Agenda Item 9

NHS Highland

Meeting:	**NHS Highland Board Meeting**
Meeting date:	**28 January 2025**
Title:	**National Treatment Centre Highland: Post Occupancy Evaluation Report**
Responsible Executive/Non-Executive:	**Richard MacDonald, Director of Estates, Facilities and Capital Planning.**
Report Author:	**Tina Monaghan/Gordon MacLeay**

1 Purpose

This is presented to the Board for:

- Decision

This report relates to a:

- Government policy/directive

This report will align to the following NHSScotland quality ambition(s):

Safe, Effective and Person Centred

This report relates to the following Strategic Outcome(s)

Start Well		Thrive Well		Stay Well		Anchor Well	
Grow Well	x	Listen Well		Nurture Well		Plan Well	x
Care Well		Live Well		Respond Well		Treat Well	x
Journey Well		Age Well		End Well		Value Well	
Perform well	x	Progress well	x	**All** Well Themes			

2 Report summary

2.1 Situation

The Post Occupancy Evaluation Report has been developed in line with the requirements set down by the Scottish Government on 18th December 2023. This requirement is met by providing Post Occupancy Evaluation (POE) as part of a gateway review of the benefits delivered by the NTC-Highland.

The NTC-Highland team have followed the Soft Landings process through project development and delivery and as part of that have produced a detailed Lessons Learned Report which includes early operational feedback on the facility. As part of the Post Project Evaluation process, Lessons Learned have continued to be captured and much of this learning has also been fed back via regular performance and status reporting to Scottish Government.

This report has been reviewed and approved by NHSH Executive Directors Group on 28 October 2024 and reviewed and approved at NHSH Finance Resources and Performance Committee on 1st November 2024.

NHSH Board approval is sought as the final stage of governance prior to Scottish Government submission.

2.2 Background

NTC-Highland was designed to provide the infrastructure to deliver elective orthopaedic and ophthalmology service in a 'ring-fenced' facility with 24 inpatient beds and 5 theatres. Procedures and care are currently being delivered to NHS Highland (NHSH), NHS Grampian (NHSG), NHS Tayside (NHST) patients. The focus beyond construction is clearly based on the demonstratable benefits to our patients and teams working within the new infrastructure but also clearly captures our lessons learned for both the NTC-Highland but also the wider principles for the development of infrastructure going forward to deliver care and services to our patients.

- Post Occupancy Evaluation (POE) is a process which has been developed in line with the Scottish Capital Investment Manual (SCIM). The purpose of POE is to evaluate the delivery of our projects in terms of delivery of patient care and delivery of the infrastructure which supports care.
- Evaluation is also scheduled to take place in years 3 and 5 of operation (2026 and 2028).
- Key aspects to POE are that we review areas of success and challenge and that the opportunity is taken to identify key lessons learned.
- Planning commenced for the NTC-Highland in 2016 with IA approval in July 2017, OBC approval in 2018, and FBC in 2020. Patient care and the care of our NHSH teams has been paramount throughout inception, design, build, and transition to becoming operational.
- Construction costs were £35.8m with equipment costs £4.14m.
- Production review and approval of deign drawings specification and associated technical information is a key deliverable to project's success.
- For all future projects clinical occupation, equipping, team familiarisation and training should be programmed to follow project completion and handover.
- Resourcing of eHealth, in terms of briefing, budget, and availability is essential in the future.

- Detailed workforce planning and development of a target operating model are critical.
- Clear understanding and review of objectives of the project with clear measures of success should be ongoing throughout the project and following project completion.
- Data collection requires to be clear and consistent to enable comparison study.
- Stakeholder engagement requires to be evidenced constantly and ongoing throughout the project and following project completion.
- Construction commenced in June 2020 with handover to NHSH in March 2023.
- This report has been prepared in accordance with the Scottish Capital Investment Manual and evaluates the performance of the NTC-H against the criteria set out in the approved Full Business Case, both in terms of the construction project and in terms of service delivery over the first year of operation.

2.3 Assessment

The team have collated a robust document demonstrating the benefits delivered to NHSH through the NTC-H and national NTC programme. There is clear data included within the report to support this and the report demonstrates the following:

For the Ophthalmology service the transition of the Service from Raigmore Hospital to NTC-H was challenging as emergency and urgent operating and outpatient service remained operational including managing sight threatening conditions. Those challenges were around equipment, training, familiarisation and delivery of services and the overall impact on the team transitioning.

In terms of Outpatients, a total of 7360 new outpatients were seen against a target set of 7000 and whilst a target was not set for return appointments, the service saw a total of 16,968 outpatients equating to 24,328 ophthalmology outpatients being seen in Year 1.

Previously the Ophthalmology service had access to the Modular Unit at Raigmore Hospital where often it was necessary to cancel elective operating to make way for emergency procedures. The service now has access to 2.6 operating theatres at NTC-H where 1.5 hours per day are ring fenced for emergency operating and this is built into the modelling.

For Ophthalmology operating in Year 1 the service delivered a total of 2287 procedures against a target of 1975 which was inclusive of cataracts and non-cataracts.

Due to the success of the Orthopaedic model, NHS Grampian cataracts also became part of the delivery plan at the request of Scottish Government and in the first year a total of 185 cataract procedures were undertaken against a target of 184.

Ophthalmology does still have access to the Modular Unit on the Raigmore site, and this is for paediatric operating and for the more complex patients who require HDU and for contingency for emergency operating should there be any issues in ophthalmology theatres at NTC-Highland. When opened in April 2023, a target of 1588 ASA1 and 2 Arthroplasty cases were to be referred to the NTC-Highland.

For the Orthopaedic service in terms of targets and delivery across the Boards, the target set at 85% in year 1 was 1588 arthroplasty procedures.

- NHSH had an allocation of 1131 and delivered 868 hip and knee procedures in total with the split being 485 hips and 383 knees.
- NHSG allocation was 457 and delivered 365 cases in total, 198 hips and 167 knees
- For NHS Tayside (NHST) there was no target set but due to the success of NHSG, engagement with Tayside colleagues resulted in us taking first patients in December 2023 and we operated on 35 hips and 36 knees.

In total Orthopaedics delivered 82% of a target that was set at 85% efficiency for arthroplasty operating.

Orthopaedics have access to Theatre B two days a week and a target of 171 was set and we operated on 132 foot and ankle patients. A total of 267 hand procedures against a target that was set of 164. All hand, foot and ankle patients are from NHSH.

Through assessment of the document we consider that it demonstrates all the requirements for the SG submission.

2.4 Proposed level of Assurance

This report proposes the following level of assurance:

Substantial		Moderate	x
Limited		None	

Comment on the level of assurance

Moderate Assurance is proposed.

3 Impact Analysis

3.1 Quality/ Patient Care

As per report, the NTC-Highland is delivering a high standard of patient care and considered a functional and high-quality environment by users.

3.2 Workforce

Planned vs actual workforce impact is discussed in the report.

3.3 Financial

Project Costs as per report. Operational costs out with scope.

3.4 Risk Assessment/Management

Not applicable.

3.5 Data Protection

No patient identifiable information.

3.6 Equality and Diversity, including health inequalities

Not applicable.

3.7 Other impacts

None anticipated.

3.8 Communication, involvement, engagement and consultation

A full list of stakeholders involved in compiling the POE are included in Appendix B of the NTC Highland POE report.

3.9 Route to the Meeting

This has been previously considered by the following groups as part of its development. The groups have either supported the content, or their feedback has informed the development of the content presented in this report.

- Executive Directors Group, 28th October 2024
- Finance, Resource and Performance Committee, 1st November 2024

4 Recommendation

For Decision: the Board is asked to review and approve the report as part of the formal governance process.

4.1 List of appendices

The following appendices are included with this report:

- APPENDIX A – Draft NTC Post Evaluation Report

National Treatment Centre – Highland

Post Occupancy Evaluation Report

Document Number H230H_XXXXX-NHSS-XXXX-XX-R-Z-4060001

Document Title:	NTCH Post Occupancy Evaluation – Project Monitoring Report
Document No.:	H230H_XXXXX-NHSS-XXXX-XX-R-Z-4060001
Revision:	P06
Date:	25/06/2024
Author:	David Mason, (Core Associates), Laurence Casserly (Thomson Gray), Kevin Minnock (NHS Highland), Diane Woodward (NHS Highland), Beth Brotherton (NHS Highland), Gordon MacLeay (NHS Highland), Heather Cameron (NHS Highland) & Kevin Richard (NHS Highland).

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Document history and status.

Revision	Date	Description	By	Review	Approved
01	25.06.2024	POE draft Issued for approval	KM/LC	EG	
02	27.09.2024	Combined Report Issued for comment	BB/DW	EG/HC/ GM/ KR	
03	24.10.2024	Issued to SG for comment	HC	SR	
04	28.10.2024	Approved by EDG Business Meeting.			EDG
04	01.11.2024	Approved by Finance, Resources & Performance			FRP
05	11.11.2024	Updated section 5.4 with the inclusion of charts comparing targets of NHSH, NHST & NHSG.	BB/ DW	EG/HC/ GM/ KR	
06	16.12.2024	Updated in response to SG's comments.	BB/ DW/ KR/ GM		

Contents

1. Introduction

This Project Monitoring Report has been compiled by NHS Highland in accordance with Scottish Capital Investment Manual (SCIM) requirements and following the relevant guidance documentation: Project Monitoring & Service Benefits Evaluation, dated 30th January 2017.

The content of this reporting follows the requirements set down in Scottish Government's letter to Helen Roberston as National Treatment Centre Highland (NTC-H) Manager dated 18th December 2023. The letter set out the arrangements for undertaking the Post Project Evaluation (PPE) as part of an overarching Gateway review of the benefits delivered by the first phase of the National Treatment Centre programme, and confirmed, in line with the Scottish Capital Investment Manual, the requirement for all Boards upon completing a capital project to:

- Complete a Project Monitoring Report; and
- Undertake a Service Benefits Evaluation.

The NTC Highland team have followed the Soft Landings process through project development and delivery and as part of that have produced a detailed Lessons Learned Report which includes early operational feedback on the facility. As part of the Post Project Evaluation process, Lessons Learned have continued to be captured and much of this learning has also been fed back via regular performance and status reporting to Scottish Government. Please refer to Appendix A for the latest draft Lessons Learned report.

NHS Assure have successfully supported the project with NDAP and KSAR related activities.

The NHS Highland Full Business Case (FBC) Vision Statement described the aspiration of the Centre:

The North of Scotland Elective Care Centre will be designed to deliver 'world-class' performance with the patient at the heart of the care delivery process. The aim is to create an 'exemplar' healthcare facility using quality improvement tools and process mapping techniques working in partnership with HIE, UHI and North Scotland Boards. This will serve to embed the healthcare improvement agenda and drive the facility to achieve the 'world-class' target in the delivery of five key investment objectives:

1. Safe, timely effective patient care provided locally
2. Capacity to meet demand through improved services and facilities
3. Improved recruitment and retention of staff
4. Repatriation of patients from out of area
5. Opportunities for collaborative working

These aims, and objectives were encapsulated in the vision statement agreed by a stakeholders event:

"Delivering the best quality state of the art, innovative Ophthalmology and Orthopaedic healthcare to the people of the North of Scotland."

The NTC-H has broadly met these aims, achieving significantly streamlined patient flow, reduced waiting times and an increase in the number of patients treated. This has been achieved by formally reviewing anaesthetic criteria and transitioning from the ASA classification system to a "meets

criteria" definition. By modelling the ARISE (Arthroplasty Rehabilitation in Scotland Endeavour) principles, NTC-H has been able to enhance the quality of care they provide, ensure that all patients receive equitable and personalised treatment, and foster a supportive and inclusive environment.

A full list of stakeholders involved in the production of this report are listed in Appendix B.

2. Project Delivery Overview

Planning of the National Treatment Centre – Highland (NTC-H) commenced in 2016 as part of the Scottish Government's National Treatment Centre Programme. An Initial Agreement was approved in July 2017, followed by approval of the Outline Business Case (OBC) in August 2018 and the Full Business Case (FBC) in May 2020.

The 24-bed, 5 theatre facility is designed to provide a dedicated, high-quality environment for elective ophthalmology and orthopaedic procedures, including inpatient and outpatient activity.

It was procured under Health Facilities Scotland's (now NHS Assure) Frameworks Scotland 2 frameworks using an NEC3 construction contract. Balfour Beatty were appointed as Principle Supply Chain Partner (PSCP), leading a design team comprising Oberlanders Architects, and engineering firms Hulley & Kirkwood and Mott MacDonald. Construction commenced in June 2020. The building was handed over to NHS Highland on the 31st of March 2023 and opened to the first patients on the 17th of April 2023. NTC-H was officially opened by the First Minister of Scotland, Humza Yousaf, on 12th of June 2023.

3. Project Performance: Delivery Phase

3.1 Project Scope Changes

The project development up to FBC Stage and delivery from that approval through Construction stage was affected by a number of significant issues that had an impact on Changes required and therefore associated impacts on Costs, Programme and Health and Safety requirements.

These included:

- The decision of the key project partners – UHI and HIE - to develop their own building on a difference plot within the Campus.
- The impacts of the Grenfell Tower disaster on the UK construction issue from a Fire Safety perspective, and associated scrutiny of materials, specifications and construction detailing.
- The impacts of the design and defects issues that were identified on the Queen Elizabeth University Hospital Campus, Glasgow, and the Royal Hospital for Children and Young People, and Department of Clinical Neurosciences, Edinburgh.
- The Covid pandemic and the far-reaching consequences of that including lockdown restrictions, impact on the construction supply chain in the UK and dependency on materials from across the world.
- The Ukraine conflict which had further impacts on global supply chains, energy and manufacturing security and supply.
- The introduction of NHS Assure Key Stage Assurance Review process (KSARs) at preconstruction. construction, commissioning, and handover phases of the project.

In addition, there were also changes in respect of Clinical service and operational requirements:

- The FBC focussed on providing increased capacity specifically for Arthroplasty (Hip and Knee replacement surgery) and Cataract surgery with throughput based on best-in-class service models both defined by National Groups. From FBC to opening, there was agreement through the National Programme for foot & ankle and hand cases to be undertaken within the NTC-H on two days per week. Although not included within the NTC-H Workforce plan, the Scottish Government Performance Team funded the NHS Highland Orthopaedic service to maximise the use of this capacity with one additional foot & ankle and one additional hand surgeon to support these sub-specialty areas.

The greatest impact on any construction phase project budget is the introduction of changes to the agreed Contract Works Information. Design changes, while potentially beneficial, can significantly disrupt project timelines and impact on the budget. The later a change is made, the more expensive

it is likely to be. Effective change management and early consideration of design and specifications can help to minimise costs and delay to a project.

Under the NEC (New Engineering Contract) Contract, a Compensation Event (CE) is the only way in which the Prices and Completion Date can be changed. On the NTC-Highland project, a total of 91 compensation events have been implemented. Most of the implemented compensation events were for changes to the design and specification during the construction stage. These are listed in Appendix C for reference. The net cost increase because of the implemented changes and related delays to the programme was £3,649,553.

The most significant compensation event was CE-04 'Theatre Equipment to Group 1S' at a value of £770k. This CE transferred responsibility for supply and installation of the theatre equipment from NHS Highland to Balfour Beatty. The initial project board decision for NHS Highland to supply and install theatre equipment had been taken as part of the value engineering exercise. CE-04 was raised on 28th April 2021, and implemented on 31st August 2023, following detailed discussions on scope, programme, risk and liaison with suppliers and installers. Whilst this is a significant sum of money, there was a significant risk that the procurement and management of the theatre equipment installation by NHS Highland may have led to programme delays which would have cost significantly more than the cost of transferring this responsibility to the Contractor.

To view the full list of Compensation Events, please refer to Appendix C.

3.2 Costs

Project costs have been monitored and tracked throughout the project. This included all costs associated with the construction contract including professional fees, land purchase, and equipment purchase. A Cost Report was submitted to the Project Board each month for review.

Key lessons learned regarding cost were:

- Balfour Beatty's commercial team were under-resourced throughout the duration of the construction stage. This led to delays with submission of Compensation Event Quotations, and delays with submission of related contractual notifications. Ensuring there is adequate commercial resource on a project of this scale will result in more effective financial planning for both the Contractor and NHS Highland.

- Budgeting by NHS Highland support services including eHealth was ineffective. The department did not consider the requirement for both hardware and software investment to make the NTC-Highland building functional on opening. The outcome was that the project Senior Responsible Officer had to secure additional funding, at a late stage in the project to support the eHealth requirements.

Refer to appendix A Lessons Learned report for further details.

The difference between cost projected at FBC and Actual cost was an increase of just under 1%. An overview of the key cost differences between FBC and Completion is as follows:

DESCRIPTION	FBC	ACTUAL	Reason for Difference
	£	£	
Total Construction Costs	32,819,447	35,800,735	Compensation Events (changes)
Total Fees	2,303,631	2,311,131	Increase in scope
Total Land Purchase	1,340,000	1,334,111	Independent valuation
Equipment	1,700,000	3,591,679	Increase in scope
Contingency	4,944,161	0	Defrayed through project
VAT (net)	6,028,397	6,767,648	20% applied to project spend
Anticipated Project spend	**49,135,636**	**49,805,304**	**-**
UHI/HIE Reimbursement	-581,519	-575,951	As agreed with UHI/HIE
Anticipated Project Spend (net)	**48,554,117**	**49,229,353**	**-**
Total Project Budget	**48.6m**	**49.2m**	**-**

3.3 Programme

The table below sets out the difference between anticipated dates at each business case stage and actual dates. These delays can be attributed to delays in the approval of the business case, and delays encountered through the construction works due to challenges with procurement of materials and labour, attributable to the Covid-19 pandemic during 2020 and 2021, and the war in Ukraine during 2022, both unforeseen events which affected the construction industry.

Project Title:	NTC-Highland			
	IA	OBC	FBC	Actual
Project Milestones: (taken from Project Plan in Management Case)				
Submission of Initial Agreement	June 2017	-	-	**October 2017**
Approval of Initial Agreement	July 2017	-	-	**2017**
Appointment of a PSCP	September 2017	October 2017	-	
Submission of Outline Business Case	March 2018	May 2018	-	**May 2018**
Approval of Outline Business Case	February 2019	July 2018	-	**August 2018**
Submission of Full Business Case	February 2019	April 2019	May 2019	**June 2019**
Approval of Full Business Case	April 2019	June 2019	July 2019	**May 2020**
Construction Mobilisation	May 2019	July 2019	June 2019	**June 2020**
Construction Completion	November 2020	April 2021	May 2021	**March 2023**

3.4 Health & Safety Performance

Management of Health & Safety is a priority for NHS Highland, Thomson Gray, and Balfour Beatty. At every stage of the project, the importance of a 'Zero Harm' culture was adopted and implemented by the site management team.

Health & Safety was a key aspect of monthly progress reporting, and the project team take immense pride in noting that there were no reportable accidents or incidents during the construction phase.

The following is a summary of Health & Safety performance throughout the construction and commissioning phases:

- No reportable accidents or incidents
- No accidents occurred which would be RIDDOR reportable.
- Zero days lost due to injuries.
- Zero treatments carried out on site.
- In total, one "near-miss" was recorded throughout the construction stage of the NTC-H.

The cumulative time worked on site was 140 weeks.

The Balfour Beatty site team's exemplary Health & Safety performance was recognised by winning the 'Safest Site in Scotland' at their National Health & Safety Awards ceremony.

3.4.1 CDM-Advisor

NHS Highland appointed Thomson Gray as CDM-Advisor, to support them in discharging their statutory duty as Client under the Construction Design and Management (CDM) Regulations 2015.

In undertaking this role, Thomson Gray undertook monthly site inspections to monitor the Health & Safety protocols on the site and highlight any concerns or comments to the Main Contractor, Balfour Beatty. This collaborative role provides reassurance that Health and Safety continue to be proactively managed throughout the duration of the construction contract. This shared endeavour between the client, contractor, and wider project team ensured a safe working environment for all operatives, managers, and visitors to the construction site.

The CDM-Advisor ensured the F10 Notification to HSE had been submitted and was kept up to date in line with the construction programme dates.

The CDM-Advisor also reviewed the Construction Phase Health & Safety Plan prepared by Balfour Beatty in order to assure the client (NHS Highland) that the Plan is robust, specific, and fit for purpose. In addition to the Construction Phase Health & Safety Plan, the CDM-A reviewed Health & Safety Reports, Risk and Method Statements, and Health & Safety Notice Boards.

Taking forward good practice from the Critical Services Upgrade Project at Raigmore Hospital, NHS Highland requested that monthly Health & Safety Meetings were arranged and held on site. These

meetings were attended by NHS Highland Health & Safety Managers, Balfour Beatty site management and Health & Safety Managers, and were chaired by the CDM-Advisor.

The purpose of the meetings was to focus on Health and Safety matters, with consideration to the ongoing works, and planned upcoming works. The meeting recorded statistics relating to the Health and Safety performance including accidents (no reportable accidents), near misses, observations, site visits and training which was held in the period.

These meetings functioned effectively during the construction phase and aided the identification and closing out of any issues in a timely manner.

Throughout the construction phase, site management and Health and Safety procedures and systems of work operated effectively. This is testament to the diligence of all members of the on-site teams and project personnel involved in the project.

3.4.2 Covid-19

Balfour Beatty monitored and implemented control measures for the project through to completion, in line with Government guidance and advice. These measures changed over the duration of the construction stage and were implemented and enforced where required.

The construction site continued to operate throughout the lockdown period.

3.5 Design, Engineering & Other Technical Items

3.5.1 Design Quality

A 3P 'Production Preparation Process' event was held at the outset of the design process. This focused event involved a wide range of clinical and operational stakeholders in addition to the design team and used LEAN methodology to develop a clear understanding of the model of service delivery which was then used to inform development of a robust design concept. Attendance of both technical and clinical stakeholders was vital in ensuring a shared understanding of the service requirements and agreeing that these were effectively implemented throughout the design process.

During the development of the RIBA Stage 3 and 4 design internal stakeholders were identified as key subject matter experts to review various aspects of the design and provide comment. This process was led by the NHSH (NHS Highland) Commissioning managers who co-ordinated review by the appropriate stakeholders in line with the project programme. These lead stakeholders were able to provide feedback to wider stakeholder groups and engineering safety groups on the design. The stakeholders carried out a detailed review of all elements of the project design providing observations back to the design team on a comments tracker which was used to record the development and rectification of all observations.

Technical Advisor support was provided by Pick Everard. Reports were delivered to support the RIBA Stage 3 and 4 Design. The purpose of the technical advisor team was to support the internal NHSH

team in ensuring quality of the design. Further advisors were sought to support reviews when there were issues identified with internal NHSH resource availability.

Early engagement was sought with system specialists where identified. This included early engagement with the Theatre Validation Engineer, the Authorising Engineers for the engineering systems, and Quality Controller for the Medical Gas System.

Following the review of each design stage, internal NHSH stakeholders were asked to provide formal acceptance that the design quality was achieved and that the project could progress. This acceptance was gathered by the Commissioning Managers by form of signatures and presented to the project board by the project director as assurance that the design was acceptable.

Derogations were submitted by the design team as the design progressed. Following submission, derogations were extracted on to acceptance forms which were reviewed by the appropriate stakeholders for formal review and acceptance. These were also presented to the project board for final acceptance.

Further overview of the project's design objectives, design standards, user expectations, and recommendations for future improvements can be found within Appendix D: 2140 Post Occupancy Monitoring Plan Rev D 280324.

3.5.2 Construction Quality

The project team ensured that proactive quality management was a key function during the construction stage.

Regular meetings were held throughout the project with focus towards the implementation and management of the PSCP's Quality Plan. These meetings were instrumental in creating a focus on quality in project as a whole and played a key role in the initial stages of the project. As the project moved on this was engrained through the delivery teams and well managed and organised by the PSCP up to the point where the delivery of the project took over and the meeting no longer required the same focus. The implementation of quality being discussed at the right level contributed to a successful management process. An example of this is NEC3 supervisor directly meeting with site teams and discussing quality and managing the effectiveness through the quality management system.

The role of NEC Supervisor within the contract was a significant contribution to the prioritisation of quality on the project. This responsibility was undertaken by NHS Highland by appointment of an internal qualified NEC3 Supervisor who reported directly to the Project Manager advising on non-compliances, defects, and providing a list of defects at Completion.

The NEC Supervisor was responsible for checking that the construction works complied with the agreed Works Information. To achieve this the NEC Supervisor was based on the site and had full access to the building site to monitor and inspect the works as they progressed.

To provide further technical support to the NHSH NEC Supervisor, Thomson Gray were appointed to provide the assistance of further NEC Supervisors to inspect the Fabric and MEP elements of the

Works. This supporting role was undertaken through monthly site inspections and directly witnessing and recording key construction activities throughout the build, following which a detailed report was issued which noted all concerns such as quality issues, and non-compliances with the contract Works Information.

The wider NHSH Stakeholder team was critical throughout the construction stage and carried out periodic reviews of the installation where they would directly witness appropriate construction activities and testing of the construction quality. This included working with the contractor to review the cutting out of various pipework and services to directly test installation quality and produce reports on this.

Alongside regular reporting the issues and defects found by all project stakeholders were directly input into the PSCP's quality management system which provided clear record of raising and rectification of items.

This methodology of detailed inspections and reports ensured that the Contractor had ample time to rectify defects in advance of completing the works.

This systematic management of quality in collaboration with the Contractor and their supply chain ensured that defects, and snags were addressed prior to completion of the project, and there was no impact on clinical commissioning and opening.

The project team incorporated full support from NHSH clinical advisors to ensure comprehensive engagement with clinical teams across all relevant disciplines. This approach ensured that clinical, service commissioning, and supply chain elements were thoroughly considered in conjunction with the technical commissioning stage.

3.5.3 Commissioning Quality

A Commissioning Manager was appointed by the PSCP to oversee and lead on all commissioning aspects. This commissioning manager worked closely with the contractor teams to deliver and monitor the commissioning programme.

Commissioning meetings were held fortnightly during the commissioning programme with the Contractor team and the NHSH Commissioning Manager. This ensured all witnessing plans, issues, and concerns were effectively communicated between the required parties.

An NHSH Commissioning Team was established of technical and clinical stakeholders required to be involved in the commissioning process. This team included the Authorised Persons from the required Disciplines and members of the maintenance and engineering teams. Within this group was all the appropriate representation from each engineering safety group to allow feedback to these groups on the commissioning progress. The primary role of the commissioning team was to witness compliance ensuring the requirements of the design, commissioning specifications, and appropriate guidance have been met.

Where appropriate the support of the NEC supervisors was used to assist with the witnessing of commissioning activities.

A validation expert was appointed by NHSH to ensure that the theatres within the building were suitable installed and commissioned to provide a safe environment to carry out surgery.

HIA SCRIBE was carried out with all relevant stakeholders through a number of on-site meetings lead by members of the IPC team. Any issues from this review could be raised to the contractor through the NEC Supervisor and NHSH Commissioning Team.

Commissioning activities were originally planned to commence after the completion of construction. However, given the complexity and challenges of an extended programme, these activities were realigned to occur concurrently. While this presented challenges, an optimised approach to programming and scheduling was implemented. By closely coordinating the clinical team and delivering a comprehensive training programme, the safety of all personnel was ensured throughout the process.

Seasonal Commissioning was carried out throughout the first year of occupation at intervals where the building could be tested in the different weather profiles which would be expected. This process was in its nature very technical undertaken directly by the control's contractor comparing the design settings to the actual metered and measured data. The adjustments observed and delivered were minor which had demonstrated a successful commissioning process as the installed systems are operating as designed and modelled. Seasonal commissioning continued at suitable intervals to ensure data was relative against the building capacity as activity levels for the building increased. Further seasonal commissioning work continues to be undertaken as the building continues to be used day to day with the control's contractor providing a service contract for ongoing maintenance to ensure effective control continues.

3.5.4 National Design Assessment Process (NDAP)

The project underwent a detailed National Design Assessment Process (NDAP) review with reports delivered at OBC and FBC stages alongside a detailed comments tracker. This process highlighted a number of areas where design recommendations were made. Working with the NHS Assure NDAP team and the PSCP's design team a supported status was delivered.

The Design Criteria cross referenced the Achieving Excellence in Design Evaluation Toolkit (AEDET) criteria to complete AEDET In Use assessment as a key reference for the Post Occupancy Template for Functionality and Effectiveness and Design Statement Criteria.

The AEDET In-Use (AEDET "PLUS") review involved key stakeholders who are users of the facility – Clinical, Support, Estates and FM, patients /carers. Where possible those who had been involved in previous AEDET workshops and Design Statement development attended.

Relevant participants scored the AEDET criteria and POE Functionality and Effectiveness in line with the Design Criteria Alignment Worksheet.

The Design Statement was reviewed in support of the above.

Questionnaires were used to gather feedback from patients' carers and visitors and included in lesson learned reporting.

3.5.5 Key Stage Assurance Review (KSAR)

The Key Stage Assurance Review (KSAR) process was implemented by NHS Assure during the project. This was implemented through the Interim Design Review Service at RIBA Stage 4 design. Further reviews were then carried out by the NHSS Assure team during Construction, Commissioning and Handover as formal KSAR reviews following the issue of the KSAR Workbooks.

This process required a close working relationship between the NHSS Assure team and NHSH team to discuss findings and reach suitable solutions to deliver a supported status at each stage.

3.5.6 Handover

The handover process employed a clear system for verification and acceptance managed by the NHS Highland Commissioning Manager in accordance with NHS Highland procedures. The handover process was supported by a full transition plan developed and implemented by the NHSH Clinical Advisor team. Sign off was gathered from the NHSH stakeholders leading on the project and delivered to the project board as formal acceptance that the building was safe to be occupied.

3.5.7 Building Information Management (BIM)

The project was delivered to BIM level 2 as set out in the NHSH Employers Information Requirements for the project. A close working relationship between NHSH and the PSCP's BIM Manager was beneficial in producing realistic outputs which could be utilised by NHSH.

In accordance with BIM level 2 requirements a Common Data Environment was utilised for the exchange of all project information. This allowed for and transparent management of the design information with the issue of transmittals between the design teams and NHSH allowing for prompt attention and action.

BIM was well utilised by the PSCP team throughout the project allowing for more effective management of various outputs. The use of BIM was present within cost and programme modelling where the delivery of the building programme was modelled against the key activities required on-site. BIM was critical in the management of quality where the use of the model was reviewed side by side with the construction 360 images to ensure systems were installed where they were designed to ensure onsite coordination.

In delivering BIM to the requirements set out, the model information delivered through a COBie file could be directly transferred into the NHSH Computer Aided Facility Management (CAFM) System. This resulted in all maintainable assets contained within the 3D model being directly assigned with maintenance plans at handover. This information continues to be used as the platform for maintaining the facility with the data providing useful context on each of the maintainable assets to the maintenance engineers.

The NHS Scotland Strategic Asset Management System (SAMS) could also be populated by using the required input templates and populating these with the COBie data as guided within the EIR's. The

use of this provides the board with accurate information of which to carry out appraisals and capital planning from.

Further opportunities are available in using the delivered BIM data in delivering possibilities for digital twins and calibrated building models. This implementation would require detailed investment to fit into an NHS Highland delivery approach.

The engagement of the NHSH Commissioning Managers with the National NHS Scotland Digital Estate Group was extremely helpful in ensuring NHSH was able to learn and deliver up to date and board specific detail to brief the PSCP teams.

3.5.8 O&M

The Operation & Maintenance (O&M) manual, inclusive of the completed Health & Safety File, was delivered prior to handover by the PSCP and reviewed by the NHSH team. This was delivered to the specified NHSH format requirements to fit within the board's current systems.

This information is delivered into the NHS Highland SharePoint site where available information on all sites is kept. By utilising preexisting NHS Highland structures and systems as set out within the client requirements the need for robust accessibility testing is not as critical. Instead, efforts were used in ensuring the quality and content of the information was sufficient. As the information is used by the ongoing maintenance of the site issues with available information is highlighted and where appropriate highlighted to the PSCP.

The handover process and progress with compiling these documents were tracked at the Health and Safety Meetings, and Progress Meetings.

3.5.9 Environmental Performance

The BREEAM process achieved a score of Very Good.

By aligning with BREEAM's principles of practicality and efficiency, the project successfully balanced environmental goals with excellent value management, optimising both sustainability performance and project success.

The solar energy system has performed as expected, generating approximately 18.4 MWh within the first year of operation. This aligns with the project estimates and demonstrates progress towards offsetting the building's energy usage.

Due to an ongoing issue with the national energy consumption tool, eSight, we are currently unable to access water and energy usage data necessary for evaluating the buildings in-use energy performance.

3.6 Risk Management

Construction risk was managed by NHSH in conjunction with Balfour Beatty through the processes set out in Frameworks Scotland 2 and the NEC construction contract.

The Frameworks 2 procurement framework is based on the appointment of a single Principle Supply Chain Partner (PSCP) to act as sole point of responsibility for the management and delivery of an integrated design and construction project. Under this type of Design and Build contract, the PSCP retains responsibility and liability for developing a compliant design, and then building this design within the agreed time, cost and quality parameters.

Balfour Beatty were appointed as PSCP prior to the development of the Outline Business Case and remained PSCP throughout the design and construction period. This continuity was beneficial in terms of both design development and partnership working between NHS Highland, Balfour Beatty and their wider supply chain.

The construction contract utilised for the NTC-Highland is an NEC3 Engineering and Construction Contract. The NEC contract has a clear mechanism for risk management and reduction through the Early Warning Process which requires all parties to formally notify the other parties as soon as they become aware of any issue which may impact time, cost, or quality.

The implementation of an Early Warning System supported using a NEC- specific contract for management system, proved instrumental in the effective administration of the contract. This approach enabled a structured and transparent process for managing issues as they arose, ensuring that the potential risks were identified and addressed promptly. The system facilitated clear communication and swift resolution.

NEC Option C was utilised for the design stages. This is a Target Price Contract with an Activity Schedule which shares financial and programme risk between the parties. This worked well during the design stages when the scope and design was least defined.

NEC Option A was utilised for the construction stage. Option A is a Priced Contract with Activity Schedule, where the PSCP carries most of the risk for work being carried out to the agreed time and cost, including the risk of errors within or changes to the agreed cost other than those caused by a Compensation Event. This was appropriate once the design was defined enough for the PSCP to reasonably quantify their risk exposure and gave certainty of cost and time to NHS Highland.

Several key risks were managed throughout the project lifecycle.

- Covid-19 pandemic constraints, and infections and isolation periods impacting on productivity.
- Delays with the supply of construction materials e.g., plasterboard, roofing materials, and steel.
- Resources: certain sub-contractors did not provide sufficient labour to achieve the productivity output required to meet the agreed programme.
- Coordination of design and development of completed designs for construction is a cause of delay.

Risk management of the transitional period from handover of the building to becoming clinically active utilised a robust and collaborative approach between NHS Highland and the contractor team. This was coordinated by NHSH Commissioning Manager and NHSH Clinical Advisor, this approach ensured that all NHSH teams engaged with a transition plan which was fully risk assessed throughout the process. Significant challenges were managed to ensure continuity of care for NHSH patients, as during the transition process care was often operational on both our original site and the NTC-H. Feedback from all teams was positive and there were no incidents throughout this time. Training for all teams on the new facility was also factored into the transition plan, with full compliance achieved. The use of video recording for all training mechanisms ensured compliance and archive of information for new personnel. This process was managed by the NHSH team and fully supported by our contractor team.

4. Service Benefits Evaluation

The Service Benefits Evaluation has utilised a number of different processes (including patient feedback, patient surveys, staff surveys, staff workshops and staff interviews) and methods of assessing the impact of the project against the realisation of the identified Benefits Criteria specifically as a way of measuring key impacts.

Refer to Appendix D: 2140 Post Occupancy Monitoring Plan Rev D 280324, for further detail on Functionality & Effectiveness.

4.1 Project Performance: In-Use

4.1.1 Service Delivery

The FBC focussed on providing increased capacity specifically for Arthroplasty (Hip and Knee replacement surgery) and Cataract surgery with throughput based on best-in-class service models both defined by National Groups.

Orthopaedics Service

From FBC to opening, it was agreed through the National Programme for Foot & Ankle and Hand cases to be undertaken within the NTC-H on two days per week. Although not included within the NTC-H Workforce plan, the Scottish Government Performance Team funded the NHSH business-as-usual Orthopaedic service to maximise the use of this capacity with one additional Foot & Ankle and one additional Hand surgeon to support these sub-specialty areas.

Ophthalmology Service

In keeping with Improving the Delivery of Cataract Surgery in Scotland: A Blueprint for Success, the aim is to deliver a minimum of eight procedures per core 4-hour session or a minimum of one procedure every 30 minutes. The NTC-H have reviewed pathways involving the entire MDT and learning from NHS Tayside.

4.1.2 Service Activity

During the initial Transition & Mobilisation period a phased approach to increasing clinical activities was planned and enacted. During this review period, this approach worked well for orthopaedics due to new service being introduced. However, slightly more challenging when transferring an existing ophthalmology service to the new facility. Due to the ophthalmology waiting lists and maintaining the provision of emergency assessment and care, it was imperative that the ophthalmology

outpatient facility was not impacted by the move to NTC-H, in essence there was no option to pause activity. This required the NHSH clinical advisor team to ensure there was a robust plan to maintain all activity within the Acute facility of Raigmore Hospital. This was achieved through robust transition planning to ensure that all personnel and equipment were available on both sites for a period of time. Whilst this added an additional layer of complexity through robust engagement with the teams and full risk assessment with a clear communication strategy this was achieved without incident.

4.1.3 Service Performance

A key objective of the proposal was to provide an improved service with innovative links to complimentary research, academic, and private enterprise to deliver a sustainable 'added value' approach to patient care, which will provide an innovative, challenging, and productive environment for the workforce. The location of NTC-H being strategically placed adjacent to the university of the Highlands and Islands ensures that there is a natural pathway to innovation and research. There are established links for training and development for UHI students being placed within the NTC-H environment and this is being further developed. The infrastructure of the theatres optimises the opportunity to share learning 'live' during clinical procedures, however, there have been some infrastructure challenges. We would expect these to be resolved by the year 3 evaluation.

4.2 Benefit Realisation

The evidence gathered indicates that whilst some of the benefits have been realised, there are several areas which require improvement. This is highlighted through some of the challenges from FBC to delivery. Initial successes have been noted, demonstrating the progress to the overall objectives.

Refer to Section 5 for further details of each of the benefits realisation criteria.

4.3 User Feedback

Feedback has been received to date by the completion of feedback surveys, staff workshops and interviews, cards and letters that NTC-H have received.

Service users commented on the modern, comfortable environment of the building. The experience could be enhanced by additional / clearer signage for easier navigation to the facility and links with public transport.

Refer to Section 6.4 and 6.13 for further information on the feedback received from patients and other stakeholders.

4.4 Service Change Impact

There are several areas where the service change has had a clear impact on operational activities, processes and people. Key Operational Changes were identified:

Operational Change Management (prior to the move):

- The entire NHSH Ophthalmology service was to move from Raigmore into the new Centre.
- The Raigmore Trauma and Orthopaedic Consultant body was planned to work across both sites and to provide surgical care within the NTC-H as an in-reach service for ASA1 and ASA2 Arthroplasty cases (high volume-low complexity) and for Ambulatory Foot and Ankle and Hand conditions.
- Pathways needed to be reviewed and optimised for both services.
- The Departmental Job plan needed to be carefully considered and shared with all stakeholders prior to sign-off.
- Foot & Ankle and Hand Surgery was to be delivered across both sites with further funding from the Scottish Government aligned to support this aspect alongside the need to provide resilience for both sub-specialties within existing business as usual activity.
- An emerging National Capacity Management Agenda was evolving with an expectation that patients would flow to the NTC-H from other Health Boards. Pathways needed to be configured to maximise this flow.
- Governance and Quality and Patient Safety measures were critical.
- Professional and Managerial structures needed to be carefully considered.
- Clinical Escalation Pathways needed to be clear
- Out of Hours (Clinical and Managerial) needed to be clear
- Standard Operating Procedures and Daily Management approaches were to be developed by the NTC-H Leadership Team.

Operational Change Management (post move)

- There was a recognised need to undertake transformation across both services
- A proportion of the current Ophthalmology activity was still be delivered on the Raigmore site – Paediatric surgery and some emergency surgery.
- The Orthopaedic Team were commissioned and funded to deliver 1,000 sessions of high-volume low complexity cases (as part of an overall Departmental job plan) within the NTC-H.
- To support the introduction of a positive culture within the NTC-H, an appreciative inquiry approach had been undertaken to develop a People Plan which was owned by the staff who would work within the building.
- The NTC-H People plan outlines what employees can expect from leaders, the organisation and each other.
- It was recognised that to deliver the People Plan careful attention would have to be paid to the following aspects:
  - Values based recruitment
  - Orientation and On-boarding
  - Leadership Development

  - Teamworking
  - Performance Indicators
  - Ongoing staff engagement
- Equipment needed to be regularly and frequently transported between the Raigmore and the NTC-H site - Catering, Theatre Equipment/ Decontamination.
- IT Solutions were critical to successful delivery, to achieve a paperless environment and to support patient flow across the two Hospital sites and across Health Boards.

Ophthalmology

The transition of the Service from Raigmore to NTC-H presented significant challenges as we were simultaneously maintaining and operating an outpatient service for sight threatening conditions. These challenges included equipment, training, familiarisation and delivery of services and the overall impact on the team transitioning

Previously the Ophthalmology service had access to the Modular Unit at Raigmore Hospital where often it was necessary to cancel elective operating to make way for emergency procedures. The service now has access to 2.6 operating theatres at NTC-H where 1.5 hours per day are ring fenced for emergency operating and this is built into the modelling.

Due to the success of the Orthopaedic model, NHS Grampian cataracts also became part of the delivery plan at the request of Scottish Government and in the first year we operated on a total of 185 cataracts against a target of 184 eyes.

Ophthalmology continues to have access to the Modular Unit on the Raigmore site. This facility is used for paediatric operating, complex cases requiring High Dependency Unit support and as a contingency for emergency operations, in the event of any issues with ophthalmology theatres at NTC-H.

4.5 Service Performance Data

4.5.1 Impact on Operational Activities

The investment objectives identified in the FBC identify safe, timely and effective patient care will be provided locally. The following table demonstrates the number of patients requiring treatment based upon the projections in the business case with the actual number of patients treated into 2024 in the adjoining column.

For Ophthalmology Outpatients, the target was set at 7,000 new outpatients, the service exceeded this by seeing 7,360. While no specific target was set for return appointments, a total of 16,968 return visits were recorded. In the first year, the service performed 2,287 procedures, surpassing the target. This total included both cataract and non-cataract procedures.

At the time of opening, a target of 1,588 ASA1 and 2 Arthroplasty cases were to be referred to the NTC-H. This was established to ensure equitable distribution across the boards.

Targets and delivery across the Boards:

NHSH had an allocation of 1,131 and delivered 485 hips and 383 knees replacements. NHSG was allocated 457 and delivered 198 hips and 167 knees replacements, falling slightly short of the target. Following the successful engagement of NHSG, NHS Tayside colleagues joined in December 2023 resulting in the delivery of 35 hips and 36 knees operations.

Orthopaedics have access to the Ophthalmology Theatre (B) 2 days a week to perform hand, foot and ankle procedures. With this additional resource, targets were set for 171 foot and ankle procedures and 164 hand procedures to be delivered at NTC-H. The service delivered a total of 267 hand procedures, and 132 foot and ankle procedure with all patients referred from NHS Highland.

Service	Year 1	Year 3	Year 5	Notes
Orthopaedics Hips & Knees (ASA 1 and 2)	1,632	1,356	1,348	**Activity at OBC**
	1,356	1,356	1,356	**Activity at FBC**
	1,304 (Orthopaedics, including hand, ankle and foot)	-	-	**Actual Activity**
Ophthalmology	4,135	4,833	5,431	**Projected Activity at OBC**
	9,200	11,200	12,050	**Projected Activity at FBC**
	10,079 (7,360 of the above were Outpatients)	-	-	**Actual Activity**

Table 1: No. of patients requiring treatment

Orthopaedic Service

FBC Arthroplasty modelling assumed that 69% of Arthroplasty cases would be suitable for the NTC-H.

Prior to opening, 35% of NHSH Hand cases (Trapeziectomy and Fasciectomy), and 50% of NHSH Foot and Ankle cases were identified as suitable for the NTC-H. Modelling for Year 1 of operating assumed that NTC-H would deliver @ 75% efficiency for the first quarter and 85% efficiency for Quarters 2-4. Currently the Orthopaedic Service is delivering 96% efficiency.

4.5.2 Impact on processes

Prior to opening, NTC-H Workforce capacity had been aligned to increase capacity within pre-operative assessment to ensure that there was a sufficient pool of patients deemed "fit, willing and available" for surgery within the NTC-H.

The 6:4:2 model is a framework to streamline operating theatre scheduling and reduce cancellations

- 6 Weeks Before Surgery - Surgical lists are finalised and initial patient suitability checks are conducted
- 4 Weeks before Surgery - Comprehensive pre-operative assessments are completed, equipment and staffing are confirmed
- 2 Weeks before Surgery - Patient confirms attendance, and any vacant slots due to cancellation are reallocated.

This model improves efficiency, ensures patient readiness and maximises resource utilisation.

To achieve a 6:4:2 booking model, the following was required:

- A pool of 180 ASA1/2 patients
- An ongoing weekly "feed" of ten patients per week from NHSG and thirty patients per week from NHSH
- A balanced Consultant rota allocation
- Planned consenting clinics 8 weeks in advance of surgery

Regional Working

The NHS Highland FBC aimed to improve collaborative working across the North of Scotland.

- NHS Grampian patients have had Arthroplasty surgery within the NTC-H since opening, with consultants undertaking Consenting clinics within Dr. Grays Hospital in Elgin.
- NHS Grampian patients have been having Cataract surgery within the NTC-H since the 20th October 2023.
- NHS Tayside Arthroplasty patients commenced within NTC-H from December 2023. Along with consenting clinics within Perth Royal Infirmary.

4.5.3 Impact on people

Staff satisfaction surveys were collated before the move from Raigmore to the new NTC – H facility then again after three months. These provide detailed rich learning which has been fed into the formal Project Lessons Learned process.

There were only two weeks from building handover until the facility became operational, therefore what should have been a 16-week handover period was condensed into a two-week period. This meant that the building became operational whilst also managing and reacting to the many building defects and familiarisation issues adding a level of complexity to what was already a major human resource change process.

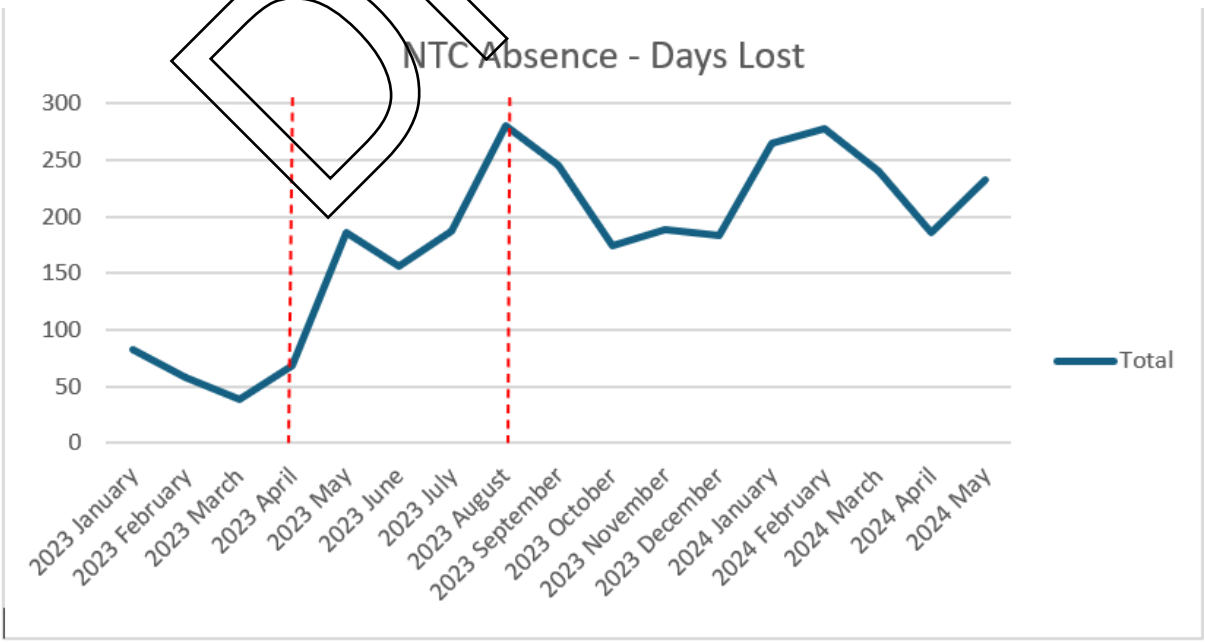
It was recognised that there are two distinct groups of staff:

- Ward/ Orthopaedic Theatre/ Support staff who had timely access and detailed orientation and familiarisation to the building.
- Ophthalmology Team who had to continue to deliver clinical care from Raigmore and then pack-up and move their whole service into the building over a two-week period and therefore with less time to orientate and familiarise.

The impact of change was evident in the range of feelings that were reported as the services transitioned.

Despite having support available to staff, Sickness and Absence rates spiked moving through the Transition period with the majority of these reported under “anxiety, stress, depression” giving a clear indication of the impact of change at that early stage.

Sicknesses and Absences are continuing to be monitored, and a People Plan Short-Life-Working group convened to ensure a re-focus on the organisations People Plan commitments.



Graph 1: No. of days lost in relation to NTC-H absences.

5. Realising the expected benefits

5.1 Improvement in patient outcomes

Parameters of data capture had not been established fully prior to commencement of care in NTC-H, and some of the outcome parameters are relatively new, therefore the baseline data is presented and whilst the figures demonstrate good outcomes they cannot be considered as direct improvements from a quantitative perspective. However, in the year 3 evaluation we will be able to fully demonstrate patient outcome data with the baseline for improvement.

Data has been captured for 2024, demonstrating good patient outcomes:

- 100% DOSA (Date of Surgery Admission)
- 100% IV fluid discontinued in theatre
- 95% IV fluid not restarted
- 100% resumed diet day 0
- 77% mobilised day 0
- 98% not catheterised
- 75% received 100% of ERAS bundle compliance

5.2 Length of Stay

Data collected for the year 2024 indicates that the discharge patterns for patients classified shows a positive trend, though not fully meeting the targeted 75% discharge rate for ASA 1&2 patients within 48 hours.

According to the collected data:
- 55% of ASA 1 & 2 patients was discharge by day 1.
- 95% of ASA 1 & 2 patients were discharged by day 3.

The gap between the current 48-hour discharge rate and the target will require further investigation into operational practices, patient management protocols, or potential delays in post-operative recovery.
Continued monitoring of discharge rates and targeted interventions may help to achieving the 75% target, enhancing efficiency and patient throughput.

5.3 Patient Quality Experience

The design principles applied in healthcare buildings prioritised enhancing the patients experience by creating a healing and comfortable environment. The optimisation of window sizes ensures ample daylight and access to calming views, contributing to reduced stress levels for patients. Ease of access to facilities has been thoughtfully incorporated, particularly for patients recovering from knee, hip or eye surgeries minimising physical strain and promoting independence. The addition of track ceiling hoists in certain bedrooms ensures a sense of normality for individuals who require mobility assistance, allowing for seamless integration and no barriers to treatment. The introduction of the iWave meal delivery system allows for patients to choose from a variety of meal options tailored to their dietary needs and preferences post-surgery ensures both convenience and nutritional support during recovery. The design of the reception and waiting area, which incorporates a cafe, creates a comfortable and relaxed atmosphere for patients and visitors. A dedicated children's area complete with play equipment and sensory space is also available to the younger patients and visitors. Additionally, local school children played a key role in contributing artwork for the outdoor space. Together, these features create a patient centred environment that fosters physical and emotional wellbeing.

The commonly used words which were captured during service user feedback below. To access full results of the service user feedback, see appendix F.

Image 1: Service User Feedback, commonly used words

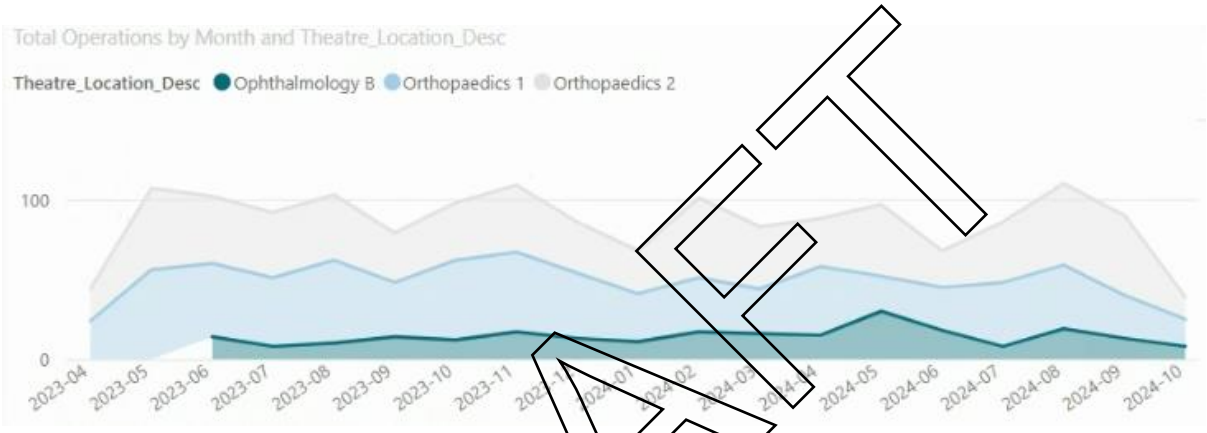
"Optimal patient experience was considered throughout the design process from inception to completion. The flow of patients requiring surgery and ensuring the flow was optimised, led to a number of design decisions including orthopaedic waiting area with directly adjacent pre-assessment rooms. In practice, factors such as number of patients coming through and scheduling, has allowed the team to optimise patient flow further and enhance patient experience by reducing the number of steps in that process and utilising rooms for other purposes." – Micheal Riach, Senior Charge Nurse Practitioner.

5.4 Theatre Efficiency (utilisation and throughput)

Orthopaedic Service

Regular four joint days are contingent upon rotas being configured to ensure surgeons are aligned to support the Target Operating Model. For 24/25 – Orthopaedic Job Plans need to fully align to the Business model of the NTC-H.

Theatre efficiency and utilisation demonstrates improvement but is not consistent in evidence, this includes the orthopaedic service utilising the ophthalmology theatre B. This will require ongoing monitoring and continuous improvement over the coming year. This can be seen below.



Graph 2: Theatre efficiency and utilisation for Orthopaedics, sourced from Power BI Report Server

On opening, a target of 1588 ASA1 and 2 Arthroplasty cases were to be referred to the NTC-H.

In terms of targets and delivery across the Boards:

- NHSH had an allocation of 1131 and delivered 868 hip and knee procedures in total, 485 hips and 383 knees
- NHSGs allocation was 457 and delivered 365 cases in total, 198 hips and 167 knees
- For NHS Tayside (NHST) there was no target set but due to the success of NHSG, engagement with Tayside colleagues resulted in us taking first patients in December 2023 and we operated on 35 hips and 36 knees.

Orthopaedics have access to Theatre B 2 days a week and a target of 171 was set and we operated on 132 foot and ankle patients, and we undertook a total of 267 hand procedures against a target that was set of 164. All hand, foot and ankle patients are from NHS Highland.

