NHS Scotland Assure
Quality in the healthcare environment

NHS National Services Scotland

Key Stage Assurance Review
NHS Tayside Thrombectomy

OBC KSAR Report

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Prepared for:

NHS Tayside & Scottish Government

Prepared by:

NHS Scotland Assure – Assurance Service

Document Control Sheet

Revision History

Version	Date	Revision Details	Originator	Changes Marked
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Approvals

This document requires the following signed approvals:

Version	Date	Name & Organisation	Role	Signature
V1.0	05.07.22	Ian Storrar	Assistant Director Engineering and Assurance NHS Scotland Assure	IGS
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Distribution

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1. Executive Summary

As a result of the Outline Business Case (OBC) Key Stage Assurance Review (KSAR), and based on the information presented to NHS Scotland Assure, we are unable to support the project progressing to Full Business Case (FBC) at this time.

There are a number of key elements that NHS Tayside should address as part of their action plan, prior to moving to the next phase of the project. NHS Scotland Assure (NHS SA) noted particular concern around the following items:

- NHS Tayside have not provided a submission that is consistently in line with the requirements of RIBA Stage 2 as required by the Scottish Capital Investment Manual (SCIM).
- There are notable omissions in the evidence provided relating to governance, water services design, medical gases requirements and design, elements of ventilation, IPC and electrical design.
- There has been a lack of evidence presented of stakeholder engagement, specifically from Authorising Engineers (AE's), Infection Prevention and Control (IPC), the Water Safety Group (WSG), Ventilation Safety Group (VSG) and Estates colleagues in the production of the OBC documentation.
- There has been no documented evidence presented that a Principal Designer has been involved in the project, as per the requirement of CDM 2015.
- There was no evidence presented by NHS Tayside regarding the implementation of the National Infection Prevention Control Manual (NIPCM) for the project.
- No documented evidence has been provided on how the Thrombectomy facility will impact the wider hospital from an Operational, IPC and Fire perspective, during the construction process or when in operation.
- No documented evidence to show that the risks have been considered, to the operation of adjacent Radiology departments (Intervention & Ultrasound) which will remain operational during the Construction Works.
- A formal fire strategy has not been produced to address the requirements of Scottish Health Technical Memorandum (SHTM) 81 and mandatory standards 2.1 to 2.15 of the Scottish Building Standards Non-Domestic Technical Handbook (NDTH).
- We note a lack of clear governance processes throughout the project from NHS Tayside and a lack of evidence that the governance processes have been implemented. There are no documented records evidenced of how technical elements of the RIBA Stage 2 design has been approved by NHS Tayside, or evidence of a documented process for dealing with derogations.
- No evidence was presented to confirm any due diligence has been carried out on the existing hospital engineering systems that NHS Tayside are proposing to utilise, the proposed points of connection and available capacity with

respect to the existing building services for example, medical gases, domestic water services, electrical services (power, fire alarms, IT standby power, medical IT systems etc.), ventilation and heating.

- There is limited evidence to show that considerations have been given to the sustainability strategy or a proposed route map for achieving Net Zero Carbon compliance, and how the project will align with the requirements of *'SHTN 02-01: Sustainable Design and Construction (SDaC) Guide*' and '*DL(2021)38: A Policy For NHS Scotland On The Climate Emergency And Sustainable Development.'* This may have a significant impact on the proposed building fabric and the mechanical and electrical services.
- NHS Tayside have not provided evidence of any commissioning strategies (for any service) or a description of how connecting to or extending these systems would impact or affect adjacent departments.

We would note however that the Board and their Design team have been actively involved and supportive of the KSAR review process. Through the review the Board have taken on board comments and observations made during the technical workshops.

The Board have already actioned some recommendations and started to implement changes.

1.1 Summary of Findings

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

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

The following categories were used in relation to the findings:

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

1.2 Project Overview

The project involves the construction of a three-storey courtyard infill structure to provide accommodation for a Thrombectomy service within the Radiology Department (Level 6) at Ninewells Hospital, Dundee.

The proposed site for the accommodation is a courtyard site at Level 5 between the Radiology Department situated in the Polyclinic Block and the main Concourse Block.

The new accommodation is to be built over three floors (Levels 5 to 7). The footprint of the proposed site is approximately 336sqm.

The new extension is to accommodate two new fully compliant Intervention Suites and associated support accommodation. In addition, new office accommodation is being provided to replace displaced offices and a new Plant Room to accommodate the mechanical & electrical plant associated with the project.

The floor-to-floor levels between levels 5 & 6 will be to match existing hospital floor to floor levels.

As part of the RIBA Stage 2 design for OBC the layout includes two Intervention Rooms in a north / south configuration. The design includes a shared Clean Prep Room and Disposal room and separate Equipment Rooms which can be accessed from out with the department. The layout plan also includes an Anaesthetic Room, small Recover bed bay area and a small Clinical Supplies store.

The floor-to-floor levels between level 6 & 7 have been increase to 4.2m to allow suitable ceiling heights and service zones as required by the Imaging Equipment manufacturers in the Intervention Rooms.

Level 7 is to be a new M&E Plant Space to accommodate the Air Handling Units (AHUs) for the two new Intervention Rooms and a new AHU for the recovery room. The AHUs are separate supply and extract units with run around coils to provide heat recovery. The Level 7 Plan space will be accessible from two protected stair enclosures accessible from the adjacent Corridors.

It is understood that the adjacent Radiology departments (Intervention & Ultrasound) will remain operational during the Construction Works. NHS Tayside have accepted that there will be the need to be short periods where adjacent services need to be shut down and these require to be planned into the Construction programme and hospital operation as part of the design process. The complexity of the project (filling in a courtyard area) has raised a number of IPC risks for the project, E.g. Partitioning of construction area, protection of water and ventilations systems, entry and exit of construction staff, delivery/storage of materials. Stage 2 HAISCRIBE makes no reference to the clinical adjacency risks associated with the project with water and ventilation system designs to be developed at FBC.

2. Review Methodology

2.1 Overview of NHS Scotland Assure & The KSAR Process

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

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

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

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

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

The KSAR focuses on key topics, specifically – IPC, water, ventilation, electrical, plumbing, medical 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 Outline Business Case (OBC) 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 Full Business Case.

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

2.2 KSAR Process

The OBC KSAR for NHS Tayside Thrombectomy Project took place between 7th March 2022 and 9th May 2022.

2.2.1 To inform the findings of the KSAR, the Health Board were issued with key documents outlining the assurance question set and expected level of evidence and supporting documents in accordance with relevant legislation and guidance. This included the OBC KSAR Workbook and OBC 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 the Health Board. The detailed observations are recorded in an action plan that should be adopted by the Health Board following the review and subsequently monitored by them to ensure appropriate actions are completed in a timeous manner.

2.3 Application of Standards & Legislation

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

2.3.2 Antimicrobial Resistance and Healthcare Associated Infection (ARHAI) Scotland currently provides advice and guidance on all aspects of infection protection and control nationally in Scotland, inclusive of expert advice and guidance on the topic of Healthcare Associated Infections (HAI) and antimicrobial resistance. It maintains and continues to develop a practice guide (National Infection Prevention and Control Manual – NIPCM) as well as a HAI Compendium of all extant guidance and policy appropriate for use

in NHS Scotland. Like HFS, these services are largely advisory in nature, identifying best practice and developing national guidance and standards. The NHS Scotland NIPCM was first published on 13 January 2012 as mandatory guidance, by the Chief Nursing Officer (CNO (2012)1), and updated by a second edition on 17 May 2012 (CNO(2012)01-update). The NIPCM provides guidance for all those involved in care provision and should be adopted for infection, prevention and control practices and procedures. The NIPCM is mandatory policy for NHS Scotland.

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

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

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

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

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

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

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

2.4 Project Technical Outline Summary

From the information provided by NHS Tayside as part of the OBC submission and information obtained from meetings and workshops during the KSAR process, the following summary of the key areas has been established.

The electrical supplies for the new Thrombectomy facility will be sourced from existing low voltage switchboards, PEA & PEB, located in dedicated switch rooms on Level 8 of the Polyclinic Building.

The switchboards were installed as part of an electrical infrastructure project completed in 2021. New sectional modules are required to each switchboard to provide new outgoing ways to enable the connection to be made. The addition of these modules will require an electrical shutdown, one per switchboard.

The proposed cable routes drop from the Level 8 switch rooms in external cable risers and then enter the building above ceiling height at Level 6. The cables are routed through the Radiography department to the location of the new Thrombectomy facility. The routing of these cables will require ceilings to be removed and then re-instated after the works.

The Polyclinic building is served by an existing analogue addressable fire alarm system with the panel located on Level 6 adjacent to the ACU area. It is proposed that the existing system will be extended to provide Fire alarm detection and audible/visual devices throughout the Thrombectomy facility to provide a level of coverage in compliance with, BS 5839 2017, class L2. The central fire alarm system will be reprogrammed to encompass the new Thrombectomy facility with the front end being updated accordingly.

The Low Temperature Hot Water (LTHW) for this project is to be sourced from the existing hospital steam system, although a suitable point of connection has not yet been established.

The domestic water services for this project are to be sourced from the existing hospital system, although suitable points of connection, for hot and cold water has not yet been established.

4No. AHUs (air handling units) will be installed to serve level 6 of the Thrombectomy facility. These new AHUs will be located in the new Level 7 plant room.

It was confirmed verbally that the new rooms on level 5 will be served from new local supply and extract ventilation units located within the ceiling voids. The location, quantity and size of these units have yet to be established.

Medical gases will be extended to the Thrombectomy facility from Level 4 (street) where a new manifold room will be provided as part of the project. Medical gas will be provided to the bed spaces in the recovery areas, the imaging rooms and also the workshop on Level 5.

At this stage the following gases are being provided: -

- Oxygen – 400kPA at outlets
- Nitrous Oxide – 400kPa at outlets
- Medical Air – 400kPa at outlet
- Vacuum – 300mmHg at front of outlet
- AGSS – 20kPa Static Pressure

3. KSAR Review Summary

The following narrative relates directly to the OBC 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.

NHS Scotland Assure Observations:

An Initial Agreement KSAR has not been carried out specifically for this project, however NHS Tayside advised that an IA for the Thrombectomy programme was drafted at national level. The contents of the National IA have not been provided to NHS Scotland Assure for review and are therefore not considered within this KSAR.

The project is entering the KSAR process at OBC stage.

Documents referenced are:

- *'Thrombectomy Imaging Facilities Project, NHS Assure V1.1'*

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.

NHS Scotland Assure Observations:

NHS Tayside have confirmed that a National Initial Agreement (IA) for the Thrombectomy project has been produced, in a draft format. There is no evidence submitted to show that CIG have provided comments on the IA. The draft National IA has not been submitted as part of the review.

Documents referenced are:

- *'2022-03-21-NHS T005 Thrombectomy Meeting Action Decision Sheet'*

- *'Thrombectomy Imaging Facilities Project, NHS Assure V1.1'*

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.

