAR action plan response.

Assurance has been provided regarding IPC undertaking regular site visits and providing feedback on HAI risks. Observations are logged via the BIM 360 system for resolution or added to the HAI action tracker, if it may take longer to resolve. A number of the issues raised via the IPCT remain unresolved.

As noted previously in this KSAR report, NHS Grampian have not yet finalised their review and approval of proposed project derogations. Until such times as this process

is complete, there is no assurance that IPC and clinical observations have been fully ratified to ensure there is no impact on patient safety.

Key documents referenced are:
IPCT Reporting structure (board)
NHS Grampian KSAR review summary IPC evidence 7.1
B&A HAI Session, Project Stocktake, 200923
IPC Resource Allocation Baird 2024
Minute of Baird HAI Session, Draft NNU Risk Assessment, 5th September 2023
Minute of Baird HAI Session, Sinks, 12th September 2023
Minute of Baird HAI Session, Wet Services above NNU and ACRM, 29th August 2023
Risk Assessment - NNU Baird - V4 11092023
SBAR Water Ingress and Mould Report BFH TAC
IPCT report HAI Risk from BFH NNU SCBU Design FINAL 25 01 24
IPCT report HAI Risk from Recirculating Chilled Cold Water System
IPCT site visit BFH 13102023

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 construction process?	The health board provides evidence: The board can demonstrate the current version of the National Infection Prevention and Control Manual has been adopted by the organisation and all staff are aware of how and where to access this and it is being referred to during the construction process. IPC risks (actual or perceived) risks identified during the work programme or through the KSAR evidence review are provided. Evidence of walk rounds during the construction process and these are being fed back to clinical staff and the executive team to provide assurance that the requirements of the CD are being adhered with.

NHS Scotland Assure Observations:

Assurance has been provided regarding the implementation of the NIPCM across the organisation and regarding the Baird project. Daily Briefs are used to inform staff of updates to the guidance provided within the NIPCM and there is a desktop icon available for staff to take them directly to the website. The evidence provided demonstrates the NIPCM has been incorporated to the project via the HAI-SCRIBE

process, HAI risk matrix and review meetings in addition to the IPC site visits and rectifications processes.

Assurance however has not been provided regarding conclusion of the HAI issues raised by the IPCT through the HAI-SCRIBE process and site visits. A number of HAI issues raised remain as ongoing actions through the design review. No evidence of resolution to these were provided by NHS Grampian as part of their KSAR response. Examples of areas where IPC have raised observations include;

- Recirculating cold water system
- Ventilation strategy for NNU, Operating Theatres and theatre recovery
- Sink review
- Water ingress

Key documents referenced are:
NHS Grampian KSAR review summary evidence (7.2)
7.2 Statement
daily-brief-1-august-2022 ref NIPCM
daily-brief-25-may-2023 NIPCM
Baird CON KSAR Review Gap Analysis IPC 7.2 NHSG Technical Supervisor Statement
Note of Baird HAI Scribe 18th and 25th January 2023 (1)
NHS Grampian KSAR Review Summary Evidence (1.7)
IPCT site visit BFH 13102023
HAI Development stage 2 Baird Hospital 180123
Baird HAI Action Plan 231001
HAI Scribe Risk Matrix no31 Nov 23

Workbook Ref No.	Areas to probe	Evidence expected
7.3	How does the health board assure itself that the contractors have a proper understanding of the infection prevention and control procedures required by the CD and that the contractors work is being rigorously managed in this respect?	The health board evidences that: All relevant staff within the contractors' organisation are provided with clear guidance on roles and responsibilities in relation to infection prevention and control. The contractors' organisation provides an education programme that meets the need of staff which includes mandatory induction, training and updates on HAI guidance, policies and procedures.

NHS Scotland Assure Observations:

Whilst NHS Grampian provided evidence of an education programme provided by the contractors regarding IPC measures, which should be embedded into the

construction of the facility, there was no assurance provided as to the extent this had been implemented and completed by operatives on site.

During the KSAR NHS Grampian acknowledged a gap in the documents provided to evidence the number of operatives who had undertaken this training and committed to reviewing the documentation process for future stages of the project.

Key documents referenced are:
NHS Grampian review summary evidence (7.3)
02517 - WorkSpace Design Quality Induction Record - blank template
02517 - WSD KSAR Training Matrix -
Appendix 5 Site Induction HAISCRIBE SLIDES
HBN_00-09 Infection Control
HTM 71
HTM63
SHTM63
Organogram Structure WSD FF&E - not IPC related
WorkSpace Design Quality Induction
01326 Baird & Anchor – (XXXXXX) & Subcontractors Training Matrix 01.12.23
Baird Anchor - Specific Disciplines 2.1 to 2.7 Organograms 01.12.23
KSAR - NGB Training Induction List 23.10.23
KSAR Induction Sign Off Sht 19.9.23
KSAR Induction1 - Plumbing (Hot & Cold Water)
KSAR Induction2 - Plumbing (Drainage)
KSAR Induction3 - Ventilation (Ductwork)
KSAR Induction4 - Electrical (Elec Install)
KSAR Induction5 - Electrical (Modular Wiring)
KSAR Induction6 - Medical Gases (MGPS)
KSAR Induction7 - Duct & Pipe Protection
KSAR NGB Induction Procedure
Sample - Sign Induction Records