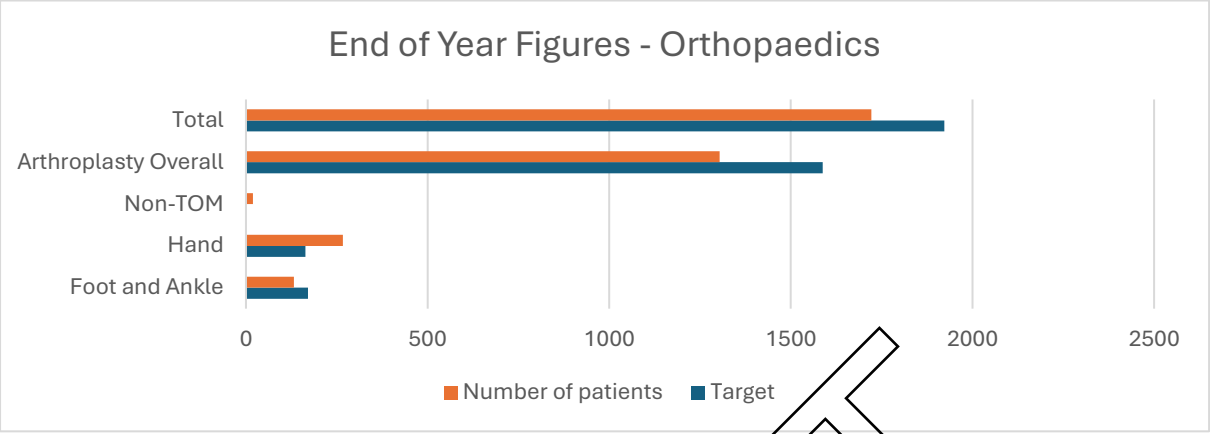


Chart 2: End of Year Figures - Orthopaedics

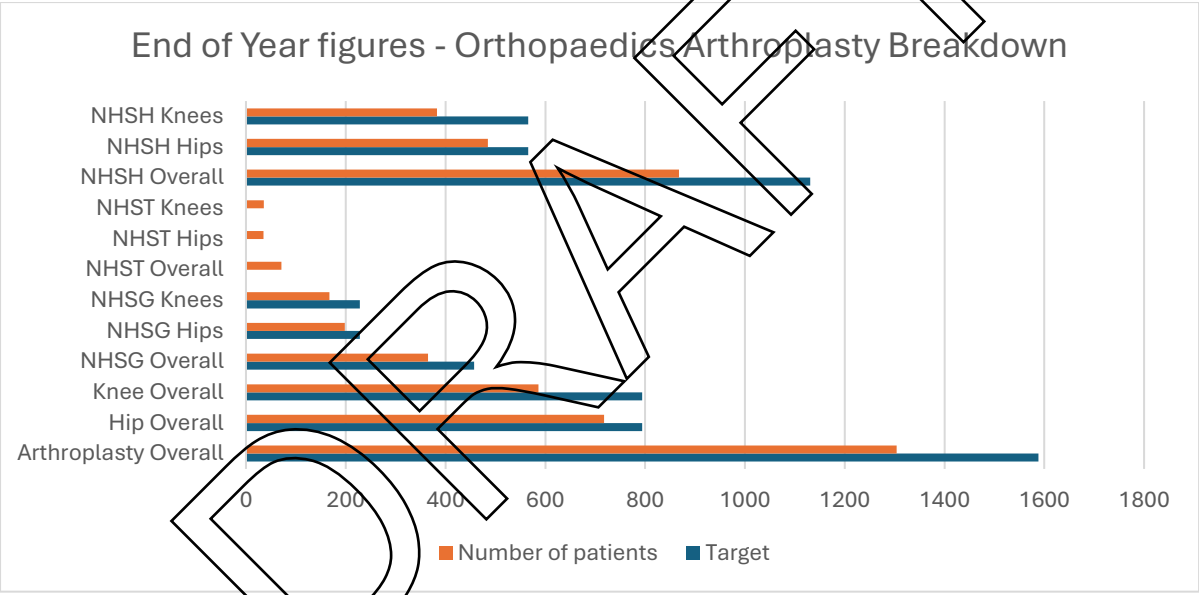
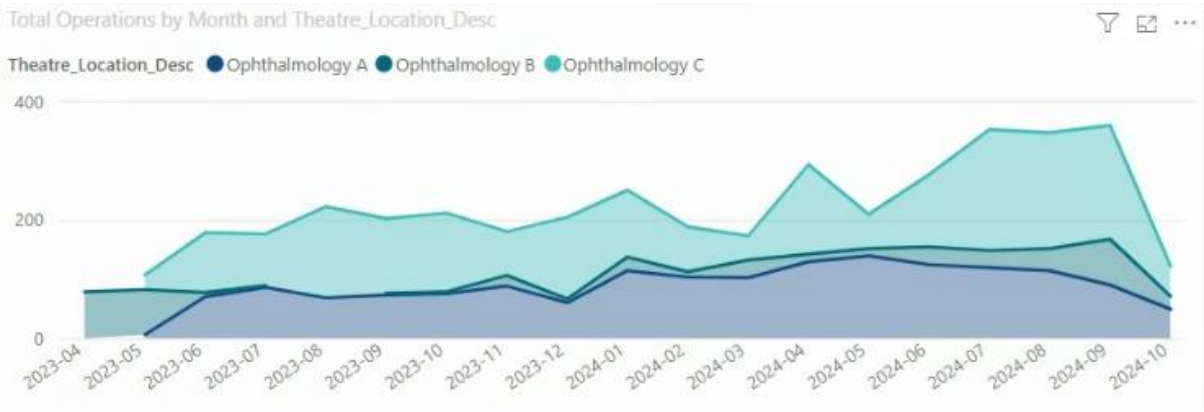


Chart 3: End of Year Figures – Orthopaedics Arthroplasty Breakdown



Graph 3: Theatre efficiency and utilisation for Ophthalmology, sourced from Power BI Report Server

In terms of Outpatients, the target set was to see 7000 new outpatients and we saw 7360. Whilst a target was not set for return appointments, the service saw a total of 16,968 outpatients.

Previously the Ophthalmology service had access to the Modular Unit at Raigmore Hospital where often it was necessary to cancel elective operating to make way for emergency procedures. The service now has access to 2.6 operating theatres at NTC-H where 1.5 hours per day are ring fenced for emergency operating and this is built into the modelling.

For Ophthalmology operating in the first year at NTC-H the service delivered a total of 2287 procedures against a target of 1975 which was inclusive of cataracts and non-cataracts.

NHS Grampian cataracts also became part of the delivery plan at the request of Scottish Government and in the first year we operated on a total of 185 cataracts against a target of 184 eyes.

Ophthalmology does still have access to the Modular Unit on the Raigmore site and this is for paediatric operating and for the more complex patients who require HDU and for contingency for emergency operating should there be any issues in ophthalmology theatres at NTC-H.

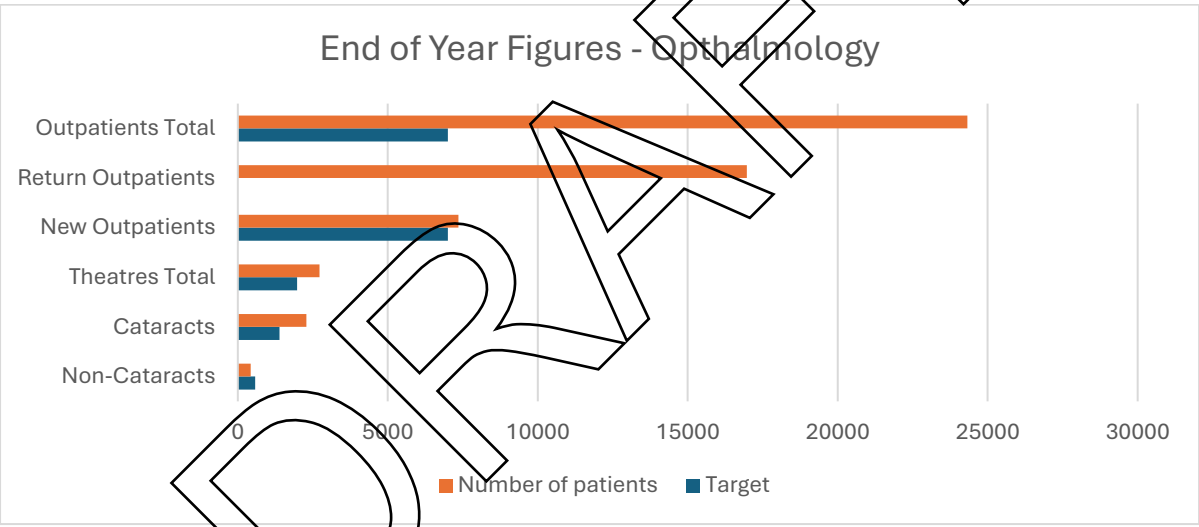


Chart 4: End of Year Figures - Ophthalmology

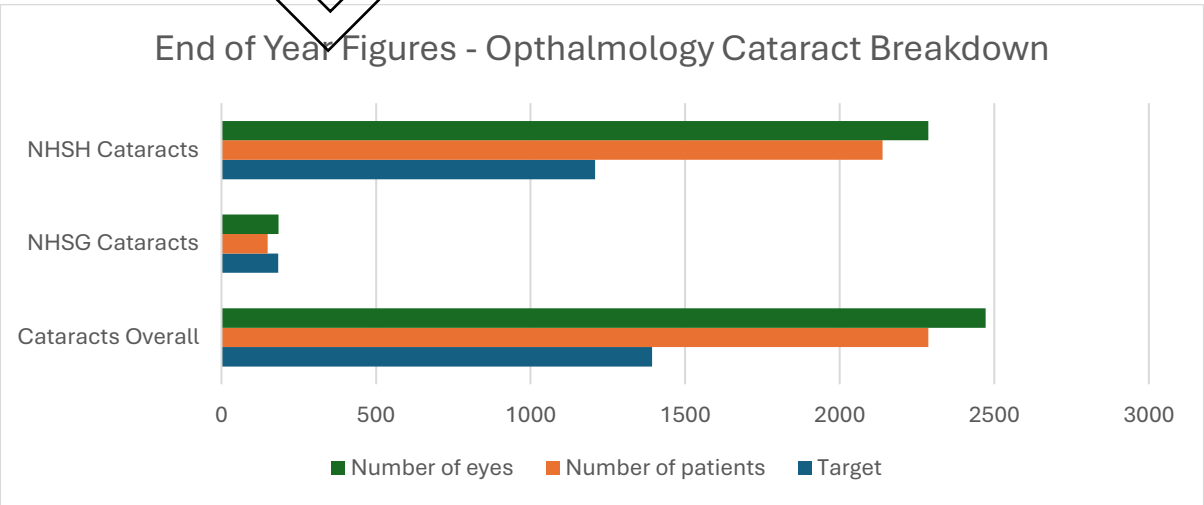


Chart 5: End of Year Figures – Ophthalmology Cataract Breakdown

Green Theatres

During the design phase, the infrastructure of the NTC-H was fully aligned with green theatre principles. All theatres are equipped with optimised setback facilities, allowing them to enter energy-saving modes during the evenings, overnight, and on weekends. This ensures compliance with the ideal green theatre setback capabilities.

Issues identified with control panels have been addressed, though they will require ongoing monitoring to ensure sustained performance.

A planned trial of Tiny Air, in collaboration with CSSD, will take place at NTC-H. Infrastructure modifications will be necessary to support this initiative, but Tiny Air is expected to optimise the usage of theatre equipment, significantly reducing the time required for transition and sterilization processes. This, in turn, will help reduce the facility's carbon footprint, lower energy consumption, and result in cost savings.

Utilisation

"The business case states that the optimal number of patients is 10, there is clear evidence that we are working towards 10 and have not arrived at this destination yet. This is due to a number of factors; developing staffing model, which is being address through revised business case processes. Developing People Plan and cultural changes in tandem with a full review of the booking processes with NTC-H and bench marking exercises with NHS Grampian and NHS Tayside, will optimise theatre utilisation and capacity." - Micheal Riach, Senior Charge Nurse Practitioner

5.5 Reduced cancellations

Orthopaedic and ophthalmology cancellations have been captured and it shows that the months with the highest cancellation rate in 2023 is in June and October. The reason for this is that there were Theatre ventilation and later Theatre Hepa filter issues during these months. This will need to be focused upon for the year 3 evaluation.

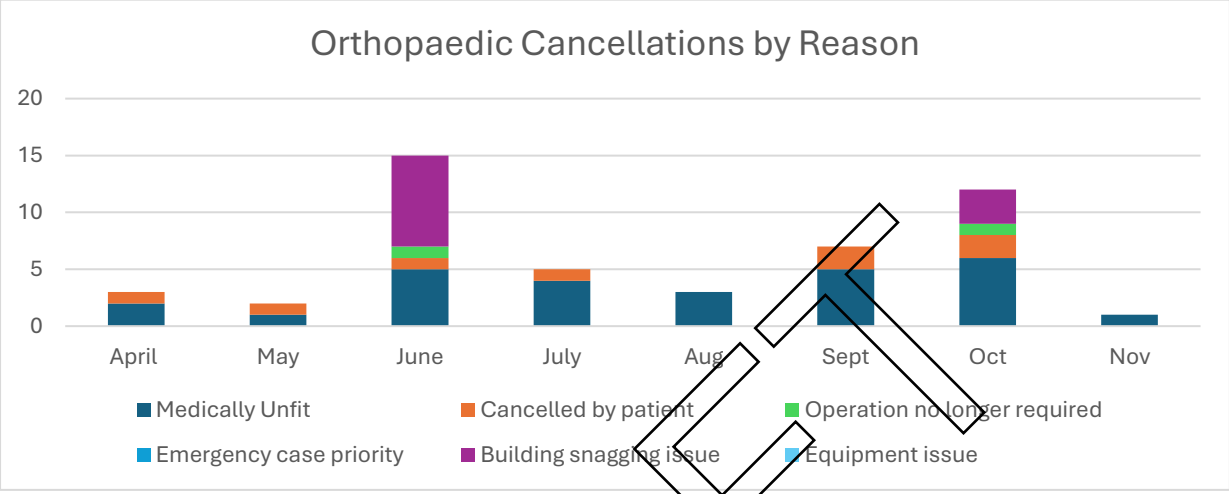


Chart 6: Orthopaedic Cancellations by Reason

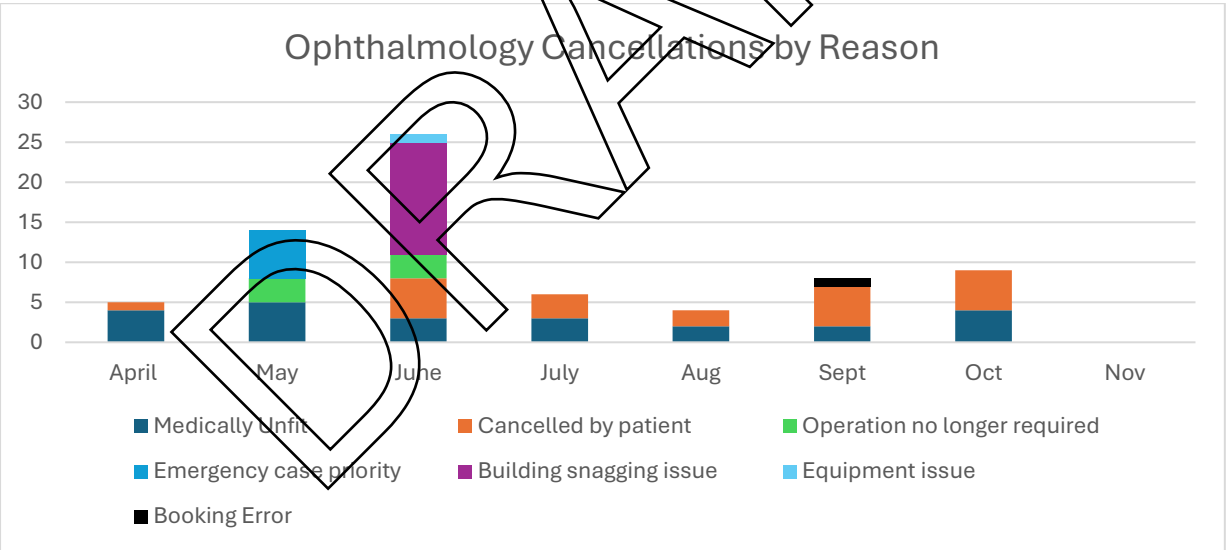


Chart 7: Ophthalmology Cancellations by Reason

5.6 Improvement in Reduction in harm to patients

At time of reporting no adverse events have occurred.

5.7 Reduction in backlog and waiting lists

At time of writing the report, the orthopaedic service had 596 people on the waiting list, with 65% waiting less than 12 weeks to be seen. Whereas the ophthalmology service there have been 2049 new patients added to the outpatient waiting list, with 52% of patients waiting less than 12 weeks for their initial appointment and 48% of patient waiting less than 12 weeks on the inpatient/ day case waiting list. Future efforts may need to be made to improve or maintain this performance, particularly for those exceeding the 12-week threshold. This is shown in the charts below.

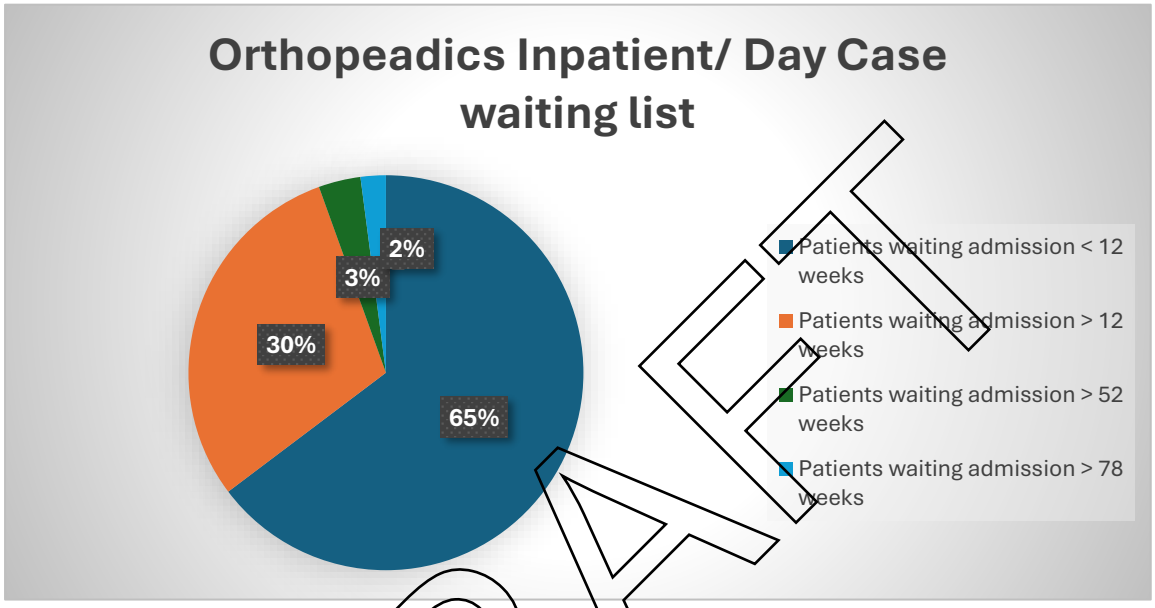


Chart 8: Orthopaedics Inpatient/ Day Case waiting list, sourced from Power BI Report Server.

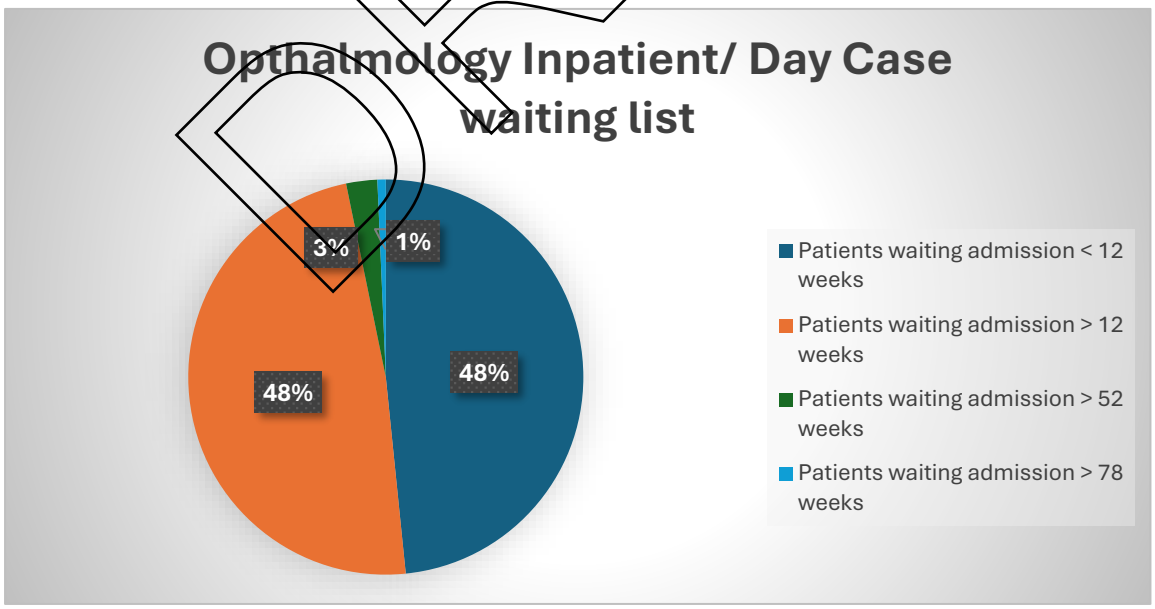


Chart 9: Ophthalmology Inpatient/ Day Case waiting list, sourced from Power BI Report Server.

5.8 Reduction in HAI incidents due to modern healthcare facilities.

In the first year of operation, there have been no reportable incidents. Improvements in patient safety and harm reduction have been demonstrated through the HAI (Healthcare Associated Infection) review process and the Scottish Patient Safety Programme (SPSP). These initiatives support the team's commitment to maintaining high standards of care and patient safety.

5.9 Adequate clinical and non-clinical staff numbers and appropriately qualified staff to provide an effective service.

Current Vacancies

There are several vacancies which are currently out to advert and/ or interviewing/ the chart below shows the current vacancies out to advert. To date, nursing vacancies have been filled quickly. There are also some future planned vacancies due to maternity leave.

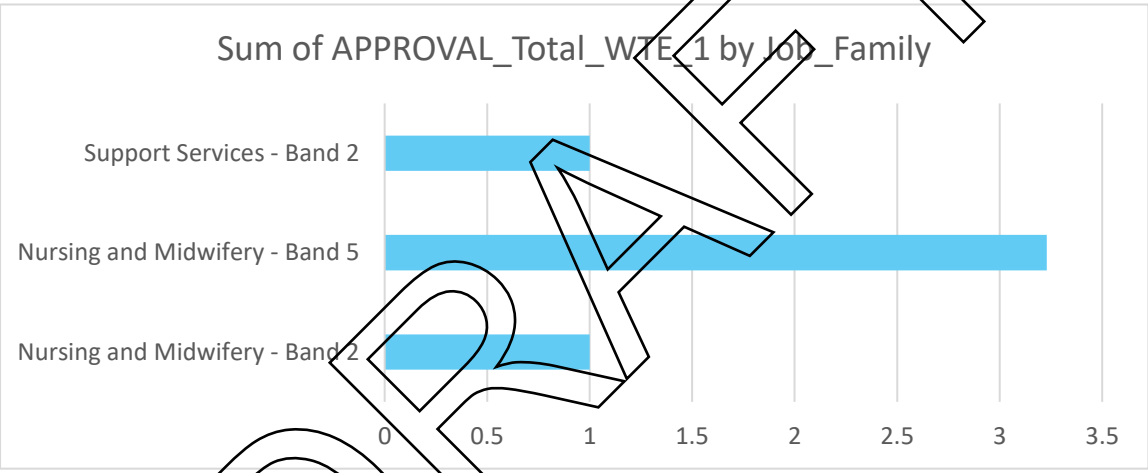


Chart 10: Current Vacancies out to advert per Job Family and Band, sourced from eESS.

5.10 Appropriate staff to provide correct level of care in the correct locations.

At the point of opening, 93% of the additional 208 whole-time equivalents had been recruited. Recruitment for the NTC-H was managed through a Programme approach, a new NTC-H Website was designed, and a recruitment campaign "Aim High Aim Highland" was commissioned with the aim of attracting new staff.

There is clear evidence that a yearly workforce review is required based upon the activity levels and clinical requirement, this requires foundation of a robust staffing model, inclusive of succession planning. The application of robust planning tools and the outcomes they generate should become Business as Usual. Anecdotally, the original workforce model required significant adjustment to meet the level of activity that was agreed at commencement of clinical service. The team at NTC-H have demonstrated a degree of autonomy in adjustment of clinical role and function, however, this has limitations as they require to work flexibility between NTC-H and Raigmore Hospital. It is acknowledged through NHS Scotland there are issues throughout recruitment and succession. planning, which is also impacted by recent developments in recruitment schemes and retire and return schemes.

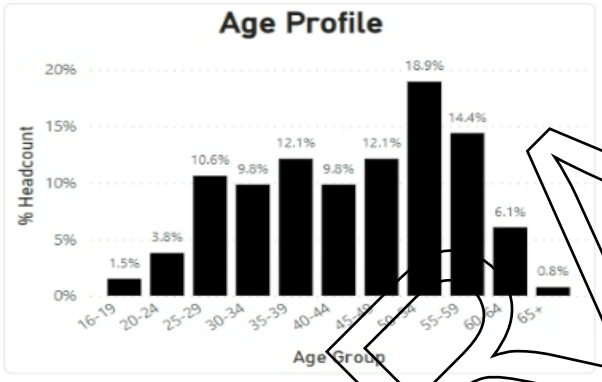


Chart 11: Age Profile of NTC-H, sourced from eESS.

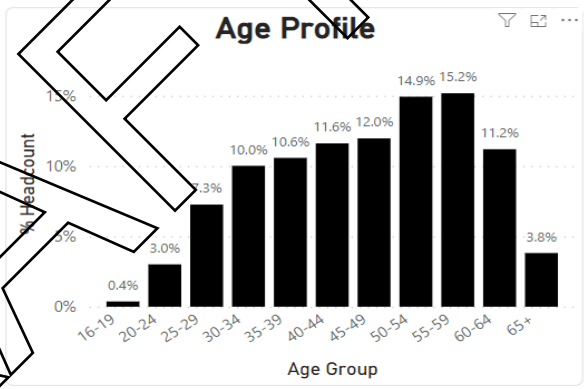


Chart 12: Age Profile of NHSH, sourced from eESS.

The charts above shows NTC-H and NHSH average age group. These charts highlights that both NHSH and NTC-H have an aging worforce and need to be aware of this and plan appropriately. Succession planning for all professionals, demonstrating that a significant number of the team a pre-retirement. We recognise that this is not a unique situation to the NHSH.

The following chart shows the breakdown of the NTC-H team and job banding

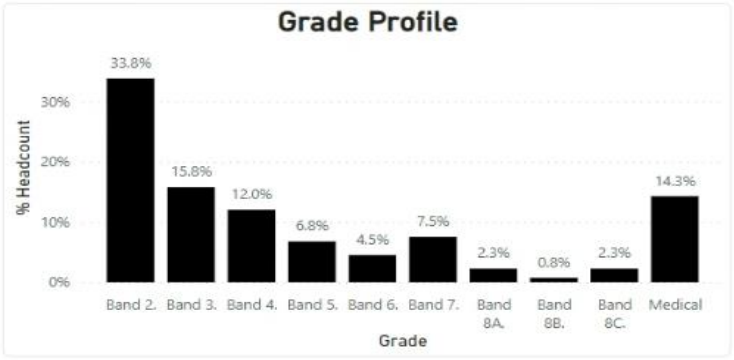


Chart 13: Grade Profile for NTC-H, sourced from eESS.

5.11 Staff can provide better care to patients.

Feedback was received through Service User survey, letters, and cards. The common theme was that patients felt that they received an exemplary service with welcoming and friendly staff.

Compliments received have been incredibly positive (examples below):

"This was a fantastic experience and the whole team made me feel relaxed and at ease to go through my operation"

"Excellent treatment and care, you are all a credit to this wonderful centre"

"We are very lucky to have these centres, and it has been a privilege to have had the opportunity of getting treatment here."

The commonly used words which were captured during service user feedback below. To access full results of the service user feedback, see appendix F.

Image 1: Service User Feedback, commonly used words

5.12 Staff are satisfied with their working environment.

The Team survey received a 50% response rate. The overall feedback commented on a positive working environment, however a limited number of issues around lockers and storage of personal items were highlighted.

The commonly used words which were captured during team feedback below. To access full results of the team feedback, see appendix G.

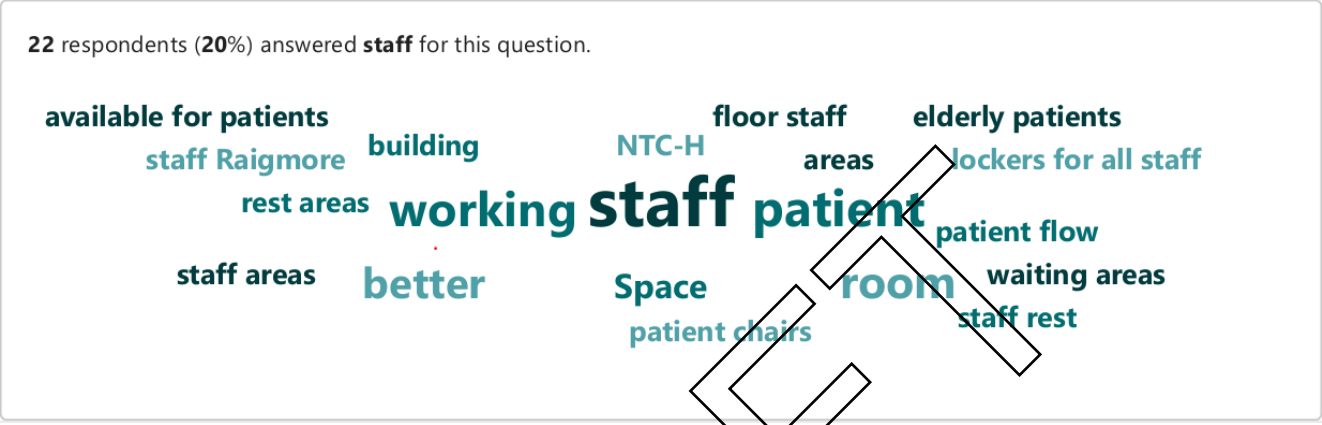


Image 2: Team Feedback, commonly used words

"The ethos of NTC-H is for the facility to provide a ring-fenced service for ophthalmology and orthopaedics. The ring-fenced nature of the staffing model of the site has allowed the team leads to optimise training opportunities within their team which they have stated they couldn't have done on the clinical site of Raigmore hospital due to the mixed nature of the theatre service and the nature of the clinical theatre model.

Whilst, NTC-H is ring-fenced it is co-located to Raigmore hospital, which on one occasion in the last year has required the Acute service to close clinical activity at the NTC-H and move both patients and staff to the Acute Raigmore site. the rationale around this issue has been investigated by a number of parties through route cause analysis. The outcome of this is unclear, but anecdotally it has undermined the foundation staffing model." – Micheal Riach, Senior Charge Nurse Practitioner

5.13 Reduced costs of recruitment

At the time of writing this report, no reduction in recruitment costs has been recorded.

5.14 Staff retention leads to improved working relationships with colleagues and patients

Turnover

The data is showing anomalies due to transfer of staff from Raigmore and other NHSH locations to NTC-H.

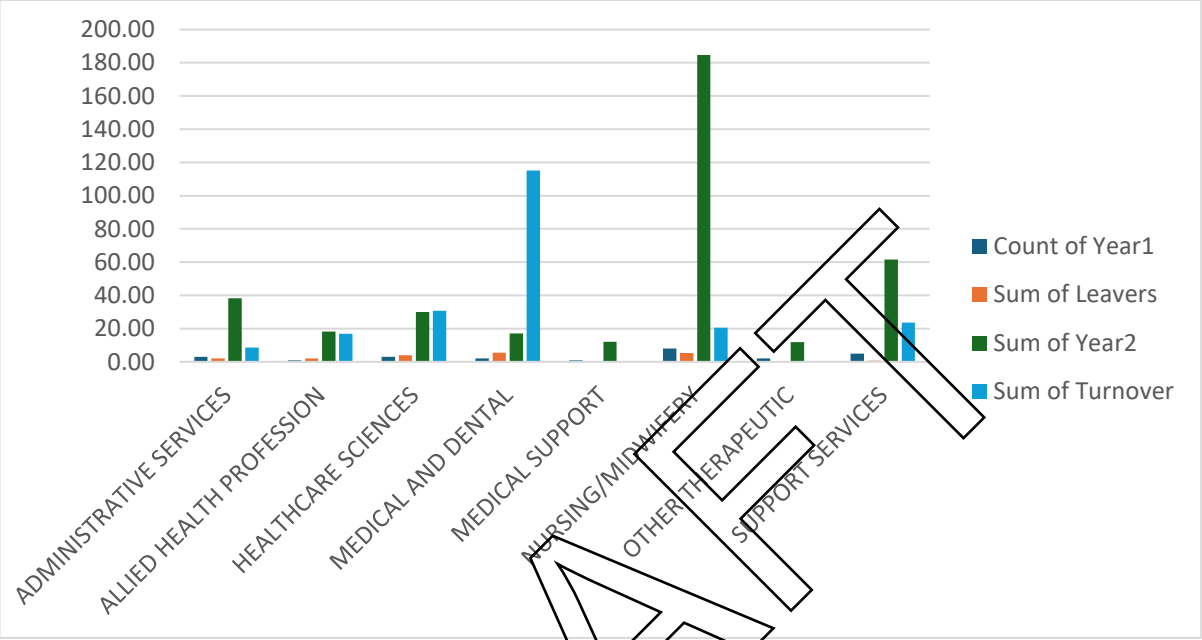


Chart 14: Staff Turnover, sourced from eESS.

"In the last 12 months only 2 members of the team have actively sought employment in the private sector, due to remuneration and relocation." – Micheal Riach, Senior Charge Nurse Practitioner

5.15 Treating patients closer to home, family and friends.

NTC-H ensures access to orthopaedic and ophthalmology service to NHS Highland patients by providing dedicated beds that remain unaffected by the challenges faced in the Acute services at Raigmore, such as infection control issues. Data on average length of stay and discharge rates indicate that the majority of patients are discharged home within 48 hours of having their procedure.

5.16 Reduced use of private sector and other providers.

There has been no requirement to use any private sector providers for orthopaedic services, for example, Synaptic. Activity has been optimised in both our Acute facility at Raigmore Hospital and at NTC-H as per NTC guidance which has also allowed NTC-H to deliver services to the patients of NHS Grampian and NHS Tayside, therefore reducing their reliance on private sector and other providers.

5.17 Improved access to 'real-time' training.

Ophthalmology and Orthopaedic seek new ways to deliver surgical training. Independent Trainee lists have commenced within the NTC-H. The Theatre arrangement within the NTC-H maximises opportunities for training of all grades of staff with opportunities being offered to UHI and higher education providers.

Theatre lighting has cameras installed to allow 'real-time' training; however, this has not been implemented due to the IT Infrastructure being unable to support this at this point.

5.18 Reduced downtime associated with maintenance and repairs.

No significant downtime as maintenance is scheduled to take place over the weekends to avoid disruption to service (Services operates Monday-Friday). All the theatres in the building are the same specification and therefore can be used flexibility in the event of a 7 day a week operational model.

5.19 Career development opportunities for staff

Promotions

The chart below outlining the promotions which have taken place is 7.04% of overall staff at the NTC. Additional funding has enabled promotions.

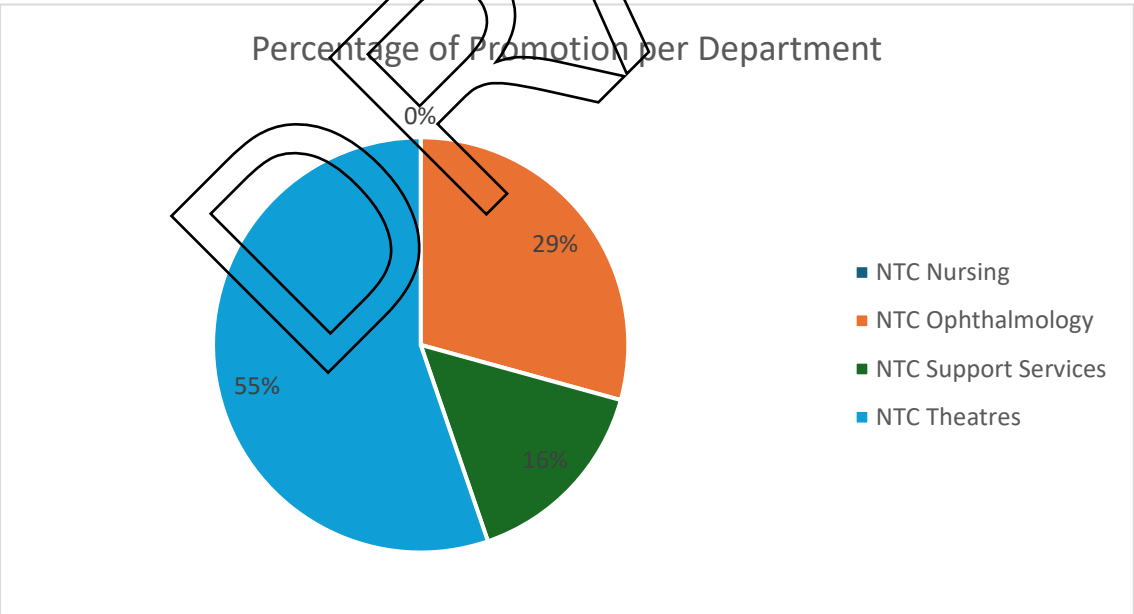


Chart 15: Promotions per department, sourced from eESS.

Career Development Opportunities and Established Training Programmes

To enable career development, the following opportunities are offered:

- Cataract Training – all Junior Doctors
- Clinical Fellow for Glaucoma
- Ophthalmology Specialist Nurses – MOPs and Botox led clinics
- Surgical First Assistant Training – 1 complete another starting Sept 24
- Anaesthetic Assistant Training – 2 complete another 2 starting Sept 24
- 2 Nurses successfully completed Non-Medical Prescriber Course
- 1 Nurse successfully completed Post-Graduate Degree in Education
- Leadership and Development for Band 7's
- 1 currently studying Master's in Science Leadership and Management

5.20 Development of a 'centre of excellence' for the services will attract staff

"Recruitment to posts within the NTC-H has been successful with significant applicants for each post. However, within ophthalmology, attracting the personnel with the required skills has remained challenging, due to well recognised limitations of the volume of ophthalmology-experienced and trained staff across Scotland and in tandem with the challenging residential housing availability across the Highlands." – Micheal Riach, Senior Charge Nurse Practitioner

NTC-H met all standards for arthroplasty care and is one of the few facilities to meet all the required standards to day 0 and day 1, please see the following report for further detail.

Refer to Appendix H: Scottish Arthroplasty National Report/ ERAS

5.21 Patient involvement with innovative forms of care

Multiskilled working

Multi-skilling is about 2 or more health professionals sharing knowledge ,skills and responsibility across professional lines in areas such as (but not limited too); Administration, assessment, planning, and discharge. For example, Physiotherapists and Occupational Therapists sharing skills and reducing demarcation between roles. NTC-H is recognised as the first of two areas in Scotland utilising this approach.

iWalk 3.0

NTC-H in conjunction with patient groups are trailing the iWalk 3.0, which is enabling discharge to take place on day 1, opposed to day 3.

Refer to Appendix I: iWalk 3.0 for details.

6. Conclusion

In conclusion, the first year of post-occupancy at NTC-H has demonstrated the successful implementation of new ways of working, enhanced service delivery, and improved patient outcomes. Staff have reported a positive working environment, supported by modern facilities that have facilitated better patient interaction and care. Innovative practices and improved operational methods have been key drivers of success, with Business Cases being submitted to further develop and expand services. Acceptance of these Business Cases would enable full utilisation of the orthopaedic and ophthalmology services, ensuring the theatres operate to the optimum five days per week.

Additional benefits, such as enhanced staff amenities, green spaces, and footpaths, have also contributed to improved wellbeing for both staff and the wider community. However, one area that could be improved is a clearer understanding and realisation of the benefits and key objectives outlined in the initial Business Case, with more defined metrics for success.

The booking system for NHSG and NHST has been functioning well, but the system for NHSH, specifically for Highland patients, requires further investment. A full review of this system is currently in progress to align it with the models used in Grampian and Tayside.

This ongoing progress and development reflect the commitment to innovation and continuous improvement within NTC-H, benefiting both patients and staff.

7. Next Steps

1. Establish Clear Parameters for Future Progress

Moving forward, it is essential to define clear parameters that will guide the subsequent phases of development and service improvement. This will ensure that all stakeholders have a consistent understanding of expectations, objectives, and deliverables.

2. Consistent and Standardised Data Collection

It is crucial to implement a standardised and consistent approach to data collection across all service areas. This will enable accurate tracking of performance metrics, allowing for reliable assessment of service efficiency and patient outcomes in future service reviews

3. Evaluate Tiny Air Implementation and Realised Benefits

A thorough review of the implementation of Tiny Air should be conducted, with an emphasis on assessing any realised benefits. This will help determine its impact on service delivery, patient care, and operational efficiency.

4. Continued Workforce Reviews for Safe, Effective, and Innovative Care

Regular workforce reviews will continue to ensure that the staff is delivering safe, effective, and innovative care. These reviews should be aligned with the overall service objectives and consider any changes in patient demand or service needs.

5. Review of Care Pathways and Addressing Anomalies Across Health Boards

A review of care pathways should be undertaken to identify and resolve any anomalies between the health boards (NHSH, NHSG, and NHST). Aligning these pathways will contribute to a more seamless patient experience and standardise care delivery across the regions.

6. Alignment of Comparative Data Collection for All Three Health Boards

Comparative data collection across NHSH, NHSG, and NHST must be aligned, ensuring that data from each board is gathered using the same methodology. This will facilitate comparative analysis and ensure that processes are consistent across the three health boards, contributing to more informed decision-making.

7. Ongoing Stakeholder Engagement with Clear Documentation

Continuous engagement with stakeholders is vital for the success of ongoing and future initiatives. This engagement should be accompanied by clear and comprehensive documentation to ensure transparency and maintain alignment with service objectives. Regular updates and feedback loops will help keep all stakeholders informed and involved in the process.

By addressing these next steps, NTC-H will continue to build on its progress, ensuring ongoing improvements in patient care, service efficiency, and workforce development.

8. Dedicated Quality Meetings

Whilst quality is a routine agenda item, it was not necessarily always dedicated therefore to enhance the efficiency and effectiveness of quality management processes, it is recommended to establish separate quality meetings dedicated specifically to addressing procurement-related issues and ensuring the delivery of high standard products. These meetings will serve as a platform to review performance metric, address non-conformance issues and discuss supplier quality concerns in a focussed manner. Formalised actions and decisions taken during these meetings will be documented, tracked, and communicated to relevant stakeholders to ensure accountability. This approach aims to streamline decision making, foster collaboration, and reinforce a culture of quality within the organisation.

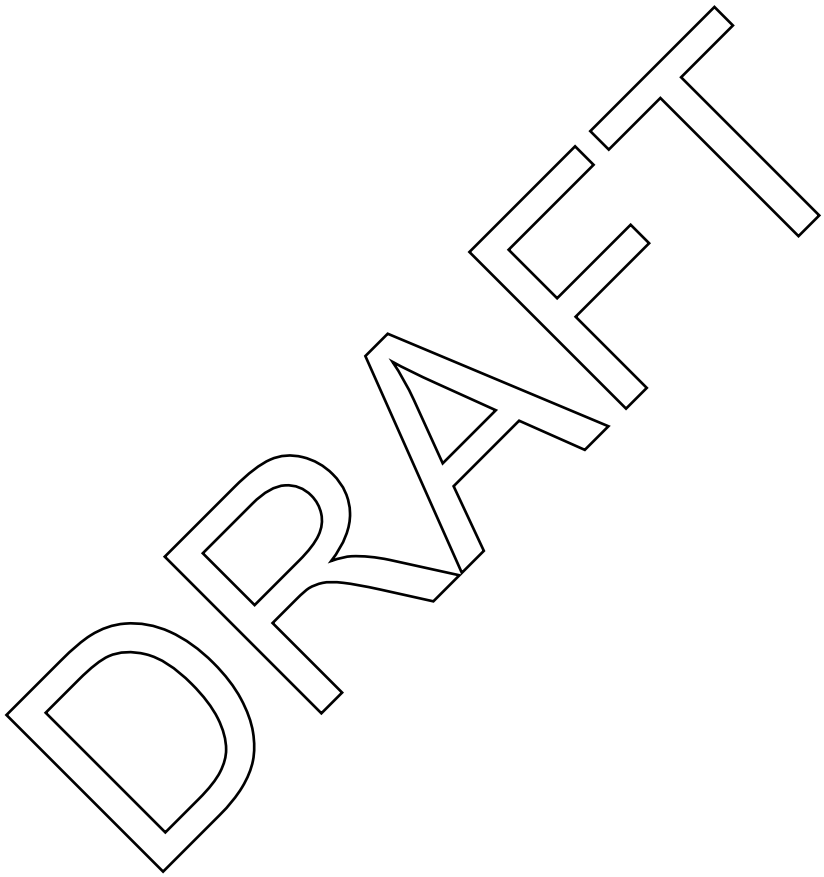
9. Scan for Safety

NHS Scotland Scan for Safety (SfS) Programme is a national programme aimed to improve patient safety by introducing barcode scanning to touch points across the Point of Care setting. This will allow the operational board to easily record data from procedures, gaining useful information on patients, practitioners and products used.

NTC-H will implement “Point of Care” scanning as part of the NHS Scotland Scan for Safety (SfS) Programme. This implementation will first be rolled out to the Ophthalmology service, then for Orthopaedics.

For further information on Scan for Safety, please visit - Scan for Safety – Improving patient safety through the traceability of medical devices and equipment (nhs.scot)

APPENDIX A – Lessons Learned Report (Latest Draft)



National Treatment Centre - Highland Lessons Learned Report

Revision H

9th February 2024

NTC Highland Lessons Learned

Executive Summary

This Lessons Learned Report has been produced following NHS SCOTLAND SOFT LANDINGS (SL) GUIDANCE V01 published 14th December 2021.

The process adopted has utilised the Soft Landings toolkit, including the lessons learned excel workbook in line with the above guidance, which has been used to gather feedback from all relevant stakeholders, meeting inputs, lessons learned from past projects and inputs from the NHS Scotland Soft Landings Champions forum.

NHS Highland is committed to sharing lessons learned outputs with other NHS Health Boards across Scotland. Several forums facilitated by Scottish Government have assisted in the sharing of information between Health Boards as part of the wider National Treatment Centre delivery programme.

NHS Highland, along with NHS Fife, have delivered the first two projects under the NTC Programme. It is vitally important that the lessons learned from these first two projects are shared with the other Health Boards whose projects are at an earlier stage of development.

A draft of this reporting was issued to key NHS Highland Stakeholders on 31st August 2023 with a workshop arranged for the 14th September 2023 with representation from the relevant stakeholders. There was positive feedback in respect of the reporting though the further recorded feedback generated from the report review workshop has included additional key lessons learned that are included in this Executive Summary.

A subsequent workshop was held with the PSCP and key members of the Supply Chain together with members of the NHS Highland Project Team and their Lead Advisor Thomson Gray on the 24thOctober 2023.

There was very active participation by those involved in this workshop and again further key lessons learned that were particularly important have been added to this Executive Summary to the full reporting.

A very important factor that relates to wider lesson learning for NHS Scotland is in respect of the status of the National Treatment Centre programme and the fact that these facilities are for Elective Treatment for certain specialties only and are not providing the range of general services that would be provided in an Acute General Hospital setting. Any lessons learned that are overtly focussed on aspects that are unique to this project, or the National Treatment Centre programme, should be carefully assessed in the context of Acute General Hospital or Primary Care projects being delivered.

This factor is considered worthy of overarching all the other lessons learned and associated feedback as at the outset of the National Treatment Centre programme there was encouragement from Health Facilities Scotland (now part of NHS Assure) to encourage innovation in the development of the facilities and this included the theatres configuration with support areas and equipment. When the KSAR process was introduced, NTC Highland was one of the first projects to be reviewed and it

was happening when the project was already well advanced on site. Separate lessons learned have been compiled in terms of the KSAR process and how it was applied on NTC Highland.

Formal Lessons Learned workshops have supplemented Lessons Learned throughout the full project development and construction process. Lessons Learned often focus on things which have not been done as well as they might have to the detriment of the more positive aspects of things which have been done well to contribute to the success of a project. These aspects include:

- Visits to the then recently completed CSU project at Raigmore to appreciate the positive learning that the project could contribute to NTC Highland.
- Developing a comprehensive and integrated project team structure that included NHS Highland personnel together with a wide range of complimentary consultancy under the Thomson Gray Lead Advisor appointment. This included the Supervisor role to support the technical, quality control and compliance aspects of the build.
- Collaboration with NHS Assure during the implementation of the KSAR process. The NTC-Highland alongside NTC-Fife were pathfinder projects for more detailed KSAR project assurance reviews.
- Successfully responding to the challenges resulting from the departure of key project partners UHI and HIE at RIBA Stage 3. Their decision to self develop on a separate plot required substantial rework of the design.
- Successful open, transparent and non-confrontational collaboration between the extended NHS Highland Project Team and PSCP Balfour Beatty working in the spirit of the NEC core clauses.
- Responding to the unforeseen challenges from significant events around the world including the Grenfell disaster, the COVID pandemic, the Ukraine War, Brexit and the resulting associated supply chain issues.
- The implementation of safe working practices to enable project delivery through the impacts of COVID.
- Integrated support from infection control and clinical teams from project initiation to completion and handover.
- The facilitation of the 3P process to inform the clinical brief. This event and resulting stakeholder engagement outputs contributed positively to the design brief, resulting in a facility which meets the requirements for patients, staff and general public.
- FM Strategy development with the input of specialist consultants and NHSH Estates to ensure a robust maintenance regime for the facility following completion and handover.
- Health and Safety and Quality Control applications that enabled technology to support key aspects of project monitoring, defects management and corrective actions. The Balfour Beatty Safety Observation App was used by PSCP and Client alike to positive effect.
- Community Engagement and Benefits were successfully delivered by having a dedicated CEB resource from PSCP. Benefits included:
    - Programme of support for Inverness UHI Civil Engineering students
    - Programme of support for Charlestown Academy students including site visits
    - Support for Education – Virtual work experience sessions
    - Supporting Inspiring Young Voices initiative working with local schools.
    - Fundraising for local charities

- DWP Placements for work experience
- CIOB Visits

- The appointment of Phoenix Commissioning Services by PSCP to oversee Commissioning process. This was at the recommendation of NHSH to support the project delivery team.
- The appointment of John McEwan to manage Theatre pre-validation checks on key systems to support the commissioning process. Again the recommendation of NHSH to support the project delivery team.

The key lessons learned from the two most recent workshops are as follows:

Business Case Management - A better understanding of business case management is required by all those involved in project delivery, in particular capital and revenue funding aspects for the project. Detailed work force planning and development of the target operating model are critical factors to a successful outcome for the business case and alignment to business case development timescales is essential to avoid delays. Adequate resource must be applied in these areas if contractual programmes are to be met.

Stakeholder Engagement and Brief Development - Lessons were learned from the previous CSU project and stakeholder engagement and a communications plan, and a stakeholder engagement plan were developed and under the direction of Deborah Jones as SRO, a 3P liaison session was carried out.

This stakeholder engagement brought the necessary clinicians to the table to engage with the PSCP and design team to inform the key aspects of the workforce model, clinical and technical briefs including the clinical flows and adjacencies to ensure that the facility met the operational, maintenance and service requirements.

This engagement process was intensive but the clinical outputs, functionality and flows in the completed facility are directly attributable to that early engagement.

Programme Management- The programme is a key document under the NEC form of contract. It is a project control document with specific contractual importance under the NEC contract. The correct use of a compliant NEC fully resourced and costed programme is an essential tool for effective project management under this form of contract. It is linked to NEC early warning and compensation event notifications required for management of time and cost on a project.

Ensure that the programme references to each of the stages of project development and make sure we can deliver it on time and have relevant resources in place.

Key dates for deliverables. Key dates missed for Cobie drops resulted in a significant delay in the development of maintenance schedules, draft O&Ms, final drawings – an earlier issue of these documents rather than at handover would greatly assist the estates teams.

Design Management - Exemplary design is required if the healthcare facility is to function as intended. A robust process for design management is therefore a pre-requisite of pre-construction activity. The production, review and approval of the design drawings, specifications and associated technical information is a key deliverable for project success. Design management must be sufficiently resourced and managed by experienced and appropriately qualified technical personnel.

Quality Management - Quality Assurance and Quality Control aspects in construction are a key consideration and the Contractor and their team need to be monitored carefully by those suitably experienced in Quality Management to identify and enforce the timely rectification of defects.

Commissioning and Equippin g- Commissioning and Equipping were key areas affected by a challenging programme to achieve handover and completion by the April 2023 opening date.

Clinical occupation, staff familiarisation and training commenced on the 9th December 2022 and this ran concurrently with the commissioning, completion and handover activities.

For all future projects, clinical occupation, equipping, staff familiarisation and training should be programmed to follow project completion and handover.

Post Occupancy Evaluation -The requirements for Post Occupancy Evaluation (POE) on capital projects are detailed within SCIM guidance (NDAP and Project Monitoring and Service Benefits Evaluation) and are mandatory on publicly funded Scottish Healthcare projects. Project teams must be able to sufficiently plan, resource and report on this aspect of the project.

Key Stage Assurance Review process (KSAR) - KSAR requirements need to be defined for individual projects at each stage of Business Case Development.

Technical requirements - Technical briefing for the project is dependent on production of the several other important NHSH documents which provide key information to inform the technical brief. These are produced by NHS Highland as Employer:

- The Workforce Plan defines the operational services to be delivered.
- The Clinical Output Specification defines the clinical requirements and informs the derived schedule of accommodation required to meet the planned services.
- The Clinical Risk Assessments for the services to be provided.

The technical requirements for the project are set out in the Technical Brief which must be fully developed and informed from the documents listed above.

The workstreams for production of these documents should be planned and resourced to meet the preconstruction programme. Failure by the Employer to have suitable developed information ready in time to suit design development will result in delays and associated additional cost.

The Design Quality Plan is also a key document for the project and is produced by the NHSH Design Manager. This sets out the required standards for the management and quality of all design information for the project. This should also be produced and available at an early stage of preconstruction.

The Ventilation Strategy should ensure that there is a validation engineer assigned to the project at the very early stages of the technical design. Theatre pre- commissioning, commissioning, pre-validation and Validation should be carried out by appropriately qualified individuals and all activities should be planned and included in the commissioning programme /master programme.

Ventilation and fire compartmentation interfaces should be reviewed and interrogated at regular interval during the design stage.

Fire damper access. This needs to be included as part of design co-ordination and evidenced in the design review process.

Value Management and Value Engineering – The development of the project was carried out in challenging circumstances which included the impacts of UHI and HIE project partners dropping out, the Grenfell disaster, COVID, Brexit and the Ukraine war with the associated implications to safety, programme and resource, energy security and prices, supply chains and procurement.

All these factors had a profound impact on the ability to manage the affordability of the project and a range of very unforeseen issues had to be managed which included Value Engineering that was carried out through the design development and procurement stages.

It was noted that the decision to reduce the floor to floor height by 200mm had a range of unintended consequences which had a huge impact on design co-ordination, fire strategy, equipment procurement and build coordination.

Training – As part of the FM Strategy for facility uptake should include a detailed training plan for the building user groups and the Estates maintenance and operations teams. Asset information is held in Maximo and detailed technical training is essential to ensure planned maintenance is carried out in accordance with the manufacturers' recommendations.

First responder on call- There were a number of faults on the nurse call system, and some occurred in the middle of the night. There needs to be a better understanding of contractor's (PSCP's) responsibilities for defects and relevant rectification during the defects liability period.

The allocation of costs arising for defects rectification during the Defects Liability Period needs to be appropriately managed.

Other relevant issues highlighted:

The suiting arrangements for door locks and other access controls need to be adequately briefed by the NHS Health Board at an early stage in the design. This will ensure that the completed facility complies with the Health Board's operational and security access requirements.

Workshops

Prior to the Workshop on the 14th September 2023 to review the Lessons Learned Draft Report, there had been two formal lessons learned workshops held for the project. These were:

- eHealth L/L Workshop
  In person on site and with Teams for those who couldn't travel – 10th November 2022
  Participants as per workshop notes.

  Key Lessons Learned were benefitting the eHealth team inputs through the latter stages of the NTC project together with the early stages of the Lochaber and Caithness redesign projects also to be delivered via Frameworks Scotland.

- PSCP - Balfour Beatty (BB) and NHSH Project Team L/L Workshop
  Microsoft Teams meeting - 13th April 2023

Participants as per workshop notes.

This Lessons Learned workshop was arranged specifically to discuss the issues to be discussed in the early stages of the Lochaber and Caithness Re-design projects. Lochaber being delivered via Frameworks Scotland 3 and Caithness via Frameworks Scotland 3 and Hub North.

- NHS Highland Project Team
  Microsoft Teams Meeting – 14th September 2023

  This workshop was primarily to review the reporting to date and agree next steps. There was very constructive and proactive feedback received that led to further updates of the reporting to ensure that it was clearly focussed on the NTC Highland project and with supporting information, some of which relates to other projects, included in the Appendices.

  There was also feedback that included some other key lessons learned which have been captured in a tabbed worksheet within the main Lessons Learned register for the project.

- PSCP - Balfour Beatty (BB) with key members of the supply chain – architects and engineers, NHSH Project Team representatives along with their Lead Advisor Thomson Gray.
  Microsoft Teams Meeting – 24th October 2023

  This workshop was primarily to engage with Balfour Beatty and their design team together with the inputs of the Thomson Gray Lead Advisor team.

  There was excellent engagement at this workshop which reinforced many of the strategic themes of Lessons Learned and included some other key lessons learned that have been captured in a tabbed worksheet within the main Lessons Learned register for the project.