NHS Scotland Assure Observations:
There has been no documented evidence of cross reference with the NHS Scotland Design Assessment Process (NDAP) or the Achieving Excellence Design Evaluation Toolkit (AEDET). There is no record of any implemented recommendations.

The AEDET score for this project was set at OBC stage and recorded within Appendix 1 of *'NHS Thrombectomy Imaging Facilities Project – OBC v14'.* It is stated that AEDET workshops were facilitated by Health Facilities Scotland, however, there was no evidence of specific actions recorded for the workshop and no detail of the stakeholders involved in the process.

Documents referenced are:
- *'Thrombectomy Imaging Facilities Project, NHS Assure V1.1'*
- *'NHS Thrombectomy imaging Facilities Project – OBC V14'*

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

NHS Scotland Assure Observations:
The Health Board has provided limited evidence to demonstrate clinical input to the design, based on a current and comprehensive knowledge of patient cohorts in relation to their typical needs in terms of the environment, safety and infection control standards.

The Board evidenced that it has consulted with a clinical user group, for input on the accommodation requirements within the Thrombectomy suite.

Whilst the Stakeholder Engagement plan acknowledges that communication is required with staff working in adjacent departments, to understand their needs, no evidence of this engagement has been provided.

IPC involvement was noted from design meeting minutes in April 2021 however attendance was not noted at other design meetings earlier and later in 2021. There was also no evidence of IPC engagement proposals within the OBC document to identify how IPC support for the project would be resourced or incorporated.

Documents referenced are:

- *'Thrombectomy Imaging Facilities Project, NHS Assure V1.1'*
- *'15.11.21 Stakeholder Communications and Engagement Plan V1.2'*
- *'P2-0051 – Thrombectomy Clinical user Design Meeting Note 1'*
- *'2022-03-21-NHS T005 Thrombectomy Meeting Action Decision Sheet'*
- *'NOS Thrombectomy_commsENGStrategy_Jun21 (1)'*
- *Folder 32 – Evidence of Stakeholder & Comms plans*
- *Folder 22-03-11 – OBC*

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.	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. 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). 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.

NHS Scotland Assure Observations:
The Project team has not provided evidence to demonstrate a unified and recorded understanding of the needs of the main users and patient cohorts.

There is no record of stakeholder engagement to inform and update the design based on the patient cohort needs. The '*stakeholder engagement and communication plan V1.2'* provides details of a programme for engagement and lists the stakeholders. There is no evidence provided to demonstrate that actions from the communication plan were taken forward.

There is no evidence provided to demonstrate that the needs of the patients have influenced the design brief in relation to critical building, engineering and infection prevention, control quality and safety standards.

The project brief *'P20-051-R2_Thrombectomy, Ninewells Project Brief_V2'* has been written by the Architect and MEP Consultant. The project brief notes that the Standard ADB Room Data Sheets were not made available to the clinical user group, the room data sheets for the layout have been developed from first principles. There is no record of any design considerations from the Estates, Authorising Engineers (AE) or IPC in the development of the room data sheets. While the clinical input is essential, the lack of documented input from other stakeholders in the design brief can result in sub-par critical building, engineering and infection prevention, control quality and safety standards.

While there are some strategies documented to support the concept design. There is a lack of detail where the design has not been developed to include essential items such as points of connection and service routes. The concept design and strategy that has been provided has focused on the infill of the courtyard (the new thrombectomy service). There is limited information provided on the impact of the service on the surrounding rooms/wards through both the construction and operation of the thrombectomy service.

Documents referenced are:

- *Thrombectomy Imaging Facilities Project, NHS Assure V1.1'*
- *'NHS Thrombectomy Imaging Facilities Project – OBCV14'*
- *Folder 1 - ACR*
- *'P20-051-R2_Thrombectomy, Ninewells Project Brief_V2'*
- *Folder 26 – OBC HAI SCRIBE*
- *Folder 22-03-11 - OBC*
- *'Clinical Brief Final'*
- *Folder 32 – Evidence of Stakeholder & Comms plans*
- *22-03-02 NDAP – 20211222 TS10 Thrombectomy OBC NDAP Interim Report v0-02*

Workbook Ref No.	Areas to probe	Evidence expected
1.6	Planned approach towards determining the necessary standards for this accommodation.	Updated and current list of the relevant NHS and non-NHS guidance that is being used and adopted (see previous section of workbook OBC KSAR (Page 9) for examples of appropriate guidance). 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. Knowledge of the role of infection prevention and control and microbiologist advisors to be used throughout the design stages, and details of the resource plan in place to ensure this advice will be available.

NHS Scotland Assure Observations:

Two documents have been provided to list out the guidance adopted by the project - *'8.7 Hierarchy of Design Standards'* and *'P20-051 Phase 3 Thrombectomy Project Derogations Schedule V1.0*'. There is an inconsistency in the documents that have been provided that may result in an ambiguity over the standards the design is required to follow.

A derogation schedule has been provided. Further supporting evidence to the derogations schedule was provided within '*Appendix 1 – RIBA Stage 2 (Concept Design) Architectural Derogations Comments'* and *'Appendix 2 M & E Derogation Comments'.* Within Appendix 1 there are noted derogations associated with room sizes, with narrative. However, there is no evidence of acceptance of the derogations by the relevant stakeholders, including the Health Board and IPC. There is a lack of cohesion between the schedule and Appendix 2. There are M & E derogations noted in the schedule with no supporting narrative or evidence within Appendix 2.

The lack of consistency in the reporting of derogations and the lack of a documented process means it is not possible to evidence if the derogations governance has been carried out.

There was no evidence of the IPC resource allocation for the project or that it is sufficient to support the project. NHS Tayside informed NHSSA at the IPC workshop that the IPC Lead nurse and Technical Building and Decontamination Clinical Lead are allocated to the project. No microbiology resource has been available thus far.

No evidence of any risk assessment was provided by the project team as a result of the lack

of microbiology support. NHS Tayside verbally confirmed during the IPC workshop discussions that the lack of microbiology resource has been escalated to NHS Tayside Board Level. The Lead nurse IPC advised the microbiologist post has now been filled and this resource will be supporting the project going forward.

Documents referenced are:

- *'Thrombectomy Imaging Facilities Project, NHS Assure V1.1'*
- *'8.7 Hierarchy of Design Standards'*
- *'P20-051 Phase 3 Thrombectomy Project Derogations Schedule V1.0'*
- *'Appendix 1- RIBA Stage 2 (Concept Design) Architectural Derogation Comments'*
- *'Appendix 2 -RIBA Stage 2 (Concept Design M& E Derogations Comments'*
- *22-03-11 – OBC*
- *Folder 1 - ACR*

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? How does the Health Board demonstrate leadership and commitment to infection prevention and control to ensure a culture of continuous quality improvement throughout the organisation and that there is an effective IPC structure in place and how does it relate to the design development?	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.

NHS Scotland Assure Observations:

No evidence was provided by NHS Tayside regarding IPC management structures and how this will support the proposed project.

The IPC leads for the project confirmed at the KSAR IPC workshop that there is an IPC management and operational structure within NHS Tayside which supports improvement to the proposed project and across the organisation.

The IPC leads advised at the IPC workshop that escalation processes are also in place for the IPC team through the IC committee to the board clinical governance committee, however, the evidence for this was not provided in advance by the health board. Discussions with the project team during the KSAR review identified there

had been no engagement with the IPC team in advance of the KSAR to provide the required evidence.

No evidence was provided by NHS Tayside regarding derogations identified during the design phase and how they will be managed to ensure clinical and IPC teams are engaged with the project derogations and decision making.

NHS Tayside stated at the weekly KSAR meetings that they have developed a Standard Operating Procedure (SOP) for the management of derogations for construction projects and that this would be used going forward. Reference was made to the involvement of IPCT to the new process.

The derogations schedule submitted did not evidence the derogations management process, risk assessment and escalation and the role of IPCT to approval any derogations or management of identified risks.

Documents referenced are:

- *'Thrombectomy Imaging Facilities Project, NHS Assure V1.1'*
- *Folder 26 – OBC HAI SCRIBE*
- *Folder 22-03-11 – OBC*
- *Folder 27 – P20-051_Phase 3 Thrombectomy Project Derogation Schedule_V1.0*

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

NHS Scotland Assure Observations:

No evidence was provided by NHS Tayside that the National Infection Prevention and Control Manual (NIPCM) has been adopted and promoted within the board. The board IPC team were able to confirm, at the KSAR weekly meeting, that the NIPCM is in place across all NHS Tayside. This reflects the lack of engagement by the project team with the IPC team in the overall project but also the planning of the evidence submission by the board for the OBC KSAR review.

Documents referenced are:

- *'Thrombectomy Imaging Facilities Project, NHS Assure V1.1'*
- *Folder 1 - ACR*

- *Folder 26 – OBC HAI SCRIBE*
- *Folder 22-03-11 – OBC*

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. IPCT annual programme of work

NHS Scotland Assure Observations:

No evidence was submitted by NHS Tayside regarding the Infection Prevention Control Strategy, the IPC team annual programme of work and how this would support construction projects within the organisation. At the IPC workshop the IPC team stated that the project team had not engaged with the IPC team regarding the IPC evidence that was required to support the KSAR review, and that all the information required was available and could have been provided in advance of the document transmittal.

Documents referenced are:

- *'Thrombectomy Imaging Facilities Project, NHS Assure V1.1'*
- *Folder 1 - ACR*
- *Folder 5 – Project Brief*
- *Folder 26 – OBC HAI SCRIBE*
- *Folder 22-03-11 - OBC*
- *Folder 32 – Evidence of Stakeholder & Comms plans*

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 OBC. For example, evidence that the proposals for equipping incorporate IPC requirements?

NHS Scotland Assure Observations:

There was no evidence to demonstrate the project team have integrated IPC requirements into the wider project at this time. This is apparent from the lack of evidence provided regarding the IPC structure, work programme and support for the project.

Using equipping as an example, the equipping matrix submitted showed a list of equipment which may be required for the project. There was no evidence submitted to confirm the engagement of the project team with the equipping team and the IPC team. At the IPC workshop it was verbally confirmed that the equipment list had been developed at a national level and at initial agreement stage and that the IPC input to this task was provided by

another board. It is therefore not clear if this is transferrable to this project. NHS Tayside project team acknowledged this and advised the engagement with the equipping team and IPC team was planned for the next design stage.

There is limited evidence available as to the integration of the IPC team throughout the project and KSAR review process.

Documents referenced are:

- *'Thrombectomy Imaging Facilities Project, NHS Assure V1.1'*
- *Folder 26 – OBC HAI SCRIBE*
- *Folder 22-03-11 - OBC*
- *Folder 32 – Evidence of Stakeholder & Comms plans*
- *Folder 30 – Equipping matrix*

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	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. Details of how gaps in expertise are being filled. 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. 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.

NHS Scotland Assure Observations:

NHS Tayside have provided details of the governance arrangements. The reporting structure noted in Appendix 36 and Table 6.1 of the OBC document '*NHS Thrombectomy Imaging Facilities Project OBC V14*' details the reporting requirements for individual governance levels. There is a documented resource plan with roles and responsibilities detailed. While there is a documented governance structure and monitoring process, there is a lack of technical expertise noted.

