

**NHS Lanarkshire – Ward 16  
Ventilation Refurbishment  
Delegated Authority Project  
Key Stage Assurance Review**

**FBC KSAR Report**

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## Document Overview

### Ward 16 Ventilation Refurbishment | Key Stage Assurance Review Report | FBC Stage

#### Prepared for:

NHS Lanarkshire

#### Prepared by:

NHS Scotland Assure – Assurance Service

## Document Control Sheet

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### Approvals

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### Distribution

This document has been distributed to:

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| V1.0    | 18/03/2022    | ██████████ | NHS Lanarkshire Project Manager |
| V1.0    | 18/03/2022    | ██████████ | NHS Lanarkshire Director PSSD   |

# 1. Executive Summary

As a result of the Full Business Case (FBC) Key Stage Assurance Review (KSAR) review and based on the information presented to NHS Scotland Assure, we are unable to support the project progressing to the construction phase at this time. There are a number of key elements that NHS Lanarkshire should address as part of their action plan prior to moving to the next phase of the project. These include but are not limited to:

- There is an absence of documented evidence out with final review to demonstrate continued stakeholder input to and approval of proposed design solutions and supporting documentation.
- HAI Scribe stage/stages process not completed in accordance with SHFN30 at time of KSAR review.
- Environmental design modelling parameters are based on design assumptions instead of surveyed data or by evidential agreement by all project stakeholder's.
- No evidenced control strategy to demonstrate how ward 16 room and corridor environmental conditions will be achieved or maintained.
- Ventilation fire and smoke damper design and control strategy is not fully developed at time of KSAR review.
- No evidence of a ventilation system resilience risk assessment against agreed clinical contingences that supports component selection and design suitability for this design application.
- No detail provided of management of safe systems of work, which demonstrates adequate risk assessment for the proposed ventilation extract modifications or LV electrical distribution modifications.
- No ratified derogation schedule that demonstrates stakeholder review or mitigation measures.
- Ward 16 M&E system commissioning plan and subsequent validation schedules were not developed or evidenced at the time of the review.
- LV distribution strategy is not yet developed.
- The KSAR identified a number of potential non-conformances with BS7671 that had yet to be reviewed/validated by the project team.

Throughout the KSAR process, NHS Lanarkshire have demonstrated an understanding of the patient cohort within Ward 16 and the need to provide appropriate ventilation within the ward. NHS Lanarkshire participated in a collaborative manner throughout the KSAR process and provided representation at all KSAR workshops, including colleagues from their clinical team.

The project is at Full Business Case (FBC) and therefore the design should typically be developed to a RIBA Stage 4 level of detail (as detailed in SCIM). In our opinion, there are a number of key elements of the design that are not representative of this level of detail that should be addressed prior to progressing to the construction stage of the project.

NHS Lanarkshire noted that as the existing Monklands Hospital has a limited remaining life (pending construction of the Monklands Replacement Project), that current projects are progressed based on a risk assessment undertaken through the wider NHS Lanarkshire Monklands Governance Group. The existing ventilation within Ward 16 was identified by the Ventilation AE as potentially not meeting required air change rates as outlined in the current SHTM 03-01 and following a review by the aforementioned group, a project brief was established and a project incepted.

Whilst predominantly a ventilation project, there are works required to other services such as modifications to existing sanitary ware, water services pipework and electrical services. As a result of the scope, building works consisting of ceiling removal/reinstatement and builders' works in connection with the services installation are also proposed. The project briefing information is primarily focused on the ventilation system and does not in our opinion suitably define the technical and quality requirements for other systems. As a result, many of the key decisions regarding all services have been driven by the Principal Supply Chain Partner (PSCP) and reviewed retrospectively by the NHS Lanarkshire project team.

Due to the nature of the patient of the patient cohort within Ward 16, it is important to ensure an appropriate ventilation system is in place to provide suitable air change rates and pressure profiles, to minimise any potential infection control risk. Throughout the KSAR workshops, it was evident that clinical and IPC stakeholders from NHS Lanarkshire had been involved in the development of the design through workshops and meetings, however there is limited evidence to demonstrate their continual engagement through the process, including key stakeholder sign-off of developed solutions and derogations.

Stage 2 & 3 HAI-SCRIBES' are not fully completed. No Stage 1 HAI-SCRIBE was undertaken. NHS Scotland Assure recommend that the Stage 3 HAI-SCRIBE is completed, with a full record of stakeholder attendees and inputs captured.

Evidence of NHS Lanarkshire's Authorising Engineers (AE) input to the developed design proposals was limited across all technical disciplines, with minimum written evidence to support their input to the project. The AE (Ventilation) was involved at the initial inception of the project, having identified concerns during an AE audit. The AE (Ventilation) was also involved at the conclusion of the FBC design, however it is unclear as to what engagement they had out with these milestones. There is no evidence if the involvement of other of NHS Lanarkshire's AEs'.

There is no evidence of the Ward 16 Project Team engagement with the NHS Lanarkshire Water Safety Group. We would consider this important, particularly with respect to the enabling works outlined within the works program which includes works to the water services installation.

Throughout the KSAR workshops, NHS Lanarkshire provided a verbal response to many of the key issues raised, particularly with respect to stakeholder engagement. However, there was a lack of written evidence in support of the statements made. NHS Lanarkshire advised many of the key decisions and evidence of stakeholder engagement was captured as part of recorded project minutes, and as a result of changing their lead advisor mid-way through the project, sourcing of these minutes was not always possible.

NHS Scotland Assure recommend that NHS Lanarkshire review how these decisions and inputs are captured, including a consolidated record of key decisions made to date prior to entering construction in order to provide full transparency.

NHS Scotland Assure note that a derogation schedule is in place, however, there is no supporting evidence to demonstrate stakeholder review and sign off. The derogation schedule is also lacking detail and in some instances proposed derogations would appear to reduce the resultant level of safety with no mitigation measures offered e.g. SHTM04-01 (Part D *Disinfection of Domestic Water Systems*) is derogated in full with little supporting commentary of which NHS Scotland Assure cannot support.

The proposed design (for all systems) contains a number of significant assumptions that still require to be validated to prove the viability of solutions proposed, some of which require intrusive surveys. NHS Scotland Assure acknowledge that access to Ward 16 has provided difficulty under current and previous Covid-19 operational parameters, however in our opinion, failure to validate these assumptions prior to commencement of the construction stage could represent a significant risk to the time, cost, quality, feasibility and safety of the works. This may also impact on operational considerations including patient care.

There is a lack of evidence presented relating to system resilience requirements and supporting risk assessments. This includes the assessment of required protective pressure profiles that support the hierarchy of space cleanliness required in accordance with SHTM 03-01.

With respect to the provision of fire and smoke dampers, the project drawings indicate an outline strategy is in place, however during the KSAR workshops NHS Lanarkshire intimidated they were reviewing the strategy in respect to certain clinical locations with a view to omitting the dampers in lieu of fire rated ductwork (in order to minimise the risk associated with accessing and maintaining the dampers). The final proposals in this respect are yet to be developed, but NHS Lanarkshire have noted that they will look to undertake full risk assessments to support any solution going forward. Prior to construction, NHS Lanarkshire should produce a fully completed design that meets with the standards contained with NHSS Fire code and Technical Handbook: Non-domestic, whilst taking account of infection control requirements.

## 1.1 Summary of Findings

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

| Review  | No. of Issues per category |   |    |   |   |
|---|----------------------------|---|----|---|---|
|   | 1                          | 2 | 3  | 4 | 5 |
| <b>Project Governance and General Arrangements</b>          |                            | 4 | 8  | 1 |   |
| <b>Water and Internal Plumbing / Drainage Systems</b>       |                            |   | 1  | 3 |   |
| <b>Ventilation</b>  | 1                          | 1 | 22 | 6 | 1 |
| <b>Electrical</b>   | 3                          | 5 | 5  | 3 |   |
| <b>Medical Gases</b>  |                            |   | 1  |   |   |
| <b>Fire</b>   |                            | 1 |    | 4 |   |
| <b>Infection Prevention &amp; Control Built Environment</b> |                            |   | 4  | 9 |   |

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

NHS Lanarkshire have identified that the current performance of the ventilation system within Ward 16 (haematology) does not meet the recommendations of the current version of SHTM03-01. Through the project works, the Health Board are seeking to upgrade the system and bring the ventilation systems within Ward 16 in line with current SHTM 03-01 recommendations.

The proposed solution involves stripping out the existing air handling units (AHU) that are currently located in the ceiling voids serving Ward 16 and replacing the existing supply and extract fans with a total of five new supply and extract AHUs located externally on the building's roof inclusive of all associated ductwork, supply and extract grilles, balancing dampers, attenuators and all associated ventilation system components. In addition, the current proposal includes reutilisation of the existing dirty extract system and replacement of the two existing dirty extract fans located on the roof, inclusive of several new volume control dampers installed within the existing ductwork.

The works are to be undertaken in a live hospital environment, inside a phased works area within Ward 16 with adjacent areas populated by patients. NHS Lanarkshire have therefore noted that risk and disruption must be minimised to the facility, with no impact on service continuity during the development and delivery of the works programme.



## **2. Review Methodology**

### **2.1 Overview of NHS Scotland Assure and the KSAR Process**

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

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

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

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

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

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

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

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

## 2.2 KSAR Process

**2.2.1** The FBC KSAR for NHS Lanarkshire Ward 16 project took place between **27 September 2021 to 13 December 2021**.

**2.2.2** To inform the findings of the KSAR, the Health Board were issued with key documents outlining the assurance question set and expected level of evidence and supporting documents in accordance with relevant legislation and guidance. This included the FBC KSAR Workbook and FBC Deliverables list.

The KSAR report includes an overview of the main findings of the review, with a further itemised list of detailed observations provided under separate cover to NHS Lanarkshire. The detailed observations are recorded in an action plan that should be adopted by NHS Lanarkshire following the review and subsequently monitored by them to ensure appropriate actions are completed in a timeous manner.

**2.2.3** As part of the KSAR process, NHS Lanarkshire issued a document transmittal log which details the evidence provided in response to the KSAR Workbook and NHS Scotland Assure recommended deliverables list. As part of an initial gap analysis, NHS Scotland Assure reviewed the transmittal log to ensure all documents had been successfully received. The transmittal log provides a version history and audit trail of information reviewed.