Reporting for these formal lessons learned workshops is included as Appendices to this Executive Summary and should be read in conjunction with the respective worksheets within the lessons learned template workbook.

This report also includes lessons learned feedback from both Badenoch and Strathspey and Skye Community Hospital projects included within the Appendices to the main report.

This appendix relates to an internal lessons learned exercise carried out by the B&S and Skye team, and the appendix is an excerpt from that including the relevant recommendations.

Lessons Learned from the previous Raigmore Critical Services Upgrade project have also informed the NTC project development.

The Lessons Learned Excel Workbook

The main workbook is structured in accordance with the prescribed template as follows:

Worksheet Tab Title	No.	Origin of Lessons Learned
Governance	0	KM prompt notes Project Review
Health & Safety	1	KM prompt notes Project Review
Sustainability	2	KM / DM prompt notes Soft Landings meeting
Community Benefits	3	KM / DM prompt notes Soft Landings meeting
Collaborative Working	4	KM / DM prompt notes Soft Landings meeting
Communications and Stakeholder Engagement	5	KM / DM prompt notes Soft Landings meeting
Contract Processes and Procedures	6	KM / DM prompt notes Soft Landings meeting
Finance	7	KM / DM prompt notes Soft Landings meeting
Hai Scribe	8	KM / DM prompt notes Soft Landings meeting
Information Management and Data Exchange [including BIM]	9	KM prompt notes Project Review
Design & Technical - Civil and Infrastructure	10	KM prompt notes Project Review
Design & Technical - Building	11	KM prompt notes Project Review
Design & Technical - M&E	12	KM prompt notes Project Review
Construction	13	KM prompt notes Project Review
Handover	14	KM prompt notes Project Review
Aftercare	15	KM prompt notes and cross reference to Aftercare Help Desk outputs for early weeks of operation.
Soft and Hard FM	16	KM prompt notes Project Review
Operational Strategy including asset performance	17	KM prompt notes Project Review
KSAR Close Out	18	Lessons Learned / Recommendations from NHS Assure KSAR team.
Operational commissioning	19	Helen Robertson Feedback from initial Operational stage.

Project Workshops Lessons Learned and Project Director Overview	20	Various
NHSH NTC Workshop 1	20.1	Balfour Beatty and NHSH project teams Workshop outputs
NHSH NTC Balfour Beatty 1	20.2	Balfour Beatty outputs in preparation for Workshop 1
NHSH NTC NHS Highland	20.3	NHS Highland Project Team Workshop outputs
NHSH NTC Balfour Beatty 2	20.4	Balfour Batty and key Supply chain Members, NHSH and Thomson Gray Lead Advisor
Project Director Overview	20.5	Kevin Minnock Review of
Directorate Workshops Lessons Learned	**21**	
e-Health	21.1	E-Health Workshop

Appendices to main Lessons Learned Workbook		
Past Projects		
NHSH Badenoch and Strathspey and Skye	PP1	Hub North Workshop outputs incl. B+S and Skye project teams and BB
NHS Scotland Soft Landings Group		
Theatres – NHS Scotland Soft Landings Group	SLC1	Various participants representing NHS Boards
Endoscopy and Decontamination – NHS Scotland Soft Landings Group	SLC2	Various participants representing NHS Boards

Other Lessons Learned Inputs

Due to the level of workshop and meeting related participation in the lessons learned process Kevin Minnock as Project Director and David Mason as Soft Landings co-ordinator held a number of Soft Landings meetings specifically to review lessons learned on the project and to populate the workbook with lessons learned where applicable and also set down prompt notes to encourage further populating of the workbook by key stakeholders.

Due to the pressures of completion and handover and a constrained commissioning period which effectively ran into the Frameworks Scotland commencement of the Lochaber and Caithness redesign projects, the project team were under considerable time pressure on these projects and that restricted wider inputs to Lessons Learned. Due to this Kevin Minnock carried out a more forensic review of the project and created a detailed schedule of a range of lessons learned issues that cover Design, Construction, QA, Health and Safety, Procurement and Equipping. These inputs are included in the Appendix as a separate tabbed document.

Next Steps:

This final report will be issued to Eric Green – Associate Director of Estates, Facilities and Capital Planning for approval prior to publication and issue to NHS Assure.

Lessons Learned Report Contents:

Relevant inputs are included within the main workbook tabs and the master Excel document is also included as an Appendix to this reporting.

Executive Summary

Appendices:

1. Lessons Learned Workbook Reference: 2140_01_NHSH NTC LL Register_Rev N_09.02.24
2. PP Past Projects PP1 NHSH Badenoch and Strathspey and Skye LL Workshop Outputs
3. NHSScotland Soft Landings Champions Group

   SLC1 Theatres
   SLC2 Endoscopy and Decontamination
4. eHealth Workshop Report Reference: 2140 02 02 eHealth Lessons learned workshop report_281122
5. NTC Lessons Learned Workshop Notes from 13.04.23
6. NTC Lessons Learned Report Workshop Notes from 14.09.23
7. NTC Lessons Learned RSCP Workshop 2 Notes from 24.10.23

Appendix 1:

Soft Landings: Lessons Learned Register

Ref: 2140_NTC-H_Lessons Learned Register

V01 Rev N

09.02.24

Soft Landings: Lessons Learned Register

NHS Scotland Board	NHS Highland
Project Name	NTC - Highland
Register Owner	Kevin Minnock
Version	v01 Rev N
Date Last Updated	09.02.2024
Document Reference Number	2140_NTC-H_Lessons Learned_Register

Code:	Category:	Tab:	Inputs to date	NHS Scotland Board Owner	PSCP Owner
GOV	Governance	0	KM prompt notes	NHS Highland	[Insert Name]
H&S	Health & Safety	1	KM prompt notes	[Insert Name]	[Insert Name]
SUS	Sustainability	2	KM / DM prompt notes	[Insert Name]	[Insert Name]
CB	Community Benefits	3	KM / DM prompt notes	[Insert Name]	[Insert Name]
COLL	Collaborative Working	4	KM / DM prompt notes	[Insert Name]	[Insert Name]
COMM	Communications and Stakeholder Engagement	5	KM / DM prompt notes	[Insert Name]	[Insert Name]
CONT	Contract Processes and Procedures	6	KM / DM prompt notes	[Insert Name]	[Insert Name]
FIN	Finance	7	KM / DM prompt notes	[Insert Name]	[Insert Name]
HAI	Hai Scribe	8	KM / DM prompt notes	[Insert Name]	[Insert Name]
INFO	Information Management and Data Exchange [including BIM]	9	KM prompt notes	[Insert Name]	[Insert Name]
D&T Civil	Design & Technical - Civil and Infrastructure	10	KM prompt notes	[Insert Name]	[Insert Name]
D&T Building	Design & Technical - Building	11	KM prompt notes	[Insert Name]	[Insert Name]
D&T M&E	Design & Technical - M&E	12	KM prompt notes	[Insert Name]	[Insert Name]
Construct	Construction	13	KM prompt notes	[Insert Name]	[Insert Name]
Handover	Handover	14	KM prompt notes	[Insert Name]	[Insert Name]
AFTERC	Aftercare	15	KM prompt notes and cross reference to Aftercare Help Desk outputs for early weeks of operation.	[Insert Name]	[Insert Name]

FM	Soft and Hard FM	16	KM prompt notes	[Insert Name]	[Insert Name]
OPS	Operational Strategy including asset performance	17	KM prompt notes	[Insert Name]	[Insert Name]
KSAR	KSAR Close Out	18	Lessons Learned / Recommendations from NHS Assure KSAR team.	[Insert Name]	[Insert Name]
COM Ops	Operational commissioning	19	HR Feedback from initial Operational stage.	[Insert Name]	[Insert Name]
LL Wkshop	Project Workshops	20	See below	[Insert Name]	[Insert Name]
W1	NHSH NTC Workshop 1	20.1	Workshop outputs	[Insert Name]	[Insert Name]
W2	NHSH NTC Balfour Beatty	20.2	BB Workshop outputs	[Insert Name]	[Insert Name]
W3	NHSH NTC NHS H	20.3	NHS Highland wkshop outputs	[Insert Name]	[Insert Name]
W4	NHSH NTC PSCP	20.4	PSCP Workshop outputs	[Insert Name]	[Insert Name]
PD1	Project Director Health & Safety	20.5.1	PD Review and feedback	[Insert Name]	[Insert Name]
PD2	Project Director Design and Technical Building	20.5.2	PD Review and feedback	[Insert Name]	[Insert Name]
PD3	Project Director Construction	20.5.3	PD Review and feedback	[Insert Name]	[Insert Name]
DEPT	Directorate and Departmental	21	Various inc NHSH and NHSScotland SL Champions working group	[Insert Name]	[Insert Name]
D1	E-Health	21.1	E-Health Workshop	[Insert Name]	[Insert Name]

OTHER APPENDICES

PP	Past Projects	Appendices	See below	[Insert Name]	[Insert Name]
PP1	NHSH Badenoch and Strathspey and Skye	PP1	Workshop outputs	[Insert Name]	[Insert Name]

NHSScotland	Soft Landings Champions Group	Appendices	See below	[Insert Name]	[Insert Name]
SLC1	Theatres - NHSScotland Soft Landings Group	SLC1	NHSScotland SL Group	[Insert Name]	[Insert Name]
SLC2	Endoscopy and Decontamination - NHSScotland Soft Landings Group	SLC2	NHSScotland SL Group	[Insert Name]	[Insert Name]

It is vital, as part of the soft landings process that lessons learned from previous projects are identified [or wider knowledge], captured and ameliorated.

As part of the post occupancy evaluation process actual performance against that required in the brief should be assessed and lessons captured and feedback to inform future projects.

This document should be owned by the Project Director or Soft Landings Champion and reviewed and updated at each Soft Landings meeting.

Soft Landings, Lessons Learned Register: Section 0.0 Governance

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NHS Scotland Board	NHS Highland
Project Name	NTC - Highland
Register Owner	Kevin Minnock
Version	v01 Rev N
Date Last Updated	09.02.2024
Document Reference Number	2140_NTC-H_Lessons Learned_Register

ID Reference	Forum Raised	Date Added	Description	Principal Owner		Input	Action	Time Scale	Status of Action	Closeout
				NHS Scotland Board	PSCP					
0.1	KM review		Agenda for improving standards	NHS Highland		All	NHSH to develop a policy for improving standards	6 months		
0.2	KM review		Client Capability Assessment: Assess baseline skill sets for the following: Construction procurement, Governance, Development Management, Procurement Management, Stakeholder Management, Contract Management, Project Management, Commercial Acumen, Design Review	NHS Highland		Heads of Dept	Assessments to be undertaken for all staff working in Estates, Facilities and Capital Planning.	6 months		
0.3	KM review		Organogram Governance	NHS Highland		Programme Manager	Produce Organogram	1 week		
0.4	KM review		Agree Delegated Authorities, evidence and record	NHS Highland		SRO	Agree and record DA's	1 week		
0.5	KM review		Organogram Project Delivery	NHS Highland		Programme Manager	Produce Organogram	1 week		
0.6	KM review		Appointments NHSH SRO/Project Director /Programme Manager/ Lead Project Manager NHSH	NHS Highland		Associate Director EF&CP	Undertake capability & capacity assessments and place appointments	2 weeks		
0.7	KM review		Appointment via Framework FS3 Lead Advisor/PM/CA/CDMA/NEC Supervisor	NHS Highland		Programme Manager	Appointments via FS3 framework	complete		
0.8	KM review		Quality Management arrangements NHSH/PSCP	NHS Highland		Programme Manager	Review QMS arrangements NHSH/PSCP	1 week		
0.9	KM review		Appointment Project Board Members	NHS Highland		SRO	Undertake capability & capacity assessments and place appointments	2 weeks		
0.10	KM review		Meetings structure and scheduling	NHS Highland		Programme Manager	Agree meetings structure and scheduling. Inform teams	1 week		
0.11	KM review		Government reporting Confirm SG/HFS reporting requirements	NHS Highland		Associate Director EF&CP	Agree and confirm SG/HFS reporting requirements	2 weeks		

Soft Landings, Lessons Learned Register: Section 1.0 Health & Safety

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NHS Scotland Board	NHS Highland
Project Name	NTC - Highland
Register Owner	Kevin Minnock
Version	v01 Rev N
Date Last Updated	09.02.2024
Document Reference Number	2140_NTC-H_Lessons Learned_Register

ID Reference	Forum Raised	Date Added	Description	Principal Owner		Input	Action	Time Scale	Status of Action	Closeout
				NHS Scotland Board	PSCP					
1.1	KM / DM Review	06.04.23	Health & Safety should be a standing agenda item for all key project meetings to ensure that it Health & Safety is not compromised due to time and cost pressures.	NHS Highland	TBC		Regular monthly reports should be provided by the Board's CDMA and the PSCP PD.	Future projects		
			Pre Construction - Key issues / Requirements							
1.2	KM / DM Review	06.04.23	H+S Advisor Appointments	NHS Highland			Identify Key personnel and for each project stage .	Future projects		
1.3	KM / DM Review	06.04.23	CDM - CDM Advisor	NHS Highland			Identify Key personnel and for each project stage .	Future projects		
1.4	KM / DM Review	06.04.23	Project planning	NHS Highland			include RACI matrix to define key responsibilities and project interfaces	Future projects		
1.5	KM / DM Review	06.04.23	Project Manager / Cost Advisor / Lead Advisor	NHS Highland			Identify Key personnel and for each project stage .	Future projects		
1.6	KM / DM Review	06.04.23	Project specific risk registers	NHS Highland			Set up and maintain corporate and project specific risk registers	Future projects		
1.7	KM / DM Review	06.04.23	Major incident reporting	NHS Highland			Develop policy and procedures - corporate level.	Future projects		
1.8	KM / DM Review	06.04.23	Corporate Communications - Policies for incident comms, etc.	NHS Highland			As above.	Future projects		
1.10	KM / DM Review	06.04.23	KPIs for H+S	NHS Highland			Set -up and monitoring / reporting requirements	Future projects		
1.11	KM / DM Review	06.04.23	PSCP appointment	NHS Highland			Including H+S vetting (inc supply chain and designers SSiP)	Future projects		
1.12	KM / DM Review	06.04.23	Design Team	NHS Highland	TBC		As above.	Future projects		
1.13	KM / DM Review	06.04.23	Principal Designer	NHS Highland	TBC		As above.	Future projects		
1.14	KM / DM Review	06.04.23	Provision of existing information	NHS Highland			H+S File and supporting information record drawings, etc.	Future projects		
1.15	KM / DM Review	06.04.23	Design risk assessments		TBC		Maintain project specific risk registers	Future projects		
1.16	KM / DM Review	06.04.23	Monthly reporting	NHS Highland	TBC		Programme	Future projects		
1.17	KM / DM Review	06.04.23	H+S Reviews at each project stage	NHS Highland	TBC		Programme	Future projects		
1.18	KM / DM Review	06.04.23	Pre-construction H+S plan	NHS Highland			To be in place timeously with inputs from all relevant parties co-ordinated by PD.	Future projects		
1.19	KM / DM Review	06.04.23	Principal Contractor Appointment	NHS Highland			Including H+S vetting (inc supply chain and designers SSiP)	Future projects		
1.20	KM / DM Review	06.04.23	PSCP H+S Business standards		TBC		Including H+S vetting (inc supply chain and designers SSiP)	Future projects		
1.21	KM / DM Review	06.04.23	HSE interfaces and F10 submission		TBC		Detail any specific requirements and particularly relating to programme..	Future projects		
			Construction - Key issues / requirements							

1.22	KM / DM Review	06.04.23	Construction Phase Plan		TBC		To be developed timeously for the works and to be maintained throughout.	Future projects		
1.23	KM / DM Review	06.04.23	HSE visits		TBC		Agree protocols for any actions arising	Future projects		
1.24	KM / DM Review	06.04.23	Safe working procedures		TBC		Interfaces with employer and contractor requirements to be managed.	Future projects		
1.25	KM / DM Review	06.04.23	RAMS		TBC		Need to be robust and issued suitability in advance of site attendance to allow for proper review and any required updates.	Future projects		
1.26	KM / DM Review	06.04.23	Permits to work		TBC		Contractor and sub contractor requirements to be clearly defined.	Future projects		
1.27	KM / DM Review	06.04.23	Site inductions		TBC		To be carried out in accordance with agreed H+S planning and protocols.	Future projects		
1.28	KM / DM Review	06.04.23	Toolbox Talks (TBT)		TBC		To be carried out in accordance with agreed H+S planning and protocols.	Future projects		
1.29	KM / DM Review	06.04.23	H+S Awareness training		TBC		To be carried out in accordance with agreed H+S planning and protocols.	Future projects		
1.30	KM / DM Review	06.04.23	Supply Chain Partner (SCP) H+S vetting		TBC		As above.	Future projects		
1.31	KM / DM Review	06.04.23	Plant inspections - inc. off site requirements		TBC		To be carried out in accordance with agreed H+S planning and protocols.	Future projects		
1.32	KM / DM Review	06.04.23	Monthly reporting		TBC		To be carried out in accordance with agreed H+S planning and protocols.	Future projects		
1.33	KM / DM Review	06.04.23	Incident reporting inc. near misses		TBC		To be carried out in accordance with agreed H+S planning and protocols.	Future projects		
1.34	KM / DM Review	06.04.23	Access to site for employers representatives during construction and including equipment delivery and installation and commissioning	NHS Highland	TBC		To be carried out in accordance with agreed H+S planning and protocols.	Future projects		
1.35	KM / DM Review	06.04.23	Employers commissioning requirements and including availability and safe access to relevant areas.	NHS Highland	TBC		To be carried out in accordance with agreed H+S planning and protocols.	Future projects		
1.36	KM / DM Review	06.04.23	H+S File		TBC		Timeous completion and hand over and maintain inc availability and use for all future maintenance, other works, etc.	Future projects		
1.37	KM / DM Review	06.04.23	Access to information		TBC		H+S file and supporting documentation inc. as builts etc.	Future projects		
1.38	KM / DM Review	06.04.23	Operational contacts		TBC		Register / contact list to be maintained at all times	Future projects		
1.39	KM / DM Review	06.04.23	Incident reporting		TBC		To be carried out in accordance with agreed H+S planning and protocols.	Future projects		
1.40	KM / DM Review	06.04.23	Major incident reporting	NHS Highland			To be carried out in accordance with agreed H+S planning and protocols.	Future projects		
1.41	KM / DM Review	06.04.23	Corporate Communications policy for ongoing operational phase and any future works inc maintenance.	NHS Highland			Include H+S issues in comms planning.	Future projects		

Soft Landings, Lessons Learned Register: Section 2.0 Sustainability

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NHS Scotland Board	NHS Highland
Project Name	NTC - Highland
Register Owner	Kevin Minnock
Version	v01 Rev N
Date Last Updated	09.02.2024
Document Reference Number	2140_NTC-H_Lessons Learned_Register

ID Reference	Forum Raised	Date Added	Description	Principal Owner		Input	Action	Time Scale	Status of Action	Closeout
				NHS Scotland Board	PSCP					
2.1	KM / DM Review	06.04.23	Corporate policies - inc construction requirements, targets, etc.	NHS Highland			To be set down at project briefing / IA Stage.	Future projects		
2.2	KM / DM Review	06.04.23	Sustainability Strategy	NHS Highland			Project specific requirements to be developed early in briefing stages and to meet business case requirements.	Future projects		
2.3	KM / DM Review	06.04.23	Sustainability Champion	NHS Highland			Appointment of suitably qualified and experienced person as early in process as possible.	Future projects		
2.4	KM / DM Review	06.04.23	Appointments	NHS Highland			Advisors and PSCP and inc inputs to RACI / Project Planning to define key responsibilities and associated deliverables.	Future projects		
2.5	KM / DM Review	06.04.23	BREEAM		Balfour Beatty		Plan, resource and co-ordinate inputs and monitoring during project development.	N/A for future		
2.6	KM / DM Review	06.04.23	Planning Application		TBC		Planning requirements to be ascertained at briefing stage if possible.	Future projects		
2.7	KM / DM Review	06.04.23	Building regulations		TBC		Building Warrant requirements to be ascertained at briefing stage if possible.	Future projects		
2.8	KM / DM Review	06.04.23	Performance targets and KPIs	NHS Highland	TBC		To be defined as early in process as possible.	Future projects		
2.9	KM / DM Review	06.04.23	Environmental modelling and inc energy consumption targets for in-use		TBC		To be defined as early in process as possible.	Future projects		
2.10	KM / DM Review	06.04.23	Renewables		TBC		Option appraisal at early stage, specification and modelling integration as part of design development and construction.	Future projects		
2.11	KM / DM Review	06.04.23	SuDS		TBC		inc site wide options and interfaces with statutory bodies:	Future projects		
2.12	KM / DM Review	06.04.23	SEPA		TBC		Early engagement in process	Future projects		
2.13	KM / DM Review	06.04.23	Scottish Water		TBC		Early engagement in process	Future projects		
2.14	KM / DM Review	06.04.23	Permissions and licensing		TBC		Early engagement in process	Future projects		
2.15	KM / DM Review	06.04.23	Budgets and resourcing	NHS Highland	TBC		To be defined as early in process as possible.	Future projects		
2.16	KM / DM Review	06.04.23	SDaC implementation	NHS Highland	TBC		Awareness of mandated requirements during all project stages. No requirement to implement on project but relevant LL need to be applied for new projects development.	Future projects		
2.17	KM / DM Review	06.04.23	Commissioning and seasonal adjustments		TBC		Programmed and planned as early as possible following construction commencement.	Future projects		
2.18	KM / DM Review	06.04.23	PoE and project monitoring	NHS Highland	TBC		Programmed and planned as early as possible following project commencement.	Future projects		
2.19	KM / DM Review	06.04.23	User training		TBC		Programmed and planned as early as possible following construction commencement.	Future projects		

Soft Landings, Lessons Learned Register: Section 3.0 Community Benefits

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NHS Scotland Board	NHS Highland
Project Name	NTC - Highland
Register Owner	Kevin Minnock
Version	v01 Rev N
Date Last Updated	09.02.2024
Document Reference Number	2140_NTC-H_Lessons Learned_Register

ID Reference	Forum Raised	Date Added	Description	Principal Owner		Input	Action	Time Scale	Status of Action	Closeout
				NHS Scotland Board	PSCP					
3.1	KM / DM Review	06.04.23	Community Benefits	NHS Highland			Define what the community benefits are	Future projects		
3.2	KM / DM Review	06.04.23	Delivery of the CBs.	NHS Highland			Use the CB toolkit to monitor	Future projects		
3.3	KM / DM Review	06.04.23	Programme for delivery	NHS Highland			To be defined at appointment,	Future projects		
3.4	KM / DM Review	06.04.23	Community Collaboration	NHS Highland	TBC		Open and transparent Community Collaboration	Future projects		
3.5	KM / DM Review	06.04.23	KPIs	NHS Highland			KPIs to meet framework requirements together with any additional local policy requirements	Future projects		
3.6	KM / DM Review	06.04.23	Outcomes	NHS Highland	TBC		Define and demonstration of outcomes	Future projects		
3.7	KM / DM Review	06.04.23	Media / Press releases	NHS Highland	TBC		Associated media / press outputs to maximise the benefits	Future projects		
3.8	KM / DM Review	06.04.23	PSCP CB Manager		TBC		PSCP CB Manager to be confirmed at call-off stage.	Future projects		
3.9	KM / DM Review	06.04.23	Cost implications	NHS Highland	TBC		Cost envelope to be defined.	Future projects		
3.10	KM / DM Review	06.04.23	Client side requirements	NHS Highland			Appoint Client lead	Future projects		

Not Started
In Progress
Complete

Soft Landings, Lessons Learned Register: Section 4.0 Collaborative Working

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NHS Scotland Board	NHS Highland
Project Name	NTC - Highland
Register Owner	Kevin Minnock
Version	v01 Rev N
Date Last Updated	09.02.2024
Document Reference Number	2140_NTC-H_Lessons Learned_Register

ID Reference	Forum Raised	Date Added	Description	Principal Owner		Input	Action	Time Scale	Status of Action	Closeout
				NHS Scotland Board	PSCP					
4.1	KM / DM Review	06.04.23	NEC 3/4 processes	NHS Highland	TBC		Overarching encouragement of collaborative behaviours through a clear mission statement	Future projects		
4.2	KM / DM Review	06.04.23	Project Management	NHS Highland	TBC		Support collaboration and administer the contract	Future projects		
4.3	KM / DM Review	06.04.23	Contract management, administration and CEMAR	NHS Highland	TBC		Utilise contract management toolkit such as CEMAR for more integrated processes	Future projects		
4.4	KM / DM Review	06.04.23	Expectation management - being realistic	NHS Highland	TBC		Inputs through the briefing, design and specification stages via stakeholder engagement	Future projects		
4.5	KM / DM Review	06.04.23	Realistic objectives	NHS Highland	TBC		Inputs through the briefing, design and specification stages via stakeholder engagement	Future projects		
4.6	KM / DM Review	06.04.23	Achievable deliverables	NHS Highland	TBC		Inputs through the briefing, design and specification stages via stakeholder engagement	Future projects		
4.7	KM / DM Review	06.04.23	Open, honest , transparent critical	NHS Highland	TBC		Inputs through the briefing, design and specification stages via stakeholder engagement	Future projects		
4.8	KM / DM Review	06.04.23	One team approach and culture - best project outcome	NHS Highland	TBC		Encourage open and closed collaboration	Future projects		
4.9	KM / DM Review	06.04.23	The value and associated inputs of everyone within the team	NHS Highland	TBC		Respect for every team member	Future projects		
4.10	KM / DM Review	06.04.23	Roles and responsibilities - better understanding by team members	NHS Highland	TBC		Clarity regarding key points of contact and how individuals integrate into the project structure	Future projects		

Soft Landings, Lessons Learned Register: Section 5.0 Communications and Stakeholder Engagement

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NHS Scotland Board	NHS Highland
Project Name	NTC - Highland
Register Owner	Kevin Minnock
Version	v01 Rev N
Date Last Updated	09.02.2024
Document Reference Number	2140_NTC-H_Lessons Learned_Register

ID Reference	Forum Raised	Date Added	Description	Principal Owner		Input	Action	Time Scale	Status of Action	Closeout
				NHS Scotland Board	PSCP					
5.1	KM / DM Review	06.04.23	Comms Plan	NHS Highland			Develop to incorporate roles and responsibilities, engagement planning, levels of information security / sharing, etc.	Future projects		
5.2	KM / DM Review	06.04.23	Stakeholder engagement plan	NHS Highland			Stakeholder mapping required.	Future projects		
5.3	KM / DM Review	06.04.23	Key Decision makers	NHS Highland			Develop roles and responsibilities with management protocols inc.	Future projects		
5.4	KM / DM Review	06.04.23	Comms routes	NHS Highland			Develop hierarchy of comms to align with roles and responsibilities planning.	Future projects		
5.5	KM / DM Review	06.04.23	Contractual routes	NHS Highland			Develop hierarchy of comms to align with contractual requirements / responsibilities	Future projects		
5.6	KM / DM Review	06.04.23	Press / media	NHS Highland			Engagement protocols aligned with relevant responsibilities	Future projects		
5.7	KM / DM Review	06.04.23	Governance	NHS Highland			Define the management structure for the process and reporting and approval requirements	Future projects		
5.8	KM / DM Review	06.04.23	Meetings and workshops	NHS Highland			Programme to ensure that everyone who needs to be aware of key dates for meetings, workshops, etc.	Future projects		
5.9	KM / DM Review	06.04.23	Strategic aims	NHS Highland			Define strategic aims and how these will be shared and evaluated through relevant stages of project development.	Future projects		
5.10	KM / DM Review	06.04.23	Open and closed communication	NHS Highland			Agree communication methods and routes	Future projects		
5.11	KM / DM Review	06.04.23	Focussed meeting attendance through restricted approach	NHS Highland			Ensure that key players are involved and focus on continuity of involvement.	Future projects		

Soft Landings, Lessons Learned Register: Section 6.0 Contract Processes and Procedures

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NHS Scotland Board	NHS Highland
Project Name	NTC - Highland
Register Owner	Kevin Minnock
Version	v01 Rev N
Date Last Updated	09.02.2024
Document Reference Number	2140_NTC-H_Lessons Learned_Register

ID Reference	Forum Raised	Date Added	Description	Principal Owner		Input	Action	Time Scale	Status of Action	Closeout
				NHS Scotland Board	PSCP					
6.1	KM / DM Review	06.04.23	Procurement Strategy	NHS Highland			Establish procurement route - Framework, Hub, Scape, other. Subject to type of project and available and recommended procurement options.	Future projects		
6.2	KM / DM Review	06.04.23	Framework call -off requirements	NHS Highland			Adhere to relevant call -off requirements and take advice from NHS Assure as relevant.	Future projects		
6.3	KM / DM Review	06.04.23	HLIP development	NHS Highland			Develop HLIP based on best examples / experience with inputs from key team members and support from NHS Assure if required.	Future projects		
6.4	KM / DM Review	06.04.23	Bid evaluation	NHS Highland			Bid evaluation to be carried out by appropriate personnel and in accordance with procurement route guidance.	Future projects		
6.5	KM / DM Review	06.04.23	Clarifications	NHS Highland			Deal with clarifications through the bid process timeously	Future projects		
6.6	KM / DM Review	06.04.23	Interview	NHS Highland			Interview planning including interview panel, questions and scoring.	Future projects		
6.7	KM / DM Review	06.04.23	Commercial check	NHS Highland			Commercial check - carry out commercial checks in accordance with procurement/ framework requirements.	Future projects		
6.8	KM / DM Review	06.04.23	Appointment	NHS Highland			Ensure that full appointment documentation is executed timeously with specialist / advisors input as required.	Future projects		
6.9	KM / DM Review	06.04.23	Support from advisors	NHS Highland			Engage advisors if required to provide necessary and specialist support through the procurement process.	Future projects		
6.10	KM / DM Review	06.04.23	Feedback to unsuccessful	NHS Highland			Feedback as fully as possible and timeously to unsuccessful bidders.	Future projects		
6.11	KM / DM Review	06.04.23	Project plans, PIP, PEP, BIM, MCP, PQP	NHS Highland	TBC		Project plans, PIP, PEP, BIM, MCP, PQP, etc to be specified and developed by agreed lead parties / owners and updated as required through the project development and construction stages.	Future projects		
6.12	KM / DM Review	06.04.23	Defined deliverables for each project stage	NHS Highland	TBC		Defined deliverables for each project stage in line with contract documentation and to be refined as required to meet developing project requirements.	Future projects		
6.13	KM / DM Review	06.04.23	Pre-construction	NHS Highland	TBC		Pre-construction planning and programming to meet business case requirements (including SDaC, KSAR and NDAP, etc) together with any necessary statutory consents and other relevant sign offs / approvals.	Future projects		

6.14	KM / DM Review	06.04.23	Construction		TBC		Progress through construction using relevant project management toolkit and employ defined processes and procedures to manage the contractual requirements including change control, compensation events, programme updates, etc.	Future projects		
6.15	KM / DM Review	06.04.23	Commissioning	NHS Highland	TBC		Operational and technical commissioning planning and implementation to be programmed and involve all relevant stakeholders and required training .	Future projects		
6.16	KM / DM Review	06.04.23	Handover / close out	NHS Highland	TBC		Handover / close out to planned in advance and including statutory approvals (planning conditions, building warrant completion certification, etc), defects management, commissioning records, validation certification, user manuals, training records and key contacts register, etc.	Future projects		
6.17	KM / DM Review	06.04.23	In-use inc Monitoring Plan and PoE	NHS Highland	TBC		Application of project monitoring through the whole process carried into occupation and including benefits realisation monitoring and reporting, energy performance monitoring, design in use feedback, etc. PoE to formally record and report relevant issues in line with planned timescales.	Future projects		

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ID Reference	Forum Raised	Date Added	Description	Principal Owner		Input	Action	Time Scale	Status of Action	Closeout
				NHS Scotland Board	PSCP					
7.1	KM / DM Review	06.04.23	Appointment of the finance lead for project	NHS Highland			Ensure that there is a defined finance lead confirmed for the project as early in the process as possible to ensure continuity.	Future projects		
7.2	KM / DM Review	06.04.23	Appointment of Cost Advisor.	NHS Highland			Timeous appointment of cost advisor via Frameworks as applicable with defined duties /activities to support project requirements.	Future projects		
7.3	KM / DM Review	06.04.23	Monthly cost reporting	NHS Highland			Set up procedures for monthly cost reporting for relevant project stages.	Future projects		
7.4	KM / DM Review	06.04.23	Capital and revenue allowances.	NHS Highland			Ensure that both capital and revenue financial allowances are developed using prescribed processes and data requirements and reviewed at each project stage.	Future projects		
7.5	KM / DM Review	06.04.23	Business Case development inputs	NHS Highland			Business Case development inputs to be by defined project team members and including advisors as required to meet the agreed programme.	Future projects		
7.6	KM / DM Review	06.04.23	Comms routes between finance team and project team	NHS Highland			Ensure that financial reporting requirements are clearly built into the project development process including approval milestones.	Future projects		
7.7	KM / DM Review	06.04.23	Governance	NHS Highland			Project governance requirements are to be clearly articulated in line with Scottish Government and NHS Highland policies, including resourcing, articulation of roles and responsibilities and lines of reporting (including timescales).	Future projects		
7.8	KM / DM Review	06.04.23	Budgets and allocations - IT, equipping, FM etc.	NHS Highland			Ensure that relevant project budgets and allocations for IT, equipping, FM, etc. are built in to the cost planning of the project from an early stage and refined in line with project development.	Future projects		
7.9	KM / DM Review	06.04.23	Approvals	NHS Highland			NHS Highland Board, Scottish Government and any external funding finance approvals to be sought in line with Business Case development	Future projects		
7.10	KM / DM Review	06.04.23	Delegated authority financial limits.	NHS Highland			Delegated authority - who can instruct what and to what limit - SRO, PD, PM, etc. to be clearly articulated as part of project governance and included in roles and responsibilities mapping.	Future projects		

7.11	KM / DM Review	06.04.23	Change control	NHS Highland			Change control processes and procedures to be defined as early in the project development process as possible and monitored in line with relevant business case requirements.	Future projects		
7.12	KM / DM Review	06.04.23	Project resourcing - NHSH	NHS Highland			Adequate suitably experienced personnel to be defined for key project team roles as early in the project development process as possible.	Future projects		

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8.1	KM / DM Review	06.04.23	HAIScribe guidance	NHS Highland	TBC		Comply with HAIScribe guidance	Future projects		
8.2	KM / DM Review	06.04.23	Programme - Scheduling milestones	NHS Highland	TBC		Programme - Scheduling milestones	Future projects		
8.3	KM / DM Review	06.04.23	Completion per contract / HAIScribe stage requirements	NHS Highland	TBC		Completion per contract / HAIScribe stage requirements	Future projects		
8.4	KM / DM Review	06.04.23	IPC team involvement	NHS Highland			IPC team involvement should be throughout the whole project life cycle and including reviews of all developing design and technical information where relevant.	Future projects		
8.5	KM / DM Review	06.04.23	Identify key leads and decision makers and continuity	NHS Highland	TBC		Key team members should be identified as early in the project development process as possible and be involved throughout.	Future projects		
8.6	KM / DM Review	06.04.23	Design review inputs / engagement IPC	NHS Highland	TBC		Participation in design reviews from early stages to ensure knowledge building and associated feedback to address any concerns.	Future projects		
8.7	KM / DM Review	06.04.23	Key decision recording inc risk management	NHS Highland	TBC		Ensure that there are processes and procedures in place to record and monitor requirements stage to stage.	Future projects		
8.8	KM / DM Review	06.04.23	Risk assessments - clinical	NHS Highland			Clinical teams to support the process and inform design and specification decision making and including mitigation of any identified risks..	Future projects		
8.9	KM / DM Review	06.04.23	Ensure all operational streams are covered	NHS Highland	TBC		Define who needs to be involved in the process to ensure that all aspects of the facility performance are going to have the right people involved in reviewing operational requirements and any impacts of the developing design and specification.	Future projects		
8.10	KM / DM Review	06.04.23	Engagement of specialist support	NHS Highland	TBC		Engage specialists as required to support design and specification development through construction and commissioning / validation.	Future projects		

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				NHS Scotland Board	PSCP					
9.1	KM Review	12.04.23	Appointment of BIM Manager - R & R	NHS Highland		Future Projects	Ensure timeous appointment of BIM manager	Future projects		
9.2	KM Review	12.04.23	Task Information Delivery Plan (TIDP)	NHS Highland		Future Projects	Task Information Delivery Plan to be developed (TIDP)	Future projects		
9.3	KM Review	12.04.23	OIR/AIR/EIR documentation	NHS Highland		Future Projects	Co-ordinate and specify all performance requirements for the project prior to commencing design.	Future projects		
9.4	KM Review	12.04.23	BIM Execution Plan	NHS Highland		Future Projects	Develop BIM Execution Plan	Future projects		
9.5	KM Review	12.04.23	BIM Protocol	NHS Highland		Future Projects	Ensure that BIM Protocol is included in contract	Future projects		
9.6	KM Review	12.04.23	Concept design / 3 D model		TBC	Future Projects	Development of Concept design / 3 D model to meet briefed requirements	Future projects		
9.7	KM Review	12.04.23	Master Information Delivery plan (MIDP)	NHS Highland	TBC	Future Projects	Master Information Delivery plan (MIDP) developed collaboratively to meet project requirements	Future projects		
9.8	KM Review	12.04.23	Developed design - Model sharing		TBC	Future Projects	Design team collaboration in developing design through shared model.	Future projects		
9.9	KM Review	12.04.23	Domain specific designs - eg structural - coordination		TBC	Future Projects	Implementation of domain specific design - eg structural - coordination	Future projects		
9.10	KM Review	12.04.23	Common Data Environment CDE		TBC	Future Projects	Implementation of a Common Data Environment CDE for stakeholder collaboration across the project.	Future projects		
9.11	KM Review	12.04.23	Federated Model / collaborative workflows		TBC	Future Projects	Implement collaborative workflows for application in the federated model as part of BIM execution planning.	Future projects		
9.12	KM Review	12.04.23	BS1192 Table 5 Suitability codes		TBC	Future Projects	Apply requirements of BS1192 Table 5 Suitability codes definitions for information development and sharing.	Future projects		
9.13	KM Review	12.04.23	Technical design / Design Coordination/Clash detection		TBC	Future Projects	Technical design / Design Coordination/Clash detection to be progressed to meet specifications and performance standards	Future projects		
9.14	KM Review	12.04.23	Construction/ Change management	NHS Highland	TBC	Future Projects	Contractual change control procedures to be followed	Future projects		
9.15	KM Review	12.04.23	COBie Drops		TBC	Future Projects	COBie Drops to be made in line with agreed programme and to specification.	Future projects		
9.16	KM Review	12.04.23	Handover and closeout/HS File/O&M/AIM/CAFM		TBC	Future Projects	Handover and closeout/HS File/O&M/AIM/CAFM documentation and electronic filing to be completed timeously for handover and including commissioning and training requirements.	Future projects		
9.17	KM Review	12.04.23	In Use/FM	NHS Highland	TBC	Future Projects	Operational performance to be monitored and supported in aftercare period and lessons learned fed back into POE at prescribed stages.	Future projects		

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				NHS Scotland Board	PSCP					
10.1	KM Review	12.04.23	Design programme / resources		TBC		Ensure that Civil engineering inputs and outputs are fed into the design programme for co-ordination with other design disciplines and including resources.	Future projects		
10.2	KM Review	12.04.23	Design Guidance and Derogations		TBC		Follow relevant design and technical guidance and confirm any relevant design discipline related derogations.	Future projects		
10.3	KM Review	12.04.23	Design Statement		TBC		Input to the development of the design statement and participate in the NDAP process as required.	Future projects		
10.4	KM Review	12.04.23	Design Risk Assessments		TBC		Complete design risk assessments as required and contribute to the pre-construction Health and Safety File in liaison with the Principal Designer.	Future projects		
10.5	KM Review	12.04.23	Nett Zero		TBC		Participate in any design and specification development to support meeting Nett Zero Carbon targets.	Future projects		
10.6	KM Review	12.04.23	SDaC		TBC		Support the SDaC process at all stages of project development.	Future projects		
10.7	KM Review	12.04.23	AEDET		TBC		Participate in AEDET workshops if required.	Future projects		
10.8	KM Review	12.04.23	NDAP		TBC		Support the NDAP process as required through key stages of project development.	Future projects		
10.9	KM Review	12.04.23	KSAR Precon/Construction/Commissioning/Handover		TBC		Support the KSAR process with discipline specific inputs.	Future projects		
10.10	KM Review	12.04.23	Draft Concepts		TBC		Produce draft concept designs including options through early design stages to support the architectural concept design.	Future projects		
10.11	KM Review	12.04.23	Design Coordination		TBC		Support overall design co-ordination and including BIM level 2 inputs.	Future projects		
10.12	KM Review	12.04.23	Design review/Approval		TBC		Submit relevant deliverables as required as part of design review and approvals processes.	Future projects		
10.13	KM Review	12.04.23	Change Control		TBC		Monitor design development and highlight any issues which may have to be considered as part of the change control process.	Future projects		
10.14	KM Review	12.04.23	MIDP Civils		TBC		Contribute to development of the MIDP with proposed Civils deliverables.	Future projects		
10.15	KM Review	12.04.23	Quality Standards		TBC		Contribute to the defined Quality Standards for the construction stage as part of specification development.	Future projects		

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				NHS Scotland Board	PSCP					
11.1	KM Review	12.04.23	Design programme / resources		TBC		Ensure that Architectural inputs and outputs are fed into the design programme for co-ordination with other design disciplines and including resources.	Future projects		
11.2	KM Review	12.04.23	Design Guidance and Derogation		TBC		Follow relevant design and technical guidance and confirm any relevant design discipline related derogations.	Future projects		
11.3	KM Review	12.04.23	Design Statement		TBC		Input to the development of the design statement and participate in the NDAP process as required.	Future projects		
11.4	KM Review	12.04.23	Design Risk Assessments		TBC		Complete design risk assessments as required and contribute to the pre-construction Health and Safety File in liaison with the Principal Designer.	Future projects		
11.5	KM Review	12.04.23	Nett Zero		TBC		Participate in any design and specification development to support meeting Nett Zero Carbon targets including architectural and structural options and embodied carbon calculations	Future projects		
11.6	KM Review	12.04.23	SDaC		TBC		Support the SDaC process at all stages of project development.	Future projects		
11.7	KM Review	12.04.23	AEDET		TBC		Participate in AEDET workshops if required.	Future projects		
11.8	KM Review	12.04.23	NDAP		TBC		Support the NDAP process as required through key stages of project development.	Future projects		
11.9	KM Review	12.04.23	KSAR Precon/Construction/Commissioning/Handover		TBC		Support the KSAR process with discipline specific inputs.	Future projects		
11.10	KM Review	12.04.23	Draft Concepts		TBC		Produce draft concept designs including options through early design stages to support the overall concept design.	Future projects		
11.11	KM Review	12.04.23	Design Coordination		TBC		Support overall design co-ordination and including BIM level 2 inputs.	Future projects		
11.12	KM Review	12.04.23	Design review /Approval		TBC		Submit relevant deliverables as required as part of design review and approvals processes.	Future projects		
11.13	KM Review	12.04.23	Change Control		TBC		Monitor design development and highlight any issues which may have to be considered as part of the change control process.	Future projects		
11.14	KM Review	12.04.23	MIDP Building		TBC		Contribute to development of the MIDP with proposed Architectural and Structural deliverables.	Future projects		
11.15	KM Review	12.04.23	Quality Standards		TBC		Contribute to the defined Quality Standards for the construction stage as part of specification development.	Future projects		

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				NHS Scotland Board	PSCP					
12.1	KM Review	12.04.23	Design programme / resources		TBC		Ensure that MEP engineering inputs and outputs are fed into the design programme for co-ordination with other design disciplines and including resources.	Future projects		
12.2	KM Review	12.04.23	Design Guidance and Derogation		TBC		Follow relevant design and technical guidance and confirm any relevant design discipline related derogations.	Future projects		
12.3	KM Review	12.04.23	Design Statement		TBC		Input to the development of the design statement and participate in the NDAP process as required.	Future projects		
12.4	KM Review	12.04.23	Design Risk Assessments		TBC		Complete design risk assessments as required and contribute to the pre-construction Health and Safety File in liaison with the Principal Designer.	Future projects		
12.5	KM Review	12.04.23	Nett Zero		TBC		Participate in any design and specification development to support meeting Nett Zero Carbon targets including services options and support embodied carbon calculations.	Future projects		
12.6	KM Review	12.04.23	SDaC		TBC		Support the SDaC process at all stages of project development.	Future projects		
12.7	KM Review	12.04.23	AEDET		TBC		Participate in AEDET workshops if required.	Future projects		
12.8	KM Review	12.04.23	NDAP		TBC		Support the NDAP process as required through key stages of project development.	Future projects		
12.9	KM Review	12.04.23	KSAR Precon/Construction/Commissioning/Handover		TBC		Support the KSAR process with discipline specific inputs.	Future projects		
12.10	KM Review	12.04.23	Draft Concepts		TBC		Produce draft concept designs including options through early design stages to support the architectural concept design.	Future projects		
12.11	KM Review	12.04.23	Design Coordination		TBC		Support overall design co-ordination and including BIM level 2 inputs.	Future projects		
12.12	KM Review	12.04.23	Design review /Approval		TBC		Submit relevant deliverables as required as part of design review and approvals processes.	Future projects		
12.13	KM Review	12.04.23	Change Control		TBC		Monitor design development and highlight any issues which may have to be considered as part of the change control process.	Future projects		
12.14	KM Review	12.04.23	MIDP MEP		TBC		Contribute to development of the MIDP with proposed MEP deliverables.	Future projects		
12.15	KM Review	12.04.23	Quality Standards		TBC		Contribute to the defined Quality Standards for the construction stage as part of specification development.	Future projects		
12.16	KM Review	12.04.23	Equipment Management	NHS Highland			Support the equipment management and procurement processes with inputs relating to services supplies, integration and co-ordination.	Future projects		

12.17	KM Review	12.04.23	E Health Management	NHS Highland			Support the E Health team with support relating to IT related infrastructure, space management and coordination and comms	Future projects		

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				NHS Scotland Board	PSCP					
13.1	KM Review	12.04.23	Land Acquisition	NHS Highland			Ensure that any land required for the development is acquired and any conditions of purchase sanitised.	Future projects		
13.2	KM Review	12.04.23	Site surveys and reports	NHS Highland			Commission relevant site investigations and surveys and reports including ground conditions, buried services, trees, archaeological, ecology, existing buildings, etc.	Future projects		
13.3	KM Review	12.04.23	Stage 4 NEC Contract	NHS Highland			Set up all project management systems and develop a collaborative working ethos from the outset working under the NEC 4 form of contract.	Future projects		
13.4	KM Review	12.04.23	Target Price Options	NHS Highland			Prior to procurement agree the most appropriate form of NEC contract for the project and put relevant documentation in place for tender and appointment.	Future projects		
13.5	KM Review	12.04.23	Project Programme /Resourced / Monitoring		TBC		Contractor to develop the design and construction programme, fully resource profiled and set up for monitoring, reporting and updating at key project stages.	Future projects		
13.6	KM Review	12.04.23	Sectional /Staged completion	NHS Highland	TBC		Agree requirements for any sectional or staged completion of the project.	Future projects		
13.7	KM Review	12.04.23	MMC / Modular - Offsite Construction / Innovation		TBC		Review options for Modern Methods of construction to be utilised on the project from early stages if feasible in order to coordinate design and specification to suit construction methodology.	Future projects		
13.8	KM Review	12.04.23	Cashflow		TBC		Cashflow to be developed for the project based on programme and resource inputs.	Future projects		
13.9	KM Review	12.04.23	Change Management		TBC		Change Management protocols to be put in place for the project to ensure that all contractual requirements are met timeously.	Future projects		
13.10	KM Review	12.04.23	Contract Management		TBC		Use of CEMAR or equivalent online collaboration platform for contract management.	Future projects		
13.11	KM Review	12.04.23	Common Data Environment		TBC		Set up a Common Data Environment (CDE) for project participants to collaborate on and share all project information.	Future projects		
13.12	KM Review	12.04.23	Quality Plan /QMS monitoring/Reporting		TBC		Develop a quality plan for the project and management system for quality control and assurance on the project.	Future projects		
13.13	KM Review	12.04.23	Procurement Planning		TBC		Plan the procurement of all sub contract packages and support from specialist contractors / suppliers including market testing requirements.	Future projects		
13.14	KM Review	12.04.23	Progress reporting		TBC		Confirm proposed reporting formats to capture project progress reporting covering Design, Health and Safety, Quality Management and required processes such as HAIScribe, etc.	Future projects		

13.15	KM Review	12.04.23	Appointment of Lead Advisor / PM/CA/CDMA/NEC Sup/Tech Support	NHS Highland			Coordinate the timeous appointment of consultant / advisor team to support NHS Highland in delivering the project.	Future projects		
13.16	KM Review	12.04.23	Commissioning Management		TBC		Coordinate the approach to Commissioning Management and appoint additional support as may be required.	Future projects		
13.17	KM Review	12.04.23	Quality Management	NHS Highland	TBC		Appointment of Quality Management support to be made when required.	Future projects		
13.18	KM Review	12.04.23	Management of Subcontractors / QA checking		TBC		Ensure that procedures are in place to manage quality management through supply chain and carry out relevant checks through construction.	Future projects		
13.19	KM Review	12.04.23	Sub Contract Resourcing / Monitoring -programme/progress reporting		TBC		Ensure that procedures are in place to monitor supply chain resourcing, programme management and reporting and carry out relevant checks through construction.	Future projects		
13.20	KM Review	12.04.23	Appointment of Theatre Validation Consultant	NHS Highland	TBC		Make early appointment of Theatre Validation Consultant and allow for pre validation checks.	Future projects		
13.21	KM Review	12.04.23	Early Warning Notices (EWNs) & Compensation Events (CEs)	NHS Highland	TBC		Ensure that the EWN & CE contractual processes are used effectively to manage the impacts of issues materially affecting the progress and/or the cost of the works.	Future projects		
13.22	KM Review	12.04.23	Cost Report Format / Frequency	NHS Highland	TBC		Adhere to the specified cost reporting format and including frequency of reporting.	Future projects		
13.23	KM Review	12.04.23	Equipping Strategy/ Budgets / Service Level Agreement (SLA) with NHS Assure (HFS)	NHS Highland	TBC		Ensure that relevant responsibilities for all aspects of Equipping including the Strategy and associated Budgets and procurement requirements (including groupings) and the SLA with NHS Assure (HFS) is clearly set down contractually and programmed. Ensure that relevant delivery and storage requirements for equipment are co-ordinated across all parties.	Future projects		
13.24	KM Review	12.04.23	Temporary works		TBC		Ensure that all temporary works are carried out as specified and adequately checked with relevant safety measures in place.	Future projects		
13.25	KM Review	12.04.23	Servicing arrangements		TBC		Ensure that relevant site servicing arrangements are in place and managed effectively.	Future projects		
13.26	KM Review	12.04.23	Commissioning Master Plan	NHS Highland	TBC		Commissioning Master Plan to be developed as early in the process as feasible and to include all services, networks and equipment commissioning checks, logs, sign-offs, O+M Manuals and including associated training. To include both technical commissioning and relevant interfaces with operational commissioning.	Future projects		
13.27	KM Review	12.04.23	KSAR Construction /Commissioning/Handover	NHS Highland	TBC		Ensure that the KSAR processes covering construction, commissioning and handover have been allowed for in the programme and activity schedules as relevant and that resource will be available to support the process at key stages.	Future projects		
13.28	KM Review	12.04.23	Project Risk Register & Operational Risk Register	NHS Highland	TBC		Ensure that the management of risks is an ongoing activity and include reporting at relevant project and site meetings.	Future projects		

13.29	KM Review	12.04.23	FM strategy & FM Implementation Plan	NHS Highland			Development of the FM Strategy and implementation planning for relevant services should be progressed in advance of the works and then refined through the construction stage with virtual and actual walk throughs together with staff training.	Future projects		
13.30	KM Review	12.04.23	Aftercare Plan	NHS Highland	TBC		Ensure that the After Care planning is developed timeously and that all key requirements are agreed including emergency contacts and help desk set up.	Future projects		

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				NHS Scotland Board	PSCP					
14.1	KM Review	12.04.23	Handover Plan	NHS Highland	TBC		Jointly progress handover planning including all key aspects / requirements as scheduled below:	Future projects		
14.2	KM Review	12.04.23	Construction Completion & Handover	NHS Highland			Ensure that at Construction Completion & Handover all relevant documentation is signed off by Authorised Signatories and that they are party to the formal handover process.	Future projects		
14.3	KM Review	12.04.23	Operational Commissioning Plan	NHS Highland			Ensure that all key stakeholders are party to the Operational Commissioning Plan and that this is in place at Handover.	Future projects		
14.4	KM Review	12.04.23	Detailed Transition Plan	NHS Highland			Ensure that detailed Transition Planning is commenced well in advance of proposed occupation of the building and that it includes all requirements relating to building occupation and use.	Future projects		
14.5	KM Review	12.04.23	E Health	NHS Highland			Ensure that E Health inputs to the project development are timeous and that relevant systems and equipment is commissioned and available for occupation. See also separate eHealth Lessons Learned reporting.	Future projects		
14.6	KM Review	12.04.23	Equipping Plan	NHS Highland			Ensure that the Equipping Plan is commenced timeously and includes programming of deliveries, installations, testing, commissioning training etc and all relevant requirements for operational occupation are signed off.	Future projects		
14.7	KM Review	12.04.23	Familiarisation & Training Plans (Estates/FM/Operational)	NHS Highland			Familiarisation & Training Plans (Estates/FM/Operational) to be in place timeously and all relevant activities programmed to meet the operational in-use date.	Future projects		
14.8	KM Review	12.04.23	Clinical Cleaning Programme	NHS Highland			Clinical Cleaning - relevant activities to be programmed to meet the operational in-use date.	Future projects		
14.9	KM Review	12.04.23	Fire Safety Plan	NHS Highland			Ensure that Fire Safety Plan is in place and effectively tested for Handover and that any additional requirements for operational commissioning and in-use are resolved.	Future projects		
14.10	KM Review	12.04.23	H&S Files / O&M files/COBie/AIM/CAFM	NHS Highland	TBC		Contractor to ensure that all relevant documentation including H&S Files / O&M files /COBie / AIM / CAFM, etc is finalised and handed over timeously for NHS Highland use including key familiarisation /training related information in advance.	Future projects		

Soft Landings, Lessons Learned Register: Section 15.0 Aftercare

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NHS Scotland Board	NHS Highland
Project Name	NTC - Highland
Register Owner	Kevin Minnock
Version	v01 Rev N
Date Last Updated	09.02.2024
Document Reference Number	2140_NTC-H_Lessons Learned_Register

ID Reference	Forum Raised	Date Added	Description	Principal Owner		Input	Action	Time Scale	Status of Action	Closeout
				NHS Scotland Board	PSCP					
15.1	KM Review	12.04.23	Aftercare Plan	NHS Highland			Requires to be developed, agreed and contracted as early in advance of handover as possible and include Lessons Learned from previous projects.	Future projects		
15.2	KM Review	12.04.23	FM Implementation Strategy	NHS Highland			Requires to be developed, agreed and responsibility allocated as early in the project briefing and development process as possible and include Lessons Learned from previous projects.	Future projects		
15.3	KM Review	12.04.23	POE arrangements inc monitoring	NHS Highland			Need to be developed with relevant stakeholders inc programme and agreed prior to Handover.	Future projects		
15.4	KM Review	12.04.23	Issues/concerns management arrangements	NHS Highland			Responsibilities for Aftercare tbc during construction stage.	Future projects		
15.5	David Rich	27.07.23	Aftercare / In-Use Defects schedule via help desk - refer to Appendices.	NHS Highland			Detailed logs available that are included in Lessons Learned for the project.	Future projects		

Soft Landings, Lessons Learned Register: Section 16.0 Facilities Management: Hard & Soft FM

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NHS Scotland Board	NHS Highland
Project Name	NTC - Highland
Register Owner	Kevin Minnock
Version	v01 Rev N
Date Last Updated	09.02.2024
Document Reference Number	2140_NTC-H_Lessons Learned_Register

ID Reference	Forum Raised	Date Added	Description	Principal Owner		Input	Action	Time Scale	Status of Action	Closeout
				NHS Scotland Board	PSCP					
16.1	KM Review	12.04.23	NHSH Maintenance Policy	NHS Highland	TBC		Ensure that the maintenance policy documentation is part of the FM brief.	Future projects		
16.2	KM Review	12.04.23	FM Procurement Strategy	NHS Highland	TBC		Ensure that the relevant sections of the FM procurement strategy documentation is part of the FM brief.	Future projects		
16.3	KM Review	12.04.23	Produce project specific FM Strategy was developed.	NHS Highland	TBC		The FM strategy is an integral component of project briefing and should be developed as early in the project as feasible.	Future projects		
16.4	KM Review	12.04.23	FM Implementation Workshops/Plan -Stakeholder interfaces	NHS Highland	TBC		There should be stakeholder involvement in all aspects of FM for the project and including specific briefing and implementation workshops.	Future projects		
16.5	KM Review	12.04.23	FM Budget	NHS Highland	TBC		Ensure that the budget covers all relevant aspects of FM services including capital and revenue requirements.	Future projects		
16.6	KM Review	12.04.23	FM Risks & Opportunities	NHS Highland	TBC		Risks and Opportunities associated with the service should be identified as part of stakeholder engagement and then managed through the project development and operational in-use stages.	Future projects		
16.7	KM Review	12.04.23	FM Resourcing	NHS Highland	TBC		Suitable resourcing should be identified to support both project development and operational in -use stages.	Future projects		

Soft Landings, Lessons Learned Register: Section 17.0 Operational Strategy including asset performance

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NHS Scotland Board	NHS Highland
Project Name	NTC - Highland
Register Owner	Kevin Minnock
Version	v01 Rev N
Date Last Updated	09.02.2024
Document Reference Number	2140_NTC-H_Lessons Learned_Register

ID Reference	Forum Raised	Date Added	Description	Principal Owner		Input	Action	Time Scale	Status of Action	Closeout
				NHS Scotland Board	PSCP					
17.1	KM Review	12.04.23	Operations Asset Management & Maintenance Strategy	NHS Highland	TBC		The relevant parts of the Board Operations Asset Management and Maintnance Strategy should form part of project breifing information together with any project specific requirements added.	Future projects		
17.2	KM Review	12.04.23	Asset Management - Risk Assessment	NHS Highland	TBC		Asset Management should be included as part of project specific risk assessments.	Future projects		
17.3	KM Review	12.04.23	People, Philosophy, Process & Performance (4 Ps)	NHS Highland	TBC		To deal with any change management issues assoociated with the project adopt a holistic approach encompassing the 4 Ps of change management – People, Process, Purpose, and Performance.	Future projects		
17.4	KM Review	12.04.23	Asset Life Cycle development	NHS Highland	TBC		As part of the asset management approach ensure that the facility is properly planned for, acquired (if applicable), used, maintained, and disposed of. The main goal for NHS Highland is to improve the lifecycles of valuable assets and improve their reliability to ensure the facility is running smoothly and the finances associated with the assets are properly allocated and accounted for.	Future projects		
17.5	KM Review	12.04.23	Accurate, punctual and consistent data	NHS Highland	TBC		Ensure that all relevant data associated with the project as a developing asset is accurate, consistent and made available timeously.	Future projects		
17.6	KM Review	12.04.23	Stakeholder Engagement /Key Decision Makers	NHS Highland	TBC		Ensure that there is continuity of personnel through any stakeholder engagement and that key decision makers are present to assist the streamlining of the process.			