The OBC document states in Table 6.7 that 'Design and Technical aspects' will be monitored on a monthly basis through a formal design assessment, then reported through a progress report from the PM, however, it doesn't state what aspects will be reviewed and if the process will monitor the design against standards / brief etc. A Lead advisor will be appointed to carry out this role. There are no details documented on the accreditation or credentials required to carry out this role. This monitoring process feeds into the governance process of the project as the independent reports are issued to the Thrombectomy Executive Members.

Table 6.7 also shows that whilst project scope changes are monitored on a monthly basis, it is not clear on the input from user groups / stakeholders, and it appears to show that evaluation of stakeholders' expectations are considered only after handover during the 'Service Benefits Evaluation Stage'.

While there is a documented governance structure and monitoring process, there is a lack of technical expertise noted in the governance. There is no record of input from the AE or Authorised Person (AP) within the governance, reporting, or stakeholder engagement.

There is little evidence of a planned approach for managing the design approval process. *'Table 5 Self-Assessment -NHS Thrombectomy Imaging Facilities Project OBC*' states the decision for approval of the detailed design proposed to allow construction will be taken by the NHS Tayside Board, with advice from the Project Team. There is no documented process of how this will be implemented or recorded. It is not clear the level of stakeholder engagement that will be carried out for the approval of the design. There is no record of how the technical elements of the design have been approved to RIBA Stage 2.

There are multiple construction projects live within the hospital, and there are a significant number of potential future projects programmed for the hospital (as noted in '*310122 HLIP PSCP V1.3')* that may put demands on stakeholder resources (Estates, IPC, Clinical and AE/AP). It is not clear within the evidence if this has been considered with resources being procured to fill the gaps.

Through the KSAR weekly meetings, it was noted that there are limited IPC resources currently available within NHS Tayside. The current staff are being upskilled to be able to assist with the IPC within the built environment. A Microbiologist with IPC experience and experience of the built environment has recently been employed by the board. The expertise listed above are critical in ensuring a compliant design.

Documents referenced are:

- *Thrombectomy Imaging Facilities Project, NHS Assure V1.1'*
- *'310122 HLIP PSCP V1.3'*
- *'21221 V1.1 ACR'*
- *'NHS Thrombectomy Imaging Facilities Project – OBC V14'*

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.	Evidence on how Infection Prevention and Control are involved with the conceptual procurement approach to the design stage and future plans for project. Plans to identify any gaps in the procurement approach that may require to be addressed. Evidence on how the Infection Control procedures and management will fit with the conceptual procurement approach and initial thinking on how it will be managed. Evidence of a detailed procurement strategy report. Evidence that the Health Boards selected procurement route has gone through the Health Board's Governance channels.

NHS Scotland Assure Observations:

There is limited evidence provided by NHS Tayside to the involvement of the IPC team with the project thus far, and their involvement in the procurement process. Verbally both the project team and the IPC team confirmed there has been good engagement so far but that there had been some challenges previously due to the COVID-19 pandemic. Design to date is conceptual and full design of the facility and associated services has still to be developed.

A generic procurement route has been identified through the Framework Scotland 3 (FS3) option, via traditional capital funding. This will allow for the appointment of readily accredited contractors as Principal Supply Chain Partners (PSCP). There is no evidence that the procurement route has been reviewed through the health boards governance process.

The High-Level Information Pack (HLIP) '*310122 HLIP PSCP V1.3',* for providing prospective PSCPs with information regarding the scheme, was submitted for review. The HLIP does not accurately reflect the complexity or requirements of the project.

The following concerns were noted in the HLIP:

- No existing MEP services information noted as being provided (PSCP is expected to gather the survey information)
- Co-ordination and collaboration – IPC not noted as involved
- Stakeholder lists does not include IPC, AEs or stakeholders within adjacent

departments.

- Understanding of the design standards and IPC engagement is not noted in the scope of PSCP duties.
- Appendix D- PSCP Briefing pack has not been provided as evidence. No opportunity to evaluate if this addresses the complexity of the project, including the required governance.

There has been no record of input from a Principal Designer (PD), as required by the 'The Construction (Design and Management) Regulations 2015'. A PD should have input in the design, with a focus on health & safety issues around buildability, access and maintenance. There is no evidence that the Pre-Construction Information documentation has been developed.

There is no record of early contractor engagement. With access and buildability of the project a complex issue, it would have been beneficial to review the feasibility of the build with input from the stakeholders (Estates, clinical and IPC).

The programme provided *'2021-10-14 Thrombectomy Project Plan- Rev 13'* lacks detail. The following items are not included in the programme but have been noted in other documents;

- Stage 3 Detailed design
- Technical approval of design
- FBC KSAR
- AEDET process
- NDAP process
- Creation of a decant area
- Decant arrangements prior to construction
- Advanced information day

Documents referenced are:

- *Thrombectomy Imaging Facilities Project, NHS Assure V1.1'*
- *Folder 1 – ACR*
- *'310122 HLIP PSCP V1.3'*
- *'2021-10-14 Thrombectomy Project Plan- Rev 13'*
- *'NHS Thrombectomy Imaging Facilities Project – OBC V14'*
- *Folder 26 – OBC HAI SCRIBE*
- *Folder 22-03-11 - OBC*
- *Folder 32 – Evidence of Stakeholder & Comms plans*

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).	Evidence that the Health Board integrating this project with wider IPC requirements within the context of the OBC. For example, evidence that the proposals for equipping incorporate IPC requirements? Evidence that the procurement of the lead designer will encompass these areas in their oversight and sign off on the complete design. Evidence that a clear demarcation of design responsibility is being developed.

NHS Scotland Assure Observations:

Procurement for this project to date has been at a national level, as part of the wider National Thrombectomy Service. No evidence was submitted regarding the proposed equipping procurement process and stakeholder engagement, this is inclusive of the role of IPC within the procurement of equipment for the facility.

NHS Tayside has provided a list of items that are Contractors Designed Portions (CDP's). There is no evidence of the oversight, approval or sign off process for these designs. There is no evidence that a clear demarcation of design responsibility is being developed. There is a list of the CDP's but no indication of how this will be managed approved and signed off. There are gaps in the allocation of design responsibility, for example, medical gases have not been included as a CDP, or within the responsibilities of the MEP consultant or others.

Documents referenced are:

- *'Thrombectomy Imaging Facilities Project, NHS Assure V1.1'*
- *Folder 26 – OBC HAI SCRIBE*
- *Folder 30 – Equipping matrix*

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:

NHS Tayside has stated the design is in the early stages and subject to change, a robust commissioning plan will be developed for the FBC stage.

A commissioning strategy document has been provided. The project commissioning group members listed within the document does not include the AE or AP. These are essential stakeholders who should be involved in the development and implementation of the commissioning strategy. While the evidence notes that a robust plan will be developed for FBC, there is no indication of what that will entail.

The project brief *'P20-051-R2_Thrombectomy, Ninewells Project Brief_V2'* states the various installations (electrical, ventilation etc) will be installed and commissioned by specialist subcontractors. NHS Tayside have identified some of the specialist elements that are essential to the successful commissioning of the project. There is a statement covering how medical equipment will be required to be commissioned and handed over by the Supplier following an acceptance testing by Medical Physics. While this level of detail has been provided for some elements of the commissioning strategy, the fire alarm and medical gases have not been included in the MEP system strategy 8.1. It is not clear if these elements have been missed or addressed in other documents.

The commissioning strategy does not fully reflect the complexity of this project. It does not currently include a requirement for the commissioning of the existing systems following alterations to accommodate the courtyard infill. There is no reference to this in the evidence that has been provided. It is not clear this has been considered. Due to the proposed construction site being located within a live healthcare facility, the phasing of the commissioning strategy will require detailed planning with input from the estates team, IPC and the clinical staff from the adjacencies. There is no evidence to support that these matters has been considered.

The new services are noted as being programmed to be commissioned in 2023/24.

Documents referenced are:

- *NHS Thrombectomy Imaging Facilities Project – OBC V14'*
- *'P20-051-R2_THrombecomty, Ninewells, Project Brief V2'*
- *'Commissioning Strategy V1.0'*
- *'8.1 MEP System Strategies'*

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

NHS Scotland Assure Observations:

NHS Tayside has a recorded responsibility holder matrix '*291121 Responsibility Matrix Final*'. The matrix notes the project role being undertaken by the named individuals. There are however a number of gaps where the roles and responsibilities of a named individual within the project is not described. There are a number of roles where the responsibilities are not defined within the matrix:

- Project Senior User Representative
- Project Manager
- Technical Lead
- Senior Fire Safety Advisor
- IPC representatives

Within the matrix there is a limited technical representation from Operational Estates/ AEs etc. It is not clear if engagement with these disciplines is managed through the technical lead. There are also gaps in terms of the roles and responsibilities of the independent reviewer (as noted in *'NHS Thrombectomy Imaging Facilities Project – OBC V14'*) and the commissioning sub-group.

There is a governance structure ('*OBC V14'*) provided, however, there is limited evidence provided to show the implementation of the governance structure.

NHS Tayside have provided information regarding the design team and contractor competence (*Folder 3 – Evidence of Board competency checks*) and any training required (*Folder 5 – Project brief*), however, no evidence has been found as to the roles and responsibilities of designers and contractors in relation to IPC standards and any formal/informal training undertaken.

There has been no evidence submitted for the competency checks being undertaken on internal project team (inclusive of Estates and IPC). There is no plan of the action to be taken should resource not be available or their experience is limited.

Documents referenced are:

- *'Thrombectomy Imaging Facilities Project, NHS Assure V1.1'*
- *'NHS Thrombectomy Imaging Facilities Project – OBC V14'*
- *Folder 3 - Evidence of Board competency checks*

- *Folder 5 – Project Brief*
- *Folder 7 – Responsibility/ Duty Holder Matrix*

3.1.2 Project Governance and General Arrangements: Further Observations

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

3.1.2.1	There is little evidence to show that considerations have been given to any sustainability strategy or carbon net zero requirements within the design and how the project will align with the requirements of *'SHTN 02-01: Sustainable Design and Construction (SDaC) Guide*' and '*DL(2021)38: A Policy For NHS Scotland On The Climate Emergency And Sustainable Development.*'
3.1.2.2	The phasing of the works will require to take note of IPC requirements and the potential disruption of service to the existing departments.

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?	Recorded evidence that the design team are experienced and have a comprehensive knowledge of the relevant design standards. 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? Recorded evidence that input from the Health Authorising Engineer for Water (AE(W)) has been requested.

NHS Scotland Assure Observations:

As part of the PQQ process for the NHS Tayside Multi Discipline Design Team Framework, a competency check was carried out on the design team members. This included a review of company experience in the form of project examples and personal experience in the form of CV's.

The water and drainage consultant designers (in this case the MEP consultant) have demonstrated experience on NHS projects, working specifically for NHS Tayside, as contained within the 'Technical Questions & Evaluation Criteria Response' document.