## 2.3 Application of Standards & Legislation

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

**2.3.2** Antimicrobial Resistance and Healthcare Associated Infection (ARHAI) Scotland currently provides advice and guidance on all aspects of infection protection and control nationally in Scotland, inclusive of expert advice and guidance on the topic of Healthcare Associated Infections (HAI) and antimicrobial resistance. It maintains and continues to develop a practice guide (National Infection Prevention and Control Manual – NIPCM) as well as a HAI Compendium of all extant guidance and policy appropriate for use in NHS Scotland. Like HFS, these services are largely advisory in nature, identifying best practice and developing national guidance and standards.

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

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

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

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

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

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

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

**2.3.2** 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 technical documentation provided by NHS Lanarkshire indicates that ventilation, electricity and water for Ward 16 are currently sourced from the existing Monklands Hospital site infrastructure. Within the submitted technical information, no detail was provided with respect to the heating plant or wider heating and cooling infrastructure. The existing ventilation that serves Ward 16 consists of six supply AHUs and two extract AHUs in the ceiling voids with dirty extract being accommodated via two dirty extract fans located on the roof. The mains water supply to Ward 16 is served from the local riser with no further details provided.

The ventilation refurbishment proposals for Ward 16 includes removal of all existing ceiling mounted AHUs and associated connected services with complete replacement for five new dedicated air handling units of which will be installed on the roof of the building, each AHU will include a local DX coil to be used both as an evaporator (cooling coil) and condenser (heating coil) to meet the heating and cooling load for the space served with each associated outdoor condenser unit being installed adjacent to its AHU as confirmed through the technical workshop. NHS Lanarkshire intend to reutilise the existing dirty extract duct work, but note this will require some modification including the replacement of two dirty utility extract fans with new extract fans with appropriately located duct balancing dampers to achieve the required flow rates.

New power supplies are required to facilitate the ventilation works and the design team have evidenced two option appraisals with respect to proposed solutions. One option includes a significant shut down which proposes to supply the new AHU plant from a new tap off unit fed from existing rising bus bar and the second option proposes to utilise a spare way from the existing main LV Switch Panel (A). NHS Lanarkshire have yet to confirm the final solution.

The fire detection within Ward 16 post completion of the lowered ceiling installation is proposed to be reinstalled, terminated to the existing loops and tested for compliance to BS 5839. The PSCP also propose to test & prove the fire detection cause & effect in accordance with operational procedures for the hospital prior to hand over.

There are no proposed engineering works to the domestic water or drainage system within Ward 16 itself. The water and drainage works consist of engineering enabling work within Ward 22, where a clinical wash hand basin will be removed, a new wash basin installed and a WC and associated wash hand basin isolated and removed. All water services have been confirmed to be served from the riser with no further details provided on its source level of filtration or origin. There is also no detail regarding the testing and commissioning of the water system outlets.

During the phased areas of works for the ventilation system, the water outlets will be flushed as noted in the HAI-SCRIBE. During the workshops the PSCP also confirmed that the outlets will be protected from site dirt and debris. No information was presented regarding the re-commissioning procedure or checks to be made for reopening phased areas in relation to the water and drainage services.

No works are proposed to the medical gas infrastructure, however the HAI-SCRIBE documentation refers to medical gas regulators and equipment to be removed. There is no documentation to the protection of bed head services or how the medical gas will be recommissioned after the phased works are complete.

### 3. KSAR Review Summary

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

#### 3.1 Project Governance and General Arrangements

##### 3.1.1 Project Governance and General Arrangements KSAR Observations

| Workbook Ref No.   | Areas to probe                                     | Evidence expected  |
|--|--|--|
| 1.1  | Evaluation of changes detailed from previous KSAR. | Assessment of any substantive changes in highlighted areas from previous review stage and all actions have been implemented. |
| <b>NHS Scotland Assure Observations:</b><br>This is the first stage of review in the KSAR process, therefore no evidence was expected. |  |  |

| Workbook Ref No.  | Areas to probe   | Evidence expected  |
|---|--|--|
| 1.2   | Verification that CIG recommendations have been implemented with respect to prescribed in scope areas. | Review of the implementation of all CIG recommendations. Evaluation of any deviation from previous submissions or reviews. |
| <b>NHS Scotland Assure Observations:</b><br>As this project falls under NHS Lanarkshire's delegated authority (1.2) CIG recommendations are not applicable. |  |  |

| Workbook Ref No.  | Areas to probe  | Evidence expected  |
|---|---|--|
| 1.3   | Has cross-referencing with NDAP and AEDET recommendations been implemented? | An assessment if there is full compliance with the applicable recommendations and actions from the preceding step. |
| <b>NHS Scotland Assure Observations:</b><br>As this project falls under NHS Lanarkshire's delegated authority, NDAP and AEDET have not been applied to the project. |   |  |

| Workbook Ref No. | Areas to probe  | Evidence expected   |
|------------------|---|---|
| 1.4              | Does the Health Board continue to demonstrate service / clinical input into design decisions based on a current and comprehensive knowledge of patient cohorts? | Recorded and updated input taken from service lead(s) / clinician(s) about relevant patient cohort characteristics and their typical needs in terms of the accommodation's environment, safety and infection control standards.<br><br>Demonstrable expertise of service lead(s) / clinician(s) in providing this advice. |

#### NHS Scotland Assure Observations:

NHS Lanarkshire demonstrated a good understanding of the patient cohort during the KSAR workshops, including attendance by representatives of the Board's clinical team. The KSAR response provided by NHS Lanarkshire however lacked demonstrable evidence of service lead/clinical input into the design development process. The KSAR also identified gaps in the briefing requirements passed on to the PSCP for the ventilation requirements and other associated engineering disciplines.

NHS Lanarkshire provided clinical representation at the various workshops held throughout the KSAR process. During these workshops, the clinical representatives noted they had been engaged throughout the design process and were generally content with the current proposals. The KSAR response provided by NHS Lanarkshire contained minimal supporting evidence to document this engagement throughout the development of the design. The KSAR response also highlighted a lack of key stakeholder sign-off of the design proposals.

NHS Lanarkshire advised many of the key decisions and evidence of stakeholder engagement was captured as part of recorded project minutes. The minutes provided as part of the KSAR response by NHS Lanarkshire indicate a level of input from relevant stakeholders during the design development, however they do not provide evidence of continual involvement throughout all stages of the project.

With respect to the patient cohort categorisation, the evidence provided notes this is 'Haematology'.

Evidence of a partially completed Stage 2 and Stage 3 HAI-SCRIBE was provided, however there is no Stage 1 in place. NHS Lanarkshire acknowledged during the KSAR workshop that the Stage 3 HAI-SCRIBE was still to be completed and that works were ongoing in the background to conclude this exercise. NHS Scotland Assure note that this approach is not in accordance with the typical workflow outlined in SHFN 30.

The KSAR response did not include any details as to how NHS Lanarkshire were able to demonstrate the expertise of their clinical/service leads.

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

**NHS Scotland Assure Observations:**

NHS Lanarkshire did not provide a consolidated stakeholder list as part of the KSAR response. As noted in the response to Question 1.4, the patient group has been categorised as 'Haematology'.

Whilst the NHS Lanarkshire team have demonstrated an overall awareness of the patient needs and environmental requirements (such as Ventilation air change rates per hour and hierarchy of cleanliness pressure cascade) during the KSAR workshops, there was a lack of supporting evidence within the minutes provided as part of the KSAR response by NHS Lanarkshire there was limited evidence to demonstrate continual involvement of stakeholders' that were referenced (including infection prevention & control input).

| Workbook Ref No. | Areas to probe   | Evidence expected  |
|------------------|--|--|
| 1.6              | Planned approach towards determining the necessary standards for this accommodation. | <p>Updated and current list of the relevant NHS and non-NHS guidance that is being used and adopted (see previous section of workbook FBC KSAR (Page 9) for examples of appropriate guidance).</p> <p>Updated and current list of all proposed derogations from NHS guidance with a detailed technical narrative on each derogation and/or list of known gaps in guidance that will need to be resolved in order to meet the needs of the patient / user cohort.</p> |

|  |  |  |
|--|--|--|
|  |  | Knowledge of the role of infection prevention and control advisors (IPCN and ICD) to be used throughout the final design stages, and details of the resource plan in place to ensure continuity into the construction phase. |
|--|--|--|

**NHS Scotland Assure Observations:**

With respect to NHS Lanarkshire’s planned approach towards determining the necessary standards for this accommodation, an initial assessment of the current ventilation provision was undertaken by the NHS Lanarkshire Authorising Engineer for ventilation, including a high level review of how the system was performing against both current guidance (SHTM 03-01:2014) and the guidance that was current at the time of the original ventilation installation (SHTM 2025). Following this initial review, NHS Lanarkshire identified the need for a further investigation works to determine the scope of the works to be undertaken within Ward 16. This investigation was led by the PSCP design team and identified the flow rates for supply systems 1,2,3 and 4 were significantly lower than SHTM 03-01 recommended values.

NHS Lanarkshire advised verbally that a document was subsequently produced to detail the briefing engagement process and discussed at the NHS Lanarkshire PAG (Problem Assessment Group) meeting in the lead up to the conclusion of the design brief. Records of the PAG meeting and associated documents were not provided as part of the KSAR response.

There was no additional detail provided as to the required design standards for other services such as water and electrical for the proposed works.

NHS Lanarkshire provided a copy of their derogation register, however it lacks detail with respect to mitigation measures and associated review/ discussion or recorded acceptance of the proposed derogations by all stakeholders. Many derogations also appear still to be open or contained unanswered questions (reference Monklands Ward 16 - Combined Derogations\_RevD).