Soft Landings, Lessons Learned Register: Section 19.0 Commissioning - Operational

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NHS Scotland Board	NHS Highland
Project Name	NTC - Highland
Register Owner	Kevin Minnock
Version	v01 Rev N
Date Last Updated	09.02.2024
Document Reference Number	2140_NTC-H_Lessons Learned_Register

ID Reference	Forum Raised	Date Added	Description	Principal Owner		Input	Action	Time Scale	Status of Action	Closeout
				NHS Scotland Board	PSCP					
18.1	KSAR Feedback	28.06.23	BBK ESSW (Electrical safe system of work) NHS SA received no assurance that permit receivers have been trained on the BBK electronic permit system in use on the project.	NHS Highland	Balfour Beatty	All	Produce CDMA/PD monthly reports.	2 Months		
18.2	KSAR Feedback	28.06.23	Generator Testing Load bank test results have been provided, however NHS SA are unclear if the test was conducted on site or a factory test, no final on site testing of generators had been completed at time of NHS SA review (22-02-2023). There was also no evidence of a generator start up cause and effect.	NHS Highland			NHS Highland should ensure that suitable evidence of training, TBT, SSW inductions, etc, have been provided. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observation as a lessons learned to carry forward into following projects?			
18.3	KSAR Feedback	28.06.23	Medical Locations The installation was designed and is to be tested and certified under the 17th edition of the IET regulations,BS7671 (amendment 3 2015) 2008 (amendment 3 2015). There is no confirmation that Group 1 and 2 medical locations comply with Regulation 710.415.2.2 9(ii) in that earth resistance of fixed equipment and extraneous conductive parts shall not be more than 0.7ohms.	NHS Highland	[Insert Name]		NHS Highland should ensure that all generator testing and commissioning certification and documentation are suitably signed and include all missing information e.g. load test sheets to confirm the location where it was carried out, etc. NHS Highland should confirm that generator start up times are compliant with Regulations 710.560.6.1.1 and 710.560.6.1.2 of the 17th Edition of the IET Wiring Regulations, BS7671 2008 (Amendment 3, 2015). NHS Highland should provide a generator cause and effect. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.4	KSAR Feedback	28.06.23	Escape Routes NHS SA observed a number of luminaires and flex cabling that did not appear to be independently supported to the building structure to prevent against premature collapse in accordance with the 17th edition of the IET regulations, BS7671(amendment 3 2015) 2008(amendment 3 2015) regulation 521.11. Further it was unclear how the luminaire fixing detail complied with regulation 559.5.2.	NHS Highland			NHS Highland should ensure that the electrical installation was designed, tested and certified to the requirements of the 17th Edition of the IET Wiring Regulations, BS7671 2008 (Amendment 3, 2015). HHS Highland should ensure that Group 1 and 2 medical locations comply with Regulation 710.415.2.2 9(ii) in that earth resistance of fixed equipment and extraneous conductive parts shall not be more than 0.7 ohms. As the facility is now operational NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observation as a lessons learned to carry forward into following projects?			
18.5	KSAR Feedback	28.06.23	EBB's In Accordance With Regulations 710.415.2.2 and 710.415.2.3 (17th Edition of the IET Wiring Regulations, BS7671 2008 (Amendment 3, 2015). During the Commissioning / Handover site observation review , NHS Scotland Assure queried whether EBB's (Equipotential Bonding Busbars) installed in Group 1 bedrooms complied with the requirements of Regulation 710.415.2.2 and 710.415.2.3 (17th Edition of the IET Wiring Regulations, BS7671 2008 (Amendment 3, 2015). This was subject to discussion with NHS Highland and the PSCP.	NHS Highland	[Insert Name]		NHS Highland should ensure that light fittings are independently supported to the building structure in escape routes to ensure against premature collapse in accordance with Regulation 521.11 of the 17th Edition of the IET Wiring Regulations, BS7671 2008 (Amendment 3, 2015). As the facility is now operational NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observation as a lessons learned to carry forward into following projects?			

18.6	KSAR Feedback	28.06.23	Circuit references label NHS Highland advised that the health board required that socket outlets to be labelled this had not been observed during the KSAR visit.	NHS Highland	[Insert Name]		NHS Highland should ensure that information relating to the EBB's is included in the handover documentation e.g. compliance with the IET Wiring Regulations (17th Edition, BS7671 2008 (Amendment 3, 2015), test results, test certificates, earthing schematics (including cables sizes), details of appropriate labelling, product data sheets, etc. As the facility is now operational NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observation as a lessons learned to carry forward into following projects?			
18.7	KSAR Feedback	28.06.23	Barn Theatre - Evacuation Strategy It is noted that the design of Barn theatres has been changed from the original proposal and that the connecting door between theatres will be replaced with a solid wall. There are no documents that support this change to the layout.	NHS Highland	[Insert Name]		NHS Highland should ensure that clinical teams are content with patients being evacuated direct from the theatre into a corridor and that patient care can be continued during PHE. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.8	KSAR Feedback	28.06.23	Bedroom - Evacuation Management Strategy The layout of the bedroom areas is designed to facilitate progressive horizontal evacuation, however, due to the layout, it is essential that the evacuation management is robust and staff are trained on the routes that should be used. E7:E8	NHS Highland	[Insert Name]		NHS Highland should ensure that PHE can be achieved from the bedroom areas in accordance with NHS Firecode. NHS Highland should also ensure that clinical teams are content that patient care can be continued during PHE. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.9	KSAR Feedback	28.06.23	Wheelchair Charging Points The Fire Strategy Section 5.1.3 states that wheelchair charging point doors will be fitted with a delayed action fire active closer.	NHS Highland	[Insert Name]		NHS Highland should ensure confirmation of the type of door device installed and the length of time of the delay. If these devices are non-standard, NHS Highland should ensure that the device is in accordance with SHTM 81. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.10	KSAR Feedback	28.06.23	Fire Alarm Audibility The fire strategy states 'The building will be provided with a sounder alarm system in accordance with BS 5839-1 and SHTM-82' It was verbally indicated by Jonathon Spode NHSH fire safety advisor that in the event of a fire, operating theatre staff would be alerted via the control panel. However, this procedure could not be demonstrated in order to show its effectiveness, there was limited information passed to NHS SA to confirm how this procedure would work.	NHS Highland	[Insert Name]		NHS Highland should ensure that details of the fire alert procedure for staff working in the theatre have been provided. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.11	KSAR Feedback	28.06.23	Fire exit signage locations Several instances of missing or incorrect signage were observed on site. These items were discussed on site with the Contractor and the NHS Fire Officer.	NHS Highland			NHS Highland should ensure that the Board fire safety advisor is satisfied with the fire safety signage arrangements. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.12	KSAR Feedback	28.06.23	Fire alarm panel No zone plans were observed accompanying fire alarm panels across the ground floor.	NHS Highland	[Insert Name]		NHS Highland should ensure that zone plans are installed adjacent to the fire alarm panels. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			

18.13	KSAR Feedback	28.06.23	Ventilation ductwork Timber battens were observed on the support fixings to some ventilation ductwork at second-floor plant level. This may have been a temporary measure as part of the construction process.	NHS Highland	[Insert Name]		NHS Highland should ensure that the fixing of ventilation ductwork is consistent with the manufacturer's recommended method of fixing. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.14	KSAR Feedback	28.06.23	Fire Strategy Alterations Clarification required - Have there been any changes to the fire strategy since the previous Key Stage Assurance Review?	NHS Highland	[Insert Name]		NHS Highland should ensure that the fire strategy document forming part of the handover documentation is the most recent version. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.15	KSAR Feedback	28.06.23	Pre-occupation fire risk assessment NHS Highland have confirmed that at the time of completion of the Handover KSAR, the fire risk assessment and the pre-occupation fire risk assessment had not been completed.	NHS Highland	[Insert Name]		NHS Highland should ensure that a copy of the fire risk assessment is completed in accordance with SHTM 86 and is provided as part of the handover documentation. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.16	KSAR Feedback	28.06.23	Emergency Fire Evacuation Plan. NHS Highland have not provided evidence of this for review.	NHS Highland	[Insert Name]		NHS Highland should ensure that a copy of the Emergency Fire Evacuation plan is provided as part of the handover documentation. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.17	KSAR Feedback	28.06.23	Induction Training Evidence provided states 'NTC fire training', however, this is not clear if this is induction training for the building. NHSH should confirm that all staff have received induction training.	NHS Highland	[Insert Name]		NHS Highland should ensure that all staff have received fire safety induction training. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.18	KSAR Feedback	28.06.23	Commissioning Documentation NHS Highland to confirm commissioning documents are completed for all passive and active fire safety measures.	NHS Highland			NHS Highland should ensure that all commissioning documents are complete and are provided as part of the handover documentation. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.19	KSAR Feedback	28.06.23	KSAR (Handover) Workbook Ref 1.2 The UPS gas suppression certification has not been signed by the PSCP, it unclear from the information on the certification if the UPS room on the 2nd floor plant room and main LV room are included within the certification issued, inclusive of no manufacturers information for the following equipment, Small Power accessories, luminaires, PV, Theatre intercom and Vesda.	NHS Highland	[Insert Name]		NHS Highland to ensure that all certification, as fitted drawings & manufacturers information for gas suppression is clear and definitive as to the system and location signed by the PSCP to accurately reflect the installed systems within the building and provide evidence that all residual risks in the form of a Schedule of Residual Risks have been considered and is included within the O&M documentation. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			

18.20	KSAR Feedback	28.06.23	KSAR (Handover) Workbook Ref 1.7 Although a training programme has been submitted for review there is no evidence of attendance at the training sessions	NHS Highland	[Insert Name]		NHS Highland to ensure that attendance records for each training session have been received and fully recorded. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.21	KSAR Feedback	28.06.23	KSAR (Handover) Workbook Ref 1.10 The estates management and electrical safety policies have not been ratified by the health and safety committee, the policies are past the review dates of December 2021 [Estates Management] and August 2022 [Electrical safety].	NHS Highland	[Insert Name]		NHS Highland to ensure policies are reviewed and ratified in line with current NHS Highland policy. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.22	KSAR Feedback	28.06.23	KSAR (Handover) Workbook 1.1 No action plan detailing outstanding actions from construction KSAR or Commissioning KSAR items to demonstrate close out.	NHS Highland	[Insert Name]		NHS Highland to ensure that the amalgamated list of outstanding actions from the Construction KSAR and Commissioning KSAR have been completed and closed out. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.23	KSAR Feedback	28.06.23	KSAR (Handover) Workbook 1.3 NHS Highland to ensure that all relevant information from the Commissioning and Handover phases has been collated, appropriately documented and reviewed prior to Handover.	NHS Highland	[Insert Name]		NHS Highland to ensure that the following actions have been completed and suitably filed: - Final Commissioning records which demonstrate design conditions and actual commissioned conditions. - O&M information in line with the requirements of guidance, the BCRs and BSRIA BG 79. - Record drawings. - Health and Safety file. - Digital information exchange in line with Employers Information Requirements (EIRs). (Graphical and non-graphical data, e.g. Federated BIM model, COBie data, asset lists etc.). - Updated access and maintenance strategy. - Derogations from standards have been agreed by the health board and signed-off prior to Handover. - Processes in place to allow stakeholders to review and comment on Handover documentation. - Handover checklists. - Testing commissioning and validation processes are complete, and documentation has been received and reviewed by key stakeholders from the health board (e.g. WSG/VSG/ESG, AEs, IPC etc.) in line with their governance processes. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.24	KSAR Feedback	28.06.23	KSAR (Handover) workbook 1.5 Evidence of roles and responsibilities has not been updated since the project commencement with no evidence of key maintenance procedures having been carried out since construction/commissioning.	NHS Highland	[Insert Name]		NHS Highland to ensure that the roles and responsibilities document is fully updated including, where applicable, key roles which vacant although they were previously listed with appointments in place. NHS Highland to ensure key roles are updated to reflect current responsibilities. NHS Highland to ensure that maintenance records have been provided which demonstrates that statutory inspections and maintenance have carried out since construction / commissioning has been completed As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			

18.25	KSAR Feedback	28.06.23	KSAR (Handover) Workbook 1.6 KSAR resources and key stakeholders list is out of date and no details of IPC or CPs assigned to support the NTC have been presented by NHS Highland. The only information on roles and responsibilities provided by NHS Highland was for the Designated Person.	NHS Highland			NHS Highland AE (HV/LV) listed in documentation has not been in post for several months. NHS Highland to ensure the list of key stakeholders is current and updated on a regular basis. NHS Highland to ensure that the roles and responsibilities of all positions are clearly defined and understood by those occupying each position in line with an updated relevant HBP24 Estates management procedure. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.26	KSAR Feedback	28.06.23	KSAR (Handover) workbook 1.8 No evidence of estates attendance at familiarisation training, evidence of handover of spares or details of planned maintenance carried out.	NHS Highland			NHS Highland to ensure that the following information has been provided: - Training records for estates staff including a register of attendance. - Confirmation of the tools & spares to be provided by the contractor including a detailed inventory of spares supplied, location stored and quantity. - Confirmation of maintenance carried out post handover including details of competence of maintenance staff. The project maintenance information to be comprehensive. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.27	KSAR Feedback	28.06.23	KSAR (Handover) workbook 1.9 Spreadsheet of planned maintenance does not provide sufficient detail of maintenance carried out. No evidence of soft landings review meetings has been provided.	NHS Highland			NHS Highland to ensure that the following information has been provided: - Detailed planned maintenance schedules - Copies of soft landings meeting minutes demonstrating appropriate planning and execution of soft landings. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.28	KSAR Feedback	28.06.23	KSAR (Handover) workbook 1.10 NHS Highland to ensure that there is a process in place for managing Statutory Compliance (including use of the NHS Scotland SCART system) No evidence of appointments, policies and procedures for managing and operating engineering systems or the storing and managing documentation and statutory maintenance records associated with the project.	NHS Highland			NHS Highland to ensure that the following information has been provided: - SCART question review. - Personnel allocated to compliance. - Policies and procedures in place for managing and operating engineering systems. - Process for storing and managing documentation and statutory maintenance records associated with the project. - Evidence of management appointments to support the management process. - Evidence how existing maintenance records by contractor have been incorporated into the boards maintenance systems and are being continued as required. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			

18.29	KSAR Feedback	28.06.23	KSAR (Handover) Workbook Ref 1.2 No evidence that a verification letter has been issued for the domestic water and above ground drainage systems being installed in line with the specification and guidance. No evidence that independent witnessing for all commissioning activities has taken place.	NHS Highland			NHS Highland to ensure they that confirmation has been provided by the contractor to confirm that the domestic water and above ground drainage systems have been installed in line with the specification and guidance. NHS Highland to ensure that all witnessing of commissioning documentation has been counter signed. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.30	KSAR Feedback	28.06.23	HAI-SCRIBE No completed Stage 4 HAI-SCRIBE was seen.	NHS Highland			NHS Highland should ensure that: - the Stage 4 HAI-SCRIBE is fully completed for all parts of the building by an appropriate multidisciplinary team (i.e. containing subject matter experts in all relevant disciplines). - that a process is in place for noting and ensuring rectification of any issues identified. - that both the HAI-SCRIBE and any follow up are reviewed by the Infection Prevention and Control Committee (IPCC). As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.31	KSAR Feedback	28.06.23	IPC Experience KSAR Workbook Ref 2.2 No evidence was seen of any assurance to the Board that IPC specialists involved in the handover process are appropriately qualified and experienced	NHS Highland			NHS Highland should ensure that IPC specialists who were involved in the handover process are appropriately qualified and experienced and that this was reviewed by the Board, for example at the IPCC. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.32	KSAR Feedback	28.06.23	NIPCM KSAR Workbook Ref 2.2 No evidence was seen that compliance with the National Infection Prevention and Control Manual (NIPCM) has been considered. For example: Plans for environmental and practice audits in a new build, compliance with the manual has been considered within the final stage HAI-SCRIBE etc.	NHS Highland			NHS Highland should ensure that staff in the unit will be able to meet the requirements of the NIPCM and that there is a process in place by which the Board is satisfied with. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.33	KSAR Feedback	28.06.23	National Cleaning Specification KSAR Workbook Ref 2.5 No evidence was seen that cleaning schedules will meet the National Cleaning Specification, nor was any evidence seen demonstrating how cleaning schedules were developed or who was involved in this process	NHS Highland			NHS Highland should ensure that all cleaning schedules were reviewed and approved by the IPCT before the building was occupied. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.34	KSAR Feedback	28.06.23	No evidence was seen of IPC involvement in the procurement process	NHS Highland			NHS Highland should ensure that there is a formal documented process for engaging IPC representatives in the procurement of new equipment for the unit. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			

18.35	KSAR Feedback	28.06.23	Rodding Eyes in Clinical Areas - IPC Risk A drain rodding eye is sited within the first-floor recovery area.	NHS Highland			NHS Highland should ensure that a safe system of work is in place for access to the rodding eye in the first floor recovery area to ensure that any risk of contaminating this area is minimised. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.36	KSAR Feedback	28.06.23	NIPCM Staff requirements No evidence was seen of assurance that staff in the unit will be able to meet the requirements of the National Infection prevention and Control Manual.	NHS Highland			NHS Highland should ensure that staff in the unit will be able to meet the requirements of the NIPCM and that there is a process in place by which the Board is assured of this. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.37	KSAR Feedback	28.06.23	Equipment within Window Frames Equipment is fixed within the window frames in some rooms, leaving a narrow gap just below the top of the frame that will act as a dust trap	NHS Highland			NHS Highland have provided HAI-SCRIBE, however this is only for theatres and does not include other areas or address the issue of equipment fixed within window frames. Evidenced cleaning schedules e.g. for clinics do not specifically address this issue. NHS Highland should ensure that specific and relevant documentation is provided for cleaning of all areas over and above the theatres including equipment fixed within window frames. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.38	KSAR Feedback	28.06.23	Macerator Drainage NHS SA noted during the walk round on 23/02/2023 that the macerators installed have an overflow pipe from the tank at the rear which will discharge onto the floor if needed. Dirt and moisture is likely to collect behind macerators in the unit.	NHS Highland			NHS Highland should ensure that the macerator drainage issue has been resolved. Cleaning schedules should specifically address dust traps. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.39	KSAR Feedback	28.06.23	MGPS Safety Group NHS Highland have advised that there is no formal construction medical gas group and that matters are discussed/agreed with the project team. Whilst NHS Highland provided evidence of emails/correspondence to demonstrate engagement between parties, it was unclear as to whether this correspondence was shared with all relevant medical gas safety stakeholders.	NHS Highland			NHS Highland should ensure that all relevant parties have been consulted with respect to medical gas commissioning and provide records of this. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.40	KSAR Feedback	28.06.23	MGPS VIE Compound Main VIE 02 Tank foundation leg support has packers under base plate, there is no assurance that this provides appropriate structural support.	NHS Highland			NHS Highland should ensure the following has been verified with regards to the main VIE tank: - the structural detail provides appropriate support. - the height of the packing and the material used are appropriate given the use and environment. - the capacity of the bolts meets the design requirements of the plant / wind loadings in the absence of a thicker steel shims covering the footprint of the baseplate. - the capacity of the baseplate meets design requirements of the plant / wind loadings and takes into account any additional bending/ prying forces that may be induced on the baseplate due to the air gap under the bolt locations. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			

18.41	KSAR Feedback	28.06.23	MGPS Manifold Room Medical Air manifold discharge point visibly restricted by manifold bottle bank. SHTM-02-01 (Part A) Sec 5.14 "Medical and surgical air may be vented internally normally terminating 50mm above finished floor level. Warning signs should be posted at the discharge positions; access for inspection should be provided" No lighting installed within MGPS manifold room to date.	NHS Highland			NHS Highland should ensure that they are content with the installation & PSCP response regarding the restricted medical air manifold discharge point. NHS Highland To ensure that appropriate lighting and emergency lighting is provided in the MGPS Manifold Room. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.42	KSAR Feedback	28.06.23	MGPS Pipe Work Distances MGPS pipework is extremely close to adjacent ductwork and services viewed during site walk rounds. SHTM-02-01 (Part A) Sec 13.7 "Wherever practicable, a clearance of at least 25mm should be maintained between each service".	NHS Highland			The PSCP has confirmed that areas where MGPS pipework is in close proximity to adjacent ductwork and minimum distances have not been achieved is mitigated by MGPS electrical bonding. NHS Highland should review and ensure that with the minimum distances not being achieved, that they are satisfied that adequate bonding has been provided. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.43	KSAR Feedback	28.06.23	MGPS Installation passing through concrete slab NHS SA observed instances where MGPS pipework penetrated the slab with no pipe work sleeve/collar evident. It is unclear whether the pipework is therefor adequately protected against any structural movement.	NHS Highland			NHS Highland should ensure that sleeves / collars are provided where MGPS pipework penetrates the slab or provide confirmation of acceptance. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observations as a lessons learned to carry forward into following projects?			
18.44	KSAR Feedback	28.06.23	Theatre Ventilation Strategy No further documentation in support of V1 identified in the additional information folders or Governance folders. Email from Ross Southwell of H&K advises that theatre layout is in accordance with air regime in SHTM03-01. This however does not discharge requirement for comprehensive design information and individual drawings for each theatre detailing pressure regimes, pressures and hierarchy of cleanliness. Especially in UCV theatres which will need to be demonstrated operating in dual mode (UCV & conventional). Emails provided identify requirement for terminal HEPA filtration in Sterile pack store/ Lay-up prep room. This issue does not seem to have been adequately addressed, along with pressure stabilisation issues identified during walk round. The only stakeholder dialogue found in the additional info provided is an email advising that surgical staff intend opening Sterile packs under the UCV. NHS SA acknowledges we have received the worksheets, we note several errors such as, forms not signed, errors in the calculations, the air flow directions should be stated in the Air Movement control sheet should state direction e.g. Prep "IN" to Theatre, It is unclear how the Delta P figures are being determined. If there zero leakage through the smoke seals this figure should also be zero.	NHS Highland			Further information was received detailing ventilation strategy and the process undertaken to undertake changes to theatre ventilation system. We acknowledge we have received theatre air sampling results - with no specific concerns NHS Highland to ensure: - that the terminal HEPA filter in the Lay Up Prep Room, as advised by Malcolm Thomas, which is required when the UCV theatres are in conventional mode has been installed. - fan speeds are noted and verified on the BMS commissioning records. - that the cause and effect matrix has been tested and verified. - all commissioning and handover certificates are duly signed and witnessed. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observation as a lessons learned to carry forward into following projects?			
18.45	KSAR Feedback	28.06.23	AHU Borosilicate glass traps Evidence required that trap water depths have been marked on traps.	NHS Highland			NHS Highland to ensure that trap water depths have been marked on traps. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observation as a lessons learned to carry forward into following projects?			

18.46	KSAR Feedback	28.06.23	Ventilation Company Competency Evidence that the personnel from the Commissioning company have been trained in the requirements of the local ventilation policy and procedures. Evidence that the site induction, with respect to working on ventilation and heating / chilled water systems has been agreed with all stakeholders, including the ventilation safety group. Assurance pertaining to the above was not provided by NHS Highlands as part of their commissioning KSAR response.	NHS Highland			NHS Highland ensure that all ventilation commissioning competencies for personnel have been met. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observation as a lessons learned to carry forward into following projects?			
18.47	KSAR Feedback	28.06.23	Complete Validation documentation Full and comprehensive Validation documentation required as evidence for review.	NHS Highland			Whilst a Validation report has been provided, NHS Highland to ensure that all outstanding BMS issues and non standard SPS air profiles are complete. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observation as a lessons learned to carry forward into following projects?			
18.48	KSAR Feedback	28.06.23	AHU Cleaning Whilst TR19 documentation was in place it was a minor observation that photographs were not labelled with locations to confirm they matched documentation. Follow up visit identified some metal swarf in AHU's which may be a result of removal of HEPA filter frames. Additional clean was not identified on duct cleaning documents provided.	NHS Highland			NHS Highland to ensure that an additional clean of the AHU was carried out including documentation associated with the cleaning works. As the facility is now operational, NHS Highland to acknowledge that they are content with their actions regarding the above, including any associated risks and will consider the observation as a lessons learned to carry forward into following projects?			
18.49	KSAR Feedback	28.06.23	Competence of Plumbing Sub-Contractors NHS Highland have not provided evidence that the personnel involved in the project have adequate healthcare experience and that all competency checks have been completed and signed off. The evidence does not indicate a clear record of the trade specific and site specific induction process.	NHS Highland			NHS Highland to ensure that they fully review and assess the competency of plumbing sub-contractors, to ensure relevant healthcare qualifications and experience are evident. Ensure that the competency review process is documented. NHS Highland to ensure that there are trade and site specific induction processes in place, (including toolbox talks etc.) and that these processes are appropriately documented.			
18.5	KSAR Feedback	28.06.23	Protection of Materials During Storage and Transportation The KSAR evidence does not provide assurance that pipework was adequately stored and safely managed to prevent contamination for the duration of the project. This includes the use of tape over pipe ends which is not an acceptable method. There was no evidence provided as to how the pipework and other materials were protected prior to arriving on site by the suppliers. There were no records provided as to how the PSCP has ensured that pipework has arrived to site in an appropriate condition and subsequently stored on site in accordance with SHTM 04-01 Part A 2014 16.2 which states *"The system should be regularly checked during installation to ensure that open pipes, valve ends, cylinder connections, etc are sealed to prevent the ingress of dust/debris that could cause problems during commissioning and subsequent operation."*	NHS Highland			NHS Highland to ensure that appropriate processes are in place to maintain capped pipework ends, valve ends etc. in line with SHTM 04-01 Part E 2.40 which states *"Temporary caps should be fitted to all open pipe ends of the pipework during installation, to protect it from ingress of dirt when it is not being worked on."* Where open ends of installed pipework on the above ground drainage or domestic water systems are identified these should be reported to the site supervisor and / or the plumbing contractor for action.			
18.51	KSAR Feedback	28.06.23	Testing of Materials There is no evidence to show how the Health Board assures itself that all plumbing materials were tested in such a way that would not introduce contamination during the construction.	NHS Highland			NHS Highland to ensure that processes for storage and transportation of plant and materials by the supply chain / manufacturers are in line with the requirements of SHTM 04-01 and documented. This should include the supplier/manufacturer QA testing methodology and the need to dry test plant and equipment. Assurance should be sought in relation to any wet testing of components that may have taken place and about the quality of water that was used.			

18.52	KSAR Feedback	28.06.23	KSAR workbook ref no. 3.1 NHS Highland have advised that there is no formal construction water safety group and that matters are discussed/agreed with the project team. Whilst NHS Highland provided evidence of emails/correspondence to demonstrate engagement between parties, it was unclear as to whether the correspondence was shared with all relevant water safety stakeholders	NHS Highland			NHS Highland to ensure that there is a consolidated register of water safety stakeholders and that documented evidence is made available to demonstrate that all relevant parties have been consulted with respect to domestic water services commissioning. As the facility is now operational: Board to confirm they are content with their commissioning governance, risk and will consider the observation as a lessons learned onto following projects?			
18.53	KSAR Feedback	28.06.23	KSAR workbook ref no. 3.2 Evidence that there are relevant manufacturers reassurance letters confirming that the disinfection methods proposed won't adversely affect their components (outlets and pipework) and will not impact on component warranty. SHTM 04-01 Part A Clause 17.4 states *'Advice should be sought from equipment manufacturers to ensure that proposed disinfection chemicals will not adversely affect performance.'* Letters of assurance to be sought from relevant manufacturers for the use of Oxyl-Pro. Assurance pertaining to the above was not provided by NHS Highlands as part of their commissioning KSAR response.	NHS Highland			NHS Highland should ensure that they have reviewed the requirements of the KSAR workbook and identify supporting evidence that they have appropriate assurances in place. As the facility is now operational: Board to acknowledge they are content with their commissioning governance, risk and will consider the observation as a lessons learned onto following projects?			
18.54	KSAR Feedback	28.06.23	Inspection of joints SHTM 04-01 Part A (Clause 16.0) inspection of joints should be undertaken prior to pressure testing. A document (NTC-H Domestic Water Cut-Out Report) was provided which included pictures of the joints removed, however the report did not provide assurance that the joints have been tested to the manufacturers 6 point installation method.	NHS Highland			NHS Highland to ensure that the PSCP has undertaken the joint testing exercise and that the pipework manufacturers report is fully comprehensive. This should include information of the joint insertion depth, O-ring quality, commentary on cutting technique and crimping tool. As the facility is now operational: Board to acknowledge they are content with their governance, risk and will consider the observation as a lessons learned onto following projects?			
18.55	KSAR Feedback	28.06.23	Risk assessor involvement NHS SA have been provided evidence of an independent risk assessment for the water system, document titled *"Construction Phase / Pre Handover Water System Review"*. This report highlights several issues in which NHS SA are unclear whether these have been actioned and closed out. Such as (not the exhaustive list): *"It may be prudent to contact Scottish Water to determine the upper limits of Total Chlorine permitted in the mains supply water"* - Page 2 *"How the filling of the water systems was carried out, along with disinfectant information for filing and pressure testing should be evidenced."* - Page 3	NHS Highland			NHS Highland and the PSCP to ensure they have reviewed the independent risk assessors report, actioned as appropriate and documented evidence of final actions. We note the risk assessment summary comments sheet have noted a few issues, elevated temperatures at two outlets and the café cold supply. NHSH to advise what actions have been undertaken. As the facility is now operational: Board to acknowledge they are content with their actions regarding above, risk and will consider the observation as a lessons learned onto following projects?			
18.56	KSAR Feedback	28.06.23	Thermostatic mixing tests HTM 04-01 supplement (D08) Annex F F.1.1 states *"Six to eight weeks after commissioning, carry out test given in clause 11.2.2"*, also F.1.2 states *"Twelve to fifteen weeks after commissioning, carry out the test given in clause 11.2.2* Clause 11.2.2 *"in service test procedure"*. NHS Highland provided no assurance that this had been considered.	NHS Highland			NHS Highland and PSCP to review the commissioning and further testing as listed in HTM 04-01 supplement and discuss with the WSG. As the facility is now operational: Board to acknowledge they are content with their tests, risk and will consider the observation as a lessons learned onto following projects?			

18.57	KSAR Feedback	28.06.23	KSAR workbook ref no. 3.4 Evidence of the design information, validated against the as-installed condition, to confirm the flow rates, pressures, temperatures, etc to be used for commissioning. Evidence of a written agreement from the health board representatives to confirm that they have checked this list of the criteria before commissioning commences. Evidence of the change control processes in place to capture any changes to the systems and/or their design conditions. Evidence that the final commissioning schematics and documents have been signed-off by the design consultants. Assurance pertaining to the above was not provided by NHS Highlands as part of their commissioning KSAR response.	NHS Highland			NHS Highland should ensure that they have reviewed the requirements of the KSAR workbook and identify supporting evidence that they have appropriate assurances in place. As the facility is now operational: Board to acknowledge they are content with their commissioning governance, risk and will consider the observation as a lessons learned onto following projects?			
18.58	KSAR Feedback	28.06.23	Above ground drainage - tests for self siphonage and induced NHS Highland provided no evidence of self siphonage or induced siphonage tests in branch discharge pipes. BS EN 12056-2 Section NG.3.2.2 *"To test for the effect of self siphonage the appliances should be filled to overflowing level and discharged by removing the plug, WC pans should be flushed. The seal remaining in the trap should be measured when the discharge has finished..."*	NHS Highland			NHS Highland and the PSCP to review the test for self siphonage and induced siphonage and table with the WSG. As the facility is now operational: Board to acknowledge they are content with their commissioning tests, risk and will consider the observation as a lessons learned onto following projects?			
18.59	KSAR Feedback	28.06.23	KSAR workbook ref no. 3.5 Evidence that adequate pre-commissioning check sheets, in line with the recommendations in SHTM 04-01 Part A (including reference to British Standards for above ground drainage checks) have been prepared and reviewed/accepted by the health board prior to commencing works. Evidence that the pre-commissioning check sheets have been completed and signed-off by the contractor and health board representatives. Evidence of stakeholder engagement in pre-commissioning processes (IPC / WSG / AE / AP etc.) Evidence of ongoing review of protection measures installed in relation to above ground drainage systems, including verification that all drains were appropriately capped during Construction until final connection. Evidence of a strategy to ensure drains flow freely and are free from any debris or obstructions (e.g., pre- commissioning CCTV surveys). Assurance pertaining to the above was not provided by NHS Highlands as part of their commissioning KSAR response.	NHS Highland			NHS Highland should ensure that they have reviewed the requirements of the KSAR workbook and identify supporting evidence that they have appropriate assurances in place. As the facility is now operational: Board to acknowledge they are content with their commissioning checks, risk and will consider the observation as a lessons learned onto following projects?			
18.6	KSAR Feedback	28.06.23	Commissioning evidence The evidence provided for the tank static test (Tank Static Water Test Certificate.pdf) (covering all four tanks in the plantroom) does not give the pressure that the test was carried out to and it has not been counter signed by a representative of the health board.	NHS Highland			NHS Highland to review the evidence that the cold water tanks were adequately pressure tested as part of the commissioning process for the health board's assurance. As the facility is now operational: Board to acknowledge they are content with their commissioning tests, risk and will consider the observation as a lessons learned onto following projects?			
18.61	KSAR Feedback	28.06.23	End of line flush valve activation End of line flush valves have been installed to flush water from the cold water system in six locations across the building. These are activated once the cold water temperature sensors identify 19°C water passing through and they switch off at 17°C. It is unclear whether NHS Highland have considered that if these flushing lines, in the event that the system does not reach 19°C, should have an override to flush to prevent the water within the pipework going stagnant.	NHS Highland			NHS Highland should review whether a secondary control to flush the end of lines should be considered based on a defined time period of no flow. As the facility is now operational: Board to acknowledge they are content with their commissioning tests, risk and will consider the observation as a lessons learned onto following projects?			

18.62	KSAR Feedback	28.06.23	Heating quick fill connection NHS SA observed onsite (21/02/2023) that the quick fill connection adjacent to the pressurisation unit has a straight length of pipe and flexible disconnected hose. NHS Highland representative confirmed that the quick fill has a DCV. However, SHTM 04-01 Part A (2014) Figure(s) 2 schematic indicate a requirement for an RPZ valve on the heating quick fill point and a IV and DCV on the connection to the heating pressurisation unit.	NHS Highland			NHS Highland should review with the PSCP and their NEC Supervisors the backflow arrangements around the pressurisation unit and quick fill point, as the current installation does not comply with SHTM 04-01 or Water Byelaws. Evidence provided indicates quick fill has been removed. As the facility is now operational: Board to acknowledge they are content with their quick fill removal, risk and will consider the observation as a lessons learned onto following projects?			
18.63	KSAR Feedback	28.06.23	Pipe penetrations During NHS SA site walk round 22/02/2023, we noted pipework penetrating IPS panels such as within the theatres dirty utility (below worktop). We note no pipework seal/ fill to the IPS, it is industry good practice to seal this gap.	NHS Highland			NHS Highland and the PSCP to review the filling around pipework penetrations of IPS panels/ walls from outlets. As the facility is now operational: Board to acknowledge they are content with the pipe sealing, risk and will consider the observation as a lessons learned onto following projects?			
18.64	KSAR Feedback	28.06.23	Drainage from Water Tanks During the site walk around 23/02/2023, NHS SA noted the presence of rust on the steel supports within the bund area, suitable protection should be installed to prevent degradation of the support over time. The specification of the size of the drain pipework from the four water tanks should be reviewed to determine if this is suitable for the intended purpose.	NHS Highland			NHS Highland / PSCP to review the design and installation of the support beams within the bund and the cold water tank drains and replace / repair if necessary. As the facility is now operational: Board to acknowledge they are content with the PSCP priming and painting, risk and will consider the observation as a lessons learned onto following projects?			

Soft Landings, Lessons Learned Register: Section 19.0 Commissioning - Operational

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NHS Scotland Board	NHS Highland
Project Name	NTC - Highland
Register Owner	Kevin Minnock
Version	v01 Rev N
Date Last Updated	09.02.2024
Document Reference Number	2140_NTC-H_Lessons Learned_Register

ID Reference	Forum Raised	Date Added	Description	Principal Owner		Input	Action	Time Scale	Status of Action	Closeout
				NHS Scotland Board	PSCP					
19.1	See Section 15. Aftercare			NHS Highland	Balfour Beatty	All	Produce CDMA/PD monthly reports.	2 Months	In Progress	
19.2	Helen Robertson	27.07.23	Swipe Access - unresolved for 2 months in operation. Lesson - Requires focussed activity from one person to co-ordinate, but well in advance of the move and a test to ensure all working.	NHS Highland	Balfour Beatty		NB: Non PSCP issue - otherwise would have been resolved sooner. Larger memory cards were required to work effectively. This is still ongoing		In Progress	
19.3	Helen Robertson	27.07.23	Fire evacuation plan - required the Radio interim fix as you currently you need to be physically next to a screen to know where the alarm has been activated. Not all Fire extinguishers and signage were in place on transition. Fire alarms then brought up issues with the size of the plans on the wall. Potential issue with the front main doors as these will power open and stay open if the fire-alarm is activated in that area. - this has taken a while to finalise with install of bolt-on well after handover. A workaround is in place using radios.	NHS Highland	Balfour Beatty		Lesson - safe, long-term tried and tested solution to be in place before opening. Post Completion add-ons likely to be problematic. Key Lesson Learned to be carried forwards.		In Progress	
19.4	Helen Robertson	27.07.23	E-Health - there were a number of issues with VDI which took time to fix. Ongoing issues with connectivity to OPTOS and OCTs.	NHS Highland			E-health detail required separately for lessons learned, however a longer post-occupancy transition might have helped along with detailed testing of Clinical Ophthalmology systems prior to "go-live"		In Progress	
19.5	Helen Robertson	27.07.23	Telephony - there were a few snagging issues, with some ongoing issues relating to connectivity and sound quality	NHS Highland			Earlier system installation and testing required.		In Progress	
19.6	Helen Robertson	27.07.23	Mobile coverage within the building is poor, generally down to the construction of the building.	NHS Highland			Workable solution via IP phones to alert staff in emergency situations instigated. Better solutions to be evaluated as Lesson Learned.		Complete	
19.7	Helen Robertson	27.07.23	Building doors - Ongoing issues with Theatre Doors and the sliding door to the Balcony. The Theatre doors are damaging the flooring opening and closing. The balcony doors open and close randomly when the sun comes out - this may be a real problem in the winter.		Balfour Beatty		Problem relates to reduced commissioning period pre opening as a number of key build components were not fully tested. Commissioning Lesson Learned.		In Progress	
19.8	Helen Robertson	27.07.23	Plant Island - no fence. Health & Safety risk	NHS Highland	Balfour Beatty		This was only apparent once site security fence was removed. Remedial works required to resolve in use security issue. Commissioning Lesson Learned.		Complete	
19.9	Helen Robertson	27.07.23	Green electric external cabinets were found to be unlocked following handover. Contractor locks removed and NHSH locks not installed timeously. Health & Safety risk	NHS Highland	Balfour Beatty		Handover and commissioning action not timeously completed.		Complete	
19.10	Helen Robertson	27.07.23	There is no meeting space within the building.	NHS Highland			Workaround for this is to book rooms out with the building.		Complete	
19.11	Helen Robertson	27.07.23	Value-engineering reduced the footprint of the Ophthalmology recovery area making the space cramped.	NHS Highland			Briefing stage Lesson Learned highlighted In-Use..		In Progress	
19.12	Helen Robertson	27.07.23	Generally, there were a number of complaints regarding rooms that had been signed-off as part of the 1:50 process.	NHS Highland			Users suggest mock up rooms in a large space as part of the sign-off process. Virtual Reviews - value to be further assessed?		Complete	

19.13	Helen Robertson	27.07.23	Blood fridge required on-site - engagement with SNBTS was protracted and challenging. Now lost the use of a room which houses the blood fridge.	NHS Highland			Their needs were very specific and needed to be factored in prior to construction. The recurring costs are excessive and not yet agreed - though advice from SG was taken. Third party inputs need to be understood earlier in the process.		In Progress	
19.14	Helen Robertson	27.07.23	Rompa Room - lack of co-ordination and ownership of this space means it cannot be used.	NHS Highland			Issues need to be resolved with the area to enable it to be used. Departmental ownership through the project development could have been an issue?		In Progress	
19.15	Helen Robertson	27.07.23	Size of changing rooms - too small and lack of lockers.	NHS Highland			New lockers required to be purchased. Briefing stage inputs lacking? Carry forward as Lesson Learned.		Complete	
19.16	Helen Robertson	27.07.23	Theatre Ventilation issues - lost theatre activity. Longer transition period.		Balfour Beatty		Commissioning stage issue.		In Progress	
19.17	Helen Robertson	27.07.23	Air conditioning units - faulty in Injection rooms and minor ops rooms. Contractor back on-site x 3. High risk patient areas. Leakage onto an Injection patient Datix'd		Balfour Beatty		Commissioning issue that could have had severe consequences. Log as priority Lesson Learned for commissioning checks.		In Progress	
19.18	Helen Robertson	27.07.23	Leaking sinks not picked up during commissioning. Lack of time issue.		Balfour Beatty		Commissioning issue that could have had greater consequences - due to leaking. Log as priority Lesson Learned for commissioning checks.		Complete	
19.19	Helen Robertson	27.07.23	Bike shed lock - not fully checked as part of commissioning.		Balfour Beatty		Commissioning Lesson Learned.		Complete	
19.2	Helen Robertson	27.07.23	Temperature control in some areas - reception, theatres inadequate.		Balfour Beatty		Design and specification issue though may be subjective in some respects? Log as design stage Lessons Learned.		Complete	
19.21	Helen Robertson	27.07.23	Noise within the reception area - it can be noisy. Impact on staff ability to function effectively.	NHS Highland			Design and specification issue though may be subjective in some respects? Log as design stage Lessons Learned.		Complete	

Not Started
In Progress
Complete

Soft Landings, Lessons Learned Register: Section 20.3 NHSH NTC Wkshp 1

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NHS Scotland Board	NHS Highland
Project Name	NTC - Highland
Register Owner	Kevin Minnock
Version	v01 Rev N
Date Last Updated	09.02.2024
Document Reference Number	2140_NTC-H_Lessons Learned_Register

ID Reference	Forum Raised	Date Added	Description	Principal Owner		Input	Action	Time Scale	Status of Action	Closeout
				NHS Scotland Board	PSCP					
			NHS Highland Feedback							
20.1.1	NHSH NTC Workshop 1	13.04.23	The programme was too optimistic, collectively as a group not just with the PSCP.	NHS Highland	Balfour Beatty	All	Realistic programming incorporating timescales based on activities from previous projects applied on future projects	Future projects		
20.1.2	NHSH NTC Workshop 1	13.04.23	Timescales were unrealistic for Pre-Construction	NHS Highland	Balfour Beatty		As above	Future projects		
20.1.3	NHSH NTC Workshop 1	13.04.23	Review Approvals with unrealistic timescales for the Design Teams too.	NHS Highland	Balfour Beatty		As above	Future projects		
20.1.4	NHSH NTC Workshop 1	13.04.23	Quality Assurance of Document Control Management, i.e. Drawings and Specifications need to be spot on with the correct references and revisions to ensure that everyone is working on the most relevant and up to date copy of that document. People need trained properly on how to file and store documents.		Balfour Beatty		QA of documentation to be carried out thoroughly and including filing to CDE.	Future projects		
20.1.5	NHSH NTC Workshop 1	13.04.23	Resources need to be understood prior to pre-construction, with a Resource Programme in place.		Balfour Beatty		Aligned with / incorporated into main programme as per above.	Future projects		
20.1.6	NHSH NTC Workshop 1	13.04.23	More early warnings are needed as to when and why we are missing important deadlines with a more proactive management of the programme and the option of making other choices to enable those target deadlines to be met rather than letting them slip.		Balfour Beatty		More interactive and timely assessment of barriers to progress required throughout a project.	Future projects		
20.1.7	NHSH NTC Workshop 1	13.04.23	Programme Management and a Programme of Work		Balfour Beatty		A better focus is needed on Programme Management and a Programme of Work	Future projects		
20.1.8	NHSH NTC Workshop 1	13.04.23	In all future projects an ideal situation is to have a minimum of 16 weeks post handover in order to get the building and NHS teams operationally ready, which in turn will reduce risk on delivery, commissioning etc. NB: With larger projects possibly needing longer.	NHS Highland			Aligned with / incorporated into main programme as per above.	Future projects		
20.1.9	NHSH NTC Workshop 1	13.04.23	The design process and relevant deliverables management.	NHS Highland	Balfour Beatty		A Design Quality Plan is required and will develop throughout the project incorporating relevant feedback from all the Lessons Learned Meetings.	Future projects		
20.1.10	NHSH NTC Workshop 1	13.04.23	More understanding of design detail for both the Project Teams and the Designers is needed. A level of detail that in this project there was no set guidance on.	NHS Highland	Balfour Beatty		Development of the Design Quality Plan to support.	Future projects		
20.1.11	NHSH NTC Workshop 1	13.04.23	In this Project we moved into Construction prior to sign off, this needs to be avoided in the Lochaber and Caithness Redesign Projects as there is significant risk in doing this.	NHS Highland	Balfour Beatty		Milestones for alignment of the design and associated deliverables sign-offs per stage needs to be built in to overall programme.	Future projects		
20.1.12	NHSH NTC Workshop 1	13.04.23	KSAR and everything associated with this needs to be discussed, however this would be in a future Lessons Learned Meeting.	NHS Highland	Balfour Beatty		Future Lessons Learned to cover more of the KSAR process.	Future projects		
20.1.13	NHSH NTC Workshop 1	13.04.23	Architectural and Structural Elements need to be more fixed before getting into MEP design co-ordination.		Balfour Beatty		Milestones for alignment of the design and associated deliverables per discipline needs to be built in to overall programme.	Future projects		

20.1.14	NHSH NTC Workshop 1	13.04.23	There is a need for Key Design Reviewers to help streamline the user group and RDD processes.	NHS Highland			Key reviewers to be identified early in process and inputs to be supported to ensure continuity through project development.	Future projects		
20.1.15	NHSH NTC Workshop 1	13.04.23	Design Deliverables to be scheduled for incorporation in programming.		Balfour Beatty		Aligned with / incorporated into main programme as per above.	Future projects		
20.1.16	NHSH NTC Workshop 1	13.04.23	Construction Options review		Balfour Beatty		Feasibility of modern methods of construction to be assessed as early in the process as possible.	Future projects		
20.1.17	NHSH NTC Workshop 1	13.04.23	Serious need for more resources, with regular sub-contractor and supply-chain review.		Balfour Beatty		Aligned with / incorporated into main programme and sub programmes as relevant and as per above.	Future projects		
20.1.18	NHSH NTC Workshop 1	13.04.23	More planning required around the working week as there had been approx. 20% of lost time on the NTC.		Balfour Beatty		Optimised shift patterns will be needed on the new projects going forward.	Future projects		
20.1.19	NHSH NTC Workshop 1	13.04.23	Adherence to timescales and planning around these had required some flexibility given the programme delays and compression of NHSH transition activities.		Balfour Beatty		Incorporation of relevant NHSH commissioning activities into programme.	Future projects		
20.1.20	NHSH NTC Workshop 1	13.04.23	Clinical Team understanding their roles in the process is key.	NHS Highland			Key reviewers and responsibility matrix to be developed to support clinical inputs.	Future projects		
20.1.21	NHSH NTC Workshop 1	13.04.23	Regarding Infection Control and H&S there was good feedback and everything went relatively well from these departments perspective.	NHS Highland			Positive Lessons Learned from this - processes and forms of engagement should be replicated in next projects.	Future projects		
20.1.22	NHSH NTC Workshop 1	13.04.23	There is a need for more targeted meetings for the projects going forward along with planning and structuring how key documents will be stored prior to those meetings.		Balfour Beatty		Structured meetings and including clarity in respect of key documentation access / distribution to be reviewed.	Future projects		
20.1.23	NHSH NTC Workshop 1	13.04.23	Concerns around who will be leading on the resourcing aspect.		Balfour Beatty		Regular meetings for resource review.	Future projects		
20.1.24	NHSH NTC Workshop 1	13.04.23	This project was trying to move and transfer an existing service along with a new model. Given some time once the facility is up and running it would be good to reflect and discuss this at a future Lessons Learned workshop.	NHS Highland	Balfour Beatty		Service transfer issues to be reviewed as part of lessons Learned.	Future projects		
20.1.25	NHSH NTC Workshop 1	13.04.23	Infection Control feedback - the room layout/design reviews and sign offs should be done in collaboration with the other key stakeholders e.g., H&S. Ceiling layout and specification information should also be included.	NHS Highland			Infection Control reviews and HAIScribe process should be as inclusive as possible to the range of key stakeholders.	Future projects		
			Balfour Beatty Feedback							
20.1.26	NHSH NTC Workshop 1	13.04.23	Much of the NHS Highland feedback had already been picked up by the Balfour Beatty team as part of the planning for the Lochaber and Caithness Redesign projects.		Balfour Beatty		Refer to Balfour Beatty planning for Lochaber and Caithness and feedback Lessons learned as a regular part of project development.	Future projects		
20.1.27	NHSH NTC Workshop 1	13.04.23	Senior Management above Site Level was needed.		Balfour Beatty		Actioned with the introduction of George Young. George brings with him experience as a Healthcare Project Manager and will be available throughout the next projects.	Future projects		

20.1.28	NHSH NTC Workshop 1	13.04.23	Honest and accurate progress reporting was needed going forwards and at more regular intervals.		Balfour Beatty		Reporting to be refined in line with development of more comprehensive programming.	Future projects		
20.1.29	NHSH NTC Workshop 1	13.04.23	Project management and local presence.		Balfour Beatty		By the end of September Balfour Beatty are hoping to have an office in Inverness, which will be used as a base for both projects.	Future projects		
20.1.30	NHSH NTC Workshop 1	13.04.23	Targets being set for both new projects.		Balfour Beatty		In line with programme development.	Future projects		
20.1.31	NHSH NTC Workshop 1	13.04.23	Looking at resourcing generally based on feedback received.		Balfour Beatty		Aligned and integrated as part of programme development.	Future projects		
20.1.32	NHSH NTC Workshop 1	13.04.23	A better working pattern for sub- contractors will be evaluated.		Balfour Beatty		Aligned and integrated as part of programme development to maximise the potential of the working week.	Future projects		
20.1.33	NHSH NTC Workshop 1	13.04.23	Arranging a session with the team on the NTC in Ayrshire, which has been a successful project.		Balfour Beatty		Lessons Learned session - arrangements tbc.	Future projects		
20.1.34	NHSH NTC Workshop 1	13.04.23	Design programme drill down		Balfour Beatty		Integration of design development and activity streams including all design co-ordination requirements to be incorporated in detail programming.	Future projects		
20.1.35	NHSH NTC Workshop 1	13.04.23	Already addressing feedback on Document Control and associated QA particularly in respect of KSAR and are implementing measures around this.		Balfour Beatty		Relevant Lessons Learned being actioned.	Future projects		
20.1.36	NHSH NTC Workshop 1	13.04.23	Management of documentation, stakeholder engagement, meetings, etc.	NHS Highland	Balfour Beatty		CDE to be used as an active management tool for the project.	Future projects		
20.1.37	NHSH NTC Workshop 1	13.04.23	BIM - inputs and outputs.		Balfour Beatty		BIM docs application on project and proposed support from David Philp and team in set up and planning.	Future projects		
20.1.38	NHSH NTC Workshop 1	13.04.23	MEP package development and coordination		Balfour Beatty		Continued good input from BBK required.	Future projects		
20.1.39	NHSH NTC Workshop 1	13.04.23	Agreement and programming of RDD.	NHS Highland	Balfour Beatty		Incorporate relevant RDD timescales into master programme.	Future projects		
20.1.40	NHSH NTC Workshop 1	13.04.23	Stakeholder engagement through the project development stages.	NHS Highland			Stakeholder identification and including key reviewers essential to streamline the review process. They also need tried and tested workflows with the right people reviewing the right information, rather than having everyone involved. In the future it will be sent to target people/groups.	Future projects		
20.1.41	NHSH NTC Workshop 1	13.04.23	Programmed milestones for design stage completion didn't always allow enough time for M+E integration.		Balfour Beatty		Incorporation of relevant design activities into programme allowing for all discipline interfaces.	Future projects		
20.1.42	NHSH NTC Workshop 1	13.04.23	The Revit model discipline design integration needed Architectural and Structural engineering inputs to be suitable "frozen" at each stage to allow for full M+E services co-ordination.		Balfour Beatty		This sequencing issue is particularly important through RIBA design Stages 3 and 4 and programmes should acknowledge this .	Future projects		

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NHS Scotland Board	NHS Highland
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ID Reference	Forum Raised	Date Added	Description	Principal Owner		Input	Action	Time Scale	Status of Action	Closeout
				NHS Scotland Board	PSCP					
20.2.1	Balfour Beatty Review	15.05.23	Insufficient senior leadership presence locally and on-site		Balfour Beatty		New company office will be opened in Inverness during preconstruction with Area Director and regional team. New Healthcare Project Director, experienced in north Scotland healthcare delivery and based in Inverness.	Future projects		
20.2.2	Balfour Beatty Review	15.05.23	Lack of zonal completion		Balfour Beatty		Focused zonal completions and close out as part of completion plan.	Future projects		
20.2.3	Balfour Beatty Review	15.05.23	Dedicated consistent planning resource		Balfour Beatty		We have engaged a new healthcare planning manager with over £200m of delivered healthcare experience ringfenced to deliver both Caithness and Lochaber. He will report directly to George whilst undertaking fortnightly rolling programme reviews of fully resourced programmes.	Future projects		
20.2.4	Balfour Beatty Review	15.05.23	Programme monitoring		Balfour Beatty		Command Centre (as demonstrated during our NTC Inverness innovation showcase) on-site enabling review of live project data to drive productivity and efficiencies, also provided online for 24/7 live remote access.	Future projects		
20.2.5	Balfour Beatty Review	15.05.23	RIBA 4 incomplete at financial close		Balfour Beatty		RIBA 4 completion on critical path. Included in Perfect Landings methodology and risk register.	Future projects		
20.2.6	Balfour Beatty Review	15.05.23	Some 1:50 room layouts had not completed review/approval at financial close.		Balfour Beatty		1:50s on critical path for RIBA 4. Included in Perfect Landings methodology and risk register.	Future projects		
20.2.7	Balfour Beatty Review	15.05.23	Inconsistent NEC4 application		Balfour Beatty		NEC4 workshop through our PSCM partner Mott MacDonald's NEC4 experts, who were part of the NEC4 drafting team. NEC External Programme Auditor each quarter to assess our processes. All Balfour Beatty project team members will be fully NEC4 trained. Free collaborative NEC4 training and workshops provided to wider stakeholders including customer team and SCPs.	Future projects		
20.2.8	Balfour Beatty Review	15.05.23	Realising full potential of technology assistance including 4D planning		Balfour Beatty		Refreshed and tested digital strategy guided by Alan Duffy includes 4D planning to aid reporting and programme benchmarking as well as further integration of OpenSpace, BIM360 Field, automated (robodog and drone) as-built laser scanning and command centre as above.	Future projects		