There was no evidence that the Health Boards Authorising Engineer for water and drainage AE(W) was involved in any competency checks on the water and drainage consultant designers.

Documents referenced are:

- *3.1 MDDT PQQ Scoring Criteria*
- *MDDT PQQ Scoring PQQ Criteria*
- *PQQ Response_Gauldie Wright & Partners Architects Ltd*
- *Technical Questions& Evaluation Criteria Response_Gauldie Wright & Partners Architects Ltd*

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?	Evidence that the engineers are presented their co-ordination drawings (BIM model), with space for future flexibility identified, to the Board. Evidence that the Design Consultant has considered and agreed with the Board, space for future flexibility in the service installations. Evidence that the designers have presented each of the main service runs plus plant rooms to the Board's FM team, to highlight space for future flexibility. Evidence that the Board has agreed a strategy (percentage) for spare capacity and a documented allowance to be incorporated into the design. Are plant/tank rooms, IPS sections, horizontal distribution runs and risers appropriately sized for the equipment being installed and facilitate safe adequate maintenance.

NHS Scotland Assure Observations:

NHS Tayside have provided limited information on the proposed water services design. The evidence provided has been limited to the description contained within the Stage 2 report '*Q2103 Thrombectomy - ME -Stage 2 - Rev 2*'. There is no documented evidence that confirms that investigations have been carried out on the existing water services systems for the appropriateness of the point of connection or the available capacity.

The level of detail that would be expected at OBC (RIBA Stage 2) has not been provided and investigations into the existing system have not been evidenced. No water services distribution drawings, point of connection or co-ordination drawings have been produced at this stage, therefore, it is not clear if sufficient space has been allocated within the existing design.

There is no evidence provided to allow sufficient detail to be incorporated into the access and maintenance strategy.

No coordination or distribution drawings have been produced to date.

NHS Tayside verbally confirmed at the workshop on the 21st of April that the existing hot and cold-water system serving Ninewells hospital will be utilised. There are 10

proposed connections to the existing system and the possible connection points will be surveyed at the next stage which we would consider a risk due to the age and configuration of the existing system.

No assessment has been made at this stage on the likely water requirements for the Thrombectomy facility.

Documents referenced are:

- *Question 8.1 MEP System Strategies*
- *Folder 19. Concept Sketch Drawings for Preferred Preliminary Design*
- *Q2103 Thrombectomy - ME -Stage 2 - Rev 2*
- *TH2-GWP-XX-XX-DR-A-SK-89_revA*
- *TH2-GWP-XX-XX-DR-A-SK-90_revA*
- *TH2-GWP-XX-XX-DR-A-SK-91_revA*
- *TH2-GWP-XX-XX-DR-A-SK-92_revA*
- *TH2-GWP-XX-XX-DR-A-SK-93_revA*
- *MA 20126 Stage 2 Report Drainage Extract)*

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

NHS Scotland Assure Observations:

A project derogation schedule and derogation commentary has been provided by the project design team and no derogations have been identified with the water services design.

The design is not sufficiently developed to allow NHS Tayside to confirm that the proposals are in compliance with guidance, therefore this is considered a significant risk. We would note that no input from AE(W) or the water safety group has been provided and their expertise in assessing compliance with SHTM04-01 has not been obtained.

NHS Tayside verbally confirmed in the water & drainage KSAR workshop on the 21st of April 2022, that a new water safety group has been established and they will be required to review and approve any derogations.

The architects have produced a set of above ground drainage drawings for level 4, 5, 6 and 7 that appear to have been coordinated with the proposed structure and architectural elements. CCTV surveys have been carried out on the existing drainage system. A combined surface water and foul water system is being

proposed due to the 'landlocked' nature of the site.

As noted in the Stage 2 report '*MA 20126 Stage 2 Report Drainage Extract*' Scottish Water approval is required for combining the foul and surface water, however the initial response from Scottish Water was not positive. Evidence of Scottish Water consent has not been provided and is listed as a high risk on the project risk register '*NHST Thrombectomy Risk Register v1 24.05.21 Priced/ Environmental Risk'*.

As part of the water and drainage workshop NHS Tayside confirmed that there is now a standard operating procedure and flowchart that has been developed to address the sign off of derogations going forward. A copy of this procedure and flowchart was not provided as part of this KSAR review.

Documents referenced are:

- *Appendix 1 - RIBA Stage 2 (Concept Design) Architectural Derogation Comments.doc*
- *Appendix 2 - RIBA Stage 2 (Concept Design) M&E Derogation Comments*
- *P20-051_Phase 3 Thrombectomy Project_Derogation Schedule_V1.0*

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

NHS Scotland Assure Observations:

NHS Tayside have provided limited evidence on the proposed water Management Strategy. NHS Tayside have not yet engaged with the water safety group to discuss and review the project.

NHS Tayside confirmed in the water and drainage KSAR workshop on the 21st of April 2022 that version 6 of their existing water management policy deals with how they intend to implement water management, but this was not submitted as part of the KSAR process for review. They also noted that fortnightly meetings take place with Clinical and IPC input, however, details have not been provided as evidence for the KSAR review.

Documents referenced are:

- *Folder 10 – Water Management Strategy*
- *32. Evidence of Client and Stakeholder Consultation, Review and Approval of OBC*

Workbook Ref No.	Areas to probe	Evidence expected
2.5	Water governance arrangements	Has the Health Board commenced its water governance 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? Evidence that the Health Boards AE(W) have been involved with and reviewed the design proposals to date.

NHS Scotland Assure Observations:

There is no evidence to confirm that NHS Tayside has commenced its water governance planning and no evidence of any engagement with the AE(W) or water safety group (WSG).

There is no recorded evidence to suggest that the Water and Internal Plumbing / Drainage System designs have been reviewed by an Authorising Engineer AE(W) appointed by NHS Tayside.

NHS Tayside verbally confirmed in the water & drainage workshop on the 21st of April 2022 that there has been no input from the water safety group or the subgroup yet.

Documents referenced are:

N/A

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	There is no evidence that the capacity (flow rate / pressure) of the existing domestic water services infrastructure has been investigated, to understand the ability of the system to support the new facility, and any impact on the existing system.
3.2.2.2	Points of connection may require significant shutdowns and draining of the domestic water systems, due to existing valves not being able to shut or insufficient isolation (considering the age of the system). There is no evidence that the impact of potential shutdowns on the existing hospital, including an understanding of the specific departments affected, has been investigated.
3.2.2.3	Temperature monitoring and water quality testing should be carried out prior to and during the works to establish if there are any inherent issues with the existing system.
3.2.2.4	Water quality tests should include for, and micro bacteria testing as required by IPC colleagues.
3.2.2.5	As the existing equipment has not been specified it is not known if a Cat 5 water system is required. Further dialogue is required with NHS procurement, the clinicians and IPC to establish if this is a project requirement.
3.2.2.6	We would note the importance of considering the SHTM requirements for shower connections as part of this project due to showers being considered a high-risk legionella item.
3.2.2.7	Temperature monitoring and water quality testing should be carried out prior to and during the works to establish if there are any inherent issues with the existing system.
3.2.2.8	Drainage Air Admittance Valves (AAVs) are shown A within the bi-plane neuro intervention room / disposal room / clean prep - There is no evidence if these have been reviewed by the Boards IPCT and Estates team.
3.2.2.9	There is no water services schematic, as recommended within BSRIA BG6 for a Stage 2 design within the OBC deliverables.

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?	Recorded evidence that the design team are experienced and have a comprehensive knowledge of the relevant design standards. 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? Recorded evidence that input from the Health Boards Authorising Engineer for Ventilation (AE(V)) has been requested.

NHS Scotland Assure Observations:

As part of the PQQ process for the NHS Tayside Multi Discipline Design Team Framework, a competency check was carried out on the design team members. This included a review of company experience in the form of project examples and personal experience in the form of CV's.

The ventilation consultant designers have demonstrated experience on NHS projects specifically for NHS Tayside as contained within the 'Technical Questions& Evaluation Criteria Response' document.

There was no evidence that the Health Boards Authorising Engineer for ventilation AE(V) was involved in any competency checks on the ventilation consultant designers. However, the health board's Authorisation Engineer AE(V) attended the MEP workshops where competency was discussed and recorded.

Documents referenced are:

- *3.1 MDDT PQQ Scoring Criteria*
- *MDDT PQQ Scoring PQQ Criteria*
- *PQQ Response_Gauldie Wright & Partners Architects Ltd*
- *Technical Questions& Evaluation Criteria Response_Gauldie Wright & Partners Architects Ltd*

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?	Evidence that the design engineers have presented their co-ordination drawings (BIM model), with space for future flexibility identified, to the Board. Evidence that the design consultant has considered and agreed with the Health Board, space for future flexibility in the service installations. 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. Evidence that the Health Board has agreed a strategy (percentage) for spare capacity and a documented allowance to be incorporated into the design. Are plant rooms, IPS sections, horizontal distribution runs and risers appropriately sized for the equipment being installed and facilitate safe adequate maintenance? Evidence that a plant access strategy for the entire ventilation system has been provided to ensure safe, adequate access, including access for cleaning.

NHS Scotland Assure Observations:

There has been limited evidence provided that shows how the Health Board has ensured that ventilation services are designed in a fashion, which will retain space for minor additions and modifications to services in the future, and that there is an appropriate plant access strategy.

NHS Tayside have provided limited information on the proposed ventilation services design and it is not consistently developed to RIBA Stage 2 level of detail, as would be expected for OBC stage. The evidence provided has been limited to the description contained within the Stage 2 report, the 6th and 7th floor BIM model and ventilation layouts. No information has been provided for the 5th floor or the areas out with the main Thrombectomy suite on the 6th floor.

No schematic drawings have been produced that detail the configuration of the ventilation systems and plant or evidence of future flexibility being incorporated into

the design of the ventilation systems.

The future-proofing strategy *'Question 8.11 Future Proofing Strategy'* states with respect to ventilation plant, that "all plant will be specified with an additional 15% capacity". As no calculations have been provided for review, we cannot confirm if this has been incorporated into the design.

Whilst we acknowledge the use of BIM, no evidence has been provided to indicate critical clashes have been resolved, or that there has been consideration of coordination of main services distribution routes with architecture and structural elements. From the evidence provided we would note that there appears to be clashes with the Air Handling Units (AHU) and the internal structure within the level 7 plantroom.

An Access and Maintenance Strategy drawing has been produced *'TH2-GWP-XX-XX-DR-A-SK-97_revA*' although this only details the personnel access to risers and plant room, and not how access will be provided for the installation and replacement of plant and equipment. We would also note that the level 7 ventilation drawing shows stacked AHUs. It is not clear how suitable/safe access will be provided to both units. Structural columns are also shown very close to the AHUs, which would need to be reviewed to assess if they impede plant replacement or ongoing maintenance.

No evidence has been provided that details if the ventilation design information produced to date, or the access and maintenance strategy has been presented to the Board or the Board's Estates / FM team for review and comment. The lack of information makes it difficult for the key stakeholders to fully assess the access, maintenance and future flexibility of the design.