Whilst the clinical and IPC teams indicated during the KSAR workshops that they had been involved in the design process, out with the HAI-SCRIBE there was limited demonstrable evidence to formally record their input into the project. There was no evidence of an IPC resource plan provided as part of the KSAR response.

| Workbook Ref No. | Areas to probe  | Evidence expected   |
|------------------|---|---|
| 1.7              | How does the Health Board demonstrate that there is an effective infection prevention and control management structure in place and how does it relate to the development of the project?<br>How does the Health Board demonstrate leadership and commitment to infection prevention and control to ensure a culture of | Evidence IPC and clinical teams have been integrated into all decisions regarding any derogations through the design process and are satisfied this will not impact on patient safety such as, specific sign off, supporting meeting minutes, risk assessments, risk registers relating to IPC with evidence of escalation through the agreed NHS board governance process. |



|  |  |  |
|--|--|--|
|  | continuous quality improvement throughout the organisation and that there is an effective IPC structure in place and how does it relate to the design development? |  |
|--|--|--|

**NHS Scotland Assure Observations:**

There is a project HAI-SCRIBE in place, however as noted previously there is a lack of supporting sign-offs and evidence of wider stakeholder input to and review of the process.

NHS Lanarkshire noted during the KSAR workshops that their clinical and IPC teams were significantly involved in the decision making process and input to the design (for example attendance at design workshops, etc.), however there is a limited documented evidence to support this within the KSAR response. The KSAR review uncovered no evidence as to the overall governance structure (e.g. NHS Lanarkshire Stakeholder Matrix) and escalation routes with respect to design consideration IPC matters.

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

**NHS Scotland Assure Observations:**

NHS Lanarkshire have not provided any evidence as to how the NIPCM (National Infection Prevention and Control Manual) is being/will be implemented in respect to the project, nor how staff will access and utilise the document.

As noted previously members of the NHS Lanarkshire IPC team were represented during the KSAR process. Out with the incomplete stage 2 and stage 3 HAI scribe document's and design signatory of design acceptance there is a lack of documented evidence relating to continual IPC involvement with the relevant stakeholders throughout all stages of the project.

| Workbook Ref No.   | Areas to probe  | Evidence expected  |
|--|---|--|
| 1.9  | The Health Boards Infection Prevention and Control Strategy | Assessment of the Health Boards approach to all IPC related matters in relation to the development of the design, HAISCRIBE etc. |
| <p><b>NHS Scotland Assure Observations:</b></p> <p>As noted previously members of the NHS Lanarkshire IPC team were represented during the KSAR process however out with the incomplete stage two and stage three HAI-SCRIBE documents there is limited evidence relating to their continued input.</p> <p>Stage 1 of the HAI-SCRIBE process as per SHFN30 was not undertaken by NHS Lanarkshire while stages two and three were partially completed. It was noted by NHS Lanarkshire within the KSAR workshop as not being required based on the scope of the project, there is no supporting derogation against SHFN30 in this respect as part of the KSAR response.</p> |   |  |

| Workbook Ref No.  | Areas to probe                           | Evidence expected   |
|---|--|---|
| 1.10  | The Health Boards Monitoring and Records | Evidence that the Health Board integrating this project with wider IPC requirements within the context of the FBC. For example, evidence that the proposals for equipping incorporate IPC requirements? |
| <p><b>NHS Scotland Assure Observations:</b></p> <p>There is no evidence to support IPC input into equipping proposals.</p> <p>With respect to wider monitoring, NHS Lanarkshire provided limited evidence with respect to continued engagement of key stakeholders throughout the development of the design. The AE (Ventilation) was involved at the initial inception of the project, having identified concerns during an AE audit.</p> <p>The AE (Ventilation) was also involved at the conclusion of the FBC design, however it is unclear as to what engagement they had out with these milestones. With respect to IPC involvement, again there is evidence of their involvement at the inception of the project, through the partially completed Stage 2 and Stage 3 HAI-SCRIBE and at the conclusion of the FBC design.</p> <p>NHS Lanarkshire provided minutes of meetings to demonstrate IPC involvement at other stages, however this only demonstrates partial engagement of the team.</p> |  |   |

| Workbook Ref No. | Areas to probe  | Evidence expected  |
|------------------|---|--|
| 1.11             | Planned approach for managing the design process to ensure successful compliance with agreed and approved standards | <p>The project governance arrangements and resource plan in place to ensure that the necessary decision-making authority and technical expertise is available to take responsibility for and deliver the project as planned and agreed.</p> <p>Details of how gaps in expertise are being filled.</p> <p>Details of how compliance with the appropriate guidance, design brief and other standards are being agreed, signed off, monitored, reported against and if necessary escalated / adjudicated throughout the design, construction and commissioning stages.</p> <p>Details of how all stakeholders' interests are being agreed, signed off, monitored, reported against and if necessary escalated / adjudicated throughout the design, construction and commissioning stages.</p> |

**NHS Scotland Assure Observations:**

There was a lack of demonstrable evidence provided as to the decision making process and technical expertise implemented to take responsibility for the project. The inception process for the project was clearly defined in terms of the Health Board's risk assessment process with respect to the existing estate, however the subsequent documenting of project briefing requirements, including sign-offs from key technical & clinical team members contained a number of gaps. NHS Lanarkshire noted the design brief was finalised through a PAG (Problem Assessment Group) meeting. Records of the PAG meeting and associated documents were not provided as part of the KSAR response. Throughout the KSAR workshops, NHS Lanarkshire provided verbal assurances around the process, however in the absence of supporting written evidence this could not be validated through the KSAR process.

With respect to the subsequent monitoring of compliance, NHS Lanarkshire have demonstrated an attempt to monitor this through engagement with clinical and technical personnel (including estates and Authorising Engineers), however in many instances there was a failure to 'close the loop' on comments raised by respective team members. Specific examples include the derogations schedule containing a number of unresolved points, a number of technical comments made by the AE's and estates personnel that are as yet unresolved (e.g. external design temperatures) and a lack of documented clinical/IPC input.

| Workbook Ref No. | Areas to probe   | Evidence expected   |
|------------------|--|---|
| 1.12             | The Health Boards approach on the procurement journey with evidence of the plans on how the Board will provide assurance, particularly emphasis on the critical system identified earlier. | <p>Evidence on how this requirement is being managed and how it fits with the project governance arrangements</p> <p>Plans to identify any gaps in the procurement approach that may require to be addressed.</p> <p>Evidence on how Infection Prevention and Control are involved with the conceptual procurement approach to the design stage and future plans for project.</p> <p>Evidence that the Health Boards selected procurement route has gone through the Board's Governance channels.</p> |

**NHS Scotland Assure Observations:**

Graham Construction have been appointed as the Principal Supply Chain Partner (PSCP) to deliver the design and construction of the project (inclusive of a full design team). The appointment itself is in relation to an overarching appointment, with no specific details provided as to how the required PSCP (& their design team) competencies and experience were defined or assessed in relation to this particular project.

Anecdotal evidence of the PSCP experience was provided (for example, NHS Lanarkshire note Graham Construction have been appointed by the national framework and are embarking on their 6th year of works with the board while having successfully carried out the design, installation and handover of critical ventilation theatre installations at the hospital of which was confirmed verbally by Lanarkshire team. Graham Construction recorded their relevant experience within their quality submission documentation), there is a lack of supporting documentation to evidence a formal and structured approach to the procurement and assessment of competence/expertise.

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

**NHS Scotland Assure Observations:**

The KSAR submittal indicates a number of Contractor Design Portion (CDPs) that require to be developed further. The design documentation as provided contains a number of assumptions that have not yet been validated which may have a consequential impact on the CDPs if not addressed in a timeous/structured manner. The PSCP has indicated this will be resolved during the construction stage of the project, however in NHS Scotland Assure's opinion, the resultant risks to time/cost/quality/safety have not been considered to a suitable level of detail. It is also unclear from the evidence provided as to how NHS Lanarkshire propose to monitor CDP development.

A number of the design documents, including the electrical specification, contain potentially ambiguous information with respect to design responsibility – for example whether this remains with the PSCP designer or is being passed to as yet un-appointed sub-contractors. The PSCP and their designers clarified during the KSAR workshops that unless specifically noted as a contractual CDP, then design responsibility would remain with the PSCP design team. NHS Scotland Assure recommend that design documents are updated to ensure this approach is reflected across all project documents.

A number of sub-contractors are yet to be appointed and the KSAR response provided no evidence as to how the Health Board and PSCP will look to define and assess the competency of potential bidders for these works. There is also no evidence as to a formal process for maintaining oversight and sign-off of the completed CDP packages.

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

**NHS Scotland Assure Observations:**

During the KSAR workshops, NHS Lanarkshire and the PSCP acknowledged that a full commissioning plan would require to be developed at the next stage. Whilst the KSAR response included some elements associated with respect to commissioning, there was a lack of an overarching commissioning plan, programme and resource requirements (including any required NHS Lanarkshire/Independent validation resource). It is important that a realistic and protected commissioning program is developed for all services prior to handover.

| Workbook Ref No. | Areas to probe                                      | Evidence expected   |
|------------------|---|---|
| 1.15             | Evaluation of the Health Boards duty holder matrix. | <p>Evidence that the Health Board have a fully recorded matrix of the required roles and responsibilities and have a clear governance structure that is fully resourced together with plans in place for the implementation.</p> <p>Evidence that Health Boards have appropriate number of competent, qualified staff to carry out specific duties throughout the life cycle of the project e.g., IPC, Engineers, Estates staff etc.</p> <p>The number of competent, qualified staff will depend on the type and size of the Build Project.</p> |

**NHS Scotland Assure Observations:**

It is noted that a design responsibility matrix has been evidenced which incorporates support capacity for soft landings prior to handover by the contractor. As identified in the response to KSAR Workbook reference 1.13, there are elements of ambiguity within design documents as to design responsibilities that do not fully align with the design responsibility matrix.

There is no Health Board duty holder responsibility matrix evident within the KSAR response.

**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.

|                |  |
|----------------|--|
| <b>3.1.2.1</b> | Whilst NHS Lanarkshire have acknowledged in their KSAR response the importance of maintaining continuity of service to adjacent operational clinical spaces during the works, there is a lack of supporting documentation as to how risks associated with this have been assessed or what processes will be put in place to achieve this. For example, the HAI-SCRIBE does not fully consider adjacent spaces and there is a lack of supporting risk assessments associated with the works, particularly where M&E systems have an interdependence to areas out with the construction works. |
|----------------|--|

## 3.2 Water and Internal Plumbing / Drainage Systems

### 3.2.1 Water and Internal Plumbing / Drainage Systems: KSAR Observations

| Workbook Ref No. | Areas to probe   | Evidence expected  |
|------------------|--|--|
| 2.1              | Has the Health Board completed competency checks on the water and drainage consultant designers? | <p>Recorded evidence that the design team are experienced and have a comprehensive knowledge of the relevant design standards.</p> <p>Where anyone does not have a record of extensive health care experience what recorded plans are to be put in place by the Consultant Designers?</p> <p>Recorded evidence that input from the Health Authorising Engineer for Water (AE(W)) has been requested.</p> <p>Evidence that all contractors and sub-contractor competency checks have been completed and signed off.</p> |

#### NHS Scotland Assure Observations:

NHS Lanarkshire have appointed a PSCP led design team via the Health Facilities Scotland Framework Route. The appointment itself is in relation to an overarching appointment, with no specific details provided as to how the required design team competencies and experience were defined or assessed for this particular project.