20.2.9	Balfour Beatty Review	15.05.23	Reduced productivity from travelling supply chain partner (SCP) inefficient working patterns.		Balfour Beatty		Maximised local SCPs engaged early focused on critical and key trades. Deploy high quality residential cabins on-site to provide accommodation certainty for travelling SCPs. Accommodation strategy agreed during preconstruction mix of local accommodation through GMR Henderson (Caithness), residential site cabins/Loch caravan park long term chalet/caravan lets (Lochaber). Work/shift patterns for travelling SCPs, taking lessons learned from Balfour Hospital Orkney exploring 10/4 working patterns.	Future projects		
20.2.10	Balfour Beatty Review	15.05.23	Productivity monitoring		Balfour Beatty		During construction we will also have a dedicated productivity site manager who will report weekly based on real live data collected via openspace and presented in a smart sheet linked to the project command centre as demonstrated during the Inverness Innovation Showcase in 2022	Future projects		
20.2.11	Balfour Beatty Review	15.05.23	Resource monitoring		Balfour Beatty		Programmes fully resourced with planned vs actual recorded on-site and recorded via biometric gate, monitored weekly with mitigation plan if numbers fall below specification. Refreshed Short Interval Control includes daily collaborative stand-ups and task control to ensure we are working on-site to the sequence of the programme. SCPs required to provide resourcing and shift pattern working commitments at procurement.	Future projects		
20.2.12	Balfour Beatty Review	15.05.23	Introduction of KSAR mid-construction delayed some key dates		Balfour Beatty		KSAR requirements included within our programmes. Applying lessons learned from NHS projects at Highland, Ayrshire & Arran and Tayside.	Future projects		
20.2.13	Balfour Beatty Review	15.05.23	Building warrant fire strategy approval changes		Balfour Beatty		Early Building Warrant submission for Fire Strategy included in programme. Internal specialist fire expert Andrew Smith review to ensure fire strategy meets the most up to date requirements of the local authority.	Future projects		
20.2.14	Balfour Beatty Review	15.05.23	Inefficient change control and RDD process		Balfour Beatty		Refreshed and tested change control and RDD process as described on Page 13.	Future projects		
20.2.15	Balfour Beatty Review	15.05.23	Inefficient RDD sign-off impacted wider programme		Balfour Beatty		Clear advance communication and confirmation of RDD periods to enable resource allocation.	Future projects		
20.2.16	Balfour Beatty Review	15.05.23	Ringfenced commissioning period		Balfour Beatty		Required testing and approval periods interrogated and refreshed. Included in Perfect Landings and risk register. Ring-fenced 16 weeks commissioning programme.	Future projects		
20.2.17	Balfour Beatty Review	15.05.23	Design and procurement status reporting		Balfour Beatty		Fully logic-linked programmes including design and procurement, with information release requirements and dates. Integrated with design responsibility matrix and programmed procurement critical path.	Future projects		

20.2.18	Balfour Beatty Review	15.05.23	Common Data Environment		Balfour Beatty		Refreshed our CDE to BIM Docs 360, information management and documentation control approach, including full time document controller resource and seamless alignment with NHS Digital Aims including a workshop that will be articulated during a CDE workshop facilitated by David Philp of Cohesive.	Future projects		
20.2.19	Balfour Beatty Review	15.05.23	Covid illness impact and working restrictions		Balfour Beatty		Rigorous protocols for infectious disease response established and built on productivity data benchmarking.	Future projects		
20.2.20	Balfour Beatty Review	15.05.23	Fire compliance additional design added during construction		Balfour Beatty		Fire Compliance checks will include during the RIBA stages and approved before construction on-site. Independent reviewer will be brought in to ensure Fire Compliance requirements are met. Balfour Beatty specialist fire expert Andrews myth integrated into design reviews alongside OFR fire engineering.	Future projects		

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NHS Scotland Board	NHS Highland
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ID Reference	Forum Raised	Date Added	Description	Principal Owner		Input	Action	Time Scale	Status of Action	Closeout
				NHS Scotland Board	PSCP					
20.3.1	NHS Highland Project Team Lessons Learned Workshop	20.11.23	A better understanding of business case management is required by all those involved in project delivery, in particular capital and revenue funding aspects for the project.	NHS Highland			Detailed work force planning and development of the target operating model are critical factors to a successful outcome for the business case and alignment to business case development timescales is essential to avoid delays. Adequate resource must be applied in these areas if contractual programmes are to be met.	Future projects		
20.3.2	NHS Highland Project Team Lessons Learned Workshop	20.11.23	The programme is a key document under the NEC form of contract. It is a project control document with specific contractual importance under the NEC contract.	NHS Highland			The correct use of a compliant NEC fully resourced and costed programme is an essential tool for effective project management under this form of contract. It is linked to NEC early warning and compensation event notifications required for management of time and cost on a project.	Future projects		
20.3.3	NHS Highland Project Team Lessons Learned Workshop	20.11.23	Exemplary design is required if the healthcare facility is to function as intended.	NHS Highland			A robust process for design management is therefore a pre-requisite pre-construction activity. The production, review and approval of the design drawings, specifications and associated technical information is a key deliverable for project success. Design management must be sufficiently resourced and managed by experienced and appropriately qualified technical personnel.	Future projects		
20.3.4	NHS Highland Project Team Lessons Learned Workshop	20.11.23	Quality Assurance and Quality Control aspects in construction are a key consideration	NHS Highland			and the Contractor and their team need to be monitored carefully by those suitably experienced in Quality Management to identify and enforce the timely rectification of defects	Future projects		
20.3.5	NHS Highland Project Team Lessons Learned Workshop	20.11.23	Commissioning and Equipping were key areas affected by a challenging programme to achieve handover and completion by the April 2023 opening date. Clinical occupation, staff familiarisation and training commenced on the 9thDecember 2022 and this ran concurrently with the commissioning, completion and handover activities.	NHS Highland			For all future projects, clinical occupation, equipping, staff familiarisation and training should be programmed to follow project completion and handover.	Future projects		
20.5.6	NHS Highland Project Team Lessons Learned Workshop	20.11.23	The requirements for Post Occupancy Evaluation (POE) on capital projects are detailed with SCIM guidance and are mandatory on publicly funded Scottish Healthcare projects.	NHS Highland			Projects must be able to sufficiently plan, resource and report on this aspect of the project.	Future projects		
20.3.7	NHS Highland Project Team Lessons Learned Workshop	20.11.23	Clinical staff requiring some assistance in navigating through the stakeholder engagement process for the business case development of a project. This process takes up a lot of time. Some staff will be working outside of their working hours to complete their inputs.	NHS Highland			Everyone should try to assist clinical colleagues in this respect.	Future projects		

20.3.8	NHS Highland Project Team Lessons Learned Workshop	20.11.23	Challenges keeping to the project programme.	NHS Highland			How that programme references to each of the stages and make sure we can deliver it on time and have relevant resources in place.	Future projects		
20.3.9	NHS Highland Project Team Lessons Learned Workshop	20.11.23	The KSAR process introduced additional challenges with its introduction through the project and has highlighted that project teams need to be aware of what information is required to be evidenced to illustrate the decision making on projects.	NHS Highland			An understanding of the requirements of these processes will be key on the next projects.	Future projects		
20.3.10	NHS Highland Project Team Lessons Learned Workshop	20.11.23	Issues with validation of ventilation systems. Critical that that there is a validation engineer on board at the very early stages of the design.	NHS Highland			Early appointment of validation engineer. NB: This capability is limited and therefore needs to be focussed on as early in the project as possible.	Future projects		
20.3.11	NHS Highland Project Team Lessons Learned Workshop	20.11.23	At design stage, we didn't focus on ventilation and fire compartmentation – cause and effect - at the early stages and the impact it has on critical ventilation systems.	NHS Highland			Early engagement in ventilation strategy is required. At design stage include the involvement of Building Control, Scottish Fire & Rescue service, NHS technical team. Test that there is clear access to fire dampers as required for maintenance. Ensure that there is adequate design coordination and monitoring to prevent clashes.	Future projects		
20.3.12	NHS Highland Project Team Lessons Learned Workshop	20.11.23	Fire damper access was an issue as this was not adequately illustrated in room layouts and including any equipment that may prevent access to them.	NHS Highland			Incorporate access requirements in relevant design drawings for coordination and review. Revit modelling should assist in this co-ordination.	Future projects		
20.2.13	NHS Highland Project Team Lessons Learned Workshop	20.11.23	Key dates for deliverables not met including for Cobie drops which resulted in a significant delay in the development of maintenance schedules, draft O&Ms, draft drawings, etc.	NHS Highland			Earlier issue of these documents rather than at handover would greatly assist the estates teams for future project development.	Future projects		
20.3.14	NHS Highland Project Team Lessons Learned Workshop	20.11.23	Roles and responsibilities of those involved in the process was not clear.	NHS Highland			Roles and responsibilities of those involved to highlight who does what and when in the process required and including RACI.	Future projects		
20.3.15	NHS Highland Project Team Lessons Learned Workshop	20.11.23	Although there were detailed training plans in place, there were issues with training planning and attendance.	NHS Highland			Ensure that there is a detailed plan for maintenance training and including access to information on Maximo and that relevant staff are made aware and attend as required.	Future projects		
20.3.16	NHS Highland Project Team Lessons Learned Workshop	20.11.23	First responder on call – there were a lot of teething problems and repeated faults on nurse call for example and often in the middle of the night when maintenance call out was required.	NHS Highland	[Insert Name]		Ensure that there are processes in place to adequately deal with this and including support from contractor / supply chain through the defects period in particular to reduce operational and financial impacts on the NHS team. In terms of managing call-out issues, all should have been detailed at handover stage. There were a number of workshops where all FM services were covered and this process was assisted by Turner and Townsend. The correct early engagement is required and on call requirements should be clearly defined.	Future projects		
20.3.17	NHS Highland Project Team Lessons Learned Workshop	20.11.23	The BMS link to Raigmore was problematic and required support from the relevant sub contractor that had to be chased through.	NHS Highland	[Insert Name]		Ensure that support from key sub contractors through the defects and subsequent maintenance periods for timeous attendance on site are in place.	Future projects		

20.3.18	NHS Highland Project Team Lessons Learned Workshop	20.11.23	Suiting of door locks was an issue. There was a water leak and the issues with door locking and how they were suited was a frustration for the plumber who was called out through the night. The access was extremely time consuming and problematic. It is a defects management issue that should be reported back. There had also been similar swipe card access issues too.	NHS Highland	[Insert Name]		The security strategy needs early discussion. Key suiting requires input from the key stakeholders including design team with Estates to feed in as early as possible. Specifying the right point in the project for review should be a more effective discussion along with technical specialists if required.	Future projects		
20.3.19	NHS Highland Project Team Lessons Learned Workshop	20.11.23	Some of the issues encountered were linked to the fact that that the equipping period and clinical commissioning periods were compressed. The building wasn't complete at the time it was occupied and the NHSH Facilities team took over some of the cleaning etc. NTC H never received the final clean from the contractor that was included under the contract.	NHS Highland	[Insert Name]		The timescales for technical commissioning, handover and operational commissioning need to be adhered to and the programme adjusted if there are slippages.	Future projects		
20.3.20	NHS Highland Project Team Lessons Learned Workshop	20.11.23	After care and defects period issues arising generally.	NHS Highland	[Insert Name]		Recommended that the NEC Supervisor remains on site a for a period post handover.	Future projects		
20.3.21	NHS Highland Project Team Lessons Learned Workshop	20.11.23	Relevant apportionment of capital cost and revenue finance requirements need to be better integrated into the business case process.	NHS Highland			Ensure that all revenue items for project delivery and operation are included in to the original business case and refined at each stage. The data / information from lessons learning should be used to schedule / cost for what is required.	Future projects		

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NHS Scotland Board	NHS Highland
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ID Reference	Forum Raised	Date Added	Description	Principal Owner		Input	Action	Time Scale	Status of Action	Closeout
				NHS Scotland Board	PSCP					
20.4.1+B12:I33	PSCP and Supply Chain Workshop	20.11.23	There were issues with design stage programmes which were too onerous relative to the actual design development and co-ordination progress, design changes and value engineering.		Balfour Beatty		Realistic programme task periods are required together with closer discussion with relevant team members before being presented for agreement.	Future projects		
20.4.2	PSCP and Supply Chain Workshop	20.11.23	There was a significant amount of value engineering undertaken at advanced design stages which impacted on design co-ordination and procurement.		Balfour Beatty		Value engineering should be carried out at appropriate stages in project development and also relative to relevant design stage sign-offs / freezes.	Future projects		
20.4.3	PSCP and Supply Chain Workshop	20.11.23	VE set the project out of sequence well into Stage 4 (25% complete). 25% was very significant at that time. A lot of the complexity ended up coming through the design coordination and construction on site initiated from that decision to VE at that relatively late stage.		Balfour Beatty		Closer attention and focus on costs in relation to design development and scope with checks at design freeze / sign-off stages.	Future projects		
20.4.4	PSCP and Supply Chain Workshop	20.11.23	The programme wasn't a linear path, and even in the pre-construction program itself, the design effectively went through 4 variations due to changed briefing and VE requirements that also led to out of sequence project development.		Balfour Beatty		Robust Programme with design freeze - keeping to the clinical and technical briefs and having robust documents at an early stage for design development and monitoring relative to the Programme. Design freezes at RIBA Plan of Work stages.	Future projects		
20.4.5	PSCP and Supply Chain Workshop	20.11.23	There were a lot of packages that were CDP which created a lot of information being distributed back and forth throughout the stages. Even in the construction stage where it was required to ensure that any updates to those specialist designs were captured within the mechanical infrastructure.		Balfour Beatty		Agreement of scope and extent of CDP packages on site. Early agreement on those areas would smooth a lot of design and construction at that stage. Push for more and earlier engagement on those areas of CDP.	Future projects		
20.4.6	PSCP and Supply Chain Workshop	20.11.23	The provision of an emergency hydrant tank on site. The Scottish Building regulations state that if there is not sufficient pressure or flow in the mains, there needs to be provision of an alternative form of supply, meaning a huge static hydrant tank was required.		Balfour Beatty		There should be early discussions with those representative members to try and get closed off before detailed design stage as it does have quite significant implications on the site.	Future projects		
20.4.7	PSCP and Supply Chain Workshop	20.11.23	Non-standard theatre arrangements. The team responded to the KSAR process and satisfied the issues raised to ensure that there was enough information and supporting calculations to allow for non-standard theatre layout in the NTC. There was a shared scrub room which was the main cause of concern. A lot of effort was needed by everyone in the team to get that closed out. It got verified commissioned and validated.	NHS Highland	Balfour Beatty		NB: As part of that NTC program there was a desire from HFS for innovation in theatre design, inpatient design, and to respond to sustainability issues. The approach to elective centres was different, there was a discussion on taking out anaesthetic rooms as that was something that was being achieved at the eye clinic at the Golden Jubilee. Golden Jubilee was the first to come off the drawing board with the NTC being the second. Early agreement of any derogations or innovative solutions is required.	Future projects		
20.4.8	PSCP and Supply Chain Workshop	20.11.23	Optimism Bias build up and ensuring that potential additional requirements further through the project can be covered.	NHS Highland			Carrying more of that approach into the FBC budget as during the construction phase if the project is on site for 2-3 years additional requirements can get added in.	Future projects		

20.4.9	PSCP and Supply Chain Workshop	20.11.23	Equipment costs build up - On a new build that they are not considered revenue at all whereas on the refurb, there is an element that is revenue.	NHS Highland			Understanding how equipment costs are dealt with and how they are split between capital and revenue depending on whether the project is new build or refurb.	Future projects		
20.4.10	PSCP and Supply Chain Workshop	20.11.23	In terms of design and specification, act with caution if replicating anything because a lot of what was achieved and produced at the NTC was because it was for elective patients. There were patients that were very explicitly excluded from the category of entry into that hospital.	NHS Highland			A distinction should be made between the elective program versus a general hospital theatre department design.	Future projects		
20.4.11	PSCP and Supply Chain Workshop	20.11.23	Supply and installation of theatre equipment – there were issues encountered from specifying the equipment, trying to get the cost value and then trying to get it to fit in space available.	NHS Highland	Balfour Beatty		Going forward, information should be gathered as early as feasible to coordinate it better and particularly in areas such as ceiling voids.	Future projects		
20.4.12	PSCP and Supply Chain Workshop	20.11.23	NHS Assure and KSAR – for NTC there was no KSAR pre-construction and it felt like we were always trying to catch up. It took up a lot of time and impacted on the commissioning period at the end.	NHS Highland	Balfour Beatty		For NHS Assure and KSAR, to engage earlier so issues are closed out if they become apparent.	Future projects		
20.4.13	PSCP and Supply Chain Workshop	20.11.23	The structural grid was well thought out and made the structure efficient, straightforward, rational and repeated, so that worked well and this then followed through into the cost and efficiency of the erection.		Balfour Beatty		Carry forwards this good practice / design into future projects.	Future projects		
20.4.14	PSCP and Supply Chain Workshop	20.11.23	Internal secondary steelwork issues were unforeseen due to fire regulations changing and not knowing what the impact was on the British Gypsum requirements for secondary steelwork. Secondary steelwork affecting theatres was a particular issue and lot of openings for dampers had to be changed.		Balfour Beatty		Assess the impacts of regulation and specification requirements and potential changes in conjunction with value engineering and design sign-offs, statutory submission etc.	Future projects		
20.4.15	PSCP and Supply Chain Workshop	20.11.23	The theatre pendants were affected by not having that structural information up front and the requirements that they put on the vibration sensitivity of equipment was significant and that made it difficult to effectively retro measure the building to confirm the vibration was not an issue.		Balfour Beatty		Ensure that vibration related issues are assessed with any design and specification changes.	Future projects		
20.4.16	PSCP and Supply Chain Workshop	20.11.23	Resilience - Switch room layout was developed through engagement with NHS. Lessons Learned relates to where the dual supplies terminate and creating a single point of failure. In the switch room, there was an A and the B supply coming into the single switch room.		Balfour Beatty		Now taken that on board for Lochaber and there are separate switch rooms scheduled. That's a lesson learned that has been taken into a new design.	Future projects		
20.4.17	PSCP and Supply Chain Workshop	20.11.23	There was an issue with the multiple voids created in the ceilings. Many compartments were created which meant when installing an L1 system fire alarm system this included a lot of detectors in that void. One example was a room that had steelwork crossing perpendicular to each other which meant four voids were created and therefore four smoke heads required.		Balfour Beatty		Detail design development should carefully consider the overall coordination of ceiling voids and any proposed VE should take the relevant outcomes into consideration.	Future projects		
20.4.18	PSCP and Supply Chain Workshop	20.11.23	For room layout review, there was a lot of indecision regarding how many sockets, adding more then taking them away during design and construction stages. The number of sockets can affect the number of circuits and the circuit design which in turn, affects the size of the distribution boards, so it's not as easy to just add in two sockets later in the project.	NHS Highland			Early agreement of room layouts will prevent these ramifications. The technical brief and the clinical briefs and including clinical output specifications need to be tied down as early as possible.	Future projects		
20.4.19	PSCP and Supply Chain Workshop	20.11.23	There were significant impacts on the project through its development - Grenfell happened not long after it got awarded, then Covid, Ukraine and associated further impacts. and in addition to that, the decision from Highland Council regarding the interpretation of fire regulations around the internal lifts.				Contingency arrangements required to manage significant and unforeseen circumstances that may affect projects.	Future projects		

20.4.20	PSCP and Supply Chain Workshop	20.11.23	The extent and challenges around planning requirements before site and on site. The challenging aspects of planning was due to the uniqueness of the campus site and historical aspects associated with that. All parties really pulled together through a number of meetings with planning and the transport teams. A massive effort and something to be proud of.		Balfour Beatty		Good example of integrated team work that should be carried forward into future projects.	Future projects		
20.4.21	PSCP and Supply Chain Workshop	20.11.23	There were some teething issues with stakeholders understanding that Supervisor inputs were to help deliver a defect free completion. A good working relationship was established and was fully appreciated.	NHS Highland			Ensure that there is engagement from all key stakeholder to address all aspects of project development and delivery from the outset.	Future projects		
20.4.22	PSCP and Supply Chain Workshop	20.11.23	Early stakeholder engagement is vitally important. Various stakeholder groups visited site as completion approached and were slightly surprised about whether they had or hadn't seen a design drawing previously. They also weren't expecting to see some things even though that was in the Works Information.	NHS Highland			Lessons were learned from CSU and a stakeholder engagement and communications plan was developed and under the direction of Deborah Jones, a 3P liaison session was carried out. This approach should ideally be taken forwards in future projects.	Future projects		
20.4.23	PSCP and Supply Chain Workshop	20.11.23	The stakeholder groups were challenging. This was not only due to the extreme factors affecting the project but there was a change in working practices, personnel, people who retired and knowledge lost. That has to be recognised as much as the issues encountered towards completion and handover.	NHS Highland			Stakeholder engagement planning including resilience to cover potential loss of stakeholders should be carried forward into future projects.	Future projects		
20.4.24	PSCP and Supply Chain Workshop	20.11.23	The 3P process was very worthwhile on the project. Clinical outputs and function and flow is directly attributable to that and worth every penny and paid itself back within the first 3 months of operation. In terms of ADB – there was a complete turnover and changes outside of design and construction that took people away from the project. If the 3P can continue into developing the ADB's - then a project would be in very good state earlier as a result of that.	NHS Highland			See 20.4.22 above.	Future projects		
20.4.25	PSCP and Supply Chain Workshop	20.11.23	There were issues in getting the theatres ventilation validated timeously.		Balfour Beatty		There is a need for early engagement of the validation engineer. Consultation and early engagement to agree the ventilation strategy is crucial.	Future projects		
20.4.26	PSCP and Supply Chain Workshop	20.11.23	KSAR as a process came along as an interim process by NHS Assure during the latter stages of the project. NHS Highland fully supported the intent of NHS Assure's efforts to overcome issues on previous jobs with defects in the design and the build. KSAR was embraced as best as it could be with the resources available to discharge the requirements. Cooperation from PSCP was superb. Every effort was made in getting KSAR supported status through pre-construction with assistance from the PSCP and supply chain.	NHS Highland			Good example of integrated team work that should be carried forward into future projects.	Future projects		
20.4.27	PSCP and Supply Chain Workshop	20.11.23	KSAR was the fifth review process that the project went through. In relation to this project, it did come in at a later stage. What was reassuring was there was nothing that KSAR raised that hadn't been reviewed previously.	NHS Highland			As a lesson learned, NHS assure needs to better define the stages and associated requirements. Information required at one stage shouldn't go into the next stage if it's already been provided. Preconstruction issues should be dealt with at preconstruction and likewise with construction, etc.	Future projects		
20.4.28	PSCP and Supply Chain Workshop	20.11.23	Anything that got taken back into the design as a result of the KSAR review had actually come out because of the value engineering. It was definitely the catalyst for many of the challenges that the project underwent.	NHS Highland			Better management of the project development gateways for KSAR should be incorporated in planning for future projects.	Future projects		

20.4.29	PSCP and Supply Chain Workshop	20.11.23	The KSAR review process being required in the construction period when trying to get everything across the line, including validating theatres and trying to get all outstanding items closed off was quite a challenge. Everyone came together to support one another and assisted in processing each issue one at a time.	NHS Highland			There is a lot to learn such as early evidence tracking and discussions to allow for a smoother transition is something already being done for Lochaber.	Future projects		
20.4.30	PSCP and Supply Chain Workshop	20.11.23	There were items that were closed off in NDaP and then reopened in KSAR even though the supported status was given. That was a stressful period when about to Commission a system and having to backtrack through design elements and not have that affect handover.	NHS Highland			Better management of the project development gateways for KSAR should be incorporated in planning for future projects.	Future projects		
20.4.31	PSCP and Supply Chain Workshop	20.11.23	Communication channels and project governance continued to be refined throughout the project.	NHS Highland	Balfour Beatty		Follow the contract, and inform through the governance process, the project board, the health board and above that Government and NHS Assure. The team has come a very long way learning lessons and that shouldn't be underestimated. That will serve Lochaber and Caithness well going forward. Design quality plans have been developed which hopefully, if administered correctly, will aid that process with clarity of information requirements through each of the RIBA stages.	Future projects		

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Register Owner	Kevin Minnock
Version	v01 Rev N
Date Last Updated	09.02.2024
Document Reference Number	2140_NTC-H_Lessons Learned_Register

	NTCH - PD Health and Safety	LESSONS LEARNED	Date 03/07/23	Author K Minnock							
Ref	Item	Reason	Corrective Action	Lesson learned	Category						
20.5.1.1	Pump chambers - deep excavations	Emergency evacuation procedure	Include as appendix in RAMs	Consider emergency procedures	H&S						
20.5.1.2	Pumps to de-silting equipment	Excessive fumes from desilting pumps. Environmental NCR	maintenance / replacement	Check equipment is suitable for use.	H&S						
20.5.1.3	Use access steps /gates not ladders	Safe access and egress, especially if handling materials	Used for operative access only. Materials loaded separately	Consider when construction planning	H&S						
20.5.1.4	Use of cuplock scaffolding	Heavy to handle.	Consider alternatives	Consider use of PERI scaffolding. Half the weight of cuplock. Quicker to install and cost effective.	H&S						
20.5.1.5	Guards to block cutter	Guards removed/ H&S hazard.	Reinstate guards	Monitor and check equipment. Include requirement for guards in RAMS.	H&S						
20.5.1.6	Loading Gantry Gates	Installed from cuplock. Heavy /costly	Consider Peri specific products or equal for future projects	Consider alternatives.	H&S						
20.5.1.7	Keep access routes clear	Material placed in access routes	materials required removal	Designated material placement areas. Especial at high level	H&S						
20.5.1.8	Edge protection at high level	Gaps in edge protection	Gaps closed	Monitor and check edge protection. Include requirement in RAMS.	H&S						

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NHS Scotland Board	NHS Highland
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Ref	NTCH - PD D&T Technical	LESSONS LEARNED	Date 03/07/23	Author K Minnock							
	Item	Reason	Corrective Action	Lesson learned	Category						
20.5.2.1	Building repositioned on plot	North end of plot unsuitable for building. Piling depth excessive and costly.	Building repositioned due south	Coordinate Design with available Geotec information	Design						
20.5.2.2	Ponding between topsoil storage bunds	Lack of drainage provision	Obtain SEPA permissions. Form drainage ditch and silt drain for discharge to local watercourse	Consider drainage in design	Design						
20.5.2.3	Concrete Slabs	Surface Cracking. Lack of construction & expansion joints.	Remedial concrete repairs. Engineers report required	QA/QC on design. Ensure adequate provision of joints. Pre-pour checks to be carried out.	Design						
20.5.2.4	Cast in bolts to theatre soffit	Pendant support design incomplete	Multiple bolts installed	Finalise design of pendant support prior to slab pours	Design						
20.5.2.5	Wind bracing / SDS design	Wind bracing restricted vertical support.	Design solution required. Delays as a result	Carry out design co-ordination	Design						
20.5.2.6	Internal temporary festoon lighting	some areas of poor lighting levels for operatives	Additional baton lights provided	Consider in temporary lighting design. Modern high lux level lighting alternatives	Design / Temporary works						
20.5.2.7	Theatre Equipment / BMS	Technical issues aligning equipment controls with BMS	BMS technical support required to resolve issues	Ensure compliance at design stage. BMS controls and Theatre equipment	Design						
20.5.2.8	IPS Units	Divergence from Architects performance specification	QA/QC remedial work required to product	Ensure PSCP procurement adheres to Architects performance specification	Design/Procurement QA/QC						
20.5.2.9	Corridor signage /lighting to ward bedroom	Sight line visibility issues when viewing from corridor end	None taken - staff informed and aware	Consider reposition signage and lights to obtain clear sight lines - for future projects	Design						
20.5.2.10	Patient hoists	Ensuite doors /clash	Ensuite doors required alteration	Ensure design accommodates and door schedule reflects requirement	Design						
20.5.2.11	External Paving colour (black/white/grey)	Paving did not adhere to NTCH colour scheme or campus guidelines	none	Ensure external consultant work is checked for early compliance.	Design						
20.5.2.12	Topsoil	Plants and landscaping dependent on quality of soil	QA/QC remedial work required to product								
20.5.2.13	Horticultural products	Subjected to cold weather conditions outside during storage pre planting. Were conditions suitable for all plants /trees?	Damaged products replaced	Ensure deliveries are planned just prior to planting to ensure potential damage plants.	Landscaping						
20.5.2.14	Paving levels and falls	Area outside of sprinkler pump house. Levels and cross falls etc	none	Simplify design to enable buildability.	Design						
20.5.2.15	VIE Tank (NHSH responsibility)	Tanks size change and appears to be second hand and refurbished	Check supplier contract and ensure new equipment is provided. No late changes	The late change require plinths to be broken out. Original layout changed at late notice.	Design / Procurement						
20.5.2.16	Tree Pits / Streeting lighting cables	Clash between tree pits and external car park lighting	Trees repositioned	Ensure design coordination of component elements	Design						
20.5.2.17	Sloping tops to cupboards	Metal tops originally supplied	Change to same finish as furniture	Ensure specification reflects NHSH requirements	Design						
20.5.2.18	Sockets - Numbers	Appears to be too many sockets outlets on certain walls	None	Ensure design reflect clinical need for functional use.	Design						
20.5.2.19	Feature wall	TV and sockets placed on feature walls	None	MEP designers to be aware of feature walls and plan accordingly to minimise	Design						
20.5.2.20	Scrub sink IPS backboard	Joint in backboard - IPC issue	Fill gap	For future projects -Theatre scrub sink backboards to be single length- no joints permitted.	Design						
20.5.2.21	Fire Strategy	Post Handover request by Fire Safety advisor to amend front door operational sequence in event of fire alarm out of hours	PM reviewing. Change to Fire strategy. Requires PSCP/Building Standard /Fire Safety Engineer (Mott Macdonald)/SFRS review and approval	Review Fire Strategy meets NHSH operation aspirations.	Design						
20.5.2.22	Pendants /Microscope Positioning on ceiling.	Difficulty in achieving correct fixing position.	Alternations /repairs to ceiling.	Fixing templates to be used. PSCP to liaise with supplier.	Design						
20.5.2.23	Phone signal in facility poor	Signal strength	Solution via provider	Design measures to provide adequate service	Design						
20.5.2.24	Ophthalmic test rooms - black walls	Clinical requirement	Walls painted black on request	Include requirement in design	Design						
20.5.2.25	Corridor walls -tape joint detail at junction	Detail not robust. Clinical risk .	Remedial work to joint. Cleaning and adhesion	Provide a different detail for future projects	Design						
20.5.2.26	En Suite Bath room. Emergency pull cord	Clash with patient hoist	Reposition pull cords	Ensure design coordination of component elements	Design						
20.5.2.27	Low ceilings in pod rooms	Design	None	Avoid in future designs	Design						
20.5.2.28	Pendant hoses to articulated joint	Hoses crushed	Replacement hoses and new configuration	Ensure future designs note and correct	Design						
20.5.2.29	Lifting point holes on AHU Base skids	Prevent potential access for animals	Fit plugs/caps	Include in future specifications	Design						
20.5.2.30	Plant room ductwork supports - exposed bolts	Health & Safety.	Fit safety caps to exposed bolts	Include in specification	Design						

20.5.2.31	Water tank bunding & drainage	Incident- discharge outlet did not cope with water flow discharge arising from a joint failure (5Bar)	Filtration system repaired and checked. Drain outlet cleared and CCTV,d. Discharge test carried out	Ensure incident report recommendations are incorporated in future designs. Ensure discharge testing as part of commissioning.	Design						
20.5.2.32	Cable routing / containment/binding/labelling	Non compliance issues	Re-work as necessary to achieve compliance	Ensure compliance at design stage. Monitor to ensure installation meets design requirements.	Design						
20.5.2.33	Theatres Ceiling Lights	Back plates restrict of maintenance access	Training in removal and access for maintenance	Select products which permit easy access for maintenance	Design						
20.5.2.34	Access hatches - clear access	Clash with cable trays above theatres	Re-routing cable trays	Ensure design coordination of component elements	Design						
20.5.2.35	Key Suiting	Difficulties with finalising and installing key suiting.	Temporary measures adopted	Ensure key suiting arrangements are understood included in design and delivered by PSCP in time for handover/completion.	Design						
20.5.2.36	Medical Gas pipe work	Variance in pipework layout arrangement above bedheads	Non - too late	Agree pipework layout configuration with Med Gas pipework installer.	Design						
20.5.2.37	Fireman's access from stair wells	Late change to door ironmongery	Push bar internal plus external handle (on stair well side or door) introduced	Ensure Ironmongery schedule reflects Fireman's access strategy	Design						
20.5.2.38	Clock synchronisation - mains supply	Avoid battery replacements	None	Consider NHSH requirements and affordability at design stage.	Design						
20.5.2.39	Blinds in Theatres	Choice mains or manual	Late change under CE. Work carried out post handover /completion due to procurement period	Consider NHSH requirements and affordability at design stage.	Design						
20.5.2.40	Sink Height /Taps	Complaint from staff that sink /taps not suitable for intended use.	Risk assessment and management issue	Consider NHSH requirements and affordability at design stage.	Design						
20.5.2.41	Covers to Boilers	Problems reported by users	Not currently being utilised	Discuss requirement at design and ensure appropriate covers are selected.	Design						
20.5.2.42	Cable trays on floor	Trip Hazard	Loose cable tied back / consider warning signage.	Consider placement / protective measures / designated walkways	Design						
20.5.2.43	Water storage tanks access caps	Security.	Lockable caps fitted	Lockable caps to be included in specification	Design						
20.5.2.44	Blood Fridge Location	Late agreement on final location	Required services introduced to final location	Agree location and requirements early in design	Design						
20.5.2.45	Reception air flows	Complaints from staff - cold air	Review of ventilation to area.	Design	Design						

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Ref	NTCH - PD Construction	LESSONS LEARNED	Date 03/07/23	Author K Minnock							
	Item	Reason	Corrective Action	Lesson learned	Category						
20.5.3.1	Structural steelwork members out of tolerance	Failure to check setting out prior to grouting.	Structural Engineers report on non conformance.	Carry out QA checks. Ensure hold point in ITP.	Construction						
20.5.3.2	Laydown area	Lack of suitable laydown areas for receipt and handling of materials.	Provide adequate laydown areas for material handling and storage	Consider laydown when construction planning	Preconstruction						
20.5.3.3	Blockwork to Lift Shafts	Poor quality standard.	Remedial checks to bonding and ties.	Use Pre-cast. Better quality. Quicker to install	Preconstruction						
20.5.3.4	Concrete Slabs	Poor quality to levelling and finish	Remedial concrete repairs	QA/QC checks	Construction						
20.5.3.5	Concrete Slabs	Rain damage post pour.	Remedial concrete repairs	Protect post pour. Weather checks	Construction						
20.5.3.6	Intumescent Painting defects	Painting weather conditions. Inadequate cleaning and preparation of steelwork prior to application	Remedial painting repairs	QA/QC, Application in accordance with manufacturers instructions. Consider off site painting prior to erection.	Construction						
20.5.3.7	Standing water - external works	Weather conditions and ground conditions.	Pumping to clear.	Consider solutions. Earlier completion of externals to hard landscaping sub-base. Dewatering arrangements	Construction						
20.5.3.8	Damage to Steelwork primer	Damage caused during unloading and loading.	Remedial painting repairs	Consider protection	Construction						
20.5.3.9	Use of car park	Cost and adjacency to main site	Remedial repairs required	Car park not new at handover. Consider when construction planning	Construction						
20.5.3.10	Excessive dust	External works open to elements. Dry hot weather	Dust control measures implemented	Consider when construction planning	Construction						
20.5.3.11	Roof damage	Operatives walking on roof. Box gutters used as access routes. Poor access arrangements. No temporary walkways	Roofing remedial repairs required	Consider when construction planning	Construction						
20.5.3.12	Fire protection to steel	Site sprayed application.	Remedials required. Area cleared for spraying preventing other work in area	consider off site application	Construction						
20.5.3.13	PSCP Site establishment situated on NTCH project's car park	Main offices required removal to complete works to the car park.	PSCP required temporary offices and facilities. Also place on permanent works	Avoid on future projects. Disruption / Delay /Cost	Construction planning						
20.5.3.14	External Works completed late with some works post handover.	Resin paths and landscaping weather dependent. Delays pushed activities into winter period.	Carried out post handover by agreement with client	Consider completion of external works earlier in programme. Consider Sectional completion in contract	Construction planning						
20.5.3.15	Delay in achieving watertight date	Roof sheeting and cladding - material delays	Cladding supplier contacted. NTCH given priority over commercial projects. Roof sheeting however was delayed.	Covid impact led to material supply delays.	Construction						

20.5.3.16	Access for large equipment delivery into building	Delays to equipment delivery impacts ability to achieve watertight date	Temporary weather protection to external envelope	Ensure delays are programmed to suit building closure /watertight date	Construction planning						
20.5.3.17	Secondary steelwork -Fins to East and West wings	Installed later than main steel frame	required roof edge protection removal and reinstatement for bolt access and installation.	Schedule same time as main structural steel	Construction planning						
20.5.3.18	Importance of dilapidation surveys	Subsequent damage to campus roads by heavy vehicles	Implemented a designated route for all construction traffic. HIE carried out remedial / design change to speed calming chicanes	Delap survey removed doubt as to impact from construction vehicles. Proved a design fault affecting areas not on designated NTCH route.	Construction						
20.5.3.19	Canteen and smoking areas	Position adjacent to and behind NHSH client offices	Operatives requested to move smoking shelter during teams calls.	Consider when construction planning	Construction planning						
20.5.3.20	Internal partition base rails	Set out early and subsequently damaged by screeders wheelbarrows.	Renewal /replacement in most instances	Programme to follow screeding /or manage screeding subcontractor.	Construction						
20.5.3.21	Leaks to roofing	Mainly jointing issues.	Remedial works	QA/QC monitoring. Designated access routes on roof. Keep off the roof once installed.	Construction						
20.5.3.22	Site entrance control	Rear service road gates locked on occasion	Project lead informed.	Consider emergency vehicular access at all times. Consider barriers for next major project.	Construction						
20.5.3.23	Site labour control measures	Improve site programme /resource management	Improve use of technology	Consider biometric devices to record time and attendance for future projects	Construction						
20.5.3.24	Storage /Laydown areas On site footprint	Affects ability to complete works in that area.	Relocate off footprint. Plot 5 was available.	Consider affects of placement when construction planning	Construction Planning						
20.5.3.25	Storage of plasterboard	Building not watertight. No humidity control.	Damaged materials replaced. Materials covered in polythene.	Achieve watertight prior to drylining	Construction						
20.5.3.26	Plasterboard sheets deflection	Material handling equipment and pallet size	Sheets turned /reversed	Avoid it happening in first instance with suitable handling and storage.	Construction						
20.5.3.27	Site tidiness /storage of materials within building	Clear areas required for construction	Designated storage areas internal	Improved planning for material storage within building. Better external storage facilities. Only have materials required for week's construction activities.	Construction						
20.5.3.28	Roof sheeting - surplus holes drilled	Inaccuracy during drill / setting out	Surplus holes required plugging	Setting out accuracy	Construction						
20.5.3.29	Additional secondary steel	Amendment to specification required by manufacturer (Gyproc) to achieve fire rating / warranty	Additional steel designed, procured and installed	Manufacturer design requirements reviewed earlier.	Construction						
20.5.3.30	Construction sequencing	Lack of zonal completion / zonal close out	Additional resources required to close out multiple areas at same time.	Plan to zonal completion to internal areas Consider contractual phased completion dates. Internally and externally.	Construction planning						
20.5.3.31	Dry lining	Water damage to installed dry lining due to water ingress.	Replacement of water damaged plasterboard.	Ensure building is watertight prior to drylining commencement.	Construction						
20.5.3.32	Temporary storage facilities	Too much material stored internally and too early	Material moved to suit construction	Improved planning for material storage within building. Better external storage facilities. Only have materials required for week's construction activities.	Construction planning						
20.5.3.33	Temporary manhole cover	Loose cover to manholes	Covers fixed	Temporary covers to be fixed. Include in RAMS	Construction						
20.5.3.34	Ductwork - protective seals to ends	Damage caused during unloading and loading.	Reclean & seal ends	Ensure SHTM compliance in relation to sealed ends	Construction						
20.5.3.35	Mud externally	Weather conditions and ground conditions.	Measures to reduce	Plan to avoid. Achieve hard landscaping earlier.	Construction						

20.5.3.36	Holes in slabs	Falling objects H&S hazard	Covers installed	Robust monitoring arrangements. Include requirement to provide covers after drilling in RAMS	Construction						
20.5.3.37	Site car parking	Capacity issues	UHI car parks used by agreement as overflow	Plan for anticipated vehicle numbers. Plot 5 was available.	Construction planning						
20.5.3.38	Resin Paving	Installation weather dependent	Completion delayed due to weather. Completed post handover	Ensure product selection suits local condition. When consider contingency alternatives in event of delays.	Procurement /Construction						
20.5.3.39	Storing of materials on finished paving	Damage to paving	Paving jet blasted to ensure clean and draining. (drains stormwater to attenuation). Joints need to be clean	Avoid storing materials on finished work	Construction						
20.5.3.40	Clinical Occupation	Clinical Occupation took place pre-handover - (09/12/22) due to construction delays to meet opening date (17/04/230	Completion of project works undertaken at same time as clinical commissioning.	Monitor PSCP programme to ensure dates are met. In event of delays implement mitigation. Ring fence clinical occupation period and commence post handover.	Construction						
20.5.3.41	Chiller Plant deck	Rust staining to deck covering as the result of angle grinding in area. Swarf arisings	Clean decking	Prohibit cutting of metal on roof decks. Include in specification.	Construction						
20.5.3.42	Above ceiling approvals	Progress approval prior to grid. Aim for minimal approvals following grid installation.	Additional resources required to close out multiple areas at same time.	Programme to sequence inspection requirements	Construction						
20.5.3.43	Sample Colour	Finalising interior colour scheme	Multiple samples submitted. Some walls repainted various times	Agree approval process using RAL system.	Construction						
20.5.3.44	Theatre floor protection	Protection removed too early resulting in damage	Remedial repairs	Protection to be removed only on completion of all works in theatres.	Construction						
20.5.3.45	Finishing foremen	Avoid poor quality in finishing and close out	Remedial works to install SHTM and quality compliant installation	Ensure experiences healthcare finishing foremen are employed by PSCP	Construction						
20.5.3.46	Window manifestations	Some manifestations installed upside down. Fade out at bottom not at top of window.	Re -work	Instruct subcontractor and include in RAMS	Construction						
20.5.3.47	Material storage plant room	Left it late in removing materials to complete area	Materials removed	Phase and sequence work to complete areas to programme allowing sufficient time for snagging and defects.	Construction						
20.5.3.48	X Ray	X Ray installation to SHTM Compliance. Some coordination issues.	Site alterations required to proposed installation	Ensure co-ordination between PSCP & turnkey fit out contractor Provide evidence of SHTM compliant installation. Particularly shielding, automation of door locking & signage etc	Construction						
20.5.3.49	Use of corridor zip protection screens	Poorly managed	Agree and monitor correct use by PSCP	Dust management procedures, particularly in Theatre suite areas needs to be understood by workforce and rigidly administered by PSCP	Construction						
20.5.3.50	Temporary macadam to pavement trip hazards	Inappropriate material used (10mm bitmac). Poor finish.	Some repairs carried out	Ensure appropriate materials are used for temporary works.	Construction						
20.5.3.51	Building clean	Builders clean / sparkle clean not fully completed due to delays	NHSH took over cleaning activities	Keep to programme and ensure adequate for PSCP to discharge cleaning activities.	Construction						
	QA / QC Issues										
20.5.3.52	Bolts missed during steelwork erection	QA/QC checking and monitoring issue	Bolts installed. Required revisit by steelwork subcontractor	Ensure QA/QC checks are carried out and recorded. Record bolt torque records	Quality						
20.5.3.53	Flooring.	Large quantity of flooring defects	Flooring remedials repairs/replacement	Subcontractor selection and approval. QA/QC monitoring of works. Adherence to manufacturers product data installation guidance. QA/QC checks on substrate.	QA/QC						
20.5.3.54	Screeding	Relative Humidity compliance of substrate prior to screeding	Screeding remedials repairs/replacement	Subcontractor selection and approval. QA/QC monitoring of works. Adherence to manufacturers product data installation guidance. QA/QC checks on substrate.	QA/QC						

20.5.3.55	Temporary protection to floor	Subsequent damage to flooring	Flooring remedials repairs/replacement	PSCP to manage temporary protection and ensure floors are protected at all times	QA/QC						
20.5.3.56	Ditto Finished work	Subsequent damage to finished work	Remedials repairs/replacement	PSCP to manage temporary protection and ensure finished works are protected at all times	QA/QC						
20.5.3.57	IPS Units	Divergence from Architects performance specification	QA/QC remedial work required to product	Ensure PSCP procurement adheres to Architects performance specification	Design/Procurement QA/QC						
20.5.3.58	Damage to Theatre doors	Storage and handling issue. Door facing blown due to water damage	Replacement door ordered and installed	Ensure suitable storage and handling	QA/QC						
20.5.3.59	Theatre Canopy installation issues	Difficulty achieving validation compliance. Air leaks	Additional visits by Interfurn. Remedial works	QA/QC monitoring during first second and third fix Commissioning and pre commissioning checks prior to validation	QA/QC						
20.5.3.60	Water tank	Leaks to tanks	Remedial repairs. Retorquing bolts	QA/QC Monitoring during installing. Use calibrated torque wrench and record results	QA/QC						
20.5.3.61	Stair treads facings	Damage to facing bars	Remedial repairs and cleaning of scuff marks	Provide protection	QA/QC						
20.5.3.62	Kick plates	Overtightening results in deformation of plate around screw holes	Replacement of defective plates	Advise subcontractor. Do not overtighten. Monitor on completion QA/QC	QA/QC						
	Equipping and Procurement										
20.5.3.63	IPS Units	Divergence from Architects performance specification	QA/QC remedial work required to product	Ensure PSCP procurement adheres to Architects performance specification	Design/Procurement QA/QC						
20.5.3.64	Resin Paving	Installation weather dependent	Completion delayed due to weather. Completed post handover	Ensure product selection suits local condition. When consider contingency alternatives in event of delays.	Procurement /Construction						
20.5.3.65	VIE Tank (NHSH responsibility)	Tanks size change and appears to be second hand and refurbished	Check supplier contract and ensure new equipment is provided. No late changes	The late change require plinths to be broken out. Original layout changed at late notice.	Design / Procurement						
20.5.3.66	Doors & Doorsets	Two types supplied. Rounded edge and square edge. Former preferred	None	PSCP to supply uniform product	Procurement						
20.5.3.67	Highland Table -CAFÉ	Non compliant Installation	Remedial works to install SHTM compliant installation	Avoid direct contracts in the future. Advise that any future such work is instructed via PSCP. PSCP to control. Fully developed drawings and specifications. SHTM compliance mandatory.	NHSH Procurement						
20.5.3.68	Equipping	Equipping took place pre handover.	Completion of project works undertaken at same time as equipping.	Suggest equipping takes place post handover during operational commissioning period	Equipping						
20.5.3.69	Unlipped edges to IPS	Water ingress issue / clinical risk	Remedial works to reclip	Ensure PSCP compliance with Architects performance specification prior to sub contract order placement.	Procurement						
20.5.3.70	Management of NHS Deliveries	Security /Quality of delivered products. Some deliveries left in car park / gatehouse	NHS Supervisor delivered to building	Ensure suppliers deliver to building and suppliers are received and signed for by authorised NHSH personnel	Procurement						
20.5.3.71	Hobart Dishwashers	Problems with units	Replacement FOC. Alternative supplier	Problems had been previous report with Hobart dishwashers. Equipping selection issue	Equipping						
20.5.3.72	NHSH Group supplied equipment	Design coordination	None	Architect to review product data for selected equipment	Equipping						

Soft Landings, Lessons Learned Register: Section 21.1 eHealth

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NHS Scotland Board	NHS Highland
Project Name	NTC - Highland
Register Owner	Kevin Minnock
Version	v01 Rev N
Date Last Updated	09.02.2024
Document Reference Number	2140_NTC-H_Lessons Learned_Register

ID Reference	Forum Raised	Date Added	Description	Principal Owner		Input	Action	Time Scale	Status of Action	Closeout
				NHS Scotland Board	PSCP					
21.1.1	eHealth Lessons Learned Workshop	10.11.22	Dedicated eHealth resource to project manage relevant requirements with clarity in respect of relevant responsibilities	Iain Ross (IR)	N/A	IR and Deb Jones (SRO)	Dedicated resource - Alister McNicholl provided by eHealth paid through project budget. Also addressed in subsequent projects coming on stream.	Completed albeit well into project programme.	Complete	Monitor on new projects
21.1.2	eHealth Lessons Learned Workshop	10.11.22	Strategic requirements and priorities - SG - impact on project.	Deb Jones (DJ)	N/A	DJ and AMcN (PM)	Maintain flexibility for as long as possible to deal with potential changed requirements.	Completed with final close out of requirements	Complete	No further action
21.1.3	eHealth Lessons Learned Workshop	10.11.22	Lack of engagement and continuity in business case process by eHealth	Iain Ross (IR)	N/A	IR	Dedicated resource now allied to all new projects coming from forwards and from earliest business case stages.	Ongoing for current and future projects.	In Progress	Monitor on new projects
21.1.4	eHealth Lessons Learned Workshop	10.11.22	National context has not provided enough support and lessons learned that are more specifically eHealth focussed.	Iain Ross (IR)	N/A	eHealth team	Progress is being made in joining up relevant NHSS teams for lesson learning / shared expertise but at a national level there needs to be a more appropriate forum for eHealth.	Ongoing for current and future projects.	In Progress	Monitor on new projects
21.1.5	eHealth Lessons Learned Workshop	10.11.22	Need to be briefed by Capital Planning, FM, medical physics, clinical teams inc patient interfaces.	Iain Ross (IR) and delegate on a project specific basis	N/A	eHealth team	Being implemented on all new projects	Ongoing for current and future projects.	In Progress	Monitor on new projects
21.1.6	eHealth Lessons Learned Workshop	10.11.22	Specialist technical input	Iain Ross (IR) and delegate on a project specific basis	N/A	eHealth team	Seek and commission specialist technical input at an appropriate stage in project development	Ongoing for current and future projects.	In Progress	Monitor on new projects
21.1.7	eHealth Lessons Learned Workshop	10.11.22	Flexibility to cater for new technology developments	Iain Ross (IR) and delegate on a project specific basis	N/A	eHealth team	Build in flexibility on projects to deal with evolving requirements and new technology	Ongoing for current and future projects.	In Progress	Monitor on new projects
21.1.8	eHealth Lessons Learned Workshop	10.11.22	Finance / budgeting issues highlighted relating to business case development	Iain Ross (IR)	N/A	eHealth team	Establishing costs at start-up At IA/OBC Stages - need to be less conservative with costing. Digital strategy to be driven by requirements from the clinical strategy Must improve at a corporate level - accept that there is a 'business as usual' cost, and an additional cost for investing in the new building – albeit should be a relatively small proportion.	Ongoing for current and future projects.	In Progress	Monitor on new projects
21.1.9	eHealth Lessons Learned Workshop	10.11.22	Corporate Governance in Business Case Process - Governance up to Project Boards is there, but above that governance is lacking.	NHS H Board	N/A	NHS Board	Ensure that appropriate corporate governance is in place for all stages of project development	Ongoing for current and future projects.	In Progress	Monitor on new projects

21.1.10	eHealth Lessons Learned Workshop	10.11.22	Financial Planning - and including Project costs inc. in Business Case	Project Teams	N/A	Project Teams	Costs within the business cases need to be robust and cover the full requirements – capital and revenue over the life cycle. Ensure integrated involvement in the financial planning aspects of the project.	Ongoing for current and future projects.	In Progress	Monitor on new projects
21.1.11	eHealth Lessons Learned Workshop	10.11.22	Clinical Leads and clinical input	Project Teams	N/A	Project Teams	Clinical Leads need to be identified as early in the process as possible and ensure continuity of input.	Ongoing for current and future projects.	In Progress	Monitor on new projects
21.1.12	eHealth Lessons Learned Workshop	10.11.22	eHealth involvement in stakeholder engagement	Project Teams	N/A	Project Teams	eHealth team needs to be involved in the stakeholder engagement process throughout the project development and delivery.	Ongoing for current and future projects.	In Progress	Monitor on new projects
21.1.13	eHealth Lessons Learned Workshop	10.11.22	Risk register development	Project Teams	N/A	Project Teams	Ensure integrated involvement in the risk register development and management aspects of the project.	Ongoing for current and future projects.	In Progress	Monitor on new projects

Appendix 2:

PP Past Projects PP1 NHSH Badenoch and Strathspey and Skye LL Workshop Outputs

Soft Landings: Lessons Learned Register

NHS Scotland Board	NHS Highland
Project Name	NTC - Highland
Register Owner	Kevin Minnock
Version	v01 Rev K 06.10.2023 Appendices
Date Last Updated	06.10.2023
Document Reference Number	2140_NTC-H_Lessons Learned_Register

Code:	Category:	Tab:	Inputs to date	NHS Scotland Board Owner	PSCP Owner
APPENDICES					
PP	Past Projects	Appendices	See below	[Insert Name]	[Insert Name]
PP1	NHSH Badenoch and Strathspey and Skye	PP1	Workshop outputs	[Insert Name]	[Insert Name]
NHSScotland	Soft Landings Champions Group	Appendices	See below	[Insert Name]	[Insert Name]
SLC1	Theatres - NHSScotland Soft Landings Group	SLC1	NHSScotland SL Group	[Insert Name]	[Insert Name]
SLC2	Endoscopy and Decontamination - NHSScotland Soft Landings Group	SLC2	NHSScotland SL Group	[Insert Name]	[Insert Name]

It is vital, as part of the soft landings process that lessons learned from previous projects are identified [or wider knowledge], captured and ameliorated.

As part of the post occupancy evaluation process actual performance against that required in the brief should be assessed and lessons captured and feedback to inform future projects.

This document should be owned by the Project Director or Soft Landings Champion and reviewed and updated at each Soft Landings meeting.