NHS Tayside verbally confirmed at the workshop on the 21st of April that meetings are held every two weeks with various stakeholders, but to date the ventilation safety group hasn't had any input as yet.

Documents referenced are:

- *Folder 8.1 MEP System Strategies*
- *Folder 19. Concept Sketch Drawings for Preferred Preliminary Design*
- *TH2-GWP-XX-XX-DR-A-SK-97_revA*
- *Folder 8.15 Limitations or Consideration for Future Design Development*
- *Folder 8.11 'Question 8.11 Future Proofing Strategy'*

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 Health Board, and agreed with their ventilation safety group, clinical, engineering, Estates, infection control and FM teams.

NHS Scotland Assure Observations:

A project derogation schedule and derogation commentary has been provided by the project design team and no derogations were identified as part of this process with the ventilation services design.

The design is not sufficiently developed to allow NHS Tayside to confirm that the proposals are in compliance with guidance, therefore this is considered a significant risk. We would note that no input from AE(V) or the ventilation safety group has been provided.

We would note that within *'Appendix 2 - RIBA Stage 2 (Concept Design) M&E Derogation Comments*' under SHTM03-01 Part A, that the ventilation consultant designer stated that as there will be a new ventilation system dedicated to this department it will be fully compliant. However, we would specifically highlight the requirement of SHTM 03-01 Part A (2022) Clause 10.13 as the units are greater than 1m wide. No evidence has been provided to prove that the AHU configuration is in compliance with the access requirements, due to double sided access not being achievable.

NHS Tayside verbally confirmed in the ventilation workshop on the 21st of April 2022, that there is now a standard operating procedure and flowchart that has been developed to address the sign off of derogations going forward. A copy of this procedure and flowchart was not provided as part of this KSAR review.

Documents referenced are:

- *Appendix 1 - RIBA Stage 2 (Concept Design) Architectural Derogation Comments.doc*
- *Appendix 2 - RIBA Stage 2 (Concept Design) M&E Derogation Comments*
- *P20-051_Phase 3 Thrombectomy Project_Derogation Schedule_V1.0*

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)?	Evidence of agreed environmental matrix. 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. Floor plans with associated plant locations highlighted plus simple schematic of strategy. This must also identify the air intake and exhaust strategy / locations.

NHS Scotland Assure Observations:

NHS Tayside has provided a ventilation strategy for level 6 only (i.e. no description or drawings have been provided for level 5).

The evidence provided relates to the ventilation system description contained within the Stage 2 report '*Q2103 Thrombectomy - ME -Stage 2 - Rev 2*', the 6th floor ventilation layout, 7th floor plantroom layout, the 'environmental matrix' and the 'Concept Sketch Drawings for Preferred Preliminary Design'.

We would expect to see completed ADB Room Data Sheets or environmental matrix to cover all room environmental conditions, water temperatures, key fire and clinical risk, lighting, FF&E, room functions and ventilation requirements. The information provided does not allow stakeholders to comment on the proposals and does not provide sufficient detail to allow the design to progress to FBC.

Floor plans have been provided for the level 6 AHU's and condensers associated with this level (located at level 7), this details the air intake and discharge locations. However, no information has been provided for the level 5 accommodation and where air intake and exhaust locations would be and their proximity to existing openable windows.

There are also rooms outwith the main suite of rooms on level 6 that will require ventilation, which has not been shown or described on any submitted documentation. NHS Tayside verbally confirmed in the ventilation workshop on the 21st of April 2022, that these rooms would be served from existing ventilation systems. However, further surveys will be required to establish the existing capacity that can be used to ventilate these spaces.

No strategy or pressure cascade for the clinical areas has not been provided as part of this KSAR, as would be expected for OBC (RIBA Stage 2). This is potentially a

significant omission from the OBC and should be addressed to allow input from key stakeholders such as ventilation safety group, AE(V) and IPC.

Internal temperature and ventilation requirements are contained on the MEP 'Concept Sketch Drawings for Preferred Preliminary Design' and the 'Environmental Matrix'.

No documentation has been provided that assesses the impact on the existing hospital rooms that currently rely on natural ventilation and will now no longer have access to daylight due to the infill of the courtyard for the Thrombectomy project.

Documents referenced are:

- *Folder 19 - Concept Sketch Drawings for Preferred Preliminary Design*
- *Question 8.1 MEP System Strategies*
- *TH2-KDQ-XX-06-DR-M-57-001*
- *TH2-KDQ-XX-07-DR-M-50-001*
- *Folder 11 - Environmental Matrix*

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: a) The type of ventilation (to SHTM 03-01) b) Patient group and / or function related to the space. c) Name of the Consultant, Clinical Lead or Department Lead who has agreed to the room requirements. d) Name of the Infection Prevention and Control Doctor or equivalent who has agreed to the room requirements. e) Name of the Infection Prevention and Control Nurse who has agreed to the room requirements. f) Name of the Estates / FM team representative who has agreed to the room requirements. g) Name of the NHS Project Manager who has agreed to the room requirements. h) Name of the Decontamination Manager who has agreed to the room requirements (where this is part of the project).

NHS Scotland Assure Observations:
No evidence has been provided by NHS Tayside that details stakeholder input to ventilation strategies detailed on the environmental matrix (i.e. no evidence to demonstrate involvement from the clinicians, Estates / FM team and IPC representatives).

The *'Concept Sketch Drawings for Preferred Preliminary Design*' have a stamp that requires sign-off from NHS Tayside, which has not been completed. It is unclear from the information provided if this is the agreed process the NHS Tayside are following (i.e. all drawings will be formally signed off at each stage).

NHS Tayside confirmed in the ventilation workshop on the 21st of April 2022, that there has been correspondence with IPC colleagues, but it was not submitted as part of the KSAR review documentation. NHS Tayside confirmed that this will be a specific action at the next stage.

We would note that IPC input is important for ventilation discussions, specifically pressure cascade and direction of air movement from and to clinical spaces.

Documents referenced are:
- *Folder 11 - Environmental Matrix*
- *Folder 19 - Concept Sketch Drawings for Preferred Preliminary Design*

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

NHS Scotland Assure Observations:
No evidence has been provided for the ventilation commissioning with regards to the new ventilation installation works or alterations to the existing ventilation installations.

The lack of ventilation commissioning proposals creates a risk to the existing hospital, as it is unknown how connecting the new rooms to the existing ventilation will impact existing facilities. The complex interdependencies of this project within the existing hospital and reliance on the use of existing systems would warrant at least a high-level consideration of the commissioning approach at this stage.

NHS Tayside verbally confirmed in the ventilation workshop on the 21st of April 2022, that ventilation commissioning proposals will be looked at and developed in the future stages.

Documents referenced are:

N/A

Workbook Ref No.	Areas to probe	Evidence expected
3.7	Has the Health Board started developing its ventilation governance arrangements?	Is the Heath Board considering how it will ensure appropriate numbers of trained staff (AP and CP) and AE(V) for the project? Evidence that the Health Boards AE(V) have been involved with and reviewed the design proposals to date.

NHS Scotland Assure Observations:
No evidence has been provided by NHS Tayside that deals with ventilation governance planning nor that an AE(V) has been appointed to provide input into this project.

NHS Tayside verbally confirmed in the ventilation workshop on the 21st of April 2022 that there has been no input from the ventilation safety group.

Documents referenced are:
N/A

3.3.2 Ventilation: Further Observations

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

3.3.2.1	There is no evidence to confirm that the impact on the existing areas and adjacent departments affected by the courtyard infill have been surveyed to assess the impact of removing the windows for loss of natural light and natural ventilation.
3.3.2.2	There is no evidence that the distances between existing ventilation plant and new ventilation plant have been assessed to ensure no cross contamination.
3.3.2.3	The control room 2 on level 6 has been missed from the environmental matrix.
3.3.2.4	The electrical switch room on level 6 has not been based on air changes, it has been based on litres per second per person. This should be corrected.
3.3.2.5	There is no evidence that a pressure cascade diagram has been produced to show clearly the movement of air between spaces and where air make-up or additional extract is required. Further design development is required on how to manage the air flow. The hierarchy of cleanliness should be implemented, and the pressure cascade reviewed by IPC.
3.3.2.6	Extract only systems serving the scrub rooms are not shown on the documents provided for review, and need to be identified on the drawings, schematic and pressure cascade diagrams.
3.3.2.7	The proposed column locations within the level 7 plantroom may be problematic for AHU plant replacement and maintenance.
3.3.2.8	The ventilation strategy for level 5 requires engagement with estates and IPC regarding having an AHU within the ceiling void of an occupied space.
3.3.2.9	A review needs to be carried out on the existing systems in the surrounding departments to establish if there are any services that need to be re-routed. This was specifically mentioned within the HAI-Scribe.
3.3.2.10	Fire dampers are noted on the drawings, but we understand that these should be noted as Combined Smoke and Fire Dampers (CSFD's). We would also note that a number of dampers are missing from the initial layouts through compartment floors etc.

3.3.2.11	No ventilation proposals have been provided for level 5. It is unclear is the implications of this strategy on the existing hospital (existing ventilation and or openable windows).
3.3.2.12	The LTHW Schematic shows connection to the existing steam and condensate system with level 4. There is no information provided on the proposed connection point and confirmation that there has been checks on available capacity within the existing system. New plate heat exchanger and distribution pumps are shown located within level 4, but no plantroom or space has been identified on any layout drawings. It is unclear if space is available to house this plant and equipment. No information has been provided that identifies how the connections would be made to the existing steam and condensate system and what safety measures would be put in place.

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?	Recorded evidence that the design team are experienced and have a comprehensive knowledge of the relevant design standards. 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? Recorded evidence that input from the Health Boards Authorising Engineer for Electrical (AE(E)) has been requested.

NHS Scotland Assure Observations:

As part of the PQQ process for the NHS Tayside Multi Discipline Design Team Framework, a competency check was carried out on the design team members. This included a review of company experience in the form of project examples and personal experience in the form of CV's.

The electrical consultant designers have demonstrated their experience on NHS projects specifically for NHS Tayside as contained within the 'Technical Questions & Evaluation Criteria Response' document.

There was no evidence that the Health Boards Authorising Engineer for Electrical (AE(E)) was involved in any competency checks on the electrical consultant designers.

Documents referenced are:

- *3.1 MDDT PQQ Scoring Criteria*
- *MDDT PQQ Scoring PQQ Criteria*
- *PQQ Response_Gauldie Wright & Partners Architects Ltd*
- *Technical Questions& Evaluation Criteria Response_Gauldie Wright & Partners Architects Ltd*

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?	Evidence that the designers have presented their co-ordination drawings (BIM model) to the Board. Evidence that the designers have presented each of the main service runs plus plant rooms to the Health Board's FM team. Evidence that the Board has agreed a strategy (percentage) for spare capacity and a documented allowance has been incorporated into the design. Are sub stations, switch rooms, distribution board cupboards, horizontal distribution runs and risers appropriately sized for the equipment being installed and facilitate safe, adequate maintenance.