NHS Lanarkshire have presented no evidence regarding input from the Authorising Engineer for water. It is acknowledged that the Authorising Engineer water attended the technical workshop meeting for water and drainage (25/11/2021).

No evidence of sub-contractor competency checks being undertaken was provided as part of the KSAR response and not all sub-contractors have yet been appointed.

| Workbook Ref No. | Areas to probe   | Evidence expected  |
|------------------|--|--|
| 2.2              | How does the Health Board ensure that water services are designed in a fashion, which will retain space for minor additions and modifications to services in the future? | <p>Evidence that the engineers are presented their co-ordination drawings (BIM model), with space for future flexibility identified, to the Board.</p> <p>Evidence that the Design Consultant has considered and agreed with the Board, space for future flexibility in the service installations.</p> <p>Evidence that the designers have presented each of the main service runs plus plant rooms to the Board's FM team, to highlight space for future flexibility.</p> |

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

**NHS Scotland Assure Observations:**

NHS Lanarkshire advised during the KSAR workshops that the project scope was primarily focused around the ventilation services and that as no specific risks with the water and drainage installations had historically been identified, there was no further review of the existing water & drainage installations undertaken to assess compliance with relevant standards or the condition of the existing systems.

The project scope includes for some modifications to water and drainage systems. These are to be undertaken in Ward 22 where a clinical wash hand basin will be removed, a new wash basin installed and a WC and associated wash hand basin isolated and removed. Whilst these works are minimal the PSCP drawings, specification is lacking detail and a commissioning plan for the water and drainage is missing.

There is no BIM model for the works and NHS Lanarkshire have noted any modifications to the water and drainage systems will be to local areas that do not impact on the co-ordination of the main infrastructure, inclusive of capacity and plant rooms.

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

**NHS Scotland Assure Observations:**

The derogations schedule is lacking detail on its single water related derogation, whilst the derogation schedule as a whole requires further NHS Lanarkshire review as there appears to be several possible derogations not listed (as identified in the NHS Scotland Assure review of the design information).

The derogations schedule presented partially addresses SHTM 04-01 Part D: Disinfection of Domestic Water Systems. The derogation indicated has not been signed off as agreed by stakeholders. We acknowledge the water services works are minimal, however there is no evidence of the stakeholders having discussions around the proposed works or derogations (for example, no evidence of input /review from the Water Safety Group, estates team, clinicians or infection control).



There is no evidence of discussions around the commissioning, testing, quality of installation workmanship test etc. from the information provided. It is our opinion that it would be difficult to derogate from this SHTM without having a detrimental impact on water quality and potentially patient and staff safety.

| Workbook Ref No. | Areas to probe            | Evidence expected  |
|------------------|---------------------------|--|
| 2.4              | Water Management Strategy | Assessment of Board proposed water management strategy and how this relates to the specification, guidance and project requirements.<br><br>What involvement has there been from the water management group? |

**NHS Scotland Assure Observations:**

There is no evidence of NHS Lanarkshire's water management strategy (as noted in BS 8680 Clause 4.2.1 & Clause 4.2.2) and how this relates to the specification, guidance and project requirements.

The KSAR response lacks demonstrable evidence that members of NHS Lanarkshire Water Safety Group have been engaged at any stage of the project, nor if they have been consulted in the decision making process.

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

**NHS Scotland Assure Observations:**

During the review, NHS Lanarkshire have provided no evidence to confirm appropriate numbers of trained AP / CP staff are in (or will be) place. They noted during the KSAR workshops that the existing AP/CP structure for the facility on the whole would remain unchanged.

Within the existing iteration of the stage 3 HAI-SCRIBE it is recorded that the water outlets within the phased areas of the project have been categorised as little used and will be flushed daily for 3 minutes and appropriately recorded. However, there is no evidence to the flushing method for the outlets. Flushing of WCs is also not currently defined. There is also no evidence that the NHS Lanarkshire WSG have considered this or reviewed and confirmed these proposals.

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

**NHS Scotland Assure Observations:**

The KSAR response provided no demonstrable evidence for the water and drainage services that commissioning, testing or checks have been considered or procedures defined for reopening a phased area to the patients in Ward 16 (for example water quality recorded pre and post works).

With respect to the outlined minor works within Ward 22, there is no evidence supporting, engineering checks, commissioning and testing to be undertaken. The PSCP package of works does not mention microbiological sampling or any tests/ checks to be undertaken.

The new pipework to be installed for the clinical wash hand basin within room ND317 is specified as copper, however there is no evidence that the rest of the existing system is in copper and no evidence demonstrated towards the disinfection method/ chemical to be used and whether this is compatible with copper.

NHS Lanarkshire have not specified a preference to the chemical disinfection method.

The PSCP specification does not refer to the hygiene requirements for the storage of materials, commissioning brief or removal and testing of pipework joints as stated in SHTM 04-01 or being noted as a derogation. The PSCP specification also does not refer to the processes for reopening phased areas to patients or if there is a need for the installer to have been trained for the specified pipework manufacturer and on a healthcare Water Hygiene Awareness course.

| Workbook Ref No.   | Areas to probe  | Evidence expected  |
|--|---|--|
| 2.7  | Evaluation of the Health Boards planned preventative maintenance (PPM) proposals. | <p>Has the Health Board commenced its planning and recorded the PPM requirements and approach to ensure appropriate levels of maintenance, comprehensive statutory compliance and robust management processes, including:</p> <ul style="list-style-type: none"> <li>• Adequate numbers of staff</li> <li>• Water management PPM including all outlets, TMT &amp; TMV, plumbing and Drainage systems, etc.?</li> </ul> |
| <p><b>NHS Scotland Assure Observations:</b></p> <p>NHS Lanarkshire have provided no evidence of assessment of PPM requirements for the new facility.</p> |   |  |

### 3.2.2 Water and Internal Plumbing / Drainage Systems: Further Observations

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

|         |   |
|---------|---|
| 3.2.2.1 | With respect to the removal of a WC and associated WHB in ward 22, and the removal and installation of a clinical wash hand basin, the PSCP has not provided a pipework layout drawing. An Architectural layout drawing with notes has been provided to accompany the specification with no technical drawing detail. |
|---------|---|

## 3.3 Ventilation

### 3.3.1 Ventilation: KSAR Observations

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

#### NHS Scotland Assure Observations:

NHS Lanarkshire have appointed a PSCP led design team via the Health Facilities Scotland Framework Route. The appointment itself is in relation to an overarching appointment, with no specific details provided as to how the required design team competencies and experience were defined or assessed for this particular project.

No evidence of designer or sub-contractor competency checks being undertaken was provided as part of the KSAR response and not all sub-contractors have yet been appointed.

| Workbook Ref No. | Areas to probe  | Evidence expected   |
|------------------|---|---|
| 3.2              | How does the Health Board ensure that ventilation services are designed in a fashion, which will retain space for minor additions and modifications to services in the future, and there is an appropriate plant access strategy? | <p>Evidence that the design engineers have presented their co-ordination drawings (BIM model), with space for future flexibility identified, to the Board.</p> <p>Evidence that the design consultant has considered and agreed with the Board, space for future flexibility in the service installations.</p> <p>Evidence that the design engineers have presented each of the main service runs plus plant rooms to the Board's Estates team and / or FM team, to highlight space for future flexibility.</p> <p>Evidence that the ventilation solution has been agreed with clinical and IPC colleagues.</p> |

|  |  |  |
|--|--|--|
|  |  | <p>Evidence that the Board has agreed a strategy (percentage) for spare capacity and a documented allowance to be incorporated into the design.</p> <p>Are plant rooms, horizontal distribution runs and risers appropriately sized for the equipment being installed and facilitate safe adequate maintenance?</p> <p>Evidence that a plant access strategy for the entire ventilation system has been provided to ensure safe, adequate access, including access for cleaning.</p> |
|--|--|--|

**NHS Scotland Assure Observations:**

As this project is a refurbishment, no BIM model was provided. The KSAR response consisted of PDF drawings, hand drawings and design calculations only.

In respect to future plant capacity, no evidence was provided with respect to how provision of spares, spatial co-ordination, services routes and adaptability of services had been incorporated into the design. As part of the NHS Lanarkshire response we have not received a plant removal/ replacement strategy, we acknowledge there is an access and maintenance strategy but this is lacking information towards future removal and replacement of plant.

The PSCP noted as part of the KSAR workshops that the Plant Service strategy is still to be developed. NHS Scotland Assure note that whilst removing plant from the ceiling voids helps to mitigate a number of the issues associated with ongoing access and maintenance of plant in a clinical environment, it is not clear from the evidence provided as to whether the selection, erection and ongoing maintenance of external plant takes full cognisance of potential inclement weather. It is also unclear from the KSAR response as to the extent the NHS Lanarkshire estates team have been involved in the decision making process, with concerns being raised by estates personnel during the KSAR workshops that external AHU plant frost coils had been specified to -6°C and not -10°C given previous issues experienced at the site.

Whilst new risers are being formed to accommodate the new ductwork, there is an element of the existing extract system, that is located within existing risers, that is being re-utilised as part of the project. It is unclear from the evidence provided as part of the KSAR response as to whether the PSCP has consider access requirements to the existing risers (for example to volume control dampers [VCDs]) that may be required as part of the new works. It is not clear how these new system modifications have been assessed with respect to available spare space, including how the new ductwork components will be installed and maintained.

The AHU smoke and fire damper control cause and effect strategy is incomplete and is yet to be developed by the subcontractor.