Soft Landings, Lessons Learned Register: Section 20.1 Badenoch and Strathspey and Skye

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NHS Scotland Board	NHS Highland
Project Name	NTC - Highland
Register Owner	Kevin Minnock
Version	v01 Rev K 06.10.2023 Appendices
Date Last Updated	06.10.2023
Document Reference Number	2140_NTC-H_Lessons Learned_Register

ID Reference	Forum Raised	Date Added	Description	Principal Owner		Input	Action	Time Scale	Status of Action	Closeout
				NHS Scotland Board	PSCP					
			Appointments and Project Initiation							
PP1.1	B+S and Ske Lessons Learned Forum		NHSH to be involved with HNSL on the selection of Project Director and Project Manager roles.	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
PP1.2	B+S and Ske Lessons Learned Forum		HNSL to seek clarification from prospective PM's that they are fully available and resourced for the project prior to appointment.	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
PP1.3	B+S and Ske Lessons Learned Forum		An Organogram and Roles + Responsibilities Matrix must be developed and agreed to illustrate both HNSL and NHSH key personnel, their roles and responsibilities and inter-relationships.	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
PP1.4	B+S and Ske Lessons Learned Forum		Approvals processes for design, appointments, surveys etc., must be developed aligned to the Organogram and R+R Matrix.	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
PP1.5	B+S and Ske Lessons Learned Forum		HNSL to 'look ahead' and ensure access to necessary sub consultants e.g. ecology, archaeology etc., is in place within the HNSL Consultant Supply Chain	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
PP1.6	B+S and Ske Lessons Learned Forum		Establish membership and frequency of all design team meetings (involving NHSH representatives) from the outset.	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
PP1.7	B+S and Ske Lessons Learned Forum		HNSL and their advisors to create a project specific Project Execution Plan (PEP) to ensure formats for reports and recording (including tracker docs) is established and agreed.	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
			Programme							
PP1.8	B+S and Ske Lessons Learned Forum		Realistic programme to be developed by HNSL (and their advisors) for review and agreement with NHSH to encompass;	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
PP1.9	B+S and Ske Lessons Learned Forum		Achievable Client approval periods	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
PP1.10	B+S and Ske Lessons Learned Forum		Cascading nature of the work of the design team – Architect – MEP + C&S Engineer. It is sequential and not parallel.	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
PP1.11	B+S and Ske Lessons Learned Forum		Management of cost and cost review as a regular activity.	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes

PP1.12	B+S and Ske Lessons Learned Forum		Completion of the Project Brief by NHSH (and their advisors) – see note on extent of Project Briefing information set out below.	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
PP1.13	B+S and Ske Lessons Learned Forum		Detailed review periods for clinical requirements (including RDS, COS and Environmental Matrix) between NHSH, Architect and MEP Engineer as early as possible in the process.	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
			Commissioning and handover	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
PP1.14	B+S and Ske Lessons Learned Forum		Recognition that the Programme is a 'live' document and should be reviewed and updated on a regular basis to reflect the reality of project progress.	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
			Project Brief							
PP1.15	B+S and Ske Lessons Learned Forum		Wherever practical, NHSH to complete project brief information (which was largely done on these projects) before engaging with design teams. The project brief as a minimum should include; Clinical Output Specs (COS), Authorities Construction Requirements (ACR's) or equivalent, SoA, RDS and Environmental Matrix. Noting that HNSL will support NHSH on the preparation of the project brief using the Strategic Partnering Services route where desired.	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
PP1.16	B+S and Ske Lessons Learned Forum		Recognition that ACR's are a live document through the life of the project. Important to maintain accurate and timeous record of derogations and version control. *Note: Need to be aware that the ACR's are a contractual document and will need to be recorded as such at Financial Close.*	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
PP1.17	B+S and Ske Lessons Learned Forum		Recommend that ACR's are made available to all relevant parties and located on a shared drive (SharePoint or equivalent).	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
PP1.18	B+S and Ske Lessons Learned Forum		Recommend that ACR's are reviewed regularly at Design Team meetings and any ambiguities reported back to NHSH.	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
PP1.19	B+S and Ske Lessons Learned Forum		NHSH and their advisors to establish and advise design team on Energy Targets	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
PP1.20	B+S and Ske Lessons Learned Forum		Format of information – NHSH to set out in their brief the required format (2D / 3D), type and quality of the information that they require to review and at what stage. Important that the design team note the Client's requirements in this regard and plan accordingly.	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
PP1.21	B+S and Ske Lessons Learned Forum		Utilise SharePoint or equivalent to share and store all project information.	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
			Change Control Management							

PP1.22	B+S and Ske Lessons Learned Forum		HNSL to review the format of the SFT contract in related to Change Control in the context of potential simplification of the process. Ideally this would align with the NEC3 format which NHSH are familiar with	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
PP1.23	B+S and Ske Lessons Learned Forum		Each item of change to be logged separately (to avoid minimising impact by recording 2 or more items on the same Change Order).	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
PP1.24	B+S and Ske Lessons Learned Forum		HNSL to create and maintain a Change Order Tracker throughout the life of the project.	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
PP1.25	B+S and Ske Lessons Learned Forum		For each Change Order, the need for consequential design work by Architect, MEP and C&S Engineers and others to be identified and monitored.	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
			Cost Management							
PP1.26	B+S and Ske Lessons Learned Forum		Ensure that 'cost' is a standing item on all project and design team agendas.	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
PP1.27	B+S and Ske Lessons Learned Forum		Manage cost proactively throughout hub Stage 1 + 2 to avoid uncertainty leading to FC. Noting that NHSH and hNSL are keen to promote a culture of 'no surprises'. Any cost concerns should be shared, discussed and a way forward agreed in an open manner.	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
PP1.28	B+S and Ske Lessons Learned Forum		Ensure that all parties are aware at all times of 'design to cost' issues (Including area savings)	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
PP1.29	B+S and Ske Lessons Learned Forum		Manage VE throughout the project.	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
			Pre-FC Approvals							
PP1.30	B+S and Ske Lessons Learned Forum		Obtain as much approval as possible on all design matters pre-FC to avoid 'shunting' issues in to contract and hence reduce information that needs to be dealt with as Reviewable Design Data (RDD).	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
PP1.31	B+S and Ske Lessons Learned Forum		Where RDD is necessary, all parties are to ensure that there is clarity on what is to be provided, subject matter, form of information (drawings, schedules etc.,), timing and what level of detailed approval the client is expected to provide (to align with the Contract).	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
PP1.32	B+S and Ske Lessons Learned Forum		Ensure that there is clarity on all 'Design Approval' requirements (from NHSH) through all stages of the project up to FC. These are to be agreed at the project outset. Ensure that all Client feedback on design approvals is communicated to the design team timeously and sufficient time is programmed for the design team to make any necessary changes.	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
			Consultants Fees							
PP1.33	B+S and Ske Lessons Learned Forum		HNSL to monitor consultants fees in relation to FC prime costs.	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
			Legal Title and Boundaries							

PP1.34	B+S and Ske Lessons Learned Forum		HNSL to work closely with NHSH to obtain clarity on project specific redline boundaries and that this is communicated clearly within the team	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
PP1.35	B+S and Ske Lessons Learned Forum		All members of the team to regularly review the redline boundaries and the consequent impact on any site restrictions including live hospital operations.	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
			Performance Reviews							
PP1.36	B+S and Ske Lessons Learned Forum		HNSL and NHSH to monitor performance of consultants + advisors (as per HNSL KPI process for supplier performance).	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes
PP1.37	B+S and Ske Lessons Learned Forum		HNSL and NHSH to monitor performance of consultants + advisors (as per HNSL KPI process for supplier performance).	Project Director	N/A	Review at Lessons Learned workshops	Lessons learned feedback into futire projects	N/A	Complete	Yes

Appendix 3:

NHSScotland Soft Landings Champions Group

SLC1 Theatres

SLC2 Endoscopy and Decontamination

NTCP Soft Landings - Lessons Learned Register: Section 21.1 Theatres

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ID Reference	Forum Raised	Date Added	Description
SLC1.1	NTCP Soft Landings Champions Catch up	18.11.22	Automatic doors from theatres risk being damaged from staff in a hurry. This can lead to malfunction. Consideration should be given to this potential issue at briefing/design stage to ensure, for example, that sensors pick up the correct areas. There will also be a requirement in the operational stage for staff to be aware of the correct use (and be reminded of this).
SLC.1.2	NTCP Soft Landings Champions Catch up	18.11.22	Ventilation systems, particularly in laminar flow theatres, will require low level extracts for the ventilation to function as designed. These low level extracts therefore need to be kept clear. Consideration to be given to some form of demarcation at these low level extracts so that staff are aware that the area needs to be kept clear.
SLC1.3	NTCP Soft Landings Champions Catch up	18.11.22	Sockets for essential power in theatres should be a different colour, e.g. red. Staff should be made aware of this so that they are used appropriately.
SLC1.4	NTCP Soft Landings Champions Catch up	18.11.22	Where integral blinds are used in theatre windows, consideration should be given, during the design stage, to the safe operation and maintenance requirements, e.g. how would a damaged blind be removed/replaced.
SLC1.5	NTCP Soft Landings Champions Catch up	18.11.22	Blind controls should be easy to use, e.g. manual wand type (Golden Jubilee example) and consideration should be given to the risk of (electronic) controls being lost if they are not fixed in position.
SLC1.6	NTCP Soft Landings Champions Catch up	18.11.22	Safe access for cleaning of the inside of theatre windows is critical.
SLC1.7	NTCP Soft Landings Champions Catch up	18.11.22	Design should allow for the HVAC controls to link to the BMS. This allows for switching HVAC off when not in use.
SLC1.8	NTCP Soft Landings Champions Catch up	18.11.22	Project Managers, PSCPs and Design Teams should be aware that many of the stakeholders will not previously have been involved in the design of new theatre facilities. It is important that this is taken into consideration in the design process and that there is good communication to illicit the brief and continuously confirm that the design is developing in accordance with this.
SLC1.9	NTCP Soft Landings Champions Catch up	18.11.22	The way that clinical services are delivered is likely to change over the lifetime of a theatre, it is therefore important that there is sufficient flexibility built in to designs (e.g. storage space (or other space) adjacent to a theatre may be identified as a potential expansion zone
SLC1.10	NTCP Soft Landings Champions Catch up	18.11.22	Care should be taken to ensure that there is clarity around definitions/descriptions as sometimes stakeholders can have a different understanding, e.g. peri-op theatres could mean different things to different stakeholder groups/project teams as could the reference to and use of anaesthetic rooms.
SLC1.11	NTCP Soft Landings Champions Catch up	18.11.22	When referring to commissioning, e.g. durations, it is important to distinguish between technical commissioning (within the PSCP contract) and functional commissioning post handover and before occupation.
SLC1.12	NTCP Soft Landings Champions Catch up	18.11.22	It is important for staff wellbeing that there is natural daylight coming into the theatre suite area. This does not necessarily mean that every theatre has to have a window. This could be difficult to achieve and could lead to compromises in some areas. There is a balance to be struck! Where possible, there should be windows in staff rest areas and light coming into corridors/circulation areas. For privacy and dignity purposes, glass in some areas may have to be frosted, however, this still achieves the benefit of natural light. It is important that the project teams/stakeholder rational/decision making for the agreed strategy is well documented.
SLC1.13	NTCP Soft Landings Champions Catch up	18.11.22	The floor below roof level can be the best location for theatres as there is direct access to roof top plant.
SLC1.14	NTCP Soft Landings Champions Catch up	18.11.22	There should be no drainage /or water services routes above theatres in order to eliminate the risk of leaks.
SLC1.15	NTCP Soft Landings Champions Catch up	18.11.22	It is important that project teams give due consideration to long lead in times for items of plant (e.g. fan coil units/AHUs) and for specialist equipment (e.g. pendants). This is particularly relevant in the current uncertain global markets.
SLC1.16	NTCP Soft Landings Champions Catch up	18.11.22	It is recognised that, in certain areas, guidance may be out of date and not reflect current practice, e.g. lay up prep rooms within theatres are a recent inclusion. It is therefore important that key decisions and particularly those requiring derogations are clearly documented and that all relevant stakeholders, e.g. technical, clinical and IPCT have been consulted.

SLC1.17	NTCP Soft Landings Champions Catch up	18.11.22	It is important that there is a planned maintenance programme for theatres and that this is implemented. Lessons learned from previous backlog maintenance projects has highlighted that this has historically been an issue.
SLC1.18	GS	29.11.2022	Green Theatres Programme - there is no requirement for piped Nitrous oxide (except as required in Maternity and paediatric theatres) - manifolds are being actively decommissioned - any requirement would require a strong justification.
SLC1.19	GS	29.11.2023	Green Theatres Programme - consider the number of items of equipment which require piped pressurised air and whether there are alternative solutions to providing the built infrastructure.
SLC1.20	GS	29.11.2024	Ensure that the Group 1 equipment is included in the main contract - there is significant coordination of the separate elements and systems which can only realistically be undertaken by the Main Contractor (surgeons panel, setback, canopy, pressure regimes, AHUs).
SLC1.21	GS	29.11.2025	Requirement of Anaesthetic rooms should be carefully considered - is it necessary?
SLC1.22	GS	29.11.2026	Flooring demarcation of laminar air flow extent to be incorporated into flooring design.
SLC1.22	GS	29.11.2027	Consider provision for closed system suction machine (such as Stryker Neptune suction) where appropriate - docking station including power and drainage are required.
SLC1.23	GS	29.11.2028	Adequate waste processing storage space to be incorporated for the future proofing of recycling many more materials. Consult with HFS/Assure Sustainability team and SG Circular economy contacts.
SLC1.24	GS	29.11.2029	Consider requirement for provision of scrub up facilities - increasingly rubbing alcohol is regarded as an alternative to scrubbing up for each procedure - this could result in fewer scrub sinks being required in a Theatre suite - refer to the Green Theatre Programme.
SLC1.25	GS	29.11.2030	Consider digital pressure gauges (such as a Neduis system) which are able to record pressures 24/7 including during set-back and demonstrate when pressure regimes return to the correct steady state after switch-on. The recordable function has proved extremely useful during technical commissioning. There is a potential that funding may be available via sustainability budgets.
SLC1.26	GS	29.11.2031	Use of sliding doors causes less disruption to the sensitive air-flows and pressure cascades within Theatres and Theatre suites and they do not require as large a free floor area for a door swing. Sliding doors to require free wall space and must not open over ventilation grilles or if ventilation grilles. To create the correct airtightness when closed - a high specification of sliding doors and seals must be specified.
SLC1.27	GS	29.11.2032	Provision of a lay-up prep room could be considered - this is potentially a more efficient way to improve throughput in the theatre. The ventilation cascade regime is crucial if this is the case and suitable ventilation grilles that must remain unobstructed must be incorporated.
SLC1.28	GS	29.11.2033	Provision requirement for anaesthetic gas scavenging systems are a subject of considered discussion as to their requirement as part of the Green Theatres Programme - latest developments should in this discussion should be considered when developing Theatre strategy.
SLC1.29	GS	29.11.2034	Green Theatre Programme - ensure adequate storage is provided as per SHTM guidance for the amount of instrument trays to be stacked safely one per shelf (do not stack trays on top of one another)

NTCP Soft Landings - Lessons Learned Register: Section 21.2 Endoscope/Decontamination

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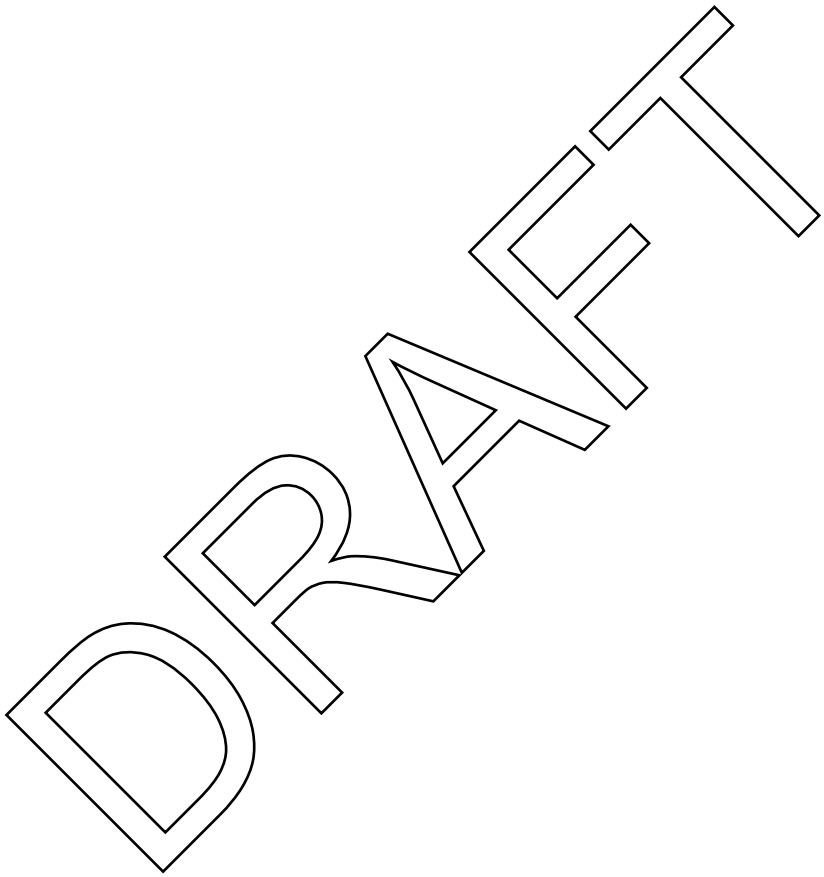
ID Reference	Forum Raised	Date Added	Description
SLC2.1	NTCP Soft Landings Champions Catch up	02.12.22	Consider dealing with higher risk patients at the end of the day as fallow time is
SLC2.2	NTCP Soft Landings Champions Catch up	02.12.22	Consider a room use matrix to inform the number of air changes per hour in clinical spaces. This in turn will inform the environmental matrix.
SLC2.3	NTCP Soft Landings Champions Catch up	02.12.22	Consider using a key decision log. This will help to evidence decisions and those involved. There needs to be an agreed governance process around its use, e.g. where does it report in to.
SLC2.4	NTCP Soft Landings Champions Catch up	02.12.22	Consideration to be given to some NHS Assure templates to ensure consistency in approach of the different boards
SLC2.5	NTCP Soft Landings Champions Catch up	02.12.22	Uninterrupted power supply required for equipment in ERCP
SLC2.6	NTCP Soft Landings Champions Catch up	02.12.22	Double check head heights required for equipment and include end user in these discussions
SLC2.7	NTCP Soft Landings Champions Catch up	02.12.22	Involve the radiation protection adviser in the briefing for ERPC to ensure that the requirement for lead lining is defined. Noted that there is an RPA in NHS Scotland Assure that can be consulted.
SLC2.8	NTCP Soft Landings Champions Catch up	02.12.22	Controlled access required to endoscope rooms
SLC2.9	NTCP Soft Landings Champions Catch up	02.12.22	Consider a project researcher (or using library services) to undertake research and to provide evidence for key decisions
SLC2.10	NTCP Soft Landings Champions Catch up	02.12.22	Decontamination - ensure compliance with SHTM -13

Appendix 4

eHealth Workshop Report Reference: 2140 02 02 eHealth Lessons learned workshop report_281122



NHS Highland

NTC Highland
Lessons Learned – eHealth Workshop
10th November 2022

DRAFT

Contents

Attendees

Alison Gorham (AG)	Project Delivery Team Manager
Deb Jones (DJ)	SRO and Executive Lead
Ian Laidlaw (IL)	HFS Equipping Services
Stephen Matacera (SM)	eHealth Senior Project Manager
Alister McNicoll (AMcN)	Deputy Head of eHealth
Kevin Minnock (KM)	Project Director
Kevin Richard (KR)	Commissioning Manager
Iain Ross (IR)	Head of eHealth
Norry Thom (NT)	eHealth Technical Lead
Tony Watson (TW)	Network & Telecommunications Manager
Philip Wilson (PW)	NHSH Projects Manager
Laurence Casserly (LC)	Project Manager, Thomson Gray
David Mason (DM)	Soft Landings Lead, Thomson Gray

All present – both in the room and joining via Teams – introduced themselves and explained their roles generally and on the project as relevant.

Introduction - Why are Lessons Learned Important – Background and Context

Lessons Learned is an important part of the Government Soft Landings (GSL) process

(as adopted and made more bespoke for NHSScotland)

core associates aligned thinking

What is Soft Landings?

- Government Construction Strategy May 2011 set objective;
- "Aligning the interests of those who design and construct an asset with those who subsequently use it"
- Aligned to BIM and links all project stages - Design, Construct & Operate
- Soft Landings is about making buildings perform better from day one by bringing together best practices at all stages of a project.

Soft Landings (GSL) is a process designed to assist the construction industry and its clients to deliver better, more operationally effective buildings. It involves those that use and maintain the facility at the outset and in the design, requires extended aftercare, and mandates feedback / Lessons Learned.

NHS Scotland has mandated the use of both Soft Landings and BIM Level 2 as an integrated approach for new build projects over £3m construction value and this was effective from April 2017. A range of guidance refers to relevant technical and procedural requirements.

Learning Lessons from previous experience and practice is an integral part of the Soft Landings Process.

- A lesson learned can be defined as experience of good work practice
  or
  an innovative approach that is captured and shared to promote repeat or future application.

Innovative approaches and good work practices should be shared with others.

- Lessons learned should be used to improve future projects and future stages of current projects.
- It is not necessary to wait until the end of the project for the learning to occur.
- Lessons can be identified at any point during the project.

The Lessons Learned session with eHealth had been convened to capture the key issues from the project to date and particularly to include inputs from two key personnel who were retiring imminently to ensure that their relevant lessons learned and associated feedback was not lost.

An agenda had been issued in advance of the session and covered:

Introductions/ Apologises

The role of NHSH eHealth team generally and how they have supported the NTC project. – eHealth to present.
Overview of:
Structure
Resourcing

Roles and responsibilities
Reporting

What Lessons have you learned from other projects that you have been able to bring to the benefit of the NTC – Highland project?

What would you do again and what would you do differently on the next project?

References / prompts in relation to above:
Project planning - Business Case stage inputs / actions
Briefing / scoping / specifying including budgets, procurement and contractual arrangements / requirements
Key interfaces/ Comms – internal and external stakeholders:
Finance (Capital and Revenue budgets) Infrastructure, Contractor / subs, Equipping – clinical and non-clinical, FM
Operational phase – maintenance, replacement / upgrades, resilience, redundancy and future proofing

Discussion around feedback on Lessons Learned

Next steps and reporting

AOB

This Lessons Learned session is the first of three to four workshops planned as part of the Soft Landings process to gather feedback across a broad range of themes including business case development, project design development, technical workstreams, together with construction, commissioning and handover work stages.

The role of the NHS Highland eHealth Team - Overview

Iain Ross as head of eHealth provided an overview of the role of the NHSH eHealth team generally and how they have supported the NTC project.

The overview included the structure of the department, the services provided to relevant stakeholders and resourcing including roles and responsibilities and budgeting.

IR highlighted that the department is not simply fulfilling an IT / Digital role, but also provides wide ranging staff and patient support which also includes care in the community and with a great deal of that stakeholder support managed through a service desk at the front end dealing with repair and maintenance issues. This coverage being for facilities over the widest geographic reach of any NHSScotland Board from Caithness to Campbeltown.

Inputs by a team of project managers includes support for telephony – fixed and mobile, business intelligence analytics, clinical technical requirements, facilitation to

agree requirements, interactions with contractors and preferred suppliers, infrastructure including networks and servers, links, devices, network connectivity and online services.

Alister McNicoll provided a more project specific overview. He confirmed that he joined the project a year ago with a focus on 2 key parts:

1. Infrastructure (working with Andy Griffen (now retired), inc. network, kit)
2. Digital pathways (with the clinical services)

This following on from the delivery of the Community Hospital facilities for Skye and Aviemore from which some valuable lessons were learned.

Scope of the clinical team support includes Orthopaedics and Ophthalmology. Ophthalmology is being fully transferred and the service has been redesigned for the new facility.

AMcN highlighted that some questions had arisen in the context of the services being provided by eHealth - e.g., Digital - tv services - where did this sit? – which had to be resolved.

A key aspect was the emphasis on supporting teams to work differently digitally as well as the 'business as usual' systems. The new patient management system interfaces with the roll out of the national pre-op assessment tool with the NTC Highland effectively now leading this for NHSScotland. New processes and associated systems are also required to support the management of referrals from other NHS Boards to the NTC.

In respect of reporting, AMcN confirmed that there were different eHealth reporting lines:

- For Scottish Government (SG) on performance
- For NHSH - dashboard
- Service Operations – planning and managing the service (NB: From a new facility and location for NTC-H)

In terms of finance issues, AMcN highlighted that the NTC was splitting from acute services with the NTC paying for their element of service. Understanding and effectively managing that split was therefore important.

IR highlighted that lessons had been learned from other projects to bring to the benefit of the NTC – Highland project and addition a number of valuable lessons head been learned on the project specifically in both its planning and development.

Lessons Learned

The eHealth overviews provided by IR and AMcN flowed into a wide-ranging discussion regarding Lessons Learned from relevant experience of the project development through into construction and commissioning stages.

DJ provided comments to help set context by highlighting that the project has been 8-9 years in progress, so it should be no surprise to anyone that the requirement is to make the building function supported by digital systems together with appropriate technical support resource.

DJ emphasised that earlier in the project lifecycle, any request to eHealth seemed to have come as a 'surprise' and it had taken some time for appropriate project inputs and support from eHealth to be provided.

AMcN time is being paid for through the project budget to ring fence support otherwise there was concern that suitable resources were not going to be allocated.

DJ also highlighted that from a service perspective the evolving strategic requirements of SG had impacts on the ability of eHealth to fully support effectively. It was highlighted that having a named person (AMcN) is hugely important and that had benefited the project significantly.

KM stated that the situation with eHealth support is much better now but highlighted that early lessons had been learned through the Business Case stages of project development.

There had not been enough engagement through the business case process and particularly in the early stages and this had affected brief development particularly as there had not been enough briefing inputs to scope requirements accurately and robustly. There had also been a lack of continuity from the eHealth team through the process and this had contributed to a lack of understanding of required resources and ownership of relevant requirements to support the project.

For all projects now going forward there was greater emphasis on the correct teams being allocated at project initiation stage and the developing work on Lochaber was cited as a good recent example of this.

IR stated that he generally agreed with points raised by DJ and KM and confirmed that lessons had been learned from the three most recent new builds – Skye, Aviemore and the NTC. Starting any new project would now involve a very different approach.

IR highlighted that there had been a lack of detailed understanding of the project development process but this had been addressed through the lessons learned already. Resources have been allocated at IA stage for the Lochaber and Caithness projects to provide early inputs.

The project should be viewed as a transformation of the service, not simply a construction project.

A ring-fenced project team with a named key person involved to support relevant project development is essential to help influence and shape the relevant components of the project.

The service was provided through the core team, who have responsibility to prioritise and manage the existing services across the estate.

Specialist network and digital design resources are required and the eHealth team were getting support from NHS Lanarkshire who have done this on the Monklands Replacement project. This was a good example of wider lesson learning that IR confirmed was now happening more so across NHSScotland eHealth teams.

Design brief development involved more specialist inputs through outsourcing design work to support the briefing including system resilience, cable runs, A/C, room sizes, alcoves for access to technology. All of this will influence the design brief and including agreement of relevant standards upfront.

Dedicated technical staff have been allocated for Lochaber and Caithness projects development and are working with clinical staff, considering future services e.g., robotics, AI as part of the services transformation process.

DJ confirmed that she was supportive of this approach in recognising the process improvements that could be made.

In respect of the NHS Lanarkshire support example, it was highlighted that this was a good example of the horizon scanning that should be done nationally and including the corporate level and technical expert engagement that is required to prove the "Art of the possible".

Electronic Patient Records (EPR) was highlighted as a key issue that could not be carried through with full rigour and from the outset of facility operation. Relevant systems would not be in place so filing cabinets are required in the interim (with limited space for them as it was never anticipated that they would be required). Operationally the supporting technology is not there yet for paperless records.

IR confirmed that strategic support and interfaces are with the SG Digital Health and Care directorate. (Jonathan Cameron – Deputy Director). There is, though, no national working group for IT / digital systems similar to the National Infrastructure Group.

AMcN stated that dealing with change was an ongoing issue as some things may not have been known a few weeks/months ago but then need to be incorporated into the project. There needs to be a consistency at national level to support the planning and development process and this has been highlighted in the three recent build projects that have been delivered close together and with another now being implemented.

DJ confirmed that the Target Operation Model (TOM) was the business model that essentially incorporates the clinical pathways and service transformation requirements to support them. The service transformation is gradual and requires a structure to support the process and allow for flex.

As part of the financial model relevant Capital and Revenue costs have to be established. The project is now £600k+ over the agreed budget (from £16.5m operating budget).

Key issues that were highlighted in respect of the budgeting for the project:

- Not good at establishing costs at start-up
- At IA/OBC Stages - need to be less conservative with costing.
- Digital strategy to be driven by requirements from the clinical strategy
- Must improve at a corporate level - accept that there is a 'business as usual' cost, and an additional cost for investing in the new building – albeit should be a relatively small proportion.

It became clear from the discussion that eHealth was not familiar enough with the SCIM requirements for business case development and subsequent project delivery and that this potentially needed to be addressed through further training and support.

IL confirmed that he had been involved in the project since 2018/19 and eHealth were involved at that time and had confirmed that they would control all IT equipment etc.

IT equipment budgets were therefore set to £0 within HFS Equipping list. Nothing further happened from an equipment list perspective from that point until Alister got involved in 2021.

IL highlighted that there should be a good understanding of relevant requirements at an early stage. Clinicians usually know what they want and can give an initial steer. eHealth can establish AV and network requirements.

There was discussion regarding clinical input to equipment and system briefing and selection. The NTC project (and those recently completed - Skye and Aviemore) didn't have designated Clinical Leads – this is a corporate issue that requires to be addressed.

KR stated that it was important to identify key stakeholders that could input to the digital requirements and also integrate eHealth into relevant workstreams including user groups, etc.

IR added that specifications should be developed by technical experts for incorporation as part of briefing as more specialist knowledge is critical.

Corporate Governance:
There was discussion regarding the levels of governance and how issues can be escalated if required. Governance up to Project Boards is there, but above that governance is often lacking.

There are also resource issues generally on projects of the scale of the NTC.

It was also highlighted through discussion that there is not always enough internal scrutiny of business cases when going through board governance.

It was confirmed that there is a new structure for Operations / Estates and Capital Planning which has been presented by Alan Wilson and Eric Green.

Risk Management:
There was discussion regarding risk management on projects and this included in the context of finance related issues also highlighted.

- Was eHealth noted as a project risk on the NTC? Ie design of eHealth infrastructure.
- Corporate mitigation measures for what's not in place?
- Project costs v wider corporate costs under eHealth budget?
    - Corporate strategy and implementation on projects
- Caithness redesign - roll out of Morse (software application) is assumed, but this may not be the corporate approach. This is a briefing and specification issue.
- Funding requirement to be clear in OBC for each element of the service/transformation
- SRO to flag risks to delivering the plan.

Finance:
There were a number of issues raised relating to finance and this included detailed discussion – some of which requires follow up in the context of Lesson Learning for future projects.

Requirements for the operational phase of project was discussed and including relevant financial aspects:

- Operational resource allocated to NTC-H
- Change in developing the wi-fi network
- Replacement of kit in 5 years' time.
- Device replacement programme to be implemented.
- Firmware updates.
- Reliability – resilience planning.

Other non-pay costs were also highlighted:

- Reasonably close and reflected in GEM model development.
- Some capital cost could be in revenue budget
- Forensic scrutiny required on revenue costs - what will it cost to run the facility over its operating life?
- Known costs and assumed costs are required at OBC stage

Equipment issues were discussed further in the context of finance:

- HFS provided a costed consolidated equipment list equipment list 2019
- Who was responsible for changing this going forward?
- eHealth equipment removed going forward
- Need to understand how this has happened.
- eHealth costs excluded yet the business case was signed off.

Business Case:

- Should go to AMG for approval. Responsibility for this sits with the members of the AMG. Responsibilities to be clearly set out.
- Costs within the business cases need to be robust and cover the full requirements.

As the session needed to conclude, DM reviewed agenda items to check off that relevant issues had been covered and also summarised next steps in reporting.

Key Issues from Lessons Learned

1. Evidence of lessons learned already being acted on to the benefit of new projects was presented in the workshop.
2. eHealth remit now being actioned:
    1. Need to be briefed by capital planning, FM, med physics, patient interfaces, clinical,
    2. Clarity on responsibilities
    3. eHealth brief needs to incorporate and coordinate requirements from the above and others
    4. Dedicated staff (named individuals) to projects now, with input from external specialists as required.
    5. Specialist technical support being sought when required.
3. For all projects now going forward there was greater emphasis on the correct teams being allocated at project initiation stage and the developing work on Lochaber was cited as a good recent example of this.
4. Build in flexibility to deal with evolving requirements and new technology.
5. At a national level there needs to be a more appropriate working group / forum for the scope of eHealth inputs and outputs.
6. More support / training required for eHealth in respect of understanding the business case process and key inputs required – particularly financial.
7. Lack of clarity in respect of budget shortfalls associated with eHealth requirements and relevant decision making.
    What was included originally?

When was it changed?
Why was it changed?
Who was involved and including at sign-offs / business case approvals?
Where is the funding coming from if not in the project costs included in business case?

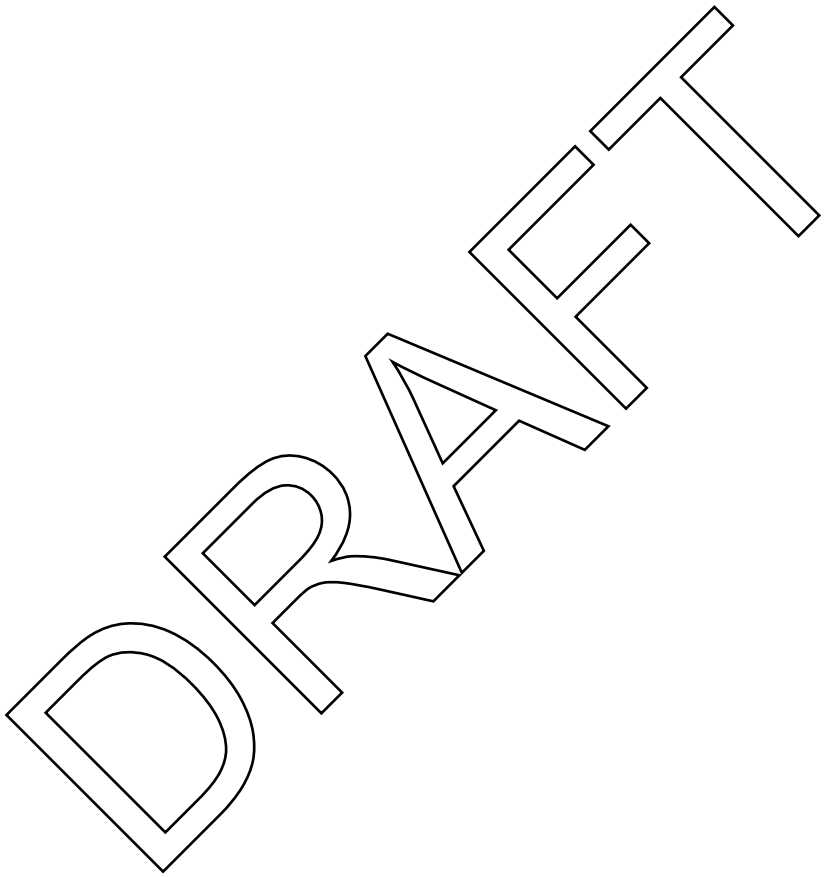
8. Key issues that were highlighted in respect of the budgeting for the project:
    1. Not good at establishing costs at start-up
    2. At IA/OBC Stages - need to be less conservative with costing.
    3. Digital strategy to be driven by requirements from the clinical strategy
    4. Must improve at a corporate level - accept that there is a 'business as usual' cost, and an additional cost for investing in the new building – albeit should be a relatively small proportion.
9. Corporate Governance - Governance up to Project Boards is there, but above that governance is lacking.
10. Not always enough internal scrutiny of business cases when going through board governance.
11. Business Cases should go to AMG for approval. Responsibility for this sits with the members of the AMG. Responsibilities to be clearly set out.
12. Costs within the business cases need to be robust and cover the full requirements – capital and revenue over the life cycle.
13. Resource issues generally on projects of the scale of the NTC should be addressed as part of project planning.
14. Clinical Leads need to be identified as early in the process as possible and ensure continuity of input.
15. Involvement in stakeholder engagement process and including user groups.
16. Ensure integrated involvement in the risk register development and management aspects of the project.
17. Ensure integrated involvement in the financial planning aspects of the project.

In Conclusion:

- Good participation from those present at workshop – NB: Mix of both live and virtual attendance.
- The workshop didn't quite get into the detail anticipated.
- Corporate and strategic lessons learned were generally well covered.
- Plenty of Lessons Learned and planning for actioning these on future projects.
- Key issues identified including some that relate to wider context – both for NHS Highland and nationally.

Appendix 5:

NTC Lessons Learned Workshop Notes from 13.04.23



NTC Lessons Learned

Thursday 13th April 2023 11:30 - 13:00 – Teams Meeting

In attendance – John Bowman (JB), Laurence Casserly (LC), Gary Crossan (GC), Natalie Duthie (ND), Rebekah Garrett (RG) Eric Green (EG), Fiona Grist (FG), Hunter IP (HI), Brian Johnstone (BJ), David Mason (DM), Kevin Minnock (KM), Robert MacDonald (RM), Wilma MacKenzie (WM), Gordon MacLeay (GM), Michael O'Donnell (MOD), Michael Riach (MR), Kevin Richard (KR), Helen Robertson (HR), John Segrott (JS), Martin Sim (MS), Ross Southwell (RS), Colin Telfer (CT), George Young (GY).

Apologies - Deborah Jones (DJ), Nicola Orr (NO). Catherine Stokoe (CS).

Please note that this meeting reporting has been structured to support the key Lessons Learned process requirements and for ease of reference some meeting inputs have been added within relevant sections below and therefore may be out of sequence with the flow of some of the discussion that took place within the workshop on the day.

1.0 Overview and Context

EG provided and overview for the Lessons Learned discussions with some strategic context in respect of the NTC Highland project and what was relevant to the planning of the Lochaber and Caithness bundled Frameworks Scotland project.

EG highlighted that there had been issues with over optimistic programming and associated management operationally on the NTC project from which lessons could be learned and that the introduction of George Young as Project Director had helped the process.

2.0 Lessons Learned Process

KM introduced the Lessons Learned review and confirmed that David Mason (DM) from Core Associates was acting as an Independent Facilitator appointed through Thompson Gray to run these Lessons Learned meetings.

DM confirmed the Agenda as issued and introduced everyone to the Lessons Learned Workbook which was issued to the group via email the previous day (Wednesday 12th April). This is for everyone in the group to review and complete the section/s relevant to them. Slides for the Lessons Learned Workshop were also shared with the group which outlined some Key Issues in respect of project planning and programming (The fuller presentation that was prepared is included as Appendix A):

3.0 NHS Highland Feedback

3.1 EG kicked this part of the discussion off by highlighting the main issues from an NHS Highland perspective:

- The programme was too optimistic, collectively as a group not just with the PSCP.
- Timescales were unrealistic for Pre-Construction
- Review Approvals with unrealistic timescales for the Design Teams too.
- Quality Assurance of Document Control Management, i.e. Drawings and Specifications need to be spot on with the correct references and revisions to ensure that everyone is working on the most relevant and up to date copy of that document. People need trained properly on how to file and store documents.
- Resources need to be understood prior to pre-construction, with a Resource Programme in place.
- More early warnings are needed as to when and why we are missing important deadlines with a more proactive management of the programme and the option of making other choices to enable those target deadlines to be met rather than letting them slip.
- A better focus is needed on Programme Management and a Programme of Work
- In all future projects an ideal situation is to have a minimum of 16 weeks post handover in order to get the building and NHS teams operationally ready, which in turn will reduce risk on delivery, commissioning etc. NB: With larger projects possibly needing longer

3.2 KR added these additional points:

- A Design Quality Plan is required and will develop throughout the project incorporating relevant feedback from all the Lessons Learned Meetings.
- More understanding of design detail for both the Project Teams and the Designers is needed. A level of detail that in this project there was no set guidance on.
- In this Project we moved into Construction prior to sign off, this needs to be avoided in the Lochaber and Caithness Redesign Projects as there is significant risk in doing this.
- KSAR and everything associated with this needs to be discussed, however this would be in a future Lessons Learned Meeting.
- Architectural and Structural Elements need to be more fixed before getting into MEP design co-ordination.

NB: See also H+K comments below which this statement responds to.

- PSCP Needs an understanding of the Stakeholder's on both Projects and who all needs to be involved with what inputs at each stage of the process.
- Access to the design development information and including the Revit models can support the review of ventilation ductwork for example and how it fits in with the other systems and build components with the right areas for maintenance access, etc.
- Development of the MIDP with robust task information is required at an early stage for project delivery.

3.3 KM confirmed his agreement with the issues raised above and adding:

- That there was a need for Key Design Reviewers to help streamline the user group and RDD processes.
- Design Deliverables to be scheduled for incorporation in programming.
- Feasibility of modern methods of construction to be assessed as early in the process as possible.
- Serious need for more resources, with regular sub-contractor and supply-chain review.
- More planning required around the working week as there had been approx. 20% of lost time on the NTC.
- Optimised shift patterns will be needed on the new projects going forward.

3.4 GM – Led feedback on Clinical and operational commissioning with inputs from HR and FG

- Adherence to timescales and planning around these had required some flexibility given the programme delays and compression of NHSH transition activities.
- Clinical Team understanding their roles in the process is key.
- Regarding Infection Control and H&S there was good feedback and everything went relatively well from these departments perspective.
- There is a need for more targeted meetings for the projects going forward along with planning and structuring how key documents will be stored prior to those meetings.
- Concerns around who will be leading on the resourcing aspect. EG agreed and suggested regular meetings for resource review.
- HR added this project was trying to move and transfer an existing service along with a new model. Given some time once the facility is up and running it would be good to reflect and discuss this at a future Lessons Learned workshop.
- Infection Control feedback - the room layout/design reviews and sign offs and making should be done in collaboration with the other key stakeholders e.g., H&S.
- Ceiling layout and specification information should also be included.
- GM, HR, FG confirmed that they had many lessons learned to schedule and it was agreed that more specific workbook tabs were required to support this.
- GM suggested that there should a responsibility matrix included for clarity around inputs to the LL process and completion of relevant worksheets.

4.0 Balfour Beatty Feedback

4.1 MS confirmed that much of the NHS Highland feedback had already been picked up by the Balfour Beatty team as part of the planning for the Lochaber and Caithness Redesign projects.

- More Management above Site Level is needed and this has been actioned with the introduction of George Young. George brings with him experience as a Healthcare Project Manager and will be available throughout the project.
- Honest and accurate progress reporting was needed going forwards and at more regular intervals.
- By the end of September Balfour Beatty are hoping to have an office in Inverness, which will be used as a base for both projects.
- Targets being set for both new projects.
- Looking at resourcing generally based on feedback received.
- GY - A better working pattern for sub- contractors will be evaluated.
- Arranging a session with the team on the NTC in Ayrshire, which has been a successful project.
- ND responded to issues raised around the design process and task information delivery.
- Design programme drill down
- Already addressing feedback on Document Control and associated QA particularly in respect of KSAR and are implementing measures around this.
- CDE to be used as an active management tool for the project.
- BIM docs application on project and proposed support from David Philp and team in set up and planning.
- Continued good input from BBK required.
- Agreement and programming of RDD.
- Stakeholder identification and including key reviewers essential to streamline the review process.
- They also need tried and tested workflows with the right people reviewing the right information, rather than having everyone involved. In the future it will be sent to target people/groups.

4.2 Design Team Feedback – H+K perspective

MO'D highlighted some key issues from a design perspective but particularly in respect of MEP inputs:

- Programmed milestones for design stage completion didn't always allow enough time for M+E integration.
- The Revit model discipline design integration needed Architectural and Structural engineering inputs to be suitable "frozen" at each stage to allow for full M+E services co-ordination.
- This sequencing issue is particularly important through RIBA design Stages 3 and 4.

5.0 Conclusion and Next Steps

KM summed up with stating that these 2 new Projects are very different to each other with one being a complete new build and the other a redesign, each of which will come with their own challenges. Everyone involved needs to realise the size of these projects and all that is involved.

EG thanked everyone for their participation and requested confirmation of proposals regarding any future workshops and populating of the workbooks.

KM proposed that in the first instance, the Worksheets are populated by those most appropriate to canvass relevant feedback from those involved in relevant workstreams, etc. and then take a view on any further workshops that may be required.

It was agreed that the Workbook / Worksheets will be issued, with everyone to complete their relevant section/s as per the responsibility matrix that is to be developed.

DM shared the workbook on the screen with a quick explanation on how to complete it. It was highlighted that many of the “Lessons Learned” were more prompts than anything to stimulate thinking.

Following dicussion regarding the formatting of the workbook, DM /KM confirmed that they would do further work on populating relevant worksheets as worked examples.

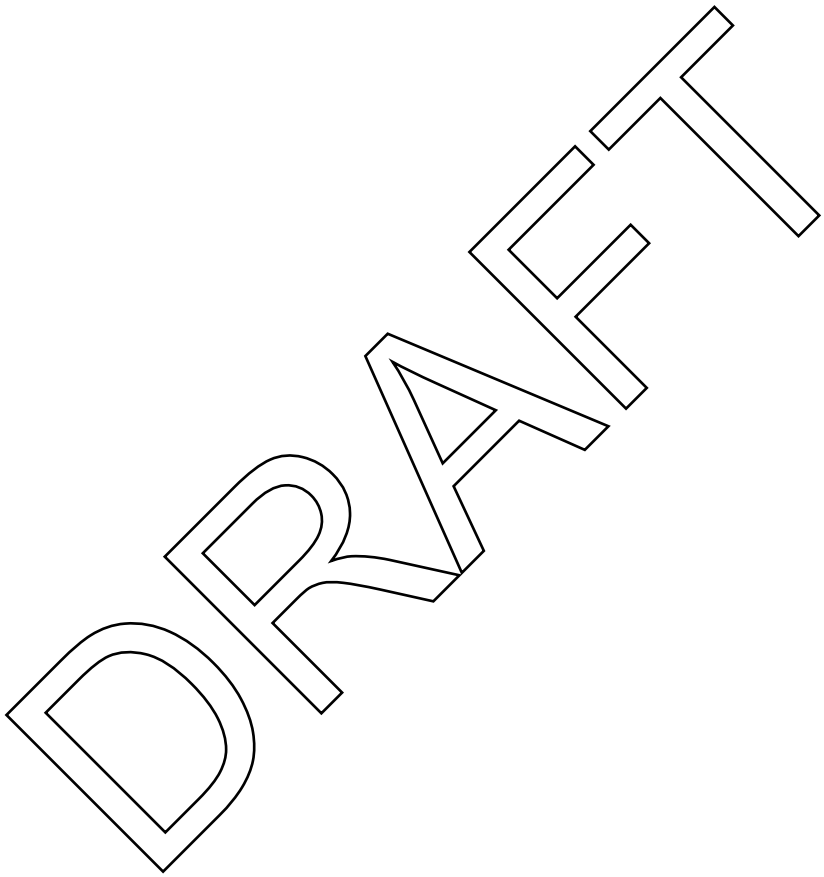
It was also noted that the workbook is designed to be a dynamic tool to be used as part of regular project meetings to capture lessons learned in real time whenever possible.

Access to workbook(s) to be confirmed following relevant discussion at the meeting.

DM and WM to ensure that the populating of the workbooks is completed in a timely manner and any further workshops arranged.

Appendix 6:

NTC Lessons Learned Report Workshop Notes from 14.09.23



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DRAFT

WORKSHOP NOTES

Architecture Masterplanning Strategic Consulting

Project : NTC Highland, UHI Inverness Campus, Inverness

Purpose : Lessons Learned Report Review

Location : Teams Online

Date : 14th September 2023

Present :

Kevin Minnock	KM	NHSH - Project Director NTC-H.
Diane Forsyth	DF	NHSH - Programme Manager for Caithness Redesign
John Bowman	JB	NHSH - Senior Mechanical Engineer.
Robert MacDonald	RMcD	NHSH - Senior Water Engineer
Ryan Muffat	RM	NHSH - Estates Manager
Kevin Richard	KR	NHSH – NTC Commissioning & Change Manager
Katie Webster	KW	NHSH - Clinical Advisor Caithness and North Coast Project
Ryan Nelson	RN	NHSH - Project Manager
Sharon Kelly	SK	NHSH – Team Leader Estates Department
Gordon MacLeay	GM	NHSH – Healthcare Planner / Clinical Manager
Catherine Stokoe	CS	NHSH - Infection Control Manager
Helen Robertson	HR	NHSH - NTC- H Manager
David Mason	DM	Core Associates - Soft Landings external consultants
Julie Jones	JJ	Core Associates – Administrator - Workshop notes

Distribution : As present plus original invitees.
NB: 12 no of the original 24 No. NHS Highland invitees were in attendance.

Notes By : Julie Jones – Core Associates
Prepared By: Julie Jones
Checked by: David Mason

1. Introductions/ Apologies

All present introduced themselves.

NB: A copy of the presentation is appended to these workshop notes.

2. NTC Highland Lessons Learned Report Overview

2.1. DM provided a brief overview of the structure of the NTC-H Lessons Learned report including reference to the two formal workshops previously held with eHealth in Inverness and with the PSCP Balfour Beatty and the wider project team on MS Teams.

- eHealth L/L Workshop
  In person on site and with Teams for those who couldn't travel – 10th November 2022
  Participants as per workshop notes.

- PSCP - Balfour Beatty (BB) and NHSH Project Team L/L Workshop
  Teams meeting - 13th April 2023
  Participants as per workshop notes.

NB: Reports from these workshops have been included within the appendix of the NTC-H Lessons Learned Report.

2.2. There was general discussion regarding eHealth. KM confirmed that eHealth had done a very good job overall on the NTC-H project. The lessons learned workshop focused on issues around e health engagement during early stages of the project, e health resourcing, briefing and budget. During the later stages of the project the level of detail provided in e health project reports was very good. Lessons Learned had been acted on and understood to be carried into the Lochaber and Caithness projects.

2.3. DM highlighted that a lot of good lesson learning had been compiled. KM providing feedback on the design, construction, procurement and equipping aspects of the project.

NHS Highland has been engaged in sharing lessons learned with other NHS Boards for their projects through the forums established by HFS. (i.e. Technical forum, NTC Project Director and Soft Landings forums)

2.4. KM stated that there is greater dialogue now between NHS Highland and other Scottish Health Boards, with more sharing of findings from the NTC-H lessons learned process.

2.5. KM confirmed his 6 top lessons learned as:

- Business Case Management
  A better understanding of business case management is required by all those involved in project delivery, in particular capital and revenue funding aspects for the project. Detailed work force planning and development of the target operating model are critical factors to a successful outcome for the business case and alignment to business case development timescales is essential to avoid delays. Adequate resource must be applied in these areas if contractual programmes are to be met.
- Programme Management
  The programme is a key document under the NEC form of contract. It is a project control document with specific contractual importance under the NEC contract. The correct use of a compliant NEC fully resourced and costed programme is an essential tool for effective project management under this form of contract. It is linked to NEC early warning and compensation event notifications required for management of time and cost on a project.
- Design Management
  Exemplary design is required if the healthcare facility is to function as intended. A robust process for design management is therefore a pre-requisite pre-construction activity. The production, review and approval of the design drawings, specifications and associated technical information is a key deliverable for project success. Design management must be sufficiently resourced and managed by experienced and appropriately qualified technical personnel.
- Quality Management.
  Quality Assurance and Quality Control aspects in construction are a key consideration and the Contractor and their team need to be monitored carefully by those suitably experienced in Quality Management to identify and enforce the timely rectification of defects.
- Commissioning and Equipping
  Commissioning and Equipping were key areas affected by a challenging programme to achieve handover and completion by the April 2023 opening date.

Clinical occupation, staff familiarisation and training commenced on the 9th December 2022 and this ran concurrently with the commissioning, completion and handover activities.
For all future projects, clinical occupation, equipping, staff familiarisation and training should be programmed to follow project completion and handover.

- Post Occupancy Evaluation
  The requirements for Post Occupancy Evaluation (POE) on capital projects are detailed with SCIM guidance and are mandatory on publicly funded Scottish Healthcare projects. Projects must be able to sufficiently plan, resource and report on this aspect of the project.

2.6. JB commented on discussions held in soft landing forums nationally about the need for dedicated purpose-built anaesthetic rooms in theatre suites (Reference Lessons Learned Register Workbook Revision J - Theatres tab 21.1 item 21.1.21.).

JB stated that any decision taken by a Health Board to omit anaesthetic rooms from theatre suites would require a derogation as this would be a departure from national Scottish healthcare guidance. KM stated it will be for Heath Boards to assess their own specific requirements for individual projects in line with the current guidance.

KM stated the NTC-H lessons learned report had been structured to include all feedback provided from various sources and it will be up to individual Boards to decide on what they will move ahead.

KR stated that we should be taking a look at items locally as well as nationally. It is good to have cognisance of other national groups, however being specific to our project is important as well.

DM stated there was input from a number of Boards as trying to garner various level of feedback that can be carried forward to the benefit of other projects. It was questioned whether more text from clarification would be needed. KM stated perhaps it could be an addendum to the report.

DM agreed and stated we don't want to lose sight of innovation. With the green theatres programme, there is a lot of innovative work going on nationally and internationally.

NB: There was discussion regarding the relevant source of lessons learned as recorded at this point and also later in the workshop.

It was agreed that anything that didn't directly result from Lessons Learned from NTC Highland project should be added as an Appendix to the report rather than be included in the main body. This applies particularly to the Lessons Learned Workbook. e.g. Skye and Aviemore project tabs.

2.7. KM noted that clinical staff may need some assistance in navigating through the stakeholder engagement process for the business case development of a project. This process takes up a lot of time. Some staff will be working outside of their working hours to complete their inputs. Everyone should try to assist clinical colleagues in this respect.

2.8. KM – Recognises the varying reasons for the low attendance at this workshop (12/24 attended 50%), however, to achieve the best outcomes we would like to have 80% attendance at workshops in the future.

It was agreed that the report will be updated and redistributed. KM stated in the absence of comments, the report will be deemed accepted.

There was general discussion about the report and what the intention was for the meeting, to have read the whole report and comment?

KM stated he would have expected attendees to at least have read the parts of the report in relation to their own disciplines in preparation of this meeting.

KR stated we need to act on lessons learned and create an action plan based on the outcomes of lessons learned.

DM also highlighted that we need to apply lessons learned as early as we can.

3. Discussion regarding Key Lessons Learned

3.1. KR highlighted top lessons learned on the project from his perspective.

1. Programme is the top one. How that programme references to each of the stages and make sure we can deliver it on time and have relevant resources in place.

2. KSAR – We need to be aware of what we will come up against in the next project. Things we are expecting to see.

DM asked where we are sitting with KSAR on Lochaber and Caithness projects. KR stated that an IA review had been done and no other principal meetings programmed until we get to OBC.

DM stated that SDaC will be applicable on these next projects.

KR confirmed that an understanding of the requirements of these processes will be key on the next projects.

3.2. JB highlighted top lessons learned on the project from his perspective.

1. Ventilation, that we get a validation engineer on board at the very early stages of the design.
2. Design stage, we have to look at the early stage of ventilation and fire compartmentation – cause and effect - at the early stages and the impact it has on critical ventilation.
3. Fire damper access. One thing we don't see is the layout and any equipment layout that may prevent access to them.

KM agreed early engagement in ventilation strategy is required. At design stage, to include Building Control, Scottish Fire & Rescue service, NHS technical team. Clear access to fire dampers is required for maintenance, Adequate design coordination and monitoring is essential to prevent clashes.
Question – can Revit modelling assist in the co-ordination?

3.3. RMc highlighted that there were issues on all previously referenced projects - CSU, B&S, Skye due to the classification of in-patient rooms and in the associated ensuites heights of wash hand basins vary, e.g., able bodied – standard height, assisted - lower height, and some rise and fall. Height of WHB in ensuites can be a different height for across the design. This needs to be clear in the briefing and project development.

3.4. SK highlighted key lessons learned from her perspective.

1. Key dates for deliverables. Key dates missed for Cobie drops resulted in a significant delay in the development of maintenance schedules, draft O&Ms, draft drawings – an earlier issue of these documents rather than at handover would greatly assist the estates teams.
2. Roles and responsibilities of who does what and when would also assist.
3. Training – Asset information is held in Maximo but there needs to be detailed training for planned maintenance.
4. First responder on call – a lot of teething problems and repeated faults on nurse call for example often in the middle of the night – if it's a contractor fault they should pick up relevant costs within defects period as this is a revenue cost - staff that are called out in the middle of the night still have to work in the morning.
5. Anything we have to do as a change of result of something – anything that costs us money – we end up spending money to fix something - should be included in the cost of project.

BMS link to Raigmore was an issue that was highlighted.

RM and KR highlighted that there had been issues that required chasing the sub-contractor dealing with the BMS.

3.5. There was general discussion regarding Cobie dates on the programme being missed. SK asked if there are penalties in the contract for not making key dates?

KM confirmed there are penalties and the extension of time is subject to ongoing review regarding cause and effect.

3.6. KM addressed SK's other points – there was a draft commissioning training schedule and focus on all staff training. What went wrong, as training was scheduled, will have to be reviewed.

In terms of managing call-out issues, all should have been detailed at handover stage. There were a number of workshops where all FM services were covered and this process was assisted by Turner and Townsend. The correct early engagement is required and on call requirements should be clearly defined.

Cost and revenue – needs to be a better understood by the accountants as to what revenue items are for project delivery – i.e. what goes in to the original business case. We should be using the data / information from lessons learning to schedule / cost for what is required.

3.7. SK – Its key to make sure that we don't end up in the same position as for Skye as there was no managed defects period. Staff had to purchase tools to maintain the equipment. It is lessons learned and working collaboratively.

Do we have an opportunity to feedback any further comments after today?

KM requested that any further feedback is e mailed to David Mason who will include any relevant material in the final report.

DM confirmed that he was happy to continue to get feedback via email and within the chat here as relevant.

3.8. SK – General comment. B&S hospitals – We took the hit to pick up faults.

3.9. KR asked how can we capture things that are positive and went well? How can we pick up the positive and take that forward? Things that we have done positively should be looked at to take forward and continue to keep doing them.

SK agreed saying encouraging the positives ensure we keep doing them.

DM highlighted that we do tend to dwell on the things that go wrong but should reflect more on the positive. Innovative practice is what we do well to do the job, and as well, if not better, the next time. We should reflect more on the positives. With lessons learned it is an ongoing process. There will be lessons learned from the project through in-use that we have to keep capturing as well.