NHS Scotland Assure Observations:

NHS Tayside have provided information on the strategy for the proposed electrical services design. The evidence provided relates to the electrical system description contained within the Stage 2 report and the submain cable routes for level 6,7 and 8.

The electrical strategy is based on obtaining primary and secondary supplies from existing LV switchboards PEA and PEB, which were installed during 2021.

The proposed main LV Distribution routes are shown installed through corridors on Level 6. No evidence was provided of coordination or survey verification of existing information has been carried out to ensure the proposed containment routing and the existing MEP distribution is achievable in the same ceiling voids as we would expect for OBC (RIBA Stage 2).

The design team have proposed existing LV switchboards PEA and PEB are to be extended to provide the required outgoing ways to supply the new electrical distribution. There is no evidence of what spare outgoing ways are being provided or what existing spare ways are available within PEA and PEB that would reflect there are suitable spare outgoing ways from both switchboards.

No spatial evidence has been provided for extensions to existing LV switchboards PEA and PEB. The electrical designer and NHS Tayside advised at the MEP workshop that space is available to extend both switchboards within the switchrooms.

It was clarified during the electrical workshop on the 21st of April 2022 that the switchboards PEA and PEB are interlinked to allow Estates to transfer supplies and maintain operation of critical equipment in the event of a major failure. However, it

has been confirmed by NHS Tayside that the link is not for the purpose of facilitating shutdowns for switchboards extension, or any other works to the switchboards. This is not shown on the proposed LV schematic and should be shown to ensure the existing resilience is a complete replication of the existing LV distribution.

No evidence is provided to demonstrate the full extent of electrical alterations to the existing electrical wiring installation, with regards to small power and general lighting final wiring circuits, or the suitability of local distribution boards for altering and adding new circuits. No evidence or reference is provided with regards Arc Fault Protection Devices for new or altered small power circuits.

Evidence has been provided of the electrical switchroom layout that is being proposed for the UPS and IPS within the existing building.

Documents referenced are:

- *SUB-MAINS CABLE ROUTES LEVEL 6 Q2103(60)601*
- *SUB-MAINS CABLE ROUTES LEVEL 7 Q2103(60)701*
- *SUB-MAINS CABLE ROUTES LEVEL 8 Q2103(60)801*
- *PROPOSED ELECTRICAL SCHEMATIC Q2103(60)001*
- *ELECTRICAL SWITROOM & IPS SCHEMATIC Q2103(60)002*
- *Mechanical & Electrical Engineering Stage 2 Report Q2103 (SP001)*

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:

A project derogation schedule and derogation commentary has been provided by the project design team and no derogations identified with the electrical services design.

Due to the nature of the works with regards alterations and installing new systems within an existing building and due to the level of detail provided for OBC (RIBA Stage 2), it is not possible to fully review the evidence provided for non-compliance with guidance. This is a risk for the project until further verification and surveys have been completed.

Documents referenced are:

- *Mechanical & Electrical Engineering Stage 2 Report Q2103 (SP001)*

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.

NHS Scotland Assure Observations:

There is no new or upgraded statutory electrical supplies required from the incumbent electricity distribution operator required.

No estimated diversified peak electrical demand / load schedule has been produced to assess the revised capacity on the existing LV switchboards PEA and PEB or upstream LV distribution.

NHS Tayside and the electrical consultant advised at the KSAR technical workshop, that both LV switchboards have physical spare capacity based on their knowledge of the LV distribution and their involvement on the LV Switchgear replacement during 2021.

NHS Tayside should ensure that a diversified electrical load schedule is produced for the new works, which includes the recorded peak electrical demand of the existing electrical installation to ensure the revised overall electrical maximum demand is known.

Documents referenced are:

- *Mechanical & Electrical Engineering Stage 2 Report Q2103 (SP001)*

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. Capacity of generators UPS provision

NHS Scotland Assure Observations:
NHS Tayside have provided information on the strategy for emergency supplies during loss of the utility incoming supply.

The electrical designers advised during the KSAR electrical workshop on the 21st of April 2022 that switchboards PEA and PEB are interlinked to allow Estates to transfer supplies and maintain operation of critical equipment in the event of a major failure. However, it has been confirmed by NHS Tayside that the link is not for the purpose of facilitating shutdowns for switchboards extension, or any other works to the switchboards. This is not shown on the proposed LV schematic and should be shown to ensure the existing resilience is a complete replication of the existing LV distribution.

Evidence has been produced showing UPS provision for the new works including electrical switchroom layout within the existing building.

It is understood from the discussions at the Electrical KSAR workshop, that there is no requirement for dedicated standby generators for this facility, however, no evidence to support this has been provided for review.

Documents referenced are:

- *ELECTRICAL SWITROOM & IPS SCHEMATIC Q2103(60)002*
- *Mechanical & Electrical Engineering Stage 2 Report Q2103 (SP001)*

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.

NHS Scotland Assure Observations:
Not applicable as substations are not part of this project.

Documents referenced are:
N/A

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.

NHS Scotland Assure Observations:

The design team have proposed utilising the existing LV switchboards PEA and PEB and extending them to provide the required outgoing ways to supply the new electrical distribution and switch room on level 6. There is no evidence of what spare outgoing ways are being provided, or what existing spare ways are available within PEA and PEB that would confirm there are suitable spare outgoing ways from both switchboards.

No spatial evidence has been produced for extensions to existing LV switchboards PEA and PEB. The electrical designer and NHS Tayside advised at the MEP workshop that space is available to extend both switchboards within the switch rooms.

Evidence has been produced showing UPS provision for the new works including electrical switch room layout within the existing building.

Documents referenced are:

- *SUB-MAINS CABLE ROUTES LEVEL 6 Q2103(60)601*
- *SUB-MAINS CABLE ROUTES LEVEL 7 Q2103(60)701*
- *SUB-MAINS CABLE ROUTES LEVEL 8 Q2103(60)801*
- *PROPOSED ELECTRICAL SCHEMATIC Q2103(60)001*
- *ELECTRICAL SWITROOM & IPS SCHEMATIC Q2103(60)002*
- *Mechanical & Electrical Engineering Stage 2 Report Q2103 (SP001)*

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. Compliance with BS7671 section 710 Compliance with SHTM 06-01

NHS Scotland Assure Observations:

No evidence has been provided by NHS Tayside that deals with strategy for locating Medical IT distribution equipment.

Documents referenced are:

- *SUB-MAINS CABLE ROUTES LEVEL 6 Q2103(60)601*
- *SUB-MAINS CABLE ROUTES LEVEL 7 Q2103(60)701*
- *SUB-MAINS CABLE ROUTES LEVEL 8 Q2103(60)801*
- *PROPOSED ELECTRICAL SCHEMATIC Q2103(60)001*
- *ELECTRICAL SWITROOM & IPS SCHEMATIC Q2103(60)002*

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

NHS Scotland Assure Observations:

NHS Tayside have provided information on the strategy for the proposed electrical services design. The evidence provided relates to the electrical system description contained within the Stage 2 report and the submain cable routes for level 6,7 and 8.

The electrical strategy is based on obtaining primary and secondary supplies from existing LV switchboards PEA and PEB which were installed during 2021.

The proposed main LV Distribution routes are shown installed through corridors on Level 6. No evidence has been provided of coordination or survey verification of existing information being carried out, to ensure the proposed containment routing and the existing MEP distribution is achievable in the same ceiling voids, as we would expect for OBC (RIBA Stage 2).

Documents referenced are:

- *SUB-MAINS CABLE ROUTES LEVEL 6 Q2103(60)601*
- *SUB-MAINS CABLE ROUTES LEVEL 7 Q2103(60)701*
- *SUB-MAINS CABLE ROUTES LEVEL 8 Q2103(60)801*
- *PROPOSED ELECTRICAL SCHEMATIC Q2103(60)001*
- *ELECTRICAL SWITROOM & IPS SCHEMATIC Q2103(60)002*

- *Mechanical & Electrical Engineering Stage 2 Report Q2103 (SP001)*

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 OBC, are these sufficient do the meet the requirements of the project, guidance and the design of the system?

NHS Scotland Assure Observations:
No evidence has been produced for the electrical commissioning with regards to the new electrical installation works or alterations to the electrical installation.

The lack of electrical commissioning proposals creates a risk to the existing hospital as it is unknown how connecting the Thrombectomy facility to the existing hospital will impact existing facilities. The complex interdependencies of this project within the existing hospital and resilience during shut-downs would warrant at least a high-level consideration of the commissioning approach at this stage.

Documents referenced are:
N/A

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?	Is the Health Board considering how it will ensure appropriate numbers of trained staff (AP(HV), AP(LV), CP(HV), CP(LV), AE(HV) and AE(LV) for the project, inclusive of third party providers? Evidence that the Health Boards AE(E) have been involved with and reviewed the design proposals to date.

NHS Scotland Assure Observations:
No evidence has been provided to document the Health Board's early thinking for the electrical governance arrangements for the operational phase.

There is no documented evidence that the AP's, CP's or AE(E) have been involved in the project to date and that they have provided advice on the governance arrangement of the operational phase.

Documents referenced are:
N/A

3.4.2 Electrical: Further Observations

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

3.4.2.1	As a detailed electrical services appraisal and condition survey has not been carried out, this may impact the costs, programme durations and level of disruption.
3.4.2.2	Minor correction required on *'Proposed Electrical Schematic Q2103(60)001'* please replace XLPE/SWA/LSF with XLPE/SWA/LSZH and LSF singles to LSZH singles.
3.4.2.3	It is indicated that NHS Tayside are proposing a series of central battery units for emergency lighting (EML). It has been suggested that a local static inverter is to be included, however, it is not clear if this will be integrated post contract.
3.4.2.4	It is stated that the existing lightning protection (LPS) is required to be altered to provide cover for the new infill. The current lightning protection level of the existing system for the building is not stated within the evidence. Although the existing LPS does not require to be upgraded respectively, the extended lightning protection if extended will not comply to BS EN 62305. The strategy will need to be developed to ensure compliance or noted as derogation
3.4.2.5	No evidence produced on adapting existing fire alarm system. This should be developed to reflect the sequencing of the works and ensuring the fire alarm system remains operation during the construction works for the infill and alterations to existing areas.

3.5 Medical Gases

3.5.1 Medical Gases: KSAR Observations

Workbook Ref No.	Areas to probe	Evidence expected
5.1	Has the Health Board completed competency checks on the medical gases consultant designers?	Recorded evidence that the design team are experienced and have a comprehensive knowledge of the relevant design standards. 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? Recorded evidence that input from the Health Boards Authorising Engineer for Medical Gases (AE(MG)) has been requested.

NHS Scotland Assure Observations:

As part of the PQQ process for the NHS Tayside Multi Discipline Design Team Framework, a competency check was carried out on the design team members but not specifically for Medical Gases.