With respect to clinical and IPC review/approval of design proposals, there is a lack of progressive documented sign-offs to record continual stakeholder input and approval. Throughout the KSAR workshops, the NHS Lanarkshire team were able to (verbally) reference a number of stages where clinical & IPC involvement in the design process, however there was a lack of supporting evidence in this respect provided as part of the KSAR response.

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

**NHS Scotland Assure Observations:**

The evidenced derogation register has no associated action tracker to demonstrate each points discussion and technical analysis by the Ventilation Safety Group. As a result, there is no evidence or recorded signatory acceptance for each proposed variation/derogation. The derogation schedule in general is missing information offering justifications or mitigations for the derogation.

There is some evidence of stakeholder engagement regarding the ventilation design, however there is no clear structure or formal process and it is unclear whether all parties have reviewed, commented or approved. Further, the schedule received appears incomplete with comments that are not resolved/ complete.

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

**NHS Scotland Assure Observations:**

Whilst a drawing is available that indicates ACH/ PA/ flow rates and cascades (Ref: MKB-CDL-XX-02-DR-M-1001 included in item 8.1 drawing pack), the KSAR response did not include an environmental matrix which fully details all environmental design parameters. There is therefore a lack of supporting evidence as to how the proposed design will address all ward temperature criteria in accordance with SHTM03-01 including how the temperature range will be controlled and how the thermal comfort will be maintained.

The form of room temperature control is not clear for each space within ward 16 (floating or by fixed set point). There is also no evidence that the method of room temperature sensing for the patient rooms has been satisfactorily agreed with stakeholders regarding temperature sensor sensitivity and responsiveness.

The PSCP has indicated that full thermal modelling was not carried out for the entire Ward 16, instead two representative rooms at opposite elevations East & West of the building. The PSCP have not provided evidence that supports assumptions made within the model are representative of the rest of Ward 16. Maximum humidity levels and temperature levels are also not defined.

Generally, plant locations, exhausts and air intake louvres are clearly identifiable on the PSCP roof drawings. External AHU condensers are however not shown on the project drawings (the PSCP subsequently confirmed verbally these are to be located adjacent the AHU's). No evidence was presented as to whether a structural load assessment has been undertaken with respect to plant weights and whether the roof structure can safely accommodate the new equipment being installed.

| Workbook Ref No. | Areas to probe  | Evidence expected  |
|------------------|---|--|
| 3.5              | Is there evidence of stakeholder input to ventilation strategies? | Addition to or supplement to the Environmental Matrix which confirms the following, on a room by room basis: <ul style="list-style-type: none"> <li>a) The type of ventilation (to SHTM 03-01)</li> <li>b) Patient group and / or function related to the space.</li> <li>c) Name of the Consultant, Clinical Lead or Department Lead who has agreed to the room requirements.</li> <li>d) Name of the Infection Prevention and Control Doctor or equivalent who has agreed to the room requirements.</li> <li>e) Name of the Infection Prevention and Control Nurse who has agreed to the room requirements.</li> <li>f) Name of the Estates / FM team representative who has agreed to the room requirements.</li> <li>g) Name of the NHS Project Manager who has agreed to the room requirements.</li> </ul> Name of the Decontamination Manager who has agreed to the room requirements (where this is part of the project). |

**NHS Scotland Assure Observations:**

The KSAR response did not evidence an environmental matrix, however we acknowledge there is a ventilation design logic drawing and schedule that indicates some of the information that would be in an environmental matrix. There was also no evidence presented as to how the stakeholder group had inputted to the development of the solutions out with the final, design acceptance.

| Workbook Ref No. | Areas to probe  | Evidence expected   |
|------------------|---|---|
| 3.6              | Is there evidence of the Health Board developing Ventilation Commissioning Proposals? | <p>Evaluation of the suitability of the proposed plans in the context of the FBC, are these sufficient do they meet the requirements of the project, guidance and the design of the system?</p> <p>What plans have been made for independent validation of the ventilation systems?</p> <p>What plans have been made for independent verification of the ventilation system?</p> <p>What plant and ductwork cleaning has been specified?</p> <p>What safe adequate access has been allowed for access to dampers?</p> |

**NHS Scotland Assure Observations:**

No evidence of detailed ventilation commissioning requirements as per SHTM-03-01 or other relevant guidance was identified as part of the KSAR. It is also unclear from the KSAR response as to whether NHS Lanarkshire have considered requirements for independent validation/verification of the ventilation system out with the appointment of an NEC Supervisor to ensure validation of these systems will be carried out by a suitably qualified independent Authorised Person appointed by the NHS Board.

The PSCP specification details the required internal ductwork cleaning to be in accordance with TR/19, it is not clear how the preparation and protection of ductwork during manufacture and installation has been assessed against this guidance in order to protect against contamination of the new and existing duct systems, as elements of the extract ductwork are being retained, it is unclear from the KSAR response as to how the cleaning process will be managed in an operational setting (for example there were no risk & method statements).

Access to fire dampers has been considered within the PSCP design specification Section 4.3.3 with reference to inspections, testing and maintenance and access hatches in that they will be provided adjacent to all the existing and new fire dampers in accordance with SHTM 03-01. NHS Scotland Assure note that as the strategy is still to be finalised, further validation will be required by NHS Lanarkshire to ensure adequate access is maintained.



| Workbook Ref No.   | Areas to probe   | Evidence expected   |
|--|--|---|
| 3.7  | Has the Health Board started developing its ventilation governance arrangements? | Has the Health Board commenced its planning and recorded how it will ensure appropriate numbers of trained staff (AP and CP) staff and appointment of AE(V) for the project and is it clear how this project will interface with the Health Boards existing arrangements for management of the ventilation installations? |
| <p><b>NHS Scotland Assure Observations:</b></p> <p>NHS Lanarkshire have provided no evidence to confirm appropriate numbers of trained AP / CP staff are in place. They noted during the KSAR workshops that the existing AP/CP structure for the facility on the whole would remain in place.</p> <p>There is also no demonstrable evidence within the KSAR response as to how governance will be implemented during the Construction phase e.g. validation &amp; verification of installation, including commissioning of systems.</p> |  |   |

| Workbook Ref No.   | Areas to probe  | Evidence expected   |
|--|---|---|
| 3.8  | Evaluation of the Health Boards planned preventative maintenance (PPM) proposals. | Has the Health Board commenced its planning and recorded the PPM requirements and approach to ensure appropriate levels of maintenance, comprehensive statutory compliance and robust management processes? |
| <p><b>NHS Scotland Assure Observations:</b></p> <p>There is no evidence of NHS Lanarkshire's PPM evaluation has commenced.</p> |   |   |

### 3.3.2 Ventilation: Further Observations

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

|         |  |
|---------|--|
| 3.3.2.1 | <p>No evidence of a plant resilience assessment was provided to support plant selection process, for example selection of standby AHU motor against consideration for duplex plant.</p> <p>No clinical contingency "Patient Phase document" has been evidenced which would support plant and system selection.</p> |
| 3.3.2.2 | <p>Whilst the KSAR response includes details of an acoustic review, the requirement for any supplementary duct mounted inline attenuators is not clear (none are shown on the drawings or within schedules).</p>   |

|                       |   |
|-----------------------|---|
| <p><b>3.3.2.3</b></p> | <p>The design proposes to re-use the existing ductwork serving the dirty extract system with minor modifications to allow balancing of the system. The PSCP confirmed during the KSAR ventilation technical workshop that <i>“The dirty extract system is a communal system, it serves the full tower of wards”</i> Additionally the design specification states: "cleaning to the existing dirty extract system will be limited to ductwork on the ward and to where there is clear and unobstructed access to the existing ducts"</p> <p>It is unclear from the KSAR response whether NHS Lanarkshire have considered the following in relation to this strategy:</p> <ul style="list-style-type: none"> <li>• Impact on business continuity of adjacent areas served by a dirty extract system that is Isolated for modification/upgrade.</li> <li>• Adequate cleanliness of the system may not be achieved as the entire system will not be cleaned post completion of works.</li> <li>• Given the Haematology patient cohort and that ward 16 will not have its own dedicated dirty extract systems, the risk of particulate ingress to the ward from other served areas under certain plant failure conditions i.e., local extract failure with room extract damper failure.</li> </ul> |
| <p><b>3.3.2.4</b></p> | <p>G4 filters (ISO 16890 Coarse 60%) have been selected as the primary AHU filter in lieu of F7 filters (ISO 16890 ePM1 60%). H12(99.5%) filters have been selected as the source secondary filter. It is unclear from the evidence provided as to whether the selection of a G4 filter will have an impact on the maintenance of the system, particularly on the secondary H12 filter (for example will this impact on filter inspection/replacement periods). The PSCP advised verbally that discussions with the AHU manufacturer had taken place and no adverse impacts were anticipated, however there is a lack of supporting evidence to validate this.</p>  |
| <p><b>3.3.2.5</b></p> | <p>No evidence of the AHU DX coil condenser turn-down ratio in accordance with the plant manufacturers recommendations was found within the design documentation.</p> <p>Absence of confirmation of this detail presents a potential risk as to whether system temperature control can be achieved.</p>   |
| <p><b>3.3.2.6</b></p> | <p>There is no evidence as to how the fan selections have been validated against the calculated duty for each system, including consideration of long term efficiency and operation costs.</p>  |

## 3.4 Electrical

### 3.4.1 Electrical: KSAR Observations

| Workbook Ref No.  | Areas to probe   | Evidence expected  |
|---|--|--|
| 4.1   | Has the Health Board completed competency checks on the electrical consultant designers? | <p>Recorded evidence that the design team are experienced and have a comprehensive knowledge of the relevant design standards.</p> <p>Where anyone does not have a record of extensive health care experience what recorded plans are to be put in place by the Consultant Designers?</p> <p>Recorded evidence that input from the Health Boards Authorising Engineer for Electrical (AE(E)) has been requested.</p> <p>Evidence that all contractors and sub-contractor competency checks have been completed and signed off.</p> |
| <p><b>NHS Scotland Assure Observations:</b></p> <p>NHS Lanarkshire have appointed a PSCP led design team via the Health Facilities Scotland Framework Route. The appointment itself is in relation to an overarching appointment, with no specific details provided as to how the required design team competencies and experience were defined or assessed for this particular project.</p> <p>NHS Lanarkshire have presented no evidence regarding input from the Authorising Engineer (electrical). It is acknowledged that the Authorising Engineer (electrical) attended the KSAR technical workshop.</p> <p>No evidence of sub-contractor competency checks being undertaken was provided as part of the KSAR response and not all sub-contractors have yet been appointed.</p> |  |  |

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

|  |  |  |
|--|--|--|
|  |  | Are sub stations, switch rooms, distribution board cupboards, horizontal distribution runs and risers appropriately sized for the equipment being installed and facilitate safe, adequate maintenance. |
|--|--|--|

**NHS Scotland Assure Observations:**

BIM modelling has not been undertaken as this is a refurbishment. MEP drawings are evidenced within folder 27.2, however the extent of co-ordination undertaken is unclear.