4. Lessons Learned that should still be captured for the benefit of Lochaber and Caithness projects

4.1. SK highlighted that leaks have been problematic at B & S hospital. The roof has required a few repairs in the defects period that won't give NHSH the lifespan of product.

4.2. Locking suites are an issue. At NTC there was a leak and the issues with door locking and how they were suited was a frustration for the plumber who was called out through the night. The access was extremely time consuming and problematic.

KM- That had definitely been picked up. It is a defects management issue to be reported back.

KR – Keys – need to emphasise security strategy needs early discussion. KR confirmed that there had also been swipe card access issues too.

KM- Key suiting requires input from design team with Estates to feed in as early as possible.

KR – Specifying the right point in the project for review should be a more effective discussion.

DF – It is worth saying locking suites and security needs to be picked up on earlier. Trying to get the right people and expertise together proves a challenge and we need to look to see how we can do that now. Requires involvement from all relevant users. DF also asked if the plan is to distribute this further?

4.3. DF queried as to whether the issued report was final or a draft?

DM – A good point – what are time limitations around these things – we are trying to get to a point of conclusion on the lessons learning part of the reporting at the end of the 3 month Aftercare period and then moving on to PoE reviews.

Part of all of this is planning for the longer term.

KM recommended that David Rich remained on site as NEC Supervisor for a period post handover. Reporting can be looked at in more detail with the benefit of wider feedback.

4.4. Some of the issues were linked to the fact that that the equipping period and clinical commissioning periods were compressed. The building wasn't complete at the time it was occupied – the NHSH Facilities team

took over some of the cleaning etc. NHS-H never got the sparkle finish from the contractor included under the contract.

DF – Confirm the report with everybody who was involved. It would be useful if an executive summary includes what are the important things we need to focus on. What impacts time, cost, and quality. Pull out relevant to each stage of the project.

Agreed with KR re positive points and adding them to the Executive Summary.

KM highlighted that project teams are tied to the format prescribed and the requirement is that we populate the template. Further detail can be included within the Executive Summary.

All the requirements and data reported on is as requested by Scottish Government is part of the Business Case process.

An understanding of what the government is requesting is lesson learning that we need to take froward.

DF – Understand that we are constrained by the template.

DM – Agree with DF – when you read the report cold there perhaps isn't enough background and context. Will take on board those comments and can refresh the report.

5. Project Monitoring – Business Case requirements – OBC Stage

5.1. DM highlighted the guidance relating to Project monitoring which is a requirement of the Business Case process and applicable on the Lochaber and Caithness projects.

A monthly forum, chaired by Gordon Stewart of Scottish Government is looking at monitoring and PoE in more detail. The process tracks project development through the business case stages, construction and in-use and involves a cycle of planning, monitoring, evaluating, and learning.

DM highlighted that the process diagrams in the document of relevant requirements stage to stage needs to be updated as it doesn't include KSAR and SDaC for example.

DF reflected that the diagrams highlight the sheer number of hoops project teams have to jump through with processes required and relevant information that has to be produced. Not sure we fully grasp the resource requirements on a project.

Catherine Stokoe added this comment to the meeting chat – "Completely agree. I'd like to share some of the slides with the HAI Exec Lead to strength their knowledge of what is expected."

6. Post Occupancy Monitoring – NTC Highland

6.1. DM confirmed that the published Post Occupancy Evaluation (PoE) Template did not reflect the full monitoring and reporting requirements as stipulated in the SG SCIM Project Monitoring process as there are other requirements through the NDAP, KSAR, SDaC processes, for example, that go beyond that.

NTC Highland is now into the Post Occupancy Monitoring phase and a plan was needed for how we deal with project monitoring and evaluation In-Use over the first three years.

DM confirmed that this included Benefits Realisation, NDAP (Design Statement and AEDET) and financial aspects too.

6.2. DF highlighted that there is a distinction between benefits realisation for the service and PoE.

DM understood that Benefits realisation and PoE do overlap. The key dates for monitoring and reporting that need to be met within a project need to be mapped out and included in a programme.

KM confirmed that relevant aspects of a project are captured and how we measure it, when we measure it, what are the outcomes and have we achieved what we set out to are reflected in reporting. Although different they are linked. PoE is allocating responsibility for who will carry this out, how and when.

DM asked if it was ok to issue the Post Occupancy Monitoring Template to the team.

KM – Yes, anything to assist people of the overall process.

7. Any other Business and Next Steps

7.1. DF highlighted that there was a huge amount of information in the reporting that made it hard to fully disseminate.

KM appreciated what DF said as it is a big report.
BIM 360 reports as included should perhaps be a separate appendix and maybe some other parts could be seen that way too.

It has been a process - there have been workshops, feedback from the workshops has been incorporated into the report. Hopefully the report will be in a position where it can be finalised following feedback from this workshop.

7.2. GM confirmed that it had been a very useful meeting and huge amount of information to digest.

GM asked if this an NHS Highland document? GM requested that we move to page 50 and down the column to 20.1.23. Reference Skye and Badenoch and Strathspey projects Lessons Learned.

Should be more of an action and not a criticism of a PM? Actions should not be an allocation of specific blame.

It was confirmed that the source document had been compiled by hub North on behalf of NHS Highland.

Further review to be carried out based on this feedback.

GM highlighted though that there were a lot of good things included within the reporting.

7.3. GM requested of CS that the team review the documentation and confirm any feedback to DM and including from an infection control point of view and also touch base with David McKay and team?

CS agreed.

7.4. KR stated that actions should be clear and have tangible lessons we have learned from then we have actions to take forward.

7.5. DF asked why B&S is referenced within this report? Has information been pulled from another report?

7.6. KM stated we were asked to capture feedback from other projects but could put them in as appendices.

7.7. DM confirmed that all relevant lessons learned from NTC-H, other NHS Highland projects and reported via the national Soft Landings Champions network had been compiled into one document as issued.

7.8. GM highlighted the anaesthetic room comment in respect of Theatres Lessons Learned. Lochaber may be able to do without, however, NHS Assure have given contradictory steers previously. With NTC there was disparity from 3 NHS Assure teams – the NHS Highland team were given 3 different answers.

7.9. KM said NHS Assure's remit, processes and relevant requirements have been developing. NHS Highland have fed back through forums to Jackie Kilcoyne and her (Frameworks Scotland) team and to the NHS Assure KSAR team. There needs to be further refinement work but different people may give a different opinion if something isn't formally prescribed.

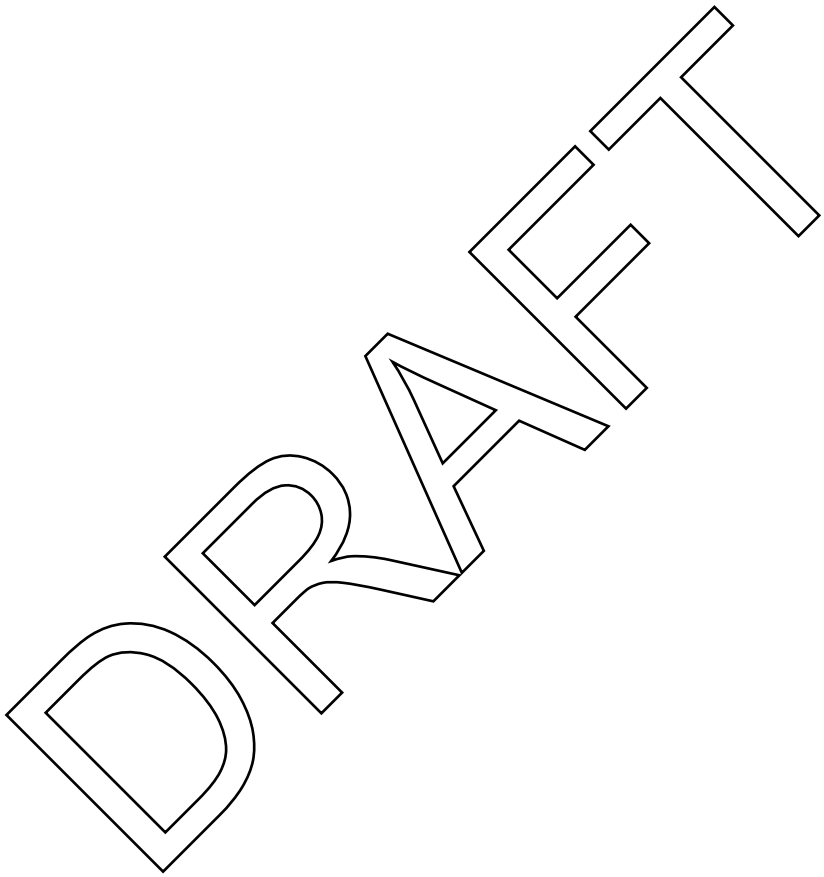
7.10. KM confirmed that he will have another follow up meeting with DM and re-tabulate the report.

7.11. All agreed meeting was helpful.

7.12. KM confirmed that the target date for end of October/beginning November to finalise.

Appendix 7:

NTC Lessons Learned PSCP Workshop 2 Notes from 24.10.23



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DRAFT

WORKSHOP NOTES

Project : NTC Highland, UHI Inverness Campus, Inverness

Purpose : Lessons Learned Report Review

Location : Teams Online

Date : 24th October 2023

Present :

Gavin McNeill	GMcN	NHS Highland
Kevin Minnock	KM	NHSH - Project Director for the NTC Frameworks Contract Consultant Lochaber & Caithness
Catherine Stokoe	CS	NHSH - Infection Control Manager. Linked into NTC Project and will be linking into Caithness and Lochaber.
Jacqueline Kilcoyne	JK	NHS Scotland Assure - Capital Projects Manager FS3
Douglas Anderson	DA	Electrical Design Manager at NTC Highland Electrical Design Manager Lochaber & Caithness
Paul Carberry	PC	Balfour Beatty. Framework Commercial Manager Lochaber & Caithness
Gary Crossan	GC	Balfour Beatty. Contracts Manager. Project Lead MEP delivery NTC. Preconstruction for Lochaber & Caithness
David Downie	DD	Balfour Beatty. Mechanical Design Manager for NTC Highland and both Caithness & Lochaber
Natalie Duthie	ND	Balfour Beatty - Healthcare Design Lead for Lochaber and Caithness
Martin Sim	MS	Balfour Beatty - Preconstruction Director. Healthcare and Account Lead for FS3
Steven Standring	SS	Balfour Beatty – QS / Preconstruction Management Role - NTC Highland Preconstruction Manager Caithness
Aiden Teague	AT	Balfour Beatty – Project Lead, NTC Highland Project Lead for Caithness General Hospital
George Young	GY	Balfour Beatty - Area Director

Ester Coma	EC	Keppie Design. Assisting with Lochaber
Samuel Hay	SH	Keppie Design – Architectural Lead for Caithness.
David Morrison	DM	Keppie Design - Architectural Lead for Lochaber
Duncan Ford	DF	Hulley and Kirkwood – Electrical for Caithness
Chris Madden	CM	Hulley & Kirkwood - Electrical Design Engineer for NTC and Lochaber.
Ross Southwell	RS	Hulley & Kirkwood. Mechanical Design Consultant on NTC and Lochaber
John Segrott	JS	Mott MacDonald. Civil and Structural engineering for NTC and for Lochaber and Caithness
David Sutherland	DS	Mott MacDonald – Structural Designer for NTC & Structural Lead for Lochaber
Mark Coffey	MC	Oberlanders Architects – Partner. NTC Architect Lead from initial stages to completion. Lead Advisor Technical support for Caithness & Lochaber
Paul Gilligan	PG	Oberlanders Architects – Partner. Assisting Thomson Gray Lead Advisor Team for Caithness
Melanie Fecker	MF	Thomson Gray – Project Manager for Lochaber
Joe Ferguson	JF	Thomson Gray – Senior Project Manager. NEC PM for Lochaber
Rebekah Garrett	RG	Thomson Gray - Associate Project Manager. Lead on Caithness redesign project.
Ged Gowans	GG	Thomson Gray – Supervisor Team for NTC. Leading Supervisor team for Lochaber & Caithness
Hannah Greenwell	HG	Thomson Gray. Senior Project Manager Caithness Hub – Caithness Redesign
Shazia Ibrahim	SI	Thomson Gray. Project Manager Assisting on Caithness
Brian Prentice	BP	Thomson Gray - Senior Surveyor. QS lead for Lochaber
Micheal Steel	MST	Thomson Gray Cost Advisor on NTC and for Caithness
Julie Jones	JJ	Core Associates – Administrator - Workshop notes
David Mason	DM	Core Associates - Soft Landings external consultants

Distribution : As present plus original invitees.
Notes By : Julie Jones – Core Associates
Prepared By: Julie Jones
Checked by: David Mason

1. Introductions/ Apologies

1.1 All present introduced themselves.

1.2 KM confirmed that Lawrence Casserly sent apologies.

1.3 KM clarified that Ged Gowans Thomson Gray team provided not only NEC technical support for the NEC supervisor role, but they also carried out the CDMA advised service to the NTC project and will provide the same CDMA service to both Lochaber and Caithness projects.

NB: A copy of the presentation is appended to these workshop notes.

2. NTC Highland Lessons Learned Overview

2.1 DM provided a general overview of where reporting was in respect of Lessons Learned for the NTC project and also highlighted requirements for project monitoring, particularly as that will be required for Lochaber and Caithness projects through the business case stages and confirmed that NTC Highland was now into post occupancy monitoring.

2.2 The project team were currently in the process of concluding reporting on NTC Highland to be shared across NHS Scotland. NHS Highland is committed to sharing these lessons learned outputs with boards across Scotland. The draft report that we've prepared includes the lessons learned workbooks which are an integral part of the soft landings guidance.

2.3 The focus in this workshop is on lessons learned from NTC Highland and how to implement these on the Lochaber and Caithness projects. It was highlighted that many of the consultants have been involved in this process already and will continue to be involved. It is hoped that the knowledge shared will be for the benefit of projects being delivered in the future.

2.4 DM stated this is the fourth formal workshop to be held. There was an eHealth workshop early in the process to capture valuable lessons learned at that time followed by a joint session with the PSCP team and NHS Highland and then a more recent session with the NHS Highland Project Team.

2.5 All reporting is based on Lessons Learned Workbook Rev H. which has been further refined following feedback from the most recent workshop with the NHSH Project Team.

2.6 Lessons learned have been gathered through NTC Highland, also through the national Soft Landings forum and from previous projects which included Skye and Badenoch and Strathspey.

2.7 KM confirmed that any feedback from this workshop will be compiled for input into the report. Feedback has been gathered from the PSCP and NHS Highland, but not so much from external consultants. The target was to conclude reporting in early November.

3. Discussion regarding Key Lessons Learned

3.1 DM provided an overview on Lessons Learned and highlighted that a great deal of progress had been made on the NTC Highland project in being able to identify lessons learned throughout the project development and delivery stages.

3.2 This is a fantastic learning opportunity with many of the same team members from B&S, Skye and NTC Highland being involved in the Lochaber and Caithness projects. From the last session that we did, it was clear that new processes and procedures have already been put in place for the key aspects of project development, design and delivery.

3.3 This priority for the session was about focusing on those lessons learned from NTC Highland.

3.4 Prior to the workshop, everyone had been requested to think of their top three lessons learned from NTC Highland.

3.5 Steven Standring (SS) opened discussions by highlighting:

3.5.1 Realistic programme task periods were required and perhaps closer discussion with relevant team members before things were presented for agreement.

3.5.2 Avoiding mammoth VE exercises post costing.

3.5.3 Closer attention and focus on costs in relation to design development and scope. So, we don't end up with a huge disjoint.

3.5.4 DM - So in terms of the VE exercise you're referring to was that when things were well advanced from a detailed design perspective.

3.5.5 SS – Well into RIBA 3 and almost starting RIBA 4 and identifying cost related issues before that stage is prudent.

3.5.6 DM – In terms of next time from your perspective, how do you think that could be better addressed?

3.5.7 SS - More attention to that detail. A number of aspects lead into that - timescale, more joined up as a team, more open with the design team in terms of their understanding of what impacts costs and how things are looking because if they don't know then they can't make decisions that help.

3.6 Mark Coffey (MC):

3.6.1 VE set the project out of sequence well into Stage 4 (25% complete). 25% was very significant at that time. A lot of the complexity ended up coming through

the design coordination and construction on site initiated from that decision to VE at that stage.

3.6.2 DM – Presumably that led into critical programme concurrency in terms of design and further detail design coordination?

3.6.3 MC – The programme wasn't a linear path, and even in the pre-construction program itself, the building was effectively designed four times. Looking back on the programme, it could appear that there was more than sufficient time given to the pre-construction programme but that wasn't the case in practice.

3.6.4 MC - The latest design was from stage 2 to an advanced stage 3 in about 8-12 weeks, so the rapid acceleration made it very difficult to keep up and was a greater challenge for the contractor to maintain progress on site. It created an out of sequence process and almost became construction design rather than a methodical and coordinated process.

3.7 George Young (GY):

3.7.1 Confirmed that he had come late to the NTC to assist the team nearer the end of NTC to get the project over the line and agreed with what Steven and Mark highlighted.

3.7.2 GY – Programme and design freeze - keeping to the clinical and technical briefs and having robust documents at an early stage for design development and monitoring relative to the Programme. Design freeze at Stage 2 before moving on to Stage 3 and another freeze to close the design off at applicable stages. Things can change for different reasons or requirements, but they all have an impact on the programme. A Lessons Learned now being applied on Lochaber and Caithness.

3.8 KM – NTC has been a fabulous job – it has been well delivered, with a brilliant design team and progressed through the covid period which cannot be underestimated. Difficulties have been highlighted with the design process. Key project partners dropped out part way through and a large value engineering exercise was also required. There was a very ambitious timescale to try to meet for operational in service. Everything considered, none of that could have been achieved without a one team ethos and supporting the weakest member of the team. NTC proved that that was possible.

3.8.1 KM – Understand the ups and downs of major construction projects and everything that goes on in the background with others involved in bringing it together. It can be difficult to manage. The Lessons Learned puts the team in a much better position to get to a fixed design for stages 2, 3 and 4 going forward (on the next projects).

3.8.2 Programme and cost the project robustly so everyone knows and understands the complexity. These lessons learned create a betterment going forward so that everyone is treated more fairly and equitably to get the right result for the service provided to the patients of Scotland. Maximise the lesson learning process and shared with NHS Assure. Lessons learned should be seen as trying to continually improve.

3.8.3 GY – fully support that.

3.9 Ross Southwell (RS):

3.9.1 Started halfway through stage 4 and into the heart of the construction period so limited experience from the early part of the project. Three lessons learned points are from a mechanical engineering perspective.

3.9.2 Agreement of scope and extent of CDP packages on site. With NTC, there were a lot of packages that were CDP which created a lot of information being distributed back and forth throughout the stages. Even in the construction stage where it was required to ensure that any updates to those specialist designs were captured within the mechanical infrastructure. Early agreement on those areas would smooth a lot of design and construction at that stage. Push for more and earlier engagement on those areas of CDP.

3.9.3 The provision of an emergency hydrant tank on site. The Scottish Building regulations state that if there is not sufficient pressure or flow in the mains, there needs to be provision of an alternative form of supply, meaning a huge static hydrant tank was required.
Regarding this provision there was dialogue regarding what the flow and pressure would be. It took quite a while to talk to the Highland Council and Scottish Fire and Rescue.
For Lochaber going forward there should be early discussions with those representative members to try and get that closed off before detailed design stage as it does have quite large implications on the site.

3.9.4 Non-standard theatre arrangements – something that has been raised multiple times. The team responded to the review process and satisfied the issues raised to ensure that there was enough information and supporting calculations to allow for non-standard theatre layout in the NTC. There was a shared scrub room which was the main cause of concern. A lot of effort was needed by everyone in the team to get that closed out. It got verified commissioned and validated. It is a feature that should not be recommended for Lochaber and Caithness theatres.

3.10 Aiden Teague (AT):
Agreed with KM that everyone worked well as a team and got there in the end.

3.10.1 Early involvement on MEP design highlighted by RS. Taking that on board and H+K are on board already for the two upcoming projects.

3.10.2 Important to get design to more advanced stage before commencing Stage 4.

3.10.3 MEP issues were also affected by what happened in Ukraine, supply chains and the markets generally.

3.11 Michael Steel (MST):

3.11.1 From a Cost Advisor point of view looking to do optimism bias workshops in the future on these projects.
MST outlined the requirements for Optimism Bias build up and ensuring that potential additional requirements down the line can be covered. Carrying

more of that approach into the FBC budget as during the construction phase if the project is on site for 2-3 years additional requirements can get added in.

3.11.2 Having done CSU at Raigmore previously which was all refurb and then NTC was all new build there is further lessons learning on how equipment costs are dealt with and how they are split between capital and revenue. On a new build that they are not considered revenue at all whereas on the CSU, there was an element that is revenue.

3.11.3 DM – Comment re the equipment costs - that will obviously affect Lochaber and Caithness.

3.12 MC – Can support and respond to other peoples' comments including Ross's comment on the non-standard theatre arrangement.

3.12.1 This project started in 2016/2017 - the elective centres were a new program. As part of that program there was a desire from HFS for innovation in theatre design, how we responded to inpatient design, and they were also trying to figure out how they wanted to develop and respond to sustainability issues. The approach to elective centres was different, there was a discussion on taking out anaesthetic rooms as that was something that was being achieved at the eye clinic at the Golden Jubilee. Golden Jubilee was the first to come off the drawing board with the NTC being the second.

3.12.2 MC – The shared scrub area came from originally wanting a barn theatre design that would assist with education particularly being linked with UHI. Only one of those theatres ended up without an anaesthetic room which was theatre one on the ground floor. Finally, the natural ventilation of the inpatient bedrooms, which post covid would be reviewed entirely differently. Taking things as innovation into an elective centre because it is for elective patients only and is not for general patients.

3.12.3 MC - Act with caution if replicating anything because a lot of what was achieved and produced at the NTC was because it was for elective patients. There were patients that were very explicitly excluded from the category of entry into that hospital.
At the Commissioning KSAR review, it had to be explained how we ended up with a non-standard layout which was an unusual situation when the majority of the information demonstrated that it was designed to HBN 26 and all the other relevant compliance documents. Innovation was sought because the value engineering was so high so there was a lot of input that went into that piece of design. It was justifiable as an elective process, but it wouldn't be justifiable in other general facilities.

3.12.4 DM - The anaesthetic rooms came up in the session held with the NHS Highland project team but that was in the context of would it be included in the lessons learned. The point was made that some of these features, as noted in lessons learned, do have to be handled with care for many of the same reasons highlighted. It's a good point in terms of being cautious with what is brought forward into the other projects.

3.12.5 TO KM: there probably isn't an adequate distinction being made between the elective program versus a general hospital theatre department design.
KM – This issue warrants a review of the reporting executive summary to include a statement at the front highlighting that this is an elective care facility and not an acute hospital or a regional general and all the design information and the lessons learned should be treated with caution in that respect.

3.13 Gary Crossan (GC): `

3.13.1 Supply and installation of theatre equipment – specifying the equipment, trying to get the cost value and then trying to get it to fit in space available. Going forward, information should be gathered as early as feasible to coordinate it better as the ceiling voids were jam packed above the theatres.

3.13.2 NHS Assure and KSAR – for NTC there was no KSAR pre-construction and it felt like we were always trying to catch up. It took up a lot of time and impacted on the commissioning period at the end. For NHS Assure and KSAR, to get it in earlier so issues are closed out if they become apparent apparent.

3.14 John Segrott (JS):

3.14.1 From the outset, the structural grid was well thought out and made the structure efficient, straightforward, rational and repeated, so that worked well and this then followed through into the cost and efficiency of the erection.

3.14.2 The internal secondary steelwork issues were unforeseen due to fire regulations changing and not knowing what the impact was on the British Gypsum requirements for secondary steelwork. It was a lot to work through.

3.14.3 The theatre pendants were affected by not having that information up front and the requirements that they put on the vibration sensitivity of equipment which was eye watering and that made it difficult to effectively retro measure the building to confirm the vibration was not an issue.

3.14.4 The Energy Centre became its own work package because there just wasn't the information earlier to fully develop it.

3.15 AT:

3.15.1 Secondary steelwork affecting theatres was an issue because of the complexity of some of the fire regulations and associated requirements. A lot of openings for dampers had to be changed.
Regarding the point about the energy centre, there was a similar problem in Badenoch and Strathspey hospital, so there were early workshops to go through the Energy Centre week after week. It needs more focus earlier on to get the energy centres right for new builds and refurbs and earlier engagement with third parties like SSE.

3.16 Chris Madden (CM): The key points for the electrical design at NTC –

3.16.1 Switch room was developed through engagement with NHS. Lessons Learned relates to where the dual supplies terminate and creating a single point of failure. In the switch room, there was an A and the B supply coming into the

single switch room. Now taken that on board for Lochaber and there are separate switch rooms scheduled. That's a lesson learned that has been taken into a new design.

3.16.2 The second point was there was an issue with the multiple voids created in the ceilings. Many compartments were created which meant when installing an L1 system fire alarm system this included a lot of detectors in that void. One example was a room that had steelwork crossing perpendicular to each other which meant four voids were created and therefore four smoke heads required.

3.16.3 Early agreement on the ADB room layouts - There was a lot of indecision regarding how many sockets, adding more then taking them away during design and construction stages. The number of sockets can affect the number of circuits and the circuit design which in turn, affects the size of the distribution boards, so it's not as easy to just add in two sockets later in the project. Early agreement of room layouts will prevent these ramifications.

3.16.4 KM – To come back to the point about the resilience and the issues KSAR raised regarding switch rooms It was impossible to accommodate two switch rooms on a fixed grid in the design at that stage, which is what was argued. Ending up with two switch zones in one room was still a resilience issue. It highlights the need for these decisions to be made earlier and all decisions need to be taken with the backup clinical risk assessments that inform what has to be designed.

3.16.5 KM - The technical brief and the clinical briefs and including clinical output specifications need to be tied down as early as possible.

3.16.6 MC- It all stemmed back to the VE process with 200mm taken off the floor to floor which created so many different aspects of change. Downstands were being squashed into the ceiling voids. It had a massive knock on throughout the entire process.

3.16.7 MC- It seemed inconsequential at the time as just a figure in a spreadsheet. However, had it been more fully analysed by the full team regarding what the cause and effect might have been, potentially the saving wouldn't have been taken at all because the potential risks and outcomes would have been realised. The man hours in re design were very high. This is a huge Lesson Learned.

3.16.8 MC – noted that this project lived through:
Grenfell happened not long after it got awarded, then Covid, Ukraine and associated further impacts. So much change happened in the construction industry in such a short space of time.

3.16.9 KM – In addition to that, the decision from Highland Council regarding the interpretation of fire regulations around the internal lifts. We had to revisit the CSU into ensure that that was a correctly applied on there and that they were satisfied. Also, all the issues that came out of Aviemore and Skye, affected this project as well.

3.16.10 DM- A good point regarding the unintended consequences of those strategic value engineering decisions. We see that quite often, but probably not quite significantly as it seems as though it's has been on NTC.

3.17 SS:

3.17.1 The extent and challenges around planning requirements as well before site and on site. The challenging aspects of planning was due to the uniqueness of the campus site and historical aspects associated with that. All parties really pulled together through a number of meetings with planning and the transport teams. A massive effort and something to be proud of.

3.18 Ged Gowans (GG): Came in as a team to support Highland halfway through the construction process and it took a bit of time to bed in and get those involved to understand that inputs were to help deliver a defect free completion. That good relationship as established will be taken forward - it was fully appreciated.

3.18.1 The underpinning theme here of all the lessons learned is that early stakeholder engagement is vitally important. Various stakeholder groups visited site as completion approached and were slightly surprised about whether they had or hadn't seen a design drawing previously. They also weren't expecting to see some things that were pointed out and were asked if they were happy to accept these, as what was being delivered was in the Works Information. That upfront engagement is key and if the design can be 100% complete before starting on site that would be great, wouldn't it? Unfortunately that doesn't always happen.

3.18.2 DM –In terms of the stakeholder inputs that are being referred to, was that because of a lack of involvement at the key stages previously?

3.18.3 KM – Lessons were learned from CSU and stakeholder engagement and a communications plan was developed, a stakeholder engagement plan and under the direction of Deborah Jones, a 3P liaison session was carried out.

3.18.4 Some input from the contractor and designers on how they felt that went? This was a great starting point for stakeholder engagement, bringing the necessary clinicians to the table with the designers and with the PSCP to inform the brief including the clinical adjacencies and how it's needs to be operated and serviced.

3.18.5 GG- The stakeholder groups were challenging. This was not only due to the extreme factors affecting the project MC highlighted, but there was a change in working practices, personnel, people who retired and knowledge lost. Hopefully it is more straight forward on the delivery of Lochaber and Caithness. That has to be recognised as much as the issues encountered towards completion and handover.

3.18.6 MC – Everything highlighted is meant as a positive and just pointing out the facts of what happened. 3P was phenomenal and should be replicated on projects of suitable scale to do so.

3.18.7 It could be halved in time as it was quite intensive. Clinical outputs and function and flow is directly attributable to that and worth every penny and paid itself back within the first 3 months of operation. In terms of ADB – there was a complete turnover and changes outside of design and construction that took people away from the project. If the 3P can continue into developing what is seen to be the less exciting part of the design briefing - the ADB's - then a project would be in very good state earlier as a result of that.

3.19 DM – Would anyone else like to add anything to the points that have already being raised?

3.19.1 KM – Highlighted the need for early engagement of the validation engineer. Consultation and early engagement to agree the ventilation strategy is crucial.

3.19.2 This was done on CSU but unable to use the same engineer(s) on NTC because of availability and suffered as a result of that. Eventually between the fire officer, the ventilation engineers, technical compliance and with the assistance of PSCP issues were resolved. Going forward, Malcolm Thomas is no longer available as a validation engineer and therefore need to be looking further afield. John McEwan is taking over his role but may not directly take over full validation services. Certified validation engineers need to be identified to support projects going forward.

3.19.3 DM – My understanding of KSAR was that it came along well into the project and there was a lot of back tracking to evidence various requirements. The switch rooms issue and resilience has been mentioned however, any other headlines from the involvement of the KSAR process?

3.19.4 KM - It was an enormous task. We had been through NDAP, then KSAR process came along as an interim process by NHS Assure. NHS Highland fully supported the intent of NHS Assure's efforts to overcome issues on previous jobs with defects in the design and the build. KSAR was embraced as best as it could be with the resources available to discharge the requirements. Cooperation from PSCP was superb. Every effort was made in getting KSAR supported status through pre-construction with assistance from the PSCP and supply chain.

3.19.5 KM - Kevin Richard took over as Commissioning Manager and managed the Construction stage KSAR and through to the end of the project. A separate lessons learned session on KSAR has been conducted and fed into the reporting. The process was a very big ask and there was a lot of documentation that had to be provided.

3.19.6 As a lesson learned, NHS assure needs to better define the stages and associated requirements. Information required at one stage shouldn't go into the next stage if it's already been provided. Preconstruction issues should be dealt with at preconstruction and likewise with construction, etc.

3.19.7 MC – KSAR was the fifth process that this project went through. In relation to this project, it did come in at a later stage. What was reassuring was there was nothing that KSAR raised that hadn't been reviewed.

There was probably not anything added from the KSAR review that hadn't been recorded and there was definitely evidence that it had gone under review, and it had been part of the design conversation. While there may not have been agreement with the decision, the whole team had actually been through the process, and was covered as far as compliance went.
What was interesting is anything that got taken back into the design as a result of the KSAR review had actually come out because of the value engineering. It was definitely the catalyst for many of the challenges that the project underwent.
Most of the things that got challenged were through innovation and that was one of the lessons learned. Not innovating would have made the review process simpler!

3.19.8 RS – Hitting the KSAR review process in the construction period when trying to get everything across the line and including validating theatres and trying to get all outstanding items closed off was quite a challenge. Everyone came together to support one another and assisted in processing each issue one at a time. It was very stressful but good to come into Lochaber with that experience. There is a lot to learn such as early evidence tracking and discussions to allow for a smoother transition is something already being done for Lochaber.
Regarding overlaps, there were items that were closed off in NDaP and then reopened in KSAR even though the supported status was given. That was a stressful period when about to Commission a system and having to backtrack through design elements and not have that affect handover.

3.19.9 KM – We should continue to improve communication and governance. Follow the contract, and inform through the governance process, the project board, the health board and above that Government and NHS Assure. The team has come a very long way learning lessons and that shouldn't be underestimated. That will serve Lochaber and Caithness well going forward. Design quality plans have been developed which hopefully, if administered correctly, will aid that process with clarity of information requirements through each of the RIBA stages.

4. New Lessons Learned that are being captured on Lochaber and Caithness projects and how they are being logged.

4.1 DM - Lochaber and Caithness. It is quite rare that there is such good continuity of teams in projects going forwards and formalising the associated lessons learned process. It is good to hear that so much good work has been done and lessons learned are being translated effectively moving forward. It is still a relatively early stage on Lochaber and Caithness, but the message is that lessons learned from NTC and other projects are being carried forward. What are new and key lessons that are being learned from those projects that may not have been logged in other forums?

4.1.1 KM – Confirmed that he provides a support service to the programme managers – Gordon MacLeay, standing in for Heather Cameron, and Diane Forsyth for Lochaber and Caithness redesign respectively. The PSCP has taken great steps to implement the lessons learned from the NTC in terms of information management, communication, authorisation using CMAR correctly, supported by a very good design manager in Natalie. If these lessons can be taken forward and there is better contract administration in terms of programme and the Early warning notices and compensation event process, that will ensure that the positions of both the PSCP and NHS Highland are as they should be, and everyone is getting correct entitlement for their efforts as the programme is moving along as robustly as possible. The scope on Caithness is difficult to finalise as there are a lot of surveys required.

4.1.2 KM - If that can be done while keeping an eye on affordability, the projects have a good chance of success. This is a difficult period in terms of the commercial and financial climate that we're now in entering in to. It will be projects that take these lessons forward and by keeping on programme and on top of cost and affordability, they will have a chance of success in getting through the to the completion. Take the lessons forward to Lochaber and Caithness which are in good hands with the people who have the experience.

4.1.3 GY – There is the construction tracker from NTC that has about 80 items which will be split up, so that there is visibility of the items raised relative to the Pre-construction stages and so that there is a live monitor that can be introduced in to Lochaber progress report. A lot of things Kevin addressed about programme management, have been reviewed and are now being managed in a different way. Early warnings – Working through differently with Thomson Gray.
Back to basics, follow the contract, it reflects both parties and in turn all the consultants as well and keep the communication channels clear and this should be a good way forward.

4.1.4 GY - Affordability is what will make or break this job. The team is in place with the lessons learned. Mark Coffey is still involved as technical support to the Lochaber and Caithness NHS Team. If the tracker is monitored and reviewed, colour code up what has been discussed today and what is being done going forward by further adding to it with the outcome of this whole process as well.

4.1.5 KM – There will be a concerted effort, following this workshop, to finalise the report and ensure that it goes to NHS board for approval. Once it's approved, prepare for sharing the publication across other NHS Boards involved in trying to deliver an NTC or other projects but as long as they take cognisance of the fact that this is an elective care centre (noting previous comments).

4.1.6 KM – There was a cost report for Stage 4. Need to ensure that during the Preconstruction stages there are regular cost estimate updates. Also, the actual cost and cashflows need to be regularly produced and put through the project governance. That is a lesson learned that is being picked up and will help keep projects on track financially.

5. Project Monitoring – Business Case requirements – OBC Stage

5.1 DM - One of the things the Scottish Government are really pushing for, and more so through the business case and process, is project monitoring and being able to back track project development through the business case stages, construction and in to use and KSAR supports this process too. This documentation was based on an earlier Department of Health in England business case guidance was first published in Scotland in 2012 and then it was refreshed in 2017.

5.2 This requirement is being highlighted because it is something that the wider team will probably be asked to input through the Caithness and Lochaber projects and it follows that cycle of planning, monitoring, evaluation, learning.

5.3 At OBC stage for Lochaber and Caithness, the project team are required to develop an outline monitoring and evaluation plan, at a relatively high level only, identifying the aspects of the project that will be monitored and evaluated, when it is be carried out and key milestone dates and how it will be done.

5.4 Please also refer to presentation slides.

6. Post Occupancy Monitoring – NTC Highland

6.1 DM - For NTC Highland, the project is now at post occupancy monitoring stage therefore the team is still evaluating the performance outcomes against the relevant benchmarks, looking at the realisation of the benefits as well from a service delivery perspective.

6.2 Helen Robertson, has recently highlighted the scale of data returns that Scottish Government are expecting from the NTC programme. There is already a huge amount of data available that can start being fed into the monitoring and evaluation planning that's being done.

6.3 KM - It has been agreed that the In-Use programme will be refined with the key deliverables and timescales and the resource allocations for each of the requirements under the POE monitoring.

6.4 DM - When there's a post occupancy evaluation template that exists, everyone tends to look at that as the only part of post occupancy that's prescribed, but there are wider performance requirements defined via NDaP,

through the design statement and AEDET. Sustainability and environmental performance will now be evaluated via SDaC and energy modelling. There is also a post occupancy review template and process for KSAR being developed.

6.5 DM - The things that will be evaluated and measured on NTC Highland are functional and effectiveness and that will include the measurement of the relevant benchmarks within the design statement. An AEDET post occupancy evaluation stage review is also required. Benefits realisation also includes Stakeholder engagement through the business case development, then ongoing and into use as well. Commercially, cost plan development through the business case stages and project development at RIBA plan of work stages.

7. Any other Business and Next Steps

7.1 KM – When the report is issued it will include:

- An executive summary,
- The workbook with worksheets broken down into the various tabs for governance, IT, eHealth, Mechanical, Electrical, etc.
- There will also be a section on construction too.
- The feedback from each of the disciplines is fed into the relative tabs.
- There will also be several appendices for supporting information from other projects.

7.2 DM – highlighted that the majority of participants had probably seen the previous version of the workbook though anything not NTC Highland has been put into appendices at the request of the NHS Highland Project team.

7.3 DM - Feedback from today will be captured and the meetings notes issued. If there is anything anyone wants to comment on, or any other contributions, they will be gratefully received. That will form part of the full reporting that will be shared more widely.

7.4 Thank you to everybody who has taken time out of their busy schedules to attend this today. Thank you for all your efforts and inputs on NTC Highland and the future jobs that you'll be working on.

APPENDIX B – Stakeholder Involvement

Stakeholder Involvement

The table below sets out the teams involved in the preparation of this report.

Team	Involvement
Capital Projects and Planning Team	Report Production, Data Collection
Gordon MacLeay	Data Gathering
Henry Smith	POE Workshop
Susan Stewart	POE Workshop
Tina Monaghan	Report Owner/ POE Workshop/ Data Gathering
Fraser Wallace	POE Workshop/ Data Gathering
Julie Riach	POE Workshop/ Data Gathering
Carrie Lonnen	POE Workshop
Micheal Riach	POE Workshop
Christina Lloyd	POE Workshop
Heather Cameron	Reviewer
Kevin Richard	Reviewer
Kevin Minnock	Report Production
Laurence Casserly	Report Production
David Mason	Report Production
Anna McInally	Finance Support

APPENDIX C – Implemented Compensation Events

Implemented Compensation Events

Ref	Title
CE-001	Planning Condition 10 - Active Travel Route - Design Updates
CE-002	BB CE002 Flooring Matrix Updates
CE-003	Design of road section for Planning Condition 9: Public Transport
CE-004	Theatre Equipment to Group 1S
CE-005	UPS to Laser Room
CE-006	IPS ATICS Provision
CE-007	Fuel Polishing Connections
CE-008	Nurse Call System
CE-009	Remote Monitoring
CE-010	Revised Access Point Locations
CE-011	Covid Costs Apr 16th 21 to July 16th 21
CE-012	Change Cafe door CW03.01 to fixed pane
CE-013	Nurse Call System
CE-014	Covid Costs Jul 16th 21 to Oct 16th 21
CE-015	Bird Spikes to external lights per RDD063 response 23/07/21
CE-017	Vehicle Barrier Removal
CE-018	BMS Monitoring of end of line dump valves
CE-019	Security covers and isolators to battery cables to generator
CE-020	Cardiac call not shown on ADBs
CE-021	Additional Pullcords to Ensuites (x 24)
CE-022	Covid Costs Oct 16th 21 to Jan 16th 21
CE-023	Provide CIBSE Building Logbook
CE-024	Remote monitoring for nurse call mains generator
CE-025	Remote monitoring of UPS/IPS
CE-026	Dual data points fed from different comms rooms
CE-027	CE-27 Theatre AV System costs
CE-028	Theatre Intercom System costs
CE-029	Provision of client cabins
CE-031	Theatres - Waste Management System
CE-032	Gel Dispensers (Group 2) in Scrub Rooms
CE-033	Covid Costs Jan 16th 22 to Apr 16th 22

CE-034	LIG958 Minor Procedures Lamp - Gp1C - Ceiling Mounted
CE-035	Theatre AV System - Service Requirements
CE-037	Refrigeration Installation
CE-038	WAR960: Change to Group 3
CE-039	DSR Rooms - Shelving Corners
CE-040	Nurse Presence
CE-041	SHTN 03-01: AHU signage letter sizing
CE-042	Clog Washers - 3 phase supply
CE-043	SUR916 - lens bank (shelf) to be removed
CE-044	BOO968 - Bookcase/Media Unit: Gp3 to GP1
CE-045	LIG953 Examination Lamp
CE-046	Covid Costs Mar 21st 22 to Apr 30th 22
CE-047	Synchronous Clocks - Conduit and Cable
CE-048	Blood Fridge
CE-049	Installation of WAP
CE-050	X20/028: Sensory Room Confirmation
CE-051	Staff lockers and Fixed Benching - Grp 3 to Grp 1
CE-052	Oil Interceptor and Pumping Stations
CE-053	KSAR - Construction Stage Input/resource
CE-054	Swirl Diffusers
CE-055	Comms Room Links
CE-056	Fixed Seating - Group 3 to Group 1
CE-058	Sterile Glove Dispenser
CE-059	Children's Lounge - Mirror - Group 1
CE-060	IPTV - Aerial
CE-061	Sensory Room (X20_028) to Gp1
CE-063	Air Changes to Injection Rooms
CE-064	Red Diesel (HMRC changes to fuel duty)
CE-066	Lighting Changes
CE-068	Change to soap dispensers
CE-071	Comms Cabinet size increase
CE-072	Additional Fixed Seating Gp3 to Gp1
CE-074	Planning Condition 9 - Submit Planning Application

CE-075	External installation of IPTV aerial
CE-076	Pipework Jointing (LTHW Plantroom)
CE-077	Adult Lounge / Cafe - Bench Seating
CE-078	Grass cut at Soil Deposition Area
CE-079	X-ray Room - CPC Earth Cable
CE-080	VIE - Adaptation of concrete base / plinths
CE-082	Rompa - Sensory: Additional Electrical Spur
CE-083	Labour for equipment deliveries
CE-084	VIE - Plant Control Breakers
CE-087	Main Entrance - Paving: Remove hexagonal slabs
CE-088	Colostomy Shelves
CE-090	Reception Foyer/Stair 3 Wall Colour - Repaint
CE-092	Additional Oberlanders time in relation to Planning Condition 9 discharge
CE-093	Vending Machine
CE-094	Cores through Corian worktops
CE-095	Vending Machine
CE-097	Removal of Ablution Taps
CE-098	Fire Alarm System - Evacuation Button
CE-099	Service Yard: Extend Fencing
CE-100	Replacement light to cook chill room
CE-101	Additional power to PACS screens
CE-102	Additional training for sensory room
CE-103	Additional lockers
CE-104	Reposition Electrical Bird Deterrent Solar Unit
CE-109	Additional COBie items to be provided
CE-111	Revisions to Nurse Call Set Up
CE-112	Water Services Staff Rest Room

APPENDIX D - 2140 Post Occupancy Monitoring Plan Rev D 280324

Post Occupancy Evaluation [POE] Monitoring Plan

Project Name:	NTC Highland
Board Name:	NHS Highland
Responsible Person:	SRO Supported by Project Director and SL team
SL Champion Name:	Kevin Minnock as Project Director supported by David Mason as SL Co-ordinator
PSCP Name:	Balfour Beatty
PSCP SL Contact:	George Young
Date POE Undertaken:	As per dates indicated
POE Year [1,2 or 3]	See separate programme

Introduction

Project Monitoring and Service Benefits Evaluation

The following four stages are as set out in SCIM Guidance - Project Monitoring
& Service Benefits Evaluation - and outline the process requirements for successful project monitoring and service benefits evaluation:

Essentially the NTC Highland project is now at Evaluation Stage but does still require Monitoring in its In-Use state to fully inform evaluation of a wide range of criteria relating to Post Occupancy Evaluation and to continue to document relevant Learning via the prescribed Lessons Learned process. This document also aims to be the Planning tool to set down how the Monitoring, Evaluation and Learning will be undertaken during In-Use for the first 3 years following Handover.

The period of project After Care that has been provided by the PSCP – Balfour Beatty, in conjunction with NHS Highland and other appointed support, will enable early issues requiring resolution to be addressed and inform the gathering of wider feedback.
The purpose of a Post Occupancy Evaluation (POE) is to provide a structured evaluation of the process of delivering a project, obtain feedback on the performance of the building / development and verify performance outcomes in use. This allows valuable learning to be captured and recorded that can be applied to new projects as well as providing recommendations that can further enhance the performance of the building / development in use.

The POE process will be required to cover, as a minimum, the first 3 years of building occupation. It is expected that the client-side Soft Landings champion will continue to maintain the 'golden thread' (ensuring the creation of an asset is linked to its intended purpose) and will coordinate and support the delivery of POE.

The POE will be undertaken by Senior Responsible Officer (SRO) with support from the Project Director together with other internal NHS Highland staff inputs and external consultant support as required.

Key performance outcomes and suitable metrics have been agreed for the project in respect of:
•Design Quality via NDAP – Design Statement and AEDET
•Environmental Performance via BREEAM and Energy Modelling
•Functional and Effectiveness via Stakeholder engagement in the design process including Design Statement and AEDET development.
•Design Quality via the NDAP process and including the Design Statement development and AEDET reviews together with inputs from NHS Assure and Architecture and Design Scotland.
•Benefits Realisation – via Stakeholder engagement during Business Case development
•Commercial – via Cost Plan development and project delivery in line with relevant reporting norms.

A mix of qualitative and quantitative data is expected to be captured and analysed during the delivery of the POE to verify how far the intended outcomes have been met and to assess the overall functionality and effectiveness of the development during operation. The proposed methodology and mechanisms for data capture has been agreed in advance through the development of relevant targets and benchmarks.

This POE Monitoring Plan does not incorporate the full requirements of the Sustainable Design and Construction (SDaC) Guide (SHTN 02-01) as this was not applicable on the project at the time of Business Case development and the relevant approvals process. A further update to the POE Monitoring Plan template to incorporate fuller requirements together with other net Zero performance targets will be carried out for future projects.

The project will be required to undergo a KSAR POE and should capture and report data utilising the report data for the relevant topics utilising this POE template and any other requirements to be confirmed as part of the KSAR process.

In respect of wider SCIM requirements this document goes beyond the prescribed Post Occupancy Evaluation guidance and template and also includes Benefits Realisation and NDAP requirements in a single Excel Workbook to assist co-ordination.

Planning
The planning stage will determine the scope of work and resources required to carry out the Project Occupancy Monitoring across the first three years of the project and to feedback with relevant Lessons Learned against the performance and benchmarks as set down.

It is the responsibility of the Project SRO and any appointed support within NHS Highland or appointed consultants to ensure that relevant reviews are carried out with appointed leads with stakeholder input as relevant from:

Introduction

Board management staff.
Clinicians.
Nursing staff.
Healthcare planners.
Patients.
General public
Scottish Government staff.
NHS Assure
Estates professionals.
Accountants and financial specialists.
IM&T professionals.
Any relevant appointed consultants
Full Monitoring & Evaluation Plan
This full Monitoring and Evaluation Plan includes:
•A detailed programme setting out when Project Monitoring events will take place.
•A detailed programme setting including when key Service Benefits Evaluation events will take place, covering information gathering, analysis and reporting stages for each element of the evaluation but subject to more detailed service level input from the relevant stakeholders.
•The service leads will be required to identify all stakeholders who will be involved in both the monitoring and evaluation processes and their expected level of involvement.
•A communication plan which explains how and when stakeholders will be kept informed of their agreed input to these processes may be required to ensure relevant buy in and continuity of involvement from key stakeholders throughout the 3 year evaluation and feedback process.

Service Benefits Evaluation – was the project a success?
The rationale for a project will have identified the potential benefits to be gained from the successful delivery of the project. These benefits will include those directly associated with service improvement, as well as others with a more in-direct supporting influence. All benefits within the project's benefits realisation plan should therefore be assessed as part of the Service Benefits Evaluation process. It will also encompass the project's impact on service delivery, activity and performance.

The evaluation will need to be carried out by the milestone dates set out in the programme. The main focus of this evaluation will involve:

•Assessing whether, and to what extent, the project has realised its expected benefits.
•Gaining feedback from users and other stakeholders on how well the project outcome, e.g. a new facility, meets their expectations.
•Reviewing the impact of any service change on operational activities, processes and people.

Understanding how well the project has impacted on service activity and performance.
Further work may be required to align question sets and questionnaires for relevant stakeholders as part of the Benefits Realisation process. Reference should be made to the Post Occupancy Monitoring Plan generally as there are similar themes across the different evaluation topics that require to be reviewed holistically. Please refer to guidance further notes below.

Also reference should be made to the following to support stakeholder engagement and feedback:
•The Scottish Inpatient Experience Survey, which asks questions about the quality of service delivery, different aspects of facilities management delivery, and the appropriateness of the internal environment of hospital facilities.

Please note that this survey has been on hold due to COVID impacts but past reporting themes should be reviewed to support benefits realisation information gathering and feedback where relevant.

The aim of this part of the evaluation is to gain a better understanding of user and stakeholder opinion on what they regard as a success, what could have been done better, what alterations to the facility may still need to be made, and what improvements could be made to the benefit of future projects.

Reviewing the impact of service change
The Management Case of the project's business case will have identified the impact of service change associated with the project on the NHS Board's current operational activities, which will have resulted in the presentation of an operational or service change management plan. This plan will become the source document for comparing the expected impact against the actual impact of the project on service activities.

The aim of this aspect of the evaluation is to review how successfully the operational change management plan was implemented, but also what lessons could be learnt to enhance similar change plans in the future.

Service activity and performance
Projects with a direct impact on service delivery will need to demonstrate how well it has delivered against projected service activity and performance assumptions included within the business case.

The evaluation process will compare data on existing, proposed, and actual service activity and performance associated with the project. This may include information, where relevant, on:
•Changes to care pathways or patterns of working.
•Changes to service capacity, demand and/or supply throughput.
•Service performance improvements, including reference to supporting KPI's and targets.
The outcome of this element of the evaluation is to confirm the accuracy of service activity assumptions used within the project's business case, and that the project has had a positive impact on service performance when compared with what would have happened from doing nothing.

The Service Benefits Evaluation Report
The programme for submitting a Service Benefits Evaluation Report to Scottish Government is set down within the programme associated with this plan. This will normally be within 1.5 to 3 years of the project completion date.

The report is expected to include the following information:
•A short overview of the evaluation process carried out.

Introduction

•Details of the stakeholders involved in each exercise, and when.
•An explanation of how successful the project has been in realising its expected benefits, whilst also acknowledging and explaining the reasons behind why any benefits didn't achieve their expected outcome.
•A summary of user and stakeholder opinion on how well the facility meets their expectations, what could have been done better, what alterations still need to be made, and what further improvements could be made.
•An overview of the lessons to be learnt and shared in relation to implementing the operational change management plan.
•Comparative data and analysis of existing, proposed, and actual service activity and performance outcomes.
The concluding part of the Project Evaluation Report should reflect on the main things that went well, as well as what could have been improved, so that lessons can be learnt for future projects.

Learning – what lessons can be learnt?
The potential value of a monitoring and evaluation process will only be realised when action is taken on the findings and recommendations coming from it. An ongoing part of the process through each project stage is the lessons to be learnt for future projects both within the organisation carrying out the evaluation and for the wider benefits of NHSScotland. This should form the final concluding part of the Service Benefits Evaluation Report by including the following information:
•A summary from the evaluation information of what went well and why.
•A summary of what could be improved upon gained from an overview of the evaluation results as well as from recommendations raised in any feedback process.
•An action plan for disseminating these lessons learnt within the NHS Board and across the wider NHSScotland. The annual State of NHSScotland Assets & Facilities Report can be used to report on any best practice recommendations.

Post Occupancy Evaluation [POE] Monitoring Plan
Guidance on completion of relevant tabbed worksheets

Guidance Notes

Guidance for completing templates:
Checklist
This is the control document for the process and should be used by the SRO and/or appointed Deputy to populate the relevant Owner for each Task and Workstream. Each Owner should identify relevant reviewers and in some cases this may mean a stakeholder group and groups who will be involved in wider participation in respect of feedback.
Front Sheet POE
This is the Front Sheet for the SCIM compliant POE requirements.
NB: This POE Monitoring Plan incorporates the wider requirements for Post Occupancy Evaluation as required by SCIM inclusive of NDAP, etc. but excludes SDaC and Net Zero requirements as this was not a requirement of the Business Case process at the time.
Environmental POE
Detail checklist on this to be completed in line with programme.
Functionality and Effectiveness POE
Detail checklist on this to be completed in line with programme.
Benefits Realisation
Further input is required by the SRO and designated support to further detail relevant methodologies and ownership for data collection and stakeholder feedback.
Relevant timescales are included in the programme and Checklist.
NDAP FBC aligned with KSAR Handover
NDAP FBC reporting is included but this requires to be read in conjunction with KSAR Handover and In-Use spreadsheets when available.
KSAR POE – Template tbc.
This is not included in the workbook as currently not available.
Design Statement
Detail checklist on this to be completed in line with programme.
NB: There are some parts of the Design Statement which should be updated – see ?
AEDET In-Use
(Reference to AEDET FBC included)
AEDET "Plus" Workshop required to populate In-Use worksheets. FBC reporting is included in this workbook for guidance.
Design Criteria Alignment - Reference doc for AEDET "Plus" Workshop
Commercial SCIM Template
To be completed by appointed Cost Advisor and NHS Highland Finance as relevant.
Programme SCIM Template
To be completed by appointed Project Manager and NHS Highland PD as relevant.