Workbook Ref No.	Areas to probe	Evidence expected
7.4	How does the health board assure itself that equipment meets the required IPC standards?	The IPC Team are involved and IPC advice followed in all procurement decisions for new equipment prior to purchase. IPCT are satisfied that all equipment purchased can be decontaminated safely in line with National Guidance and manufacturer's instructions.

NHS Scotland Assure Observations:

NHS Grampian provided assurance that they have engaged with the NHS National Services Scotland equipping team on the project (via a Service Level Agreement). Whilst this provides assurance related to nationally "pre-approved" equipment selections, there was a lack of evidence of further supporting evidence to demonstrate how the NHS Grampian IPC team had been involved in the wider equipping processes on the project.

NHS Grampian advised at the IPC KSAR workshop that a new process has been implemented which involves IPC colleagues. This will include an overview of historic decisions as well as all future decisions, however, this has not been shared with NHSSA.

Key documents referenced are:
To demonstrate that equipment meets the required IPC standards
e-mail 1 re Baird sofa bed feedback
NHS Grampian KSAR Review Summary Evidence (7.4)
Baird CON KSAR Review Gap Analysis IPC 7.4 NHSG Technical Supervisor Statement
2016 04 04 Procurement Options_Post NPD_v5 (3) Used in OBC
Appendix 1 - Procurement Options
BA Equip with PSCP action tracker_14.4.2023
Equipment Group, 051223
EQUIP ACTION TRACKER Nov 23
meeting note G1S queries with estates and IPCT 18.08.022
Terms of Reference - Equipment Commissioning Group v1.3

3.7.2 Infection Prevention & Control Built Environment: Further Observations

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

3.7.2.1	**Water ingress** No assurance has been provided regarding close out and how the board has assured itself historical water ingress incidents have been managed prior to the introduction of a quality control process dedicated to water ingress. Since the introduction of the aforementioned quality control process, there are examples of where the process has not been strictly adhered to and as such, the health board were only able to provide limited assurance as to the effectiveness of these control measures. *IPC 7.01- SBAR Water Ingress and Mould Report BFH TAC*

3.7.2.2	**Neonatal Unit** No assurance has been provided regarding the ventilation strategy for the area as it was not finalised at the time of the review. IPC 7.01 - Risk Assessment - NNU Baird - V4 11092023, IPCT report HAI Risk from BFH NNU SCBU Design FINAL 25 01 24 It was noted at the time of the KSAR by NHS Grampian that a feasibility study will be instructed to model area and ventilation parameters and is not expected to conclude until July at the earliest.
3.7.2.3	**Logistics for movement of existing equipment to new facility** Assurance has not been provided regarding functional commissioning of the facility and completion of HAI-SCRIBE stage 4 in advance of patient occupation. Commissioning plan has not been developed to date.
3.7.2.4	**Cleaning of facilities** No assurance was provided by NHS Grampian regarding assessment of domestic and portering resource for the facility. NHS Grampian however did note that a soft facilities management group was being developed but was not yet in place.
3.7.2.5	**Window opening** No assurance has been provided regarding where windows can open within the facility. Some windows are openable but no evidence provided as to where they all are, how opening would impact on patient safety or the mechanical ventilation system. Concern raised about proximity of car park extract vent to openable windows on floor above. Window opening strategy should be reviewed and discussed with key stakeholders including clinical and IPCT teams.
3.7.2.6	**Managing the risk of contamination from bird droppings** Evidence of birds and bird droppings were noted in the ground floor car park. Whilst this is not a clinical area, equipment and materials were being stored in the area which could potentially then be used in clinical areas.

	We would recommend that NHS Grampian review vermin control measures and material storage to ensure there is no consequential risk to clinical areas. This should also consider any historic / residual risks that may be present.
3.7.2.7	**IPC Engagement in Commissioning** During the KSAR IPC engagement workshops concerns were identified by the NHS Grampian IPC team that IPC interfaces and engagement processes for the commissioning stage of the project had not been fully agreed with the wider NHS Grampian project team. Specific concerns include the process for recording and reviewing IPC risks and how IPC were being engaged in the weekly commissioning meetings. Of note are concerns raised by the NHS Grampian IPC team around sequencing of commissioning activities, such as cleaning of ductwork and the consequential impact on infection prevention control measures and progress made to date in planning for the Stage 4 HAI-SCRIBE.

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

https://www.nss.nhs.scot/media/1540/nhs-scotland-assure-assurance-service-master-glossary-v10.docx