The cable and containment distribution routes within the ward areas have not been clearly defined and no containment drawings have been produced as the design team anticipate that existing containment will be used.

Spare capacity has not been identified as a requirement by NHS Lanarkshire due to the lifecycle of the building and the constraints of the existing building – this however was noted verbally during the KSAR workshops in the absence of developed Board Construction Requirements (BCRs). It is also unclear whether the capacity of the existing containment and its ability to accommodate any new cabling has been checked/validated with respect to the design assumptions made.

NHS Scotland Assure note that at the time of undertaking the KSAR, the final design solution associated with the electrical supply to the new AHU supply has yet to be developed. The KSAR response indicated a number of potential solutions, all subject to different assumptions that have not yet been validated by the project team, including cable routes and containment requirements. The electrical isolation strategy is also yet to be developed. Whilst anecdotal evidence of NHS Lanarkshire input into the development of the options was provided, further work is required to formally document this and ensure all assumptions are appropriately validated (and proven to be feasible).

The new AHU supply panel is noted as being located within the existing roof top plant room, however the final panel configuration and physical size has not yet been confirmed. In the absence of demonstrable drawings or panel specifications we were therefore unable to review whether suitable provision for access & maintenance is in place at this stage or whether all equipment will fit in the space. NHS Scotland Assure also note that the existing roof top plant room has a single means of escape from the east tower roof staircase adjacent to the plant room. NHS Lanarkshire verbally noted this had been reviewed by the local Fire Safety Advisor, NHS Scotland Assure recommend this be fully documented within the fire strategy and supporting risk assessments.

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

**NHS Scotland Assure Observations:**

NHS Lanarkshire provided evidence of a derogation schedule, however the schedule is incomplete with a number of unresolved queries/comments noted within the document. There was also no evidence of a formal process for NHS Lanarkshire stakeholder review and sign-off of proposed derogations or supporting risk assessments.

A number of the derogations listed lack detail in our opinion and contain assumptions pertaining to the existing installation that do not appear to have been validated. There is also no evidence as to whether the resultant degree of safety has been assessed in lieu of the derogations to ensure it is no less safe than had the guidance been complied with in full.

The KSAR also identified a number of potential non-conformances with BS7671 that had yet to be reviewed/validated by the project team, examples include whether a review has been undertaken of Medical Locations in accordance with Section 710 and the requirement for any safety power supplies. NHS Scotland Assure strongly recommend these addressed to ensure that NHS Lanarkshire can demonstrate compliance with BS7671 in addition to satisfying their legal obligations under Electricity at Work Regulations 1989.

| Workbook Ref No. | Areas to probe  | Evidence expected  |
|------------------|---|--|
| 4.4              | Has the Health Board assured itself of availability of adequate supply from the local utility infrastructure? | Confirmation from the Regional Electricity Company as to how the supply will be provided from their network and if single or dual supplies are being made available.<br><br>What is the Health Board's resilience strategy for the electrical infrastructure (including dual supplies, renewables, generators, UPS, etc.)? |

**NHS Scotland Assure Observations:**

The design information indicates that the new electrical supply will be derived from existing NHS Lanarkshire low voltage infrastructure, however the final design solution is not yet confirmed.

No evidence was provided to demonstrate that the existing capacity had been validated from either an NHS Lanarkshire infrastructure perspective or DNO supply agreement.

No evidence of a resilience study or risk assessment in accordance with SHTM 06-01 Part A was provided. During the KSAR electrical workshop NHS Lanarkshire confirmed that the existing generators on site currently supply 100% of the hospitals electrical need if required in the instance of a supply failure. Existing Generator start-up times and load acceptance factors have not yet been validated.

NHS Lanarkshire noted they do not have a written sequence of operations for their standby power systems but did provide an overview of how the system operated, noting that generators would synchronise before accepting any load.

| Workbook Ref No.   | Areas to probe  | Evidence expected   |
|--|---|---|
| 4.5  | Evidence of provisions for emergency supplies during loss of the utility incoming supply. | Floor plans with standby generator locations highlighted plus simple schematic. |
| <p><b>NHS Scotland Assure Observations:</b></p> <p>During the KSAR electrical workshop NHS Lanarkshire confirmed that the existing generators on site currently supply 100% of the hospitals electrical need if required in the instance of a supply failure. As the new power supplies associated with the Ward 16 project are being derived from the existing infrastructure, the design team are working on the assumption that the existing generators will therefore provide emergency power in the event of a loss of mains power. No evidence of a review of existing generator load capacity, estimated new load, load acceptance factors or generator start-up times was provided as part of the KSAR response.</p> |   |   |

| Workbook Ref No.  | Areas to probe                                | Evidence expected  |
|---|---|--|
| 4.6   | Is there a strategy for locating substations? | Floor plans with substation locations highlighted plus simple schematic of strategy. |
| <p><b>NHS Scotland Assure Observations:</b></p> <p>No new substations are proposed as part of the works. All new supplies are to be derived from existing infrastructure.</p> |   |  |

| Workbook Ref No.   | Areas to probe                                 | Evidence expected  |
|--|--|--|
| 4.7  | Is there a strategy for locating switch rooms? | Floor plans with switchroom locations highlighted plus simple schematic. |
| <p><b>NHS Scotland Assure Observations:</b></p> <p>The design information submitted as part of the KSAR response indicates that the new AHU supply panel will be located in the existing roof top plant room, however the actual location within the plant room for the panel has yet to be confirmed. No drawings of the proposed location were provided and the dimensions/physical configuration of the panel are yet to be determined.</p> |  |  |

During the KSAR electrical workshop the PSCP noted that the AHU supply panel dimensions are to be dictated by the available space in the roof top plant room, this will also confirm how cables will enter the panel and any additional containment needed for the cables in the roof top plant room. In the absence of any panel drawings it is unclear as to whether the feasibility of this proposal has been fully validated and may present potential safety concerns for operatives who will carry out future maintenance.

| Workbook Ref No.   | Areas to probe  | Evidence expected  |
|--|---|--|
| 4.8  | Is there a strategy for locating Medical IT distribution equipment? | Floor plans with Medical IT board locations highlighted plus simple schematic.<br>Compliance with BS7671 section 710<br>Compliance with SHTM 06-01 |
| <p><b>NHS Scotland Assure Observations:</b></p> <p>There is no medical IT proposed for Ward 16. NHS Scotland Assure note in the absence of a completed medical locations assessment in accordance with BS7671 or SHTM 06-01, it is not possible to determine if such a system is required.</p> |   |  |

| Workbook Ref No.  | Areas to probe                        | Evidence expected  |
|---|---------------------------------------|--|
| 4.9   | Is there a strategy for distribution? | Floor plans with containment distribution routing (horizontal and vertical). |
| <p><b>NHS Scotland Assure Observations:</b></p> <p>The design proposals provided by NHS Lanarkshire have yet to be finalised with respect to the distribution strategy. Multiple potential options are described within the project documents; however, they are all subject to assumptions that have yet to be validated or unknown/undefined elements such as how electrical isolations will be undertaken to facilitate the works and further surveys required to inform design options.</p> <p>Based on the evidence provided, the distribution strategy is in our opinion, not reflective of a RIBA Stage 4 level of detail.</p> |                                       |  |

| Workbook Ref No. | Areas to probe   | Evidence expected  |
|------------------|--|--|
| 4.10             | Is there evidence of the Health Board developing electrical commissioning proposals? | Evaluation of the suitability of the proposed plans in the context of the FBC, are these sufficient do they meet the requirements of the project, guidance and the design of the system?<br>Has sufficient time been allocated for a full commissioning program? |

**NHS Scotland Assure Observations:**

No evidence was provided to demonstrate detailed consideration of electrical commissioning proposals/requirements. NHS Scotland Assure note that there are a number of unresolved risks in this respect, including how electrical isolations will be implemented (and how continuity of service to adjacent areas will be maintained) and how safe systems of work will be implemented by the PSCP in relation to phasing of the works.

NHS Lanarkshire provided a high level programme, however this lacks detail with respect to commissioning activities, with no information as to how electrical services will be commissioned in each phase or how safe electrical isolations will be facilitated.

| Workbook Ref No. | Areas to probe  | Evidence expected   |
|------------------|---|---|
| 4.11             | Has the Health Board starting on its early thinking for the electrical governance arrangements for the operational phase? | Has the Health Board commenced its planning and recorded how it will ensure appropriate trained staff and appointment of AE for the project and is it clear how this project will interface with the Health Board existing arrangements for management of the electrical installations, inclusive of third party providers? |

**NHS Scotland Assure Observations:**

NHS Lanarkshire have provided no evidence to confirm appropriate numbers of trained Authorised Persons or Competent Persons (AP / CP) staff are in place. They noted during the KSAR workshops that the existing AP/CP structure for the facility on the whole would remain in place.

There is also no demonstrable evidence within the KSAR response as to how governance will be implemented during the Construction phase e.g. validation and verification of installation, including commissioning of systems.

At the KSAR electrical workshop the AE electrical confirmed they had not been engaged in the project to date.

The PSCP noted at the electrical meeting that NHS Lanarkshire estates had been involved in the development of the options, this was not evidenced in the documents provided.

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

**NHS Scotland Assure Observations:**

No evidence submitted for PPM proposals.