Post Occupancy Evaluation [POE] Monitoring Plan

Checklist

See Programme

	Review Theme	Ref	Status	Owner	Reviewers	Review - Action Required	Interim Feedback / Lessons Learned	Review Frequency	For SG Reporting Target review date:	Review Complete Date	
	POE Environmental										
	Energy performance	E1 - 7	Open	Board / FM Team	TBC	Data review and complete question set in POE Environmental Worksheet	Add to Lessons Learned Template for POE.	Annual	27.03.24		
	Carbon Dioxide Emissions	CD1 - 2	Open	Board / FM Team	TBC	Data review and complete question set in POE Environmental Worksheet	Add to Lessons Learned Template for POE.	Annual	03.04.24		
	Annual Water Consumption	W1 - 5	Open	Board / FM Team	TBC	Data review and complete question set in POE Environmental Worksheet	Add to Lessons Learned Template for POE.	Annual	10.04.24		
	Waste	Wa1 - 5	Open	Board / FM Team	TBC	Data review and complete question set in POE Environmental Worksheet	Add to Lessons Learned Template for POE.	Annual	17.04.24		
	POE Function / Effect										
	Use	U1 - 7	Open	Board / FM Team	TBC	Workshop in conjunction with AEDET review. Requires min 1/2 day.	Workshop reporting	Annual	27.03.24		
	Access	AC1 - 10	Open	End User Groups	TBC	Workshop in conjunction with AEDET review. Requires min 1/2 day.	Workshop reporting		01.04.24		
	Space	SP1 - 8	Open	End User Groups / Board FM Team	TBC	Workshop in conjunction with AEDET review. Requires min 1/2 day.	Workshop reporting		04.04.27		
	Performance	Wa1 - 6	Open	Board / FM Team	TBC	Workshop in conjunction with AEDET review. Requires min 1/2 day.	Workshop reporting		09.04.24		
	Engineering	Eg1 - 6	Open	Board / FM Team	TBC	Workshop in conjunction with AEDET review. Requires min 1/2 day.	Workshop reporting		12.04.24		
	Character and Innovation	Ci1 - 6	Open	End User Groups	TBC	Workshop in conjunction with AEDET review. Requires min 1/2 day.	Workshop reporting		17.04.24		
	Form and Materials	Fm1 - 5	Open	End User Groups	TBC	Workshop in conjunction with AEDET review. Requires min 1/2 day.	Workshop reporting		22.04.24		
	Staff and Patient Environment	Sp1 - 14	Open	End User Groups	TBC	Workshop in conjunction with AEDET review. Requires min 1/2 day.	Workshop reporting		25.04.24		
	Social Integration	Sn1 - 3	Open	End User Groups	TBC	Workshop in conjunction with AEDET review. Requires min 1/2 day.	Workshop reporting		30.04.24		
	Construction	Cn1 - 3	Open	Board / FM Team	TBC	Workshop in conjunction with AEDET review. Requires min 1/2 day.	Workshop reporting		03.05.24		
	Benefits Realisation	**NB: Updated list since FBC Submission**									
1	Safe, timely, effective patient care provided locally	Number of patients treated within identified treatment times	Open	Operational Team	Service Managers	Reporting data to be used.	Improvement not captured at this point. Agree measurement at future review.	Monthly	31.05.24		
		Improvement in patient outcome	Open	Operational Team	Service Managers	Reporting data to be used.	Refer to section 5.1 in the report		31.05.24		
		Length of stay – 75% (if ASA1 & 2) are discharged within 48 hours	Open	Operational Team	Service Managers	Reporting data to be used.	Refer to section 5.2 in the report		31.05.24		
		Patient Quality experience	Open	Operational Team	Service Managers	Reporting data to be used.	Refer to section 5.3 in the report	Monthly	31.05.24		
2	Capacity to meet demand through improved service and facilities	Theatre Efficiency	Open	Operational Team	Service Managers and Theatre Manager	Reporting data to be used.	Refer to section 5.4 in the report.	Monthly	31.05.24		
		Reduced cancellations	Open	Operational Team	Service Managers	Reporting data to be used.	Refer to section 5.5 in the report.		31.05.24		
		Reduction in harm to patients	Open	Operational Team	Service Managers	Reporting data to be used.	no adverse events have occurred.	Monthly	31.05.24		

Post Occupancy Evaluation [POE] Monitoring Plan

Checklist

See Programme

	Review Theme	Ref	Status	Owner	Reviewers	Review - Action Required	Interim Feedback / Lessons Learned	Review Frequency	For SG Reporting Target review date:	Review Complete Date	
		Reduction in backlog and waiting lists	Open	Operational Team	Service Managers	Reporting data to be used.	Refer to section 5.7 in the report.	Monthly	31.05.24		
		Reduced downtime associated with maintenance and repairs	Open	Operational Team	Service Managers	Reporting data to be used.	Refer to section 5.18 in the report.		31.05.24		
3	Recruitment and retention of staff	Reduction in HAI Incidents	Open	Operational Team	Infection Control	Reporting data to be used.	no reportale incidents have occurred.	Monthly	31.05.24		
		Sickness & Absence Update	Open	Operational Team	HR	Reporting data to be used.	Refer to section 4.5.3 in the report	Monthly	31.05.24		
		Vacancies/unfilled posts/ turnover rate	Open	Operational Team	HR	Reporting data to be used.	Refer to section 5.9 in the report		31.05.24		
		Appropriate staff to cover correct level of care in the correct locations	Open	Operational Team	HR	Reporting data to be used.	Refer to section 5.10 in the report		31.05.24		
		Staff experience	Open	Operational Team	HR	Reporting data to be used.	Refer to section 5.12 in the report		31.05.24		
		Reduce costs of recruitment	Open	Operational Team	Workforce Planning Manager/ HR	Reporting data to be used.	No reduction in recruitment costs has been recorded at this point.		31.05.24		
4	Repatriation of patients from 'Out of Area'	Reduce number of patients sent out of area	Open	Operational Team	Service Managers	Reporting data to be used.	Improvement not captured at this point. Agree measurement at future review.		31.05.24		
		Reduced use of private sector and other providers	Open	Operational Team	Service Managers	Reporting data to be used.	there has been no requirement to use any private sector providers for orthopaedic service.		31.05.24		
		Improved access to real-time training	Open	Operational Team	Service Managers	Method of Measurement and Review TBC	Refer to section 5.17 in the report		31.05.24		
		Development of a 'teach & treat' service to primary care professionals	Open	Operational Team	Service Managers	Method of Measurement and Review TBC	Improvement not captured at this point. Agree measurement at future review.		31.05.24		
5	Opportunities for collaborative working with partners (UHI/HIE) delivering benefits to patients and community	Career development opportunities for staff	Open	Operational Team	HR	Reporting data to be used.	Refer to section 5.19 in the report		31.05.24		
		Increased research and academic activities	Open	Operational Team	Service Managers	Method of Measurement and Review TBC	Improvement not captured at this point. Agree measurement at future review.		31.05.24		
		Development of a centre of excellence for the services will attract staff	Open	Operational Team	Service Managers	Method of Measurement and Review TBC	Refer to section 5.20 in report		31.05.24		
		Patient involvement with innovative forms of care	Open	Operational Team	Service Managers	Method of Measurement and Review TBC	Refer to section 5.21 in report		31.05.24		
	NDAP - FBC to In-Use update										
		Review NDAP FBC against KSAR Handover and In-Use and update to In-Use status in conjunction with POE Functional and Effectiveness and Design Statement In-use Review	Open	Operational Team	TBC	Propose close out on basis of POE Functional and Effectives and AEDET workshop	Workshop reporting		31.05.24		

Post Occupancy Evaluation [POE] Monitoring Plan

Checklist

See Programme

Review Theme	Ref	Status	Owner	Reviewers	Review - Action Required	Interim Feedback / Lessons Learned	Review Frequency	For SG Reporting Target review date:	Review Complete Date
Design information -PME:									
Commercial	Complete Comercial Template from POE Guidance	Open	Cost Advisor	TBC	Complete in line with relevant guidance.			31.05.24	
	1st annual energy NDEP	Open	Estates	TBC	Data review and confirmation.			31.05.24	
	O&M/ Soft Landings, on going use optimisation and shared learning	Open	Estates	TBC	Ongoing feedback to be logged.	Workshop reporting		31.05.24	
	Submit for Design Awards	Open	Board	TBC	Review with PSCP as relevant.			31.05.24	
AEDET / ASPECT:	Workshop 4: (PME at circa +1yr) assessment	Open	End User Groups / Board FM Team	TBC	Workshop in conjunction with Functional and Effectiveness Review review. Requires min 1/2 day.	Workshop reporting		31.05.24	
NHS & technical Standards:	PME report on learning for future projects and ongoing O&M (circa +1yr)	Open	End User Groups / Board FM Team	TBC	Operational Feedback required from FM and relevant user groups through POE.	Operational Feedback required from FM and relevant user groups through POE.		31.05.24	
BREEAM: (circa +1yr)	Complete BREEAM actions and Issue 'final' certificate	Open	TBC	TBC	Complete in line with relevant guidance.			31.05.24	
	Data Drop 5 – in-use Validation Information Model and ongoing O&M	Open	Board FM Team	TBC	Complete in line with relevant guidance.			31.05.24	
Design Statement									
1. AGREED NON-NEGOTIABLES FOR SERVICE USERS									
Non-Negotiable Performance objectives	1.1 - 1.8	Open			Propose close out on basis of POE Functional and Effectives and AEDET workshop	Workshop reporting		Workshop reporting	
2. AGREED NON-NEGOTIABLES FOR STAFF					Propose close out on basis of POE Functional and Effectives and AEDET workshop	Workshop reporting		30.09.23	
Non-Negotiable Performance objectives	2.1 - 2.7	Open			Propose close out on basis of POE Functional and Effectives and AEDET workshop	Workshop reporting		30.09.23	
3. AGREED NON-NEGOTIABLES FOR VISITORS (FAMILY/FRIENDS/CARERS).									
Non-Negotiable Performance objectives	3.1 - 3.3	Open			Propose close out on basis of POE Functional and Effectives and AEDET workshop	Workshop reporting		30.09.23	
4. ALIGNMENT OF INVESTMENT WITH POLICY									
Non-Negotiable Performance objectives	4.1 - 4.4	Open			Propose close out on basis of POE Functional and Effectives and AEDET workshop	Workshop reporting		30.09.23	
5. SELF ASSESSMENT PROCESS	See NDAP and Design Statement Worksheet Tabs				Propose close out on basis of POE Functional and Effectives and AEDET workshop	Workshop reporting		30.09.23	

Project Programme Monitoring Form

The undernoted programme monitoring and evaluation matrices are from SCIM: Project Monitoring and Evaluation

Project Title:	NTC-Highland			
	IA	OBC	FBC	Actual
Project Milestones: (taken from Project Plan in Management Case)				
Submission of Initial Agreement	01 June 2017	-	-	**01 October 2017**
Approval of Initial Agreement	01 July 2017	-	-	**01 October 2017**
Appointment of a PSCP	01 September 2017	01 October 2017	-	**01 October 2017**
Submission of Outline Business Case	01 March 2018	01 May 2018	-	**01 May 2018**
Approval of Outline Business Case	01 February 2019	01 July 2018	-	**01 August 2018**
Submission of Full Business Case	01 February 2019	01 April 2019	01 May 2019	**01 June 2019**
Approval of Full Business Case	01 April 2019	01 June 2019	01 July 2019	**01 May 2020**
Procurement Timetable: (taken from Commercial Case)				
Appointment of PSCP	01 September 2017	01 October 2017	-	**01 October 2017**
Construction Mobilisation	01 May 2019	01 July 2019	01 June 2019	01 June 2020
Construction Completion	01 November 2020	01 April 2021	01 May 2021	01 March 2023

An explanation is needed of all significant programme changes between each stage.

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Post Occupancy Evaluation [POE] Template

Project Name:	NTC Highland
Board Name:	NHS Highland
SL Champion Name:	Kevin Minnock - Project Director
PSCP Name:	Balfour Beatty
PSCP SL Contact:	TBC
Date POE Undertaken:	TBC
POE Year [1,2 or 3]	Year 1

Introduction

One of the key principles of the NHSScotland Soft Landings process is the implementation of a post occupancy evaluation [POE] process of an asset/facility after it has been completed and is in use to understand its actual performance against that required and to capture lessons learned.
The Project's SL Champion has the responsibility to instigate and manage a POE review; timing and format to have been established as part of the Evaluation and FM Plans.
A formal post-occupancy evaluation of the building's performance should be conducted at the end of Years 1, 2 and 3. In years 2 and 3, the reviews become less frequent, concentrating on monitoring the operation of the buildings, post-occupancy evaluation [POE] and fine-tuning. By then, the facilities management team should be able to deal with any problems, if any. This soft landing approach should have helped by this point to overcome any initial difficulties.
The first round on POE interviews and reviews should be undertaken between 12 and 18 months after occupancy.
This is to ensure that all snagging issues have been addressed before the POE commences.

Depending on timing of the year 1 POE the findings my help inform the Soft Landings, Lessons Learned Register which forms part of the Project End Review: Lessons Learned Transfer For Consideration On Future Projects.

Executive Summary

Key feedback - Board Level

[Insert key findings, recommendations and lessons from a Board perspective]

Key feedback - PSCP Level

[Insert key findings, recommendations and lessons from a PSCP perspective]

Key feedback - End-user Level

[Insert key findings, recommendations and lessons from a Board perspective]

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Environmental Outcomes - POE Assessment

This section should be completed by the FM / Asset Management team with input from end-user representative.

Review Theme	Ref	Assessment Questions	Response	Reviewers
Energy performance	E1	How did the actual year one energy consumption compare to the theoretical briefed target?		FM Team
	E2	How well have the year one results benchmarked against similar assets within the NHSScotland Estate [using eSight to support the comparison]		FM Team
	E3	Did analysis of the demand profile illustrate any abnormal readings against benchmarks?		FM Team
	E4	Has there been any issues arising around energy and energy systems?		FM Team / End Users
	E5	How well have controls, BMS and metering performed / usability?		FM Team / End Users
	E6	Suggestions for improvement in subsequent years?		FM Team / End Users
	E7	Any additional comments from FM Team / End User representatives?		FM Team / End Users
Carbon Dioxide Emissions	CD1	How did the actual year one CO2 output compare to the theoretical briefed target?		FM Team
	CD2	Suggestions for improvement in subsequent years?		FM Team / End Users
Annual Water Consumption	W1	How did the actual year one water consumption compare to the theoretical briefed target?		FM Team
	W2	How well have the year one results benchmarked against similar assets within the NHSScotland Estate [using eSight to support the comparison]		FM Team
	W3	Has there been any issues arising around water supply and water related systems?		FM Team / End Users
	W4	Suggestions for improvement in subsequent years?		FM Team / End Users
	W5	Any additional comments from FM Team / End User representatives?		FM Team / End Users
Waste	Wa1	How did the actual year one waste consumption compare to the theoretical briefed target?		FM Team
	Wa2	How well have the year one results benchmarked against similar assets within the NHSScotland Estate?		FM Team
	Wa3	Has there been any issues arising around waste management?		FM Team / End Users
	Wa4	Suggestions for improvement in subsequent years?		FM Team / End Users
	Wa5	Any additional comments from FM Team / End User representatives?		FM Team / End Users

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Functionality and Effectiveness [Social Outcomes] - POE Assessment

This section should be completed by the Project's SL Champion with input from Health Facilities Scotland and end-user representatives. Support from the Health Facilities Scotland team

Review Theme	Ref	Assessment Questions	Score 1 Poor	2 Fair	3 Average	4 Good	5 V.good	6 Excellent	Reviewers	Comments and Observations
Access	AC1/ A	How easy is it to access to the building, via car park and active travel routes/ public transport? (for staff, visitors and patients)				x			End User Groups	There are challenges for service users with regards to public transport, this is an ongoing issue. The themes of the incidents are related to bus routes, which bus to get and where to get off. There is a bus stop in close proximity to the building , however service users normally get off at 1st stop on the campus. Patients/ Service users find it difficult to navigate from the A9 and on campus, this is due to the signs being too busy and it would be beneficial to have an NTC specific signage from the A9. The only Hospital sign from the A9 at the junction is for Raigmore, which can be confusing. Cycle routes are primarily used by staff and there are good facilities for bikes.
	AC6	How sufficient is car parking for [visitors, staff and disabled users]? (Prompt: disabled parking)					x		End User Groups	There is plenty parking, better than anticipated and have not needed to review the option of additional parking. The overflow car park can be an issue with the gate being locked before staff are finished (Granite). However, staff also have access to the car park at far end of the campus for visitors, which is open all the time.
	AC3	How easy is it for staff, patients and visitors to navigate around the building? (prompt: swipe cards, the reception and check in areas)				x			End User Groups	SK who acts as duty manager only has access to the lower floors and not the upper part of the building, which is an issue in this role and should have access to all areas. Secretary offices are upstairs and should come and go freely, however they also have limited access to areas of the building. The process of cards being updated is that you have to go to Raigmore. A card scanner to update access for NTC would improve this issue and the process. The agreed set up of the access cards hasn't been followed through correctly; cards have not been programmed as agreed even with a lot of time going into the mapping of access. Service users/ patients checking in is fine with a staff member at the desk on the ground and first floor. However when there isn't a staff member there, it isn't clear where patients need to go to. Signage at the desk is adequate when someone is there, although isn't as much when no one is there. Temporary signage has been put up on the desk to try and resolve this. Ground floor toilets aren't signposted very well.

Health Facilities Scotland

NHS National Services Scotland

Functionality and Effectiveness [Social Outcomes] - POE Assessment

This section should be completed by the Project's SL Champion with input from Health Facilities Scotland and end-user representatives. Support from the Health Facilities Scotland team

Review Theme	Ref	Assessment Questions	Score 1 Poor	2 Fair	3 Average	4 Good	5 V.good	6 Excellent	Reviewers	Comments and Observations
	AC7	How well can ambulances approach and access the facility / building?					x		End User Groups	The approach and access to the building from ambulances have been well practiced. They attend to the back of the building to protect privacy, this works well and the process is smooth. There was initially an issue with signage with directing ambulances, however this is not as much as an issue now. This was more of an issue with communication with SAS as there were a number of practice runs.
	AC9	Pedestrian access routes [are they obvious, pleasant and suitable for wheelchair users and people with other disabilities / impaired sight];					x		End User Groups	Issues were raised by Caithness Site Action Group with patients making there way to the building when they got off at the bus stop. This was then raised with Campus and some tree branches cut down to help reduce this risk for patients who are visually impaired. New paths around NTC which has helps with pedestrian access. However the resin paths can be quite slippy when wet, otherwise feedback has been positive with access. People who are visually impaired can find it difficult to differentiate between the main entrance door and the building/ door frame. This is an issue which has been raised and the Caithness Site Access Group suggested that we utilise the plants we have to highlight where the main entrance is.
	AC4	How easy is it when FM staff visit site to carry out their activities? Prompt: How does this affect your work, any issues with FM vehicles or deliveries.					x		End User Groups	Normally FM park in the car park and are prompt. Main issue which has been reported was where keys are kept, finding the keys and accessing keys, this could be more of an issue OOH. These keys are for access to doors and plant rooms. An ideal solution would be to have one master key in the security office.
		Agreement on rating/ outcome					x			

Health Facilities Scotland

NHS National Services Scotland

Functionality and Effectiveness [Social Outcomes] - POE Assessment

This section should be completed by the Project's SL Champion with input from Health Facilities Scotland and end-user representatives. Support from the Health Facilities Scotland team

Review Theme	Ref	Assessment Questions	Score 1 Poor	2 Fair	3 Average	4 Good	5 V.good	6 Excellent	Reviewers	Comments and Observations
Space	SP1/ S	Does the building have appropriate space standards? Prompt: think of circulation space, Maximising sunlight and shelter.				x			End User Groups	Clinic rooms for Ophthalmology are good, doorways and corridors are great, although the laser rooms feel smaller. Patient comments on how light and pleasant the building is have been positive. Rooms which hold imaging equipment, FA room, funnel camera room can be quite tight for wheelchair users. Room in wards are spacious. The sluice/ dirty laundry on the wards are slightly on the small size and struggle to fit everything in the room. There have been issues with the theatre admission discharge areas in the Ophthalmology theatres downstairs; there aren't enough admission and discharge rooms and the seating arrangement for patients doesn't work well. There are issues with noise when admin are on the phone makes it difficult (open plan working) and their is noise through the windows from the A9. The outcome from value engineering has resulted in loss of space in theatres.
	SP4	Does the building adequately create appropriate isolation / segregation spaces? (Prompt: Staff use)					x		End User Groups	This is fine for ward perspective as these are all single rooms. Space for admission/ discharge and waiting for patients is a segregation issue (see comments above with regards to Ophthalmology).
	SP5/ S	Does both the indoor and outdoor space encourage social contact therapeutic activities and other activities beit formal or informal? (Prompt: Terrace use)					x		End User Groups	There is enough space but people may need to look for it, space isn't used particularly well a the end of the building. Training development within the building means that areas are cordoned off (use of quick screens) and you can hear everything behind those areas, but this is used to close off areas from the public. There is a lack of space for training, no dedicated space for training or meetings. Staff use the balcony in the summer for tea breaks, training etc. however there is lack of seating. Day area is used for training and meetings and is cordoned off when required. Outside there is only one bench and staff end up perching lunch on knees, this has been highlighted. It would be good to have more facilities outside. Inside the staff room is used and it encourages staff engagement.

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Review Theme	Ref	Assessment Questions	Score 1 Poor	2 Fair	3 Average	4 Good	5 V.good	6 Excellent	Reviewers	Comments and Observations
	Sp4	How effective is the building in respecting the dignity of patients and allowing for appropriate levels of privacy and company? (including bath and toilet facilities) Prompt: Inpatient ground floor, door positions				x			End User Groups	There is an issue with day case where people need to wear a gown, this doesn't provide the privacy. This goes back to value engineering where space was reduced.
	Sp4	How effective is the building in respecting the dignity of patients and allowing for appropriate levels of privacy and company? (including bath and toilet facilities) Prompt: Upper floors, single inpatient rooms, possible use of staff toilets						x	End User Groups	This is fine and there are lots of toilets dotted about. All toilets are large enough for assistance.
	Sp6	Does the building provide high levels comfort [temperature / air quality etc] and control of comfort? Prompt: Any issues with heating & ventilation in rooms, inc. theatres.			x				End User Groups	Security have no windows or aircon, they have a fan but it is too hot. The wards can be quite warm, windows are opened which helps. However the day room can be difficult as it can be like sitting in a green house, fans have been purchased for this area. North side has trickle vents and South doesn't. Where there are trickle vents, these are used, however there can be quite a lot of road noise. Theatres are warmer than theatres in Raigmore. Investigations have been done to see if the lights are producing too much heat, but no issues were found. This means staff are changing more frequently.
	SP6	Is there adequate storage space? Prompt: Location, volume match requirement/ activity		x					End User Groups	Lockers are an issue, there are not enough lockers. Not sufficient as people do not leave keys. No spare lockers with students. Lack of space for AHPs equipment, which is a huge issue for AHPs. There are investigations on how this can be reworked for storage, their equipment is quite large and there are more complex patients than anticipated.
	SP8	Any additional comments from FM Team / End User representatives? Prompt: external storage, personal belongings		x					Board / FM Team	See above
		Agreement on rating/ outcome				x				
Performance	Wa2	How well does the building allow ease of cleaning and maintenance? Prompt durable finishes and components			x				Board / FM Team	Some finishings weren't up to standard, the trims are coming away from the walls and flooring is an issue. Clinical finish flooring was bashed prior to installation. Thin pant on walls, desks slightly low. Door kicks and rubber strips keep coming off. In the sensory room, items have been removed as these were proving to be a challenge to clean. There have been issues with blinds and blind chains. Overall the finishes aren't durable however mostly cleaning of these has been good.

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	Wa5	How well does the building maximise sustainable opportunities? Prompt: Green theatre programme				x			Board / FM Team	Theatres use set back at night. Changing type of kit to be green. A suggestion was it would be good to have lights on a timer in some rooms, but acknowledges this could be a safety issue. The switches provide are compliant with current guidance. Maximising energy efficiency is with the types of lighting and mechanisms used. There have been issues but that is down to maintenance of the system in the building.
		Agreement on rating/ outcome				x				
Engineering	E	Has there been any issues around energy performance? Prompt: using light switches, sensors, energy systems				x			Board / FM Team	see above
	E	How easy is it to get things fixed and maintained? (building maintenance)	x						Board / FM Team	It can take time to get items fixed. One of the toilets have been out of use for 2 weeks and it has taken a week for a dishwasher to be fixed. There has also been an issue with an airlock in one of the admission rooms which is taking a while.
	WA	Any issues with the waste system? Any suggestions for improvement?					x		Board / FM Team	
	W	Any issues with the water system? Any suggestions for improvement? Prompt: temperature of water, drinking water, sluice.			x				Board / FM Team	Suggestion made for water fountains. We're only allowed to take cold water from 2 tap sink for patients, there is only 1 sink to access this (restroom and café). Staff use the single tap sinks for there water, although the water from these isn't very cold.
	CD	Do you have any suggestions of improving CO2 output? Prompt: green applications					x		Board / FM Team	
		Agreement on rating/ outcome				x				
Character and Innovation	Ci1/ C	Does the building and grounds lift the spirits of staff, occupants and visitors, do you thinks its interesting and sensitive to the local environment? Prompt; do you notice different things, kids waiting area (talking points, distraction)					x		End User Groups	Yes, feedback from service users is brilliant, patients love it, a frequent comment is that it feels like a hotel, comfortable and cool. It is great to have the separate waiting areas for kids and the sensory room has been a great addition. The outdoor play area sign needs to be removed. Within the theatre Ophthalmology waiting area, it isn't as pleasant as other areas as the only thing to look at is emergency signage. Staff find it a really nice place to work.
	Ci5/ C	Do the building and its grounds provide a strong and positive image and therapeutic value? Prompt: visually appealing					x		End User Groups	See above
		Agreement on rating/ outcome					x			
Form and Materials	Fm1/	Are the buildings entrances and entry points logical and welcoming? Prompt: too big, too small, visually accessible							End User Groups	Covered within access review theme.

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Functionality and Effectiveness [Social Outcomes] - POE Assessment

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	Fm4	Are the buildings colours and textures appropriate and or attractive?						x	End User Groups	Yes, landscaping is very calming and has matured with the planting, etc. and is expectational in Comparison to other hospital settings.
		Agreement on rating/ outcome					x			
Staff Environment	SP14	How safe do you feel when using the building? Prompt: in hours, OOH, weekends					x		End User Groups	No issues reported from staff or patients. Security have a good eye on everything and are attenuative. At the beginning possibly felt unsafe at the weekend but not now. Everyone feels quite safe with emergency protocols. Attack alarms weren't used as much as they've been going off in pockets but are used by AHPs when doing stair practice with patients. There was an incident with an intruder at the weekend, however security responded on site very quickly and has given staff confidence that the system works well. Going forward it is making sure doors and windows are closed at the end of the day and only swipe access to areas.
		Agreement on rating/ outcome					x		End User Groups	
Social Integration	Sn2	How well does the hard and soft landing contribute to its locality? Prompt: Operational Transition Planning, overall/ whole transition and met goals.			x				End User Groups	Ophthalmology had a different experience in compared to Orthopaedics, different areas will have different experiences. There was a covid outbreak at the same time as transition, which made it more difficult. The process worked, however the time we had to do everything in was tight, especially transitioning Ophthalmology to NTC, nothing could have been done differently with the set operational date. a slightly longer transition time would have been useful and understanding how long these activities would take. There were no major disasters and was as good as you could be managed in a unique situation. The success of the transition was down to the people involved in the process, given the limitations. Some relationships were strained from the process and people working as much as they can to ensure that the opening date was met. There were issues with IT (some of which ongoing), this will be with infrastructure and access to Raigmore servers and internal issue with networking of equipment.
		Agreement on rating/ outcome			x				End User Groups	

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Functionality and Effectiveness [Social Outcomes] - POE Assessment

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Construction	Cn1	How well did the construction process minimise any disruption of service? Prompt: Transition planning			x				Board / FM Team	There was minimal disruption with the building from a clinicians point of view with regards to construction. There were issues after with air conditioning, ventilation, filtration (including in theatres and injection rooms) which caused a lot of angst, however this is now resolved. There was a huge amount of work going on behind the scenes, to pull everything together to minimise disruption, there was a reduction of activity which affected waiting times and this was mapped in the TOM. The original date operational had to be delayed with staff being off sick, annual leave, etc. at the time of transition. The change of dates for handover caused disruption, with reducing and ramping up activity. Experiences will differ with the different services and teams.
		Agreement on rating/ outcome					x		Board / FM Team	

Note: Additional question sets should be added to meet the needs of the individual buildings and their functions.

HL07 NHS Highland Elective Care Centre - FBC stage NDAP

Report v1.3 received by email 27-11-20

No.	Ref	Item	FBC NDAP Report Status	PSCP / Design Team comments	Owner	Action	Responses PSCP/NHSH 22.10.21	OA Response 14.10.22	NHSH Response 19.10.22 (Rows 103, 104, 106, 107, 165,166,168,169)
1	12a	M&E proposals require considerable development early in next stage, to ensure decision making based on realistic DSM with realistic assumptions and whole life costing. To date, we see no or little evidence of engineering design optimisation on this project. PARTIALLY DISCHARGED – Further info required, plus see additional points below.	PARTIALLY DISCHARGED: To date, we see no or little evidence of engineering design optimisation on this project. PARTIALLY DISCHARGED – Further info required, plus see additional points below				Refer RDD submissions and NHSH approval	Discharged	
2	12a i	Confirm that detailed explanations and implications of all derogations, including evidence that these have been signed off by all members of the relevant NHS safety group, e.g. IPC, clinical, water, AEs, are/ will be recorded	Confirm that detailed explanations and implications of all derogations, including evidence that these have been signed off by all members of the relevant NHS safety group, e.g. IPC, clinical, water, AEs, are/ will be recorded	Derogation schedule submitted to NHS and is under review			Refer Approved Derogations schedule	Discharged	
3	12B	electrical services – develop proposals, e.g. resilience, UPS/ IPS location; with evidence of accurate, not 'rule of thumb' %, for sizing, diversity, expansion & max. demand.	PARTIALLY DISCHARGED – See comments below:	schedule of loadings to be provided by HK	PSCP		Refer RDD submissions and NHSH approval	Discharged	
4	12B i	Confirm that a standby generator load study has been carried out to establish that it has adequate capacity for the new maximum load and that it will operate satisfactorily when presented with the anticipated maximum and minimum loads.	PARTIALLY DISCHARGED – See comments below:	schedule of loadings to be provided by HK	PSCP		Refer RDD submissions and NHSH approval. Load study included.	Discharged	
5	12B ii	Confirm a temporary generator location has been allocated, if it was required.	PARTIALLY DISCHARGED: Confirm a temporary generator location has been allocated, if it was required.	refer to external plant compound area layout	PSCP		Confirmed as PSCP Comment	Discharged	
	12B iii	Confirm, that all components, which are served by the IPS systems, are within a 30m cable length from the IPS panel		Yes - reflected on current HK drawings	PSCP		Confirmed as PSCP Comment	Discharged	
6		Confirm, on the plans, the voids, ≥800mm depth, proposed to omit smoke detection.		Drawings are clear and smoke detection included in voids	PSCP		Confirmed as PSCP Comment	Discharged	
7	12C	Mechanical services – develop proposals, e.g. Nat vent in bedroom and OPD areas; with realistic thermal DSM to evidence comfort and safety. Confirm ACRs e.g. TM52 all 3 criteria, TM59 for bedrooms, use 2020 High local weather data, plus test for 2050. PARTIALLY DISCHARGED – Further info required, plus see additional points below.	PARTIALLY DISCHARGED – Further info required, plus see additional points below. information provided for comfort and TM52 all 3 criteria TM59 for bedrooms is sufficient and discharged. i. Confirm if zone trimmer heater batteries are required to ensure that the temperature difference (is ≤2 K) between the rooms opening onto the theatre operating room (OR). DISCHARGED	refer to latest information	PSCP		Confirmed as PSCP Comment	Discharged	
8	12C i	Confirm if zone trimmer heater batteries are required to ensure that the temperature difference (is ≤2 K) between the rooms opening onto the theatre operating room (OR).		Refer in RDD technical submission			Refer RDD submissions and NHSH approval	Discharged	
9	12c iii	Confirm that all rooms, where no heating is provided, will be maintained at the minimum required temperature, (e.g. corridors, virtual consulting rooms, stores).	DISCHARGED: Complete ventilation drawings.				Discharged	Discharged	
10	12c iii	Complete ventilation drawings.					Refer RDD submissions and NHSH approval	Discharged	
11	12c IV	Confirm where extract grilles will be at low level e.g. in OR, as per SHTM 03-01.	Confirm where extract grilles will be at low level e.g. in OR, as per SHTM 03-01.	Locations can be indicated on room layouts during RIBA stage 5	PSCP		Confirmed on 1:50 layouts and subject to Page Turn review with NHSH.	Discharged	
Provide full details of theatre ventilation strategies and coordination.			DISCHARGED: Where natural or mixed mode ventilation have not been selected in rooms such as Offices, Consulting, Bedrooms;	Theatre equipment being procured by NHSH;			Refer RDD submissions and NHSH approval	Discharged	
12	12C v	As a minimum this should include ductwork layouts	DISCHARGED: Where natural or mixed mode ventilation have not been selected in rooms such as Offices, Consulting, Bedrooms; confirm what natural ventilation adaptations were considered to as an alternative; and confirm what consideration was given to mixed mode ventilation.	Air flow diagram part of contract issue info;			Discharged	Discharged	
13		Locations and heights of air pressure stabilisers plus grilles,	DISCHARGED: Where natural or mixed mode ventilation have not been selected in rooms such as Offices, Consulting, Bedrooms; confirm what natural ventilation adaptations were considered to as an alternative; and confirm what consideration was given to mixed mode ventilation.	Equipment heights per 1:50's; noise levels comply with SHTM's; supply & extract grille as per HK schedule; air flow calc's are based on SHTM 03-01.			Discharged	Discharged	
14		Air flow diagrams with pressure regimes,		Air flow calculations to be formatted and issued to HFS.	HK		Refer RDD submissions and NHSH approval	Discharged	
15		Method of aspirating the sensors for the surgeon's panels,		Dependant on panel procurement by NHSH, design to be updated once panel specifications known	NHSH / PSCP		Refer RDD submissions and NHSH approval	Discharged	
16		Description of operation of room ventilation					Refer RDD submissions and NHSH approval	Discharged	
17		Noise levels,					Refer Acoustic report	Discharged	

HL07 NHS Highland Elective Care Centre - FBC stage NDAP

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18		Air flow calculations based on Appendix 4 of SHTM 03-01.		refer to latest information and derogation schedule	PSCP		Refer RDD submissions and NHSH approval	Discharged	
19		Where natural or mixed mode ventilation have not been selected in rooms such as Offices, Consulting, Bedrooms; confirm what natural ventilation adaptations were considered to as an alternative; and confirm what consideration was given to mixed mode ventilation.					Refer RDD submissions and NHSH approval	Discharged	
20		Confirm each plantroom ventilation method and provide details of the installations.					Refer RDD submissions and NHSH approval	Discharged	
21		Confirm how the FM Workshop and FM office are to be ventilated and proposal details.	Confirm how simultaneous heating and cooling will be prevented in the Laser Rooms. DISCHARGED x. Confirm the uses for the Collection and Set Down rooms. DISCHARGED xi. Confirm how the minimum heating flow rate is achieved for the DHW Primary pumps. DISCHARGED xii. Confirm that all of the materials in the chilled water and heating systems will be compatible with the proposed Enwamatic filtration and treatment system. DISCHARGED				Refer RDD submissions and NHSH approval	Discharged	
	12C x iii	Provide a full copy of Environmental Matrix (that provided is without the notes page).		This already exists on BC, however an updated version will be made available shortly following NHS review update.	PSCP		Refer RDD submissions and NHSH approval	Discharged	
22		Confirm how simultaneous heating and cooling will be prevented in the Laser Rooms.		Awaiting confirmation of equipment details from NHS			Refer RDD submissions and NHSH approval (Ventilation design for laser room) Laser Equipment as equipping schedule and HFS Equipping Specification	Discharged	
23		Confirm the uses for the Collection and Set Down rooms.					OA to write narrative for use	Collection and set down rooms are used for deliveries and collections of equipment and bulk supplies. This is not an area for waste as this is collected in disposal holds and transferred directly to the waste stores located externally. Trollies may be collected from here which contain used sterile equipment which is then taken to decontamination for cleaning.	
24		Confirm how the minimum heating flow rate is achieved for the DHW Primary pumps.					HK or BBK	Discharged	
25		Confirm that all of the materials in the chilled water and heating systems will be compatible with the proposed Enwamatic filtration and treatment system.					HK or BBK	Discharged	
26		Provide a full copy of Environmental Matrix (that provided is without the notes page).					HK or BBK	Discharged	
27		Confirm if the Laser equipment requires a minimum %RH in the room which would need humidification to achieve in winter.		refer to latest information	PSCP		Refer RDD submissions and NHSH approval (Ventilation design for laser room) Laser Equipment as equipping schedule and HFS Equipping Specification	Discharged	

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28		Confirm that the room temperature ranges for the rooms which are not naturally ventilated, represents the range of set points which can be selected. Also confirm that any of these room temperatures can be achieved at any time of year when the external ambient is between the winter and summer external design conditions.		See derogations schedule; typically range indicates a floating range only.			Refer approved Derogations schedule	Discharged	
29	!2C xiV	The Minor Operations room is 10 ACH. Operating rooms start at 15 ACH for Day Surgery and rise to 25 ACH. Confirm logic, e.g. procedures/ clinical sign off for 10 ACH.	PARTIALLY DISCHARGED: The Minor Operations room is 10 ACH. Operating rooms start at 15 ACH for Day Surgery and rise to 25 ACH. Confirm logic, e.g. procedures/ clinical sign off for 0 ACH. Confirm that the procedures are to be limited to those described by the "Royal College of Ophthalmologists, Theatre facilities and equipment (2018), section 2 Types of procedures".	NHSH to confirm	NHSH		Refer to approved Derogations Schedule and agreed ventilation design.	Discharged	
30	xvii.	Confirm functional requirements of theatre Preparation Rooms e.g. if Lay-up space.		refer to latest information	PSCP / NHSH		As PSCP Comment	Discharged	
31		Confirm AHUs air filtration grades are based on current standards, e.g. BS EN 16798-3:2017, ISO 16890:2016 and Specialist Ventilation for Healthcare Society guidance.	DISCHARGED: Confirm AHUs air filtration grades are based on current standards, e.g. BS EN 16798-3:2017, ISO 16890:2016 and Specialist Ventilation for Healthcare Society guidance.	NHSH to confirm, design presumed lay-up prep eg; 25ACH & HEPA filtration	NHSH		As PSCP Comment - Discharged	Discharged	
32		The description of control for the air supply temperature of the theatres does not appear to be compatible with ability for a surgeon to select ANY temperature within the control range. Please review this description or clinical brief, and confirm compatible.	DISCHARGED: The study into room air temperatures, for selected rooms, states that the report will be reassessed following a review of the operating profiles by the users. Confirm a room air temperatures review has been completed and, if so, what are the changes. DISCHARGED xxi. The room temperature analysis assumes that the Security Room has local cooling to maintain room DISCHARGED: temperatures but none is shown on the drawing. Confirm if local cooling is required, and if so, confirm revised design proposals.				Discharged	Discharged	
33	xxii.	The study into room air temperatures, for selected rooms, states that the report will be reassessed following a review of the operating profiles by the users. Confirm a room air temperatures review has been completed and, if so, what are the changes.	Confirm the exact options to be adopted and set-up for each AHU. DISCHARGED xxiv. Confirm that the details proposed for the installation/support of combined smoke and fire dampers, will be certified by the manufacturer to achieve the required fire resistance. DISCHARGED xxv. Confirm that cables inside of AHUs will be only those required to power the fan motors and that those will be contained in easily cleaned containment. DISCHARGED xxvi. Confirm AHU filter seals will be configured to avoid air leakage when the unit is running. DISCHARGED				Discharged	Discharged	
34		The room temperature analysis assumes that the Security Room has local cooling to maintain room temperatures but none is shown on the drawing. Confirm if local cooling is required, and if so, confirm revised design proposals.					HK or BBK	Discharged	

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35		Confirm that the operating temperatures for each room have been agreed and signed-off with the clinical staff and laser manufacturers.					HK or BBK	Discharged	
36		Confirm the exact options to be adopted and set-up for each AHU					HK or BBK	Discharged	
37		Confirm that the details proposed for the installation/support of combined smoke and fire dampers, will be certified by the manufacturer to achieve the required fire resistance.					HK or BBK	Discharged	
38		Confirm that cables inside of AHUs will be only those required to power the fan motors and that those will be contained in easily cleaned containment.					HK or BBK	Discharged	
39		Confirm AHU filter seals will be configured to avoid air leakage when the unit is running.					HK or BBK	Discharged	
40		Confirm refrigerants in the new cooling systems will still be available (as per current F-Gas regulations) during the expected life span of the building function. xxix. Ensure that rooms do not exceed the maximum % RH as agreed with equipment manufacturers, with clinicians, or as quoted in SHTM 03-01 Part A.		NHS now instructed R32 gas type into contract			Confirmed as R32. AS PSCP comment	Discharged	
41		Confirm that no brass valves or fittings will be used on the chilled water systems.		No brass fittings confirmed by PSCP			As PSCP Comment	Discharged	
42		Ensure that rooms do not exceed the maximum % RH as agreed with equipment manufacturers, with clinicians, or as quoted in SHTM 03-01 Part A.						Discharged	
43		Confirm the results of temperature simulations for ceiling voids.	Confirm the results of temperature simulations for ceiling voids.	Design based on outputs of ABBEM report as stated			As PSCP Comment. No studies done above ceilings.	Discharged	
		xxxi. All external static pressures for AHUs look very similar. Confirm that they are calculated values, not estimates.		all calculated			HK or BBK	Discharged	
		xxxii. AHUG2 is shown as blocking the door access to the boiler room. Confirm how this will be corrected.		RDD	PSCP / NHSH		Refer RDD submissions and NHSH approval	Discharged	
		xxxiii. Confirm that no buffer vessel is required for the chilled water system.		RDD	PSCP / NHSH		Refer RDD submissions and NHSH approval	Discharged	
		xxxiv. Confirm that the turndown ratio of the chiller plant allows the minimum cooling load to be controlled without water temperature drift.		RDD	PSCP / NHSH		Refer RDD submissions and NHSH approval	Discharged	
		xxxv. Confirm that the risk of not dosing the chilled water system with glycol has been accepted.		RDD	PSCP / NHSH		Refer RDD submissions and NHSH approval	Discharged	
		xxxvii. Confirm if the boiler condensate will be discharged to a foul or surface water drain. If surface water, confirm that suitable water treatment for the condensate is included.		RDD	PSCP / NHSH		Refer RDD submissions and NHSH approval	Discharged	
		xxxviii. Confirm that the use of a ceiling mounted fan coil unit, with the ensuing maintenance requirement, in the Minor Opps room has been agreed.		RDD	PSCP / NHSH		Refer RDD submissions and NHSH approval	Discharged	
		xxxix. Confirm the first floor heating layout (drawing shows strategy only).		RDD	PSCP / NHSH		Refer RDD submissions and NHSH approval	Discharged	
		xl. Identify all test points and purge points for the natural gas installation (locations and sizes).		RDD	PSCP / NHSH		Refer RDD submissions and NHSH approval	Discharged	
		xli. Provide low level extract in the Anaesthetic rooms.		RDD	PSCP / NHSH		Refer RDD submissions and NHSH approval	Discharged	
		xlii. Low level extract/outlets in the operating rooms should be in at least three (preferably four) locations, approximately equally spaced		RDD	PSCP / NHSH		Refer RDD submissions and NHSH approval	Discharged	
		xliii. Confirm the purpose of the 600x650 extract branches in the ceiling voids at the exit doors from the Ors		RDD	PSCP / NHSH		Refer RDD submissions and NHSH approval	Discharged	
		xliv. Confirm that the final selection of grilles and diffusers will avoid drafts (some are placed very close together)		Confirmed.			As PSCP Comment	Discharged	
		xlv. Confirm that the natural ventilation, where provided, includes the three components required by CIBSE AM10 (trickle vent, winter controllable vent and summer high flow vent)		Confirmed - trickle vent via sash ventilators and high flow/winter controllable thermal comfort vent via openable window behind screening louvre.			As PSCP Comment	Discharged	

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		xlvi. Confirm that ventilation will be added as necessary to the Theatre and Recovery area corridors in line with Appendix 2 of SHTM 03-01 Part A to achieve 7 AC/H.		Confirmed - provision exists on drawings already.			As PSCP Comment	Discharged	
		xlvii. Confirm that the level of positive air pressure in the boiler room will not unduly impact the performance of the boiler/flue assembly.		Advice sought from flue manufacturer, relevant British Standard refers only to avoiding negative pressure which might draw combustion products into room. Note positive pressure will be minimal due to exhaust ductwork to outside.			As PSCP Comment	Discharged	
		lviii. Confirm the method by which air escapes from those level 2 plantrooms which have supply air only. Also confirm the frost protection heating in those plantrooms will adequately deal with the flow of unheated air.		Passive exhaust ductwork and/or aspiration by plant. Air will be heated via LTHW coils.			As PSCP Comment	Discharged	
		xlix. Confirm that the plantroom supply air ducts will be insulated and vapour sealed.		Confirmed			As PSCP Comment	Discharged	
		. Confirm that acoustic checks have been made for the requirement to install cross talk attenuators and if any need to be fitted.		Not confirmed, Cross Talk attenuators provided on basis of room privacy classification as noted in ADBs.			As PSCP Comment	Discharged	
		i. The method of supplying air into the standard theatres is not compliant with SHTM 03-01 "air terminals and air distribution in the room". Swirl diffusers are shown instead of the style referred to in the SHTM. Also the setting out of the diffusers is non-compliant		Grille/diffuser spec has been updated to SHTM compliant laminar flow perforated face diffusers. Setting out to be confirmed.			As PSCP Comment	Discharged	
		lii. No humidifier section has been shown in the Theatre AHUs. Confirm if this is to be added.		No humidification proposed.			As PSCP Comment	Discharged	
		liii. Confirm the logic behind the variation in secondary filter grades in the theatre AHUs.		HEPA filtration only required to UCV theatres. SHTM 03-01 stipulates F7 only to remaining theatres.			As PSCP Comment	Discharged	
		liv. Theatre notes 25 ACH (08:00- 8:00 Mon-Fri) with set-back to 2.5ACH rest of the time. T= heated to 18C, cooled to 23C. Confirm approach to and sign off of set-back criteria		Unsure of context of note, set back will ultimately be controlled by users.			As PSCP Comment	Discharged	
44		Consider the use of a pair of single pumps for duty standby instead of a twin headed pump. This removes the need for a shut down when the faulty pump impeller had to be replaced.	NOT DISCHARGED e. Check with the boiler manufacturer if they require minimum back end temperature protection controls. DISCHARGED f. Confirm if you had considered the recommendations from CIBSE (Heat Networks Code of Practice CP1) to utilise the lower F&R temperatures listed in that document to ensure that the flexibility for future change of heat source was not excluded. DISCHARGED	Paired single pumps have been adopted in design.			As PSCP Comment	Discharged	
45		Check with the boiler manufacturer if they require minimum back end temperature protection controls.					HK or BBK	Discharged	
46		Confirm if you had considered the recommendations from CIBSE (Heat Networks Code of Practice CP1) to utilise the lower F&R temperatures listed in that document to ensure that the flexibility for future change of heat source was not excluded.					HK or BBK	Discharged	
47		Consider the use of flushing by pass arrangements at the boilers and chillers with facilities to manually flush the plant separately from the pipework.	NOT DISCHARGED; Consider the provision of an individual expansion vessel per boiler in addition to the system expansion vessels, in accordance with BS6644. DISCHARGED		NHSH		Discharged	Discharged	
48		Consider the provision of an individual expansion vessel per boiler in addition to the system expansion vessels, in accordance with BS6644.					HK or BBK	Discharged	
49		Consider the use of the strainers for cooling coils on the flow instead of the return.	NOT DISCHARGED	why not?			Refer RDD submissions and NHSH approval	Discharged	
50		Consider which stores will be used to house items requiring a higher degree of cleanliness. Where this is the case, consider the use of supply air to the room instead of extract.	NOT DISCHARGED: Consider the installation of an extract air grille at low level adjacent to each scrub sink to help remove droplets/aerosols from the sink. DISCHARGED	why not?			Refer RDD submissions and NHSH approval	Discharged	
51		Consider the installation of an extract air grille at low level adjacent to each scrub sink to help remove droplets/aerosols from the sink.					HK or BBK	Discharged	
52		Consider the control arrangements which would prevent the local cooling units from running when a window is opened.	Consider if the 2nd floor plant spaces require frost protection. DISCHARGED n. Confirm that the locations for the DPCVs have been selected based on the pressures around the system. DISCHARGED o. Ensure that adequate balancing dampers are included for proportional balancing of the ventilation. DISCHARGED				Discharged	Discharged	
53		Consider if the 2nd floor plant spaces require frost protection.					HK or BBK	Discharged	
54		Confirm that the locations for the DPCVs have been selected based on the pressures around the system.					HK or BBK	Discharged	

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55		Ensure that adequate balancing dampers are included for proportional balancing of the ventilation.					HK or BBK	Discharged	
56		If humidification is required, consider the use of electric resistance type humidifiers, fed by RO water instead of electrode boiler type to reduce maintenance burden.	NOT DISCHARGED				HK or BBK	Discharged	
57		Theatre ventilation – in consultation with HFS / HPS agree SHTM 03-01 application. E.G. 'General Theatre' vent for orthopaedic and 'eye' 'procedure, consider higher filter/ air quality due to eye 'fragility'; and/ or, use SHTM 'Day Theatre' as more sustainable. Consider 1st with step-down to 2nd in future. Board to prove clinical need for UCV to HPS if chosen. HPS/ Board to list agreed clinical procedures for each SHTM Theatres. NOT DISCHARGED – Submit supporting discussion and detailed layouts for the theatre ventilation.	NOT DISCHARGED – Submit supporting discussion and detailed layouts for the theatre ventilation.	Confirmation/supporting discussion required from NHSH. Current design based on General Theatre or UCV theatre where relevant. Supporting discussion to be supplied by NHSH. Detailed ventilation layouts in progress and to be provided by H&K.	NHSH / PSCP		As PSCP Comment	Discharged	
58		Water services – develop proposals, e.g. stainless steel; cold water - legionella control must be evidenced by DSM. Consider heat gain from services in void spaces, separation of cold / hot distribution, and/ or point-of-use provision. PARTIALLY DISCHARGED – Further info required, plus see additional points below.	PARTIALLY DISCHARGED – Further info required, plus see additional points below. lv. Confirm water services layouts & details. Much of the installation is not shown on the drawings. Include details of the connections to sanitary ware and appliances. DISCHARGED lvi. Confirm that the flow rate from the emergency tank filling pump set is compatible with the flow rates from the standard water bowser delivery unit. The cat 5 tank on the unit is small and could otherwise be overwhelmed by the delivery from the bowser. DISCHARGED	Water services design evidenced by Mabbett report e.g. assumes ceiling void temps in excess of 20C. Monitoring/automatic flushing and general circuit configuration design to achieve high pipework flows at all times and to induce artificial flow via end of line flushing if line temperatures exceed safe limits.			Discharged	Discharged	
59		Confirm water services layouts & details. Much of the installation is not shown on the drawings. Include details of the connections to sanitary ware and appliances.					HK or BBK	Discharged	
60		Confirm that the flow rate from the emergency tank filling pump set is compatible with the flow rates from the standard water bowser delivery unit. The cat 5 tank on the unit is small and could otherwise be overwhelmed by the delivery from the bowser.					HK or BBK	Discharged	
61	lvii	Confirm emergency fill point is within 100m of the location where the bowser can park.					Motts	Discharged	
62		Confirm what provision is included to sterilise the emergency fill system prior to its use.	lix. Confirm that the overflows, warning pipes and air vents on new water storage tanks will be screened and that the screening will be selected to limit the size of particle entering the tank. The size of particle shall be no larger than that in the supply water to the tank. DISCHARGED				Discharged	Discharged	
63		Confirm that the overflows, warning pipes and air vents on new water storage tanks will be screened and that the screening will be selected to limit the size of particle entering the tank. The size of particle shall be no larger than that in the supply water to the tank.					HK or BBK	Discharged	
64		Confirm that flexible hoses will not be formed by using EPDM in contact with the water.	lxi. Ensure that water in buried mains water pipes will not be subject to contamination from grounds conditions. DISCHARGED lxii. Confirm the water storage capacity has been assessed & agreed with the Board. DISCHARGED				Discharged	Discharged	
		lxiii. Confirm where the sprinkler zone valve enclosures are to be located.					HK or BBK	Discharged	
		lxiv. Confirm how the fire protection to the dry riser pipes at ground floor, outside of the protected zones, will be achieved.	Confirm if the tank management system includes for leak detection to stop the supply to the tanks should there be leakage detected in the tank bund. DISCHARGED t. Two of the boosted cold water mains in the 2nd floor plant zones seem to utilise a loop system to encourage increased flow. Is that correct? Could that approach not also be used for the other mains in the 2nd floor plant zones. DISCHARGED				Discharged	Discharged	
		Consider the use of stainless steel braided flexible hoses with smooth PTFE liners.					HK or BBK	Discharged	
65		Ensure that water in buried mains water pipes will not be subject to contamination from grounds conditions.		closed?			Refer RDD submissions and NHSH approval	Discharged	
66		Confirm the water storage capacity has been assessed & agreed with the Board.		closed?			Refer RDD submissions and NHSH approval	Discharged	
67		Confirm if the tank management system includes for leak detection to stop the supply to the tanks should there be leakage detected in the tank bund.		closed?			Refer RDD submissions and NHSH approval	Discharged	
68		Two of the boosted cold water mains in the 2nd floor plant zones seem to utilise a loop system to encourage increased flow. Is that correct? Could that approach not also be used for the other mains in the 2nd floor plant zones.		closed?			Refer RDD submissions and NHSH approval	Discharged	
69		Consider the use of stainless steel braided flexible hoses with smooth PTFE liners.		BBK to confirm			Refer RDD submissions and NHSH approval	Discharged	

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70		Lighting – develop proposals, e.g. day light and views are essential for user wellbeing, but also can be clinically sensitive for eye patients. Develop a Climate Based Daylighting Modelling (CBDM) approach to test solutions, see 13.b Design must also ensure layout, details, landscape contribute to practical delivery, i.e. curtains/ blinds NOT permanently left closed due to privacy concerns. NOT DISCHARGED – Further info required, including daylight studies.	NOT DISCHARGED – Further info required, including daylight studies.	Please clarify further info required. CBDM has not been carried out and we thought it had been agreed that this was effectively no longer required due to time constraints and stage of design development (e.g. no opportunity to integrate output of CBDM into design).			As PSCP Comment	Discharged	
71		Commissioning – develop proposals early at FBC stage to ensure Commissioning programme, responsibilities and coordination etc, particularly for existing hospital tie-ins, are well understood, managed and NOT squeezed, see SCIM for further info. PARTIALLY DISCHARGED – Further info required, draft document provided which is marked "to be updated". Updated version to be submitted.	PARTIALLY DISCHARGED – Further info required, draft document provided which is marked "to be updated". Updated version to be submitted.	PSCP can now provide proposed outline commissioning programme and NHSH CMP?	NHSH / PSCP		As PSCP Comment. Commissioning Programme under development	Discharged	
72	13	Sustainable – develop proposals early at FBC stage. NDTH Section 6: pass & BREEAM target score: ~70%; BUT final target score incl ENE-01/ ENE-02 etc only agreed following realistic DSM to provide a rational for sustainable decision making. Required as soon as practicable. Note: CIBSE state specifying meters to comply with TM39 (ENE-02) is NOT acceptable. It is essential metering strategy reflect client needs, incl value of information. To date, we see no or little evidence of sustainability design optimisation on this project. NOT DISCHARGED – Further info required, including studies	Comments under 13a. have been further divided to confirm individual status: PARTIALLY DISCHARGED:				Refer to updated BREEAM report plus RDD Technical Submissions.	Discharged	
	13a.i	a.i) Sustainable – develop proposals early at FBC stage. NDTH Section 6: pass	NDTH Section 6 – completed. EPC 'D' rating.				Refer to updated BREEAM report plus RDD Technical Submissions.	Discharged	
		a.ii) & BREEAM target score: ~70%; BUT final target score incl ENE-01/ ENE-02 etc only agreed following realistic DSM to provide a rational for sustainable decision making.	BREEAM NC 2014 v5.0 Credit Schedule 2020-07-02.pdf provided. Current verified scoring does not achieve a BREEAM Pass. There is potential for BREEAM Very Good, with a large number of topics in limbo. Clarity on current BREEAM credits achieved and remaining targets to be provided.	refer to updated BREEAM assessment schedule dated 30-11-20 demonstrating score of very good rating is likely.	PSCP		Refer to updated BREEAM report plus RDD Technical Submissions.	Discharged	
		a.iii) Required as soon as practicable. Note: CIBSE state specifying meters to comply with TM39 (ENE-02) is NOT acceptable. It is essential metering strategy reflect client needs, incl value of information.					?	Discharged	
		Information provided June 2020 notes that metering strategy will be rationalised with input from stakeholders during Stage 4 design to reach an acceptable balance. 'Balance' is not required. It is essential metering strategy reflect client needs, including value of information. Confirm approach to metering and that it will reflect client needs and provide value.					?	Discharged	
73		Sustainable design - Confirm workshops undertaken to agree realistic thermal and energy dynamic simulation model (DSM) assumptions e.g. operational hours, phased shutdown from day to night use. Agree file selection with HFS, e.g. 2020 High DSY local weather, and 2050 DSY for future adaptability tests. Evidence sustainable design is fit-for purpose and VfM. Note NDTH NCM model is NOT a DSM and must not be used for decision-making, refer to IES & Mabbett reports on HFS's website NHSScotland New Build Health Buildings DSM Modelling - Summary and NHSScotland New Build Health Buildings DSM Modelling - Main Report). TBC	DISCHARGED: Detailed Energy Analysis via Dynamic Thermal Simulation Modelling 17th June 2020 provided. Bespoke profiles have been created for each zone in order to represent typical hours of operation in line with information provided by NHS Highland Bespoke Weather File for Centre for Health Sciences 2, Inverness exact location (Typical Meteorological Year based on weather data collected over the last 5 years).				Discharged	Discharged	

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74		LZCT report –These need to be consulted on and checked at OBC, or as minimum first thing in FBC stage. E.G. 131 kWh/m2 for heating is unrealistic for a 24h healthcare building in the North of Scotland; CHP 100kWelectric not 100kWth ?; Payback incl maintenance & revenue is ~13yrs, i.e. longer than life expectancy; Pv feedback is also ~13yrs, based on Inverness 835 kWh/kWp and a 4.25p for FiT; also ~7sqm / kWp at 150sqm would give 21 kWp not 12 kWp. Once numbers agreed consider mix of Heat pump and Pv solutions as both are supported via recent Scottish Gov policies. TBC	NOT DISCHARGED: The Dewar Centre - Energy and LZCT Options Appraisal – 19 June 2020 report provided and has been used for the following assessment. Proposals represent change from previous approach to LZCT with omission of CHP confirmed along with PV remaining. Active area of PV confirmed as 200m2 with an installation cost of £500/m2. Total capital cost estimated as £100,000. The review of PV generally queries both the installation costs and PV inclusion as follows: Installation Costs: Based on 200m2 providing approx. 19,000 kWh of Electricity generated per