It is typical for the medical gas installation to be completed by a specialist designer/installer, employed through the main PSCP contractor, however, no specific CDP's have been noted on the list of Contractors Design Packages. We would also note that the MEP consultant does not have any design responsibility for Medical Gases stated within the MEP design responsibility matrix '*KDQ - Design Resp Matrix_Thrombect'.*

The process of assessing the competence of the medical gases consultant designer has not been documented. Therefore the process for selection of the medical gases designer must be established to assess their competency for carrying out the design.

It was clarified during the Medical Gases workshop on the 21st of April 2022 that the MEP consultant will develop the performance requirements, with the detail design element undertaken by a specialist, as part of a Contractor Design Portion (CDP) at a later stage. The competency of the specialist designer/installer would require to be assessed prior to being appointed.

There was no evidence that the Health Boards Authorising Engineer for Medical Gases (AE(MGPS)) was involved in any competency checks on the medical gases consultant designers (in this case the MEP consultant). However, the Health Board's AE(MGPS) attended the MEP workshops where competency was discussed and recorded.

Documents referenced are:

- *3.1 MDDT PQQ Scoring Criteria*
- *MDDT PQQ Scoring PQQ Criteria*
- *PQQ Response_Gauldie Wright & Partners Architects Ltd*
- *Technical Questions& Evaluation Criteria Response_Gauldie Wright & Partners Architects Ltd*
- *Contractors Design Packages*
- *KDQ - Design Resp Matrix_Thrombect*
- *GWP - Design Resp Matrix_Thrombect*

Workbook Ref No.	Areas to probe	Evidence expected
5.2	How does the Health Board assure itself that all variations / derogations' which may be required to medical gas systems are 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:

Although a project derogation schedule and derogation commentary has been provided by the project design team, no derogations have been identified with the medical gases design due to the lack of detail available to assess compliance.

Due to the nature of the works with regards alterations and installing new systems within an existing building and due to the lack of information provided on the proposed medical gas systems for OBC (RIBA Stage 2), it is not possible to accurately identify if the design is compliant with guidance. This is a risk for the project until further verification and surveys have been completed.

As part of the medical gases workshop on the 21st of April 2022, NHS Tayside confirmed that there is now a standard operating procedure and flowchart that has been developed to address the review and sign off of derogations by the correct specialist and Health Board personnel going forward. A copy of this procedure and flowchart was not provided as part of this KSAR review.

Documents referenced are:

- *Appendix 1 - RIBA Stage 2 (Concept Design) Architectural Derogation Comments.doc*
- *Appendix 2 - RIBA Stage 2 (Concept Design) M&E Derogation Comments*
- *P20-051_Phase 3 Thrombectomy Project_Derogation Schedule_V1.0*

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

NHS Scotland Assure Observations:

NHS Tayside have provided limited information on the proposed medical gas design. The evidence provided has been limited to the description contained within the Stage 2 report and the specific room drawings detailing the medical gas requirements.

No distribution/main service drawings, point of connection or assessment of spatial co-ordination have been produced at this stage, which is what we would expect for RIBA Stage 2 level of design required for OBC.

We would note that a level of briefing has still to be carried out as confirmed by NHS Tayside in the medical gases workshop on 21st of April 2022, which will influence the capacity and point of connection to the existing system.

No evidence of the drawings of the MGPS system being presented to the Board or the Board's Estates / FM team has been provided.

Documents referenced are:

- *Question 8.1 MEP System Strategies*
- *Folder 19. Concept Sketch Drawings for Preferred Preliminary Design*

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

NHS Scotland Assure Observations:

NHS Tayside have not provided any information on the medical gases commissioning proposals.

NHS Tayside have not provided any evidence that they have undertaken a risk assessment to consider the impact of breaking into the existing medical gas systems and what this means for disrupting adjacent departments, likely system downtime or the unavailability of capacity.

Documents referenced are:
N/A

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

NHS Scotland Assure Observations:
NHS Tayside have not provided any evidence of developing its medical gases governance arrangements for the operational phase.

No evidence was provided that the AE(MGPS) has been involved in the project. NHS Tayside confirmed in the medical gases workshop on the 21st of April that the AE(MGPS) has not been involved in the project to date.

Documents referenced are:
N/A

Workbook Ref No.	Areas to probe	Evidence expected
5.6	Is there recorded evidence of a strategy for bulk gas and bottle gas storage?	Floor plans with cylinder locations highlighted Site plan with VIE location(s) Simple schematic Confirmation that the medical gas strategy is adequate. Floor plans with pipework distribution routing and manifold locations.

NHS Scotland Assure Observations:
NHS Tayside have not provided any information on the strategy for bulk gas and bottle gas storage. Floor plans, schematics, distribution routes have not yet been produced

A limited medical gas strategy has been provided within the Stage 2 report but is not of sufficient detail to allow meaningful comments to be provided from the key stakeholder such as the AE(MGPS) or the Boards FM Team.

NHS Scotland Assure have concerns around the level of engagement with clinical groups in relation to developing the medical gas requirements.

Documents referenced are:

- *Folder 8.1 MEP System Strategies*

Workbook Ref No.	Areas to probe	Evidence expected
5.7	Is there recorded evidence of a strategy for medical gas plant?	Description of medical; gas requirements signed off by clinical colleagues. Floor plans with pipework distribution (horizontal and vertical) routing. Details of all medical gas plant areas ensuring safe and adequate access.

NHS Scotland Assure Observations:

NHS Tayside have provided limited information on the proposed strategy for medical gas plant. At the medical gases KSAR workshop on the 21st of April it was confirmed that the connections to the existing medical gas pipelines will be from pipe street located on level 4.

NHS Tayside confirmed, at the medical gases workshop on the 21st of April, that they have assumed the most onerous case within the MEP report, using anaesthetic, medical and surgical air. However, the overall strategy is still to be developed and the end user requirements are still to be confirmed.

Documents referenced are:

- *Folder 8.1 MEP System Strategies*

3.5.2 Medical Gases: Further Observations

3.5.2.1	We note that the Stage 2 report states “New department ASMs (Area Service Modules) shall be included and these are shown on the drawings” – NHS Tayside confirmed at the medical gases workshop on the 21st of April this was noted in error within the report, ASMs are not shown on the drawings.
3.5.2.2	It is noted that medical gas connections will be made on level 4 ‘pipe street’. When these connections are made there needs to be an understanding on the impact on other areas such as fire and evacuation.

3.6 Fire

3.6.1 Fire: KSAR Observations

Workbook Ref No.	Areas to probe	Evidence expected
6.1	Has the Health Board completed competency checks on the Fire Engineering consultant designers?	Recorded evidence that the design team are experienced and have a comprehensive knowledge of the relevant design standards. 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? Recorded evidence that input from the Health Boards Fire Advisors has been requested.

NHS Scotland Assure Observations:

NHS Tayside have not appointed a fire consultant at this stage; therefore no competency checks have taken place.

During the Fire KSAR workshop on the 21st of April, NHS Tayside verbally confirmed that they considered the appointment of a fire engineer at this stage to be unnecessary as the team do not consider there to be deviations from the prescriptive guidance.

NHS Scotland Assure have noted that a fire engineer should be appointed if there are variations from the prescriptive guidance. However, it should also be noted that a fire engineer can aid the design team to avoid early mistakes which can be more costly to fix at later stages in the design and construction.

Documents referenced are:

N/A

Workbook Ref No.	Areas to probe	Evidence expected
6.2	Has a written fire strategy been completed and does it provide evidence, where there is a variance from statutory and mandatory guidance, that an equivalent level of safety has been achieved by alternative means?	Is there documented evidence that fire suppression systems have been considered for life safety and property protection? Is progressive horizontal evacuation available for all patient areas that continuously moves away from the fire area? Does the design considerations of the fire and detection system, for in-patient facilities, provide L1 coverage including voids? Does the design provide for a compliant emergency lighting system? Are free swing arm self-closers fitted to all leafs of doors serving sleeping accommodation? Have escape lifts been considered for the evacuation of patients and others with mobility issues? Are multi sensor fire detectors installed to reduce the occurrence of unwanted fire alarm signals? Are there adequate storage facilities to ensure escape routes are not used for this purpose? Are measures in place to provide safe charging of electrical and personal electronic equipment? Have fire hazard rooms been designated based on fire load? 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?

NHS Scotland Assure Observations:

NHS Tayside have provided documents which are labelled fire strategy *'P20-05-R1_Thrombectomy, Fire Strategy'*, however, a formal fire strategy report addressing mandatory standards 2.1 to 2.15 of the Building (Scotland) Regulations and the requirements of SHTM81 has not been produced. As such, there are gaps in the information provided by the team which were evident during the Fire Safety Workshop on the 21st of April 2022 (e.g. Fire Service access has not been fully thought through).

The documentation currently doesn't consider the means of escape for occupants, considering level of mobility, whether stairs can be used, or if an escape lift will be required.

No evidence that progressive horizontal evacuation has been considered for areas where anaesthetics will be used.

From discussions during the fire engineering KSAR workshop on the 21st of April 2022, NHS Tayside do appear to have considered some items, however, a comprehensive fire strategy discussing these items and the impact on the existing building has not been provided and should have been provided as part of the RIBA Stage 2 submission for OBC.

Documents referenced are:

- *P20-05-R1_Thrombectomy, Fire Strategy,*
- *TH2-GWP-XX-XX-DR-A-SK-87_RevA,*
- *TH2-GWP-XX-XX-DR-A-SK-94_RevA,*
- *TH2-GWP-XX-XX-DR-A-SK-95_RevA,*
- *TH2-GWP-XX-XX-DR-A-SK-96_RevA,*
- *TH2-GWP-XX-XX-DR-A-SK-97_RevA,*
- *TH2-GWP-XX-XX-DR-A-SK-100_RevA.*

Workbook Ref No.	Areas to probe	Evidence expected
6.3	How does the Health Board assure itself that all variations / derogations, which may be required to fire systems, are investigated and agreed by all parties before they are instigated?	Evidence that each variation / derogation and any fire engineering proposals are being referred to the Board and agreed with their fire safety group, clinical, engineering, infection prevention and control and FM teams.

NHS Scotland Assure Observations:

The NHS Tayside team verbally confirmed during the Fire Safety Workshop on the 21st of April 2022 that they do not believe they are proposing any variations from the guidance.

Due to the lack of a detailed written fire strategy report, evidence of this variations/derogations review could not be provided. However, a discussion was held in the Fire Safety Workshop on the 21st of April 2022, in which it was made apparent that a standard operating procedure has been written with a flowchart highlighting the sign off by the correct individuals, including IPC, AE and finally board sign off. This currently has not been implemented for this project.

The wider hospital impact and derogations from the impact of the infill are currently unknown due to the lack of information provided at this stage. These items should be addressed in the fire strategy document which is to be developed. NHS Tayside verbally confirmed during the

Fire Safety Workshop on the 21st of April 2022 that the production of the Fire Strategy will be managed by the PSCP team and any technical submission by the PSCP will be submitted for approval and reviewed by NHS Tayside Fire Safety Advisors.