### 3.4.2 Electrical: Further Observations

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

|                |  |
|----------------|--|
| <b>3.4.2.1</b> | <p>The project is proposed to be undertaken in a phased manner. In the absence of an isolation strategy, it is unclear whether the risk to continuity of electrical supply has been considered to completed or existing areas in order to maintain a safe system of work for ongoing activities. It is also unclear from the information provided as to whether any works will be undertaken in proximity to live electrical services and whether any mitigation measures are required to maintain a safe system of work.</p> <p>It is also unclear as to how the demarcation of Duty Holders will be defined nor how the overlap of NHS Lanarkshire/PSCP safe systems of works (Including permitting) will be managed. Given that electrical services may serve both existing infrastructure under the control of NHS Lanarkshire and new infrastructure under the (temporary) control of the PSCP, it is imperative this is defined.</p> |
| <b>3.4.2.2</b> | <p>NHS Lanarkshire and the PSCP have not provided any cable calculations for the electrical works in ward 16.</p>  |
| <b>3.4.2.3</b> | <p>NHS Lanarkshire and the PSCP at the electrical workshop stated that an option for the power supply for the new AHU panel would be to use a cable that was previously used to supply power to a surgical area distribution board.</p> <p>The cable is currently installed in the building and has been switched off/ dormant for five years. Should the project team decide to utilise this pre-existing means of supply It was unclear if any testing of the cable had been undertaken and if the physical condition of the cable as well as electrical integrity had been verified.</p>  |

## Medical Gases

### 3.4.3 Medical Gases: KSAR Observations

| Workbook Ref No. | Areas to probe  | Evidence expected  |
|------------------|---|--|
| 4.1              | Has the Health Board completed competency checks on the medical gases consultant designers? | <p>Recorded evidence that the design team are experienced and have a comprehensive knowledge of the relevant design standards.</p> <p>Where anyone does not have a record of extensive health care experience what recorded plans are to be put in place by the consultant designers?</p> <p>Recorded evidence that input from the Health Boards Authorising Engineer for Medical Gases (AE(MG)) has been requested.</p> <p>Evidence that all contractors and sub-contractor competency checks have been completed and signed off.</p> |

#### NHS Scotland Assure Observations:

There are no additions or modifications proposed to the existing medical gases installation, therefore no specialist consultant designer has been appointed by the Health Board.

Medical Gas Regulators & equipment are noted within the HAI-SCRIBE as to be removed by Medical Physics prior to works progressing in each area. No requirement for PSCP involvement in this process has been identified.

| Workbook Ref No. | Areas to probe   | Evidence expected   |
|------------------|--|---|
| 4.2              | How does the Health Board assure itself that all variations / derogations' which may be required to medical gas systems are being 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 gases management group, clinical, Estates, infection control and FM teams. |

#### NHS Scotland Assure Observations:

There are no additions or modifications proposed to the existing medical gases installation. No derogations have therefore been proposed in this respect.

| Workbook Ref No. | Areas to probe   | Evidence expected  |
|------------------|--|--|
| 4.3              | How does the Health Board ensure that medical gas services are designed in a fashion, which will provide ease of access for future maintenance and which will retain space for minor additions and modifications to services in the future | <p>Evidence that the designers have presented their co-ordination drawings (BIM model) to the Board.</p> <p>Evidence that the designer has presented each of the main service runs to the Board's FM team.</p> |

**NHS Scotland Assure Observations:**

There are no additions or modifications proposed to the existing medical gases installation. This question has therefore been deemed not applicable.

| Workbook Ref No. | Areas to probe  | Evidence expected   |
|------------------|---|---|
| 4.4              | Is there evidence of the Health Board developing medical gases commissioning proposals? | Evaluation of the suitability of the proposed plans in the context of the FBC are these sufficient do they meet the requirements of the project, guidance and the design of the system? |

**NHS Scotland Assure Observations:**

Medical Gas Regulators & equipment are noted within the HAI-SCRIBE as to be removed by Medical Physics prior to works progressing in each area. No requirement for PSCP involvement in this process has been identified.

It is unclear from the KSAR response as to the procedures that will be implemented to reinstate these following completion of the works, including any requirements for re-commissioning or validation by a specialist.

| Workbook Ref No. | Areas to probe   | Evidence expected  |
|------------------|--|--|
| 4.5              | Has the Health Board started developing its medical gases governance arrangements for the operational phase? | Is the Health Board considering how it will ensure appropriate numbers of trained staff (AP and CP) and AE(V) for the project? And is it clear how this project will interface with the Board existing arrangements for management of the medical gases installations? |

**NHS Scotland Assure Observations:**

No modifications to the existing installation are proposed. NHS Lanarkshire have intimated that the existing governance processes will remain in place. Details of the existing medical gas governance was not provided or reviewed as part of the KSAR.

| Workbook Ref No.   | Areas to probe   | Evidence expected   |
|--|--|---|
| 4.6  | Is there recorded evidence of a strategy for bulk gas and bottle gas storage?    | <p>Floor plans with vacuum insulated evaporator (VIE) locations highlighted plus simple schematic of strategy.</p> <p>Confirmation that the medical gas strategy is adequate.</p> <p>Floor plans with pipework distribution routing and manifold locations.</p> |
| <p><b>NHS Scotland Assure Observations:</b></p> <p>As no modifications to the existing installation are proposed, this question was deemed to be not applicable as part of the current KSAR.</p> |  |   |
| Workbook Ref No.   | Areas to probe   | Evidence expected   |
| 4.7  | Evaluation of the Health Boards planned preventative maintenance (PPM) proposals | Has the Health Board commenced its planning and recorded the PPM requirements and approach to ensure appropriate levels of maintenance, comprehensive statutory compliance and robust management processes?   |
| <p><b>NHS Scotland Assure Observations:</b></p> <p>As no modifications to the existing installation are proposed, this question was deemed to be not applicable as part of the current KSAR.</p> |  |   |

#### 3.4.4 Medical Gases: Further Observations

No additional observations were made with respect to the KSAR workbook questions.

## 3.5 Fire

### 3.5.1 Fire: KSAR Observations

| Workbook Ref No.   | Areas to probe   | Evidence expected   |
|--|--|---|
| 5.1  | Has the Health Board completed competency checks on the Fire Engineering consultant designers? | <p>Recorded evidence that the design team are experienced and have a comprehensive knowledge of the relevant design standards applicable to healthcare premises.</p> <p>Recorded evidence that input from the Health Boards Fire Advisors has been requested.</p> <p>Evidence that all contractors and sub-contractor competency checks have been completed and signed off.</p> |
| <p><b>NHS Scotland Assure Observations:</b></p> <p>NHS Lanarkshire have noted that due to the specific scope of the Ward 16 Ventilation refurbishment project a specialist fire engineering design was not required, therefore no Fire Engineering Consultant has been appointed to the project.</p> <p>Throughout the KSAR process, NHS Lanarkshire were able to demonstrate input from their internal Fire Safety Advisors through both verbal discussions and written communications.</p> |  |   |

| Workbook Ref No. | Areas to probe   | Evidence expected   |
|------------------|--|---|
| 5.2              | Has a written fire strategy been completed and does it provide evidence, where there is a variance from statutory and mandatory guidance, that an equivalent level of safety has been achieved by alternative means? | <p>Is there documented evidence that fire suppression systems have been considered for life safety and property protection?</p> <p>Is progressive horizontal evacuation available for all patient areas that continuously moves away from the fire area?</p> <p>Does the design considerations of the fire and detection system, for in-patient facilities, provide L1 coverage including voids?</p> <p>Does the design provide for a compliant emergency lighting system?</p> <p>Are free swing arm self-closers fitted to all leafs of doors serving sleeping accommodation?</p> <p>Have escape lifts been considered for the evacuation of patients and others with mobility issues?</p> |

|  |  |  |
|--|--|--|
|  |  | <p>Are multi sensor fire detectors installed to reduce the occurrence of unwanted fire alarm signals?</p> <p>Are there adequate storage facilities to ensure escape routes are not used for this purpose?</p> <p>Are measures in place to provide safe charging of electrical and personal electronic equipment?</p> <p>In addition to the prescribed list in the Building Standards Technical Handbook, have fire hazard rooms been designated based on fire load?</p> <p>Where there is a mechanical ventilation system - have all compartments, sub-compartments and corridors serving sleeping accommodation been designed to be fitted with fire and smoke dampers?</p> |
|--|--|--|

**NHS Scotland Assure Observations:**

As this is an existing building and the board are working within known constraints, there are limited fire safety upgrades as part of this project, the above evidence expected list is therefore considered out with the scope of this review.

NHS Scotland Assure are satisfied that the written strategy provided by the board fire advisor provides evidence, where there is a variance from statutory and mandatory guidance, that an equivalent level of safety has been achieved by alternative means.

With respect to the provision of fire and smoke dampers, the project drawings indicate an outline strategy is in place, however during the KSAR workshops NHS Lanarkshire intimidated they were reviewing the strategy in respect to certain clinical locations with a view to omitting the dampers in lieu of fire rated ductwork (in order to minimise the risk associated with accessing and maintaining the dampers). The final proposals in this respect are yet to be developed, but NHS Lanarkshire have noted that they will look to undertake full risk assessments to support any solution going forward.

| Workbook Ref No. | Areas to probe   | Evidence expected  |
|------------------|--|--|
| 5.3              | How does the Health Board assure itself that all variations / derogations, which may be required to fire systems, are investigated and agreed by all parties before they are instigated? | Evidence that the each variation / derogation and any fire engineering proposals are being referred to the Board and agreed with their fire safety advisors, NDAP group, clinical, engineering, Infection Prevention and Control, FM teams and regulatory authorities. |

**NHS Scotland Assure Observations:**

NHS Lanarkshire have demonstrated through the KSAR process that a number of improvement works are ongoing across the Monklands site to improve fire safety measures,

with an established fire management group in place. As part of the Ward 16 works and the ongoing fire safety improvement measures, no specific derogations have been identified. The derogations schedule makes reference to various fire standards, however the narrative provided relates more to clarifications as opposed to derogations. NHS Scotland Assure are satisfied that appropriate consultation has taken place with the local Fire Officer in assessing the technical solutions proposed. NHS Scotland Assure recommend that the Derogations Schedule is fully updated to be reflective of actual derogations and that any clarifications are captured under separate cover or made clear within the document that these do not represent derogations for clarity.

| Workbook Ref No. | Areas to probe  | Evidence expected  |
|------------------|---|--|
| 5.4              | How does the Health Board assure itself that all fire dampers and fire/smoke dampers are designed to allow for inspection, resetting and maintenance? | Safe and adequate access has been allocated on both sides of all fire dampers for maintenance. |

**NHS Scotland Assure Observations:**

With respect to the provision of fire and smoke dampers, the project drawings indicate an outline strategy is in place, however during the KSAR workshops NHS Lanarkshire intimidated they were reviewing the strategy in respect to certain clinical locations with a view to omitting the dampers in lieu of fire rated ductwork (in order to minimise the risk associated with accessing and maintaining the dampers). The final proposals in this respect are yet to be developed, but NHS Lanarkshire have noted that they will look to undertake full risk assessments to support any solution going forward.

| Workbook Ref No. | Areas to probe   | Evidence expected  |
|------------------|--|--|
| 5.5              | How does the Health Board assure itself that any smoke control and/or clearance systems are fit for purpose? | Evidence that the smoke system is being designed by an accredited Fire Engineer.<br>Evidence that Building Control are being consulted.<br>Confirmation that the Health Boards fire advisors and NDAP team are satisfied with the design proposal. |

**NHS Scotland Assure Observations:**

There are no smoke clearance systems proposed – this section is therefore deemed not applicable.

| Workbook Ref No.  | Areas to probe   | Evidence expected   |
|---|--|---|
| 5.6   | Has the Health Board started the development of the fire system outline commissioning proposals? | Is there an established fire management group that will ensure the fire strategy is adhered to? |
| <p><b>NHS Scotland Assure Observations:</b></p> <p>Systems that will require commissioning on this project include the fire/smoke damper installation and the fire detection and alarm installation.</p> <p>With respect to the fire detection and alarm installation, whilst works are minimal, these still require to be commissioned/validated to demonstrate successful operation of the system in accordance with NHS Lanarkshire Cause and Effect requirements. At this stage, the PSCP has noted that detailed commissioning plans have not yet been developed and they will review requirements at the next stage of the project with NHS Lanarkshire.</p> <p>With respect to the commissioning of the fire/smoke damper installation, there is also a lack of detail around specific requirements for the works. The project programme provided is to a high level and lacks detail with respect to commissioning activities.</p> <p>An established fire management group is in place for the project.</p> |  |   |

| Workbook Ref No.   | Areas to probe  | Evidence expected   |
|--|---|---|
| 5.7  | Has the Health Board started its early thinking for the Fire Safety arrangements for the operational phase? | Has the Health Board commenced its planning and recorded how it will ensure appropriate trained staff and appointment of Fire Officers for the project in the operational phase and is it clear how this project will interface with the Health Boards existing arrangements for management of the Fire Safety? |
| <p><b>NHS Scotland Assure Observations:</b></p> <p>This area is currently occupied and as such NHS Lanarkshire have stated that they have in place suitable training and fire safety management procedures, and that these measures will be maintained both during and after completion of works. As part of the KSAR response, full copies of the fire safety training programme and staff training records were not made available, however elements of these were evidenced anecdotally through dialogue with NHS Lanarkshire. NHS Lanarkshire continue to engage with the NHS Scotland Assure Fire Team out with the KSAR process and we acknowledge their transparency in this respect.</p> |   |   |

### 3.5.2 Fire: Further Observations

No additional observations were made with respect to the KSAR workbook questions.



## 3.6 Infection Prevention & Control Built Environment

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

| Workbook Ref No. | Areas to probe  | Evidence expected  |
|------------------|---|--|
| 6.1              | <p>How does the Health Board demonstrate that there is an effective infection prevention and control management structure in place?</p> <p>How does the Board demonstrate leadership and commitment to infection prevention and control to ensure a culture of continuous quality improvement throughout the organisation and that there is an effective IPC structure in place; inputting into the design process?</p> | <p>The Health Board provides evidence that there is an IPC Management Structure with the necessary expertise and leadership skills to support the design work</p> <p>The Health Board provides evidence that there is an IPC Management Team with the necessary expertise and leadership skills to support the project.</p> <p>Executive board reports or minutes. Risk registers or equivalent, Minutes from operational and governance groups, (and action points).</p> <p>Structure of infection prevention and control team (IPCT) and qualifications held, previous experience supporting new build projects.</p> <p>Evidence IPC and clinical teams have been involved with any derogation through the design process and are satisfied this will not impact on patient safety. This can be meeting minutes, risk assessments, and risk registers.</p> <p>There is IPC evidence of escalation through the agreed NHS board governance process. Evidence the Executive Board Member assigned to lead on IPCT has been kept informed of IPC risks identified and associated with the project this can be demonstrated by the board.</p> <p>Evidence that fixtures fitting and equipment have not been proposed for the project that would represent an identified IPC risk. Evidence that all contractors and sub-contractor competency checks have been completed and signed off.</p> |

#### NHS Scotland Assure Observations:

The NHS Lanarkshire team noted during the KSAR process that they had been involved from an IPC perspective throughout the project, however there was a lack of demonstrable evidence to support this out with the partially completed Stage 2 and 3 HAI Scribes. No evidence of the IPC governance structure or formal record of their ongoing project inputs was provided as part of the KSAR.

With respect to proposed design solutions, including selection of fixtures, fittings & equipment, there is no evidence as to the IPC governance applied to the process nor how this will be controlled during the Construction Stage.

NHS Lanarkshire have appointed a PSCP led design team via the Health Facilities Scotland Framework Route (initially via Framework Scotland 2 and subsequently refreshed via Framework Scotland 3). The appointment itself is in relation to an overarching appointment, with no specific details provided as to how the required contractor/sub-contractor team competencies and experience were defined or assessed for this particular project.

| Workbook Ref No. | Areas to probe  | Evidence expected   |
|------------------|---|---|
| 6.2              | How does the Health Board demonstrate implementation of evidence based infection prevention and control measures during the design process? | <p>The Health Board provides evidence</p> <ul style="list-style-type: none"> <li>The board can demonstrate the current version of the National Infection Prevention and Control Manual has been adopted by the organisation and all staff are aware of how and where to access this and it is being referred to during the design process. The board can demonstrate IPC advisors have been included within the design phase and development of HAISCRIBE.</li> </ul> |

**NHS Scotland Assure Observations:**

NHS Lanarkshire noted during the KSAR workshops that their clinical and IPC teams were significantly involved in the decision making process and input to the design (for example attendance at design workshops, etc.), however out with design sign of meeting minutes there is a lack of ongoing project documented evidence to support this within the KSAR response.

Stage 1 of the HAI-SCRIBE process as per SHFN30 was not undertaken by NHS Lanarkshire, as it was deemed by the Health Board not to be required based on the scope of the project, there is no supporting derogation in this respect.

A partially completed Stage two HAI-SCRIBE was evidenced.

Stage 3 of the HAI-SCRIBE process is yet to be fully completed by NHS Lanarkshire. Evidence of the partially completed HAI-SCRIBE was provided as part of the KSAR response.

NHS Scotland Assure note that this approach is not in accordance with the typical workflow outlined in SHFN 30.

NHS Lanarkshire have not provided any evidence as to how the NIPCM (National Infection Prevention and Control Manual) is being/will be implemented in respect to the project, nor how staff will access and utilise the document.

| Workbook Ref No. | Areas to probe  | Evidence expected   |
|------------------|---|---|
| 6.3              | How does the Health Board assure itself that the designers have a proper understanding of the infection prevention and control procedures required? | The Health Board evidences that: <ul style="list-style-type: none"> <li>All relevant staff within the designers' organisation are provided with clear guidance on roles and responsibilities in relation to infection prevention and control. The contractors' organisation will provide evidence of education in relation to infection prevention in the built environment for all staff involved in the project.</li> </ul> |

**NHS Scotland Assure Observations:**

Stage one of the HAI-SCRIBE process as per SHFN30 was not carried out by NHS Lanarkshire, as they were deemed by the Health Board not to be required based on the scope of the project, there is no supporting derogation in this respect.

Stage two of the HAI-SCRIBE process as per SHFN30 was partially completed by NHS Lanarkshire.

Stage three of the HAI-SCRIBE process is yet to be fully completed by NHS Lanarkshire prior to the commencement of this review. Evidence of the partially completed HAI scribe was provided as part of the KSAR response. NHS Scotland Assure note that this approach is not in accordance with the typical workflow outlined in SHFN 30.

The written evidence of the HAI-SCRIBE process does not clearly identify all individuals involved and in the absence of an overall roles/responsibility matrix, it is also unclear as to whether appropriate clinical & technical representation was provided at all stages. NHS Lanarkshire did note during the KSAR workshops that the process was collaborative between all parties, however there is a lack of supporting evidence in this respect.

| Workbook Ref No. | Areas to probe  | Evidence expected  |
|------------------|---|--|
| 6.4              | How does the Health Board assure itself that equipment being proposed meets the required IPC standards? | The IPC Team are involved and IPC advice followed in all procurement decisions for new equipment prior to purchase. IPCT are satisfied that all equipment purchased can be decontaminated safely in line with National Guidance and manufacturers' instructions. |

**NHS Scotland Assure Observations:**

There was no evidence provided as to how IPC will be engaged with respect to equipment selection and procurement.

| Workbook Ref No.   | Areas to probe   | Evidence expected  |
|--|--|--|
| 6.5  | Evaluation of the Health Boards planned preventative maintenance (PPM) proposals for equipment issues and the Built Environment in relation to IPC issues. | <ul style="list-style-type: none"> <li>• Has the Health Board considered how they will undertake assessment of and report cleanliness of the proposed facility and equipment within the healthcare environment, this is inclusive of planned programmes of maintenance?</li> <li>• Does the Health Board plan to seek feedback from patients, staff and visitors for their views?</li> <li>• Is it clear how the work for this project will interface with the Health Board existing arrangements for management of the IPC in the Built Environment in the wider estate?</li> </ul> |
| <p><b>NHS Scotland Assure Observations:</b><br/>No evidence submitted for PPM proposals.</p> |  |  |

### 3.6.2 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.

|         |   |
|---------|---|
| 3.6.2.1 | The HAI-SCRIBE and project documentation provided as part of the KSAR does not appear to fully consider the placement of patients in adjacent clinical areas during erection of site hoardings, based on their clinical risks and any contingencies in place if ward occupancy is high. |
|---------|---|

## 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](#)