Documents referenced are:
N/A

Workbook Ref No.	Areas to probe	Evidence expected
6.4	How does the Health Board assure itself that all fire dampers and fire/smoke dampers are designed to allow for inspection, resetting and maintenance?	Evidence that the designers have presented their co-ordination drawings (BIM model) to the Board. Evidence that the designers have presented each of the fire dampers and smoke / fire dampers to the Board's FM team. Safe and adequate access has been allocated on both sides of all fire dampers for maintenance.

NHS Scotland Assure Observations:
The NHS Tayside team have confirmed that they are providing dampers into the existing system. During the Fire Safety Workshop on the 21st of April 2022, the team confirmed that the existing system has been upgraded through other schemes with capacity for connections and monitoring.

The damper design is subject to further development. No reference has been made in the information provided to the location of dampers or the provision of fire and smoke dampers.

The location of dampers and means of access for maintenance has not been confirmed.

Documents referenced

- *Q2103_Thrombectoy, Ninewells_Stage 2 Mechanical and Electrical Report Only_Issue 1*

Workbook Ref No.	Areas to probe	Evidence expected
6.5	How does the Health Board assure itself that any fire rated ductwork is correctly installed?	Evidence that the system is certificated and that the installation follows the installation details which were used for the certification. Written confirmation from the design consultant.
NHS Scotland Assure Observations: No fire resisting ductwork is proposed. ***Documents referenced are:*** *N/A*		

Workbook Ref No.	Areas to probe	Evidence expected
6.6	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. Evidence that Building Control are being consulted. Confirmation from the Building Services Design Consultant that the operating sequence for the smoke system has been discussed regarding being integrated into the control of other building systems.
NHS Scotland Assure Observations: No smoke ventilation is proposed. ***Documents referenced are:*** *N/A*		

Workbook Ref No.	Areas to probe	Evidence expected
6.7	Evidence that the Health Board is ensuring fire safety input into the design process together with early design decision-making.	Input from Fire lead(s) and HFS / SFRS on fire safety into site / option selection. Documents e.g. option appraisal report, fire strategy report, meeting minutes. Demonstrable and appropriate engagement and expertise of relevant Fire lead(s). Signed off documents, e.g. reports, role profiles, minutes. Evidence that the Health Boards Fire Advisor have been involved with and reviewed the design proposals to date.

NHS Scotland Assure Observations:

NHS Tayside have shown engagement with the NHS Fire Safety Advisor in the form of email correspondence. All future correspondence should be recorded as noted in the evidence required above, including but not limited to the provision of meeting minutes.

Documents referenced are:

- *(email) RE_ P20-051 – Thrombectomy – New Extension – Fire Plans*

Workbook Ref No.	Areas to probe	Evidence expected
6.8	Has the Health Board started the development of the fire system outline commissioning proposals?	Has the Health Board designed appropriate trained staff and appointed a fire officer for the project, is there an established firer management group that will ensure the fire management strategy is adhered to?

NHS Scotland Assure Observations:

This has not been considered and, as such, no information has been provided.

Documents referenced are:

N/A

3.6.2 Fire: Further Observations

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

3.6.2.1	The proposed Combined Smoke & Fire Damper (CSFD) design is subject to further development as a number of dampers are not shown on the ventilation layouts
3.6.2.2	No reference has been made in the information provided to the location of dampers. This should be developed further.
3.6.2.3	No reference has been made to the Fire Risks during the construction of the courtyard infill. The special measures that need to be put in place to minimise risks to the existing hospital and adjacent departments need to be address in line with the requirements of SHTM81.
3.6.2.4	The Thrombectomy project will have an impact on the overall hospital Fire Strategy and should be updated accordingly to include the mandatory standards 2.1 to 2.15 of the Scottish Building Standards.
3.6.2.5	We would note that the update to SHTM 81 is out for consultation. This will include elements that will be required for this project, including multistate heads. We would also highlight that the fire service are updating their attendance protocol. Although healthcare buildings are currently exempt, it may change in future. It will futureproof the facility if you can determine if there is a fire or a false alarm through the Fire Alarm system.
3.6.2.6	The existing hospital fire alarm will require to be reviewed to ensure it has sufficient capacity. This will need zone charts and panels to be updated with additional zones (the Thrombectomy suite level 5, 6 & 7).
3.6.2.7	The simulation room has a significant occupancy. It is not clear if this has been considered for the impact on the means of escape.
3.6.2.8	The strategy currently doesn't consider the means of escape for occupants, considering level of mobility. No evidence that progressive horizontal evacuation has been considered for areas where anaesthetics will be used.

3.7 Infection Prevention & Control Built Environment

3.7.1 Infection Prevention & Control Built Environment: KSAR Observations

Workbook Ref No.	Areas to probe	Evidence expected
7.1	How does the Health Board demonstrate that there is an effective infection prevention and control management structure in place? How does the 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?	The Health Board provides evidence that there is an IPC Management Structure with the necessary expertise and leadership skills to support the design work. The Health Board provides evidence that there is an IPC Management Team with the necessary expertise and leadership skills to support the project. Executive board reports or minutes. Risk registers or equivalent, Minutes from operational and governance groups, (and action points). Structure of infection prevention and control team (IPCT) and qualifications held, previous experience supporting new build projects. Evidence IPC and clinical teams have been involved with any derogation through the design process and are satisfied this will not impact on patient safety. This can be meeting minutes, risk assessments, and risk registers. 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. Evidence that fixtures fitting and equipment have not been proposed for the project that would represent an IPC risk.

NHS Scotland Assure Observations:

As described in section 1.7 (Governance), no evidence was provided by NHS Tayside to demonstrate the infection prevention and control management structure within the board, and how this operationally would support the project and the wider facility. However, here was also no evidence provided to demonstrate IPC input to the design of the facility, increasing the risk of IPC issues not being identified early, which may result in design risking patient safety or retrospective re-design increasing design costs and possible delays to the project.

The IPC leads for the project confirmed at the IPC KSAR workshop that there is an IPC management and operational structure within NHS Tayside, which supports improvement within the organisation, in addition to the proposed project. The necessary expertise and skills to support the project was also described for the IPC team, however, no evidence was noted within the documentation provided for the KSAR review. Escalation processes are also in place for the IPC team through the IC committee to the board clinical governance committee (HAI Exec lead is a member) but the evidence for this was not provided in advance by the board project team. Discussions with the project team identified there had been no engagement with the IPC team in advance of the KSAR to provide the required information which would provide the evidence to support these requirements.

No evidence was noted within the documents as to the experience of the board project team to support the project.

NHS Tayside stated at the weekly KSAR meetings that they have developed an SOP for the management of derogations for construction projects and that this would be used going forward. Reference was made to the involvement of IPCT to the new process however, no evidence had been provided to detail this process as part of the KSAR review. The derogations schedule submitted did not evidence the derogations management process, risk assessment and escalation and the role of IPCT to approval any derogations or management of identified risks.

Documents referenced are:

- *Folder 3* - Evidence of Board competency checks
- *Folder 5 – Project Brief*
- *Folder 26 – OBC HAI SCRIBE*
- *Folder 22-03-11 - OBC*
- *Folder 27 – P20-051_Phase 3 Thrombectomy Project Derogation Schedule_V1.0*

Workbook Ref No.	Areas to probe	Evidence expected
7.2	How does the Health Board demonstrate implementation of evidence based infection prevention and control measures during the design process?	The Health Board evidences that: 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 and it is being referred to during the design process. IPC work programme and planned IPC audit programme for new building taking cognisance of any actual or perceived risks identified.

NHS Scotland Assure Observations:

The National Infection Prevention and Control Manual (NIPCM) is mandatory across all healthcare settings in NHS Scotland, however no evidence was submitted by NHS Tayside to confirm the manual has been implemented across the organisation and that the manual will be used to support IPC through the design process for the project. The board IPC team were able to confirm at the weekly meeting that the manual is in place across all NHS Tayside. This reflects the deficiencies in engagement of the project team with the IPC team in the planning of the evidence submission by the board for the OBC KSAR review.

As there was no engagement by the board project team with the IPC team to support the submissions of the KSAR workbook no evidence has been submitted by the board to describe how the IPC work programme will support the construction project and new facility once delivered.

Documents referenced are:

- *Folder 5 – Project Brief*
- *Folder 26 – OBC HAI SCRIBE*
- *Folder 22-03-11 - OBC*

Workbook Ref No.	Areas to probe	Evidence expected
7.3	How does the Health Board assure itself that the designers have a proper understanding of the infection prevention and control procedures required?	The Health Board evidences that: 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.

NHS Scotland Assure Observations:

No evidence was available within the evidence submitted by NHS Tayside regarding designers and contractors having a clear understanding of their roles and responsibilities in relation to IPC or if any IPC education was or will be undertaken to support the project. IPC have been involved at points in early design/HAI-SCRIBE, but this is inconsistent with the Project Brief which refer to IPC inclusion at all project stages.

Documents referenced are:

- *Folder 5 – Project Brief*
- *Folder 26 – OBC HAI SCRIBE*
- *Folder 22-03-11 – OBC*
- *Folder 33 – HLIP- 310122 HLIP PSCP V1.3*

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

NHS Scotland Assure Observations:

The equipping matrix submitted was not developed by NHS Tayside and the local IPC team and equippers. At the IPC workshop it was confirmed that the equipment list available had been developed at a national level at initial agreement. IPC input to this task was provided by another board and therefore possibly not transferrable to this project. There was no evidence submitted to confirm the engagement of the project team with the equipping team and the IPC team. NHS Tayside project team acknowledged this and advised the engagement with the equipping team and IPC team was planned for the next design stage.

Documents referenced are:

- *Folder 26 – OBC HAI SCRIBE*
- *Folder 30 – Equipping matrix*

3.7.2 Infection Prevention & Control Built Environment: Further Observations

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

3.7.2.1	Concept design documents. Questions raised at weekly meeting regarding room designs at this stage. Local IPC team had not had full sight of all the design drawings previously whereby design issues were noted by the KSAR team rather than the local team. Board project team discussed questions with IPC team and will be addressed at the full design stage with input of the local IPC team, and that time will be allowed for IPC team review of plans.
3.7.2.2	Bed spacing within the facility noted as being generally compliant with SHTM. Discussions identified this was relating to the 2-bed reception area. Review of concept design drawings noted misalignment of media panel and trolley/bedspaces within the recovery area, risking a patient bed being in close proximity of the splash zone from the clinical wash hand basin.
3.7.2.3	NHS Tayside should give consideration to possible COVID-19 risks/requirements going forward. The hierarchy of controls should be applied to the functionality of the facility/spaces? E.g., staff rooms, training rooms and possible ventilation requirements.
3.7.2.4	The complexity of the project (filling in a courtyard area) has raised a number of IPC risks for the project and specifically the protection of adjacent clinical areas which will remain operational during construction. E.g. Partitioning of construction area, protection of water and ventilations systems, entry and exit of construction staff, delivery/storage of materials. NHS Tayside should ensure phasing of the construction project is undertaken in advance and risks identified early to ensure mitigating actions are planned in advance and implemented ahead of works commencing.

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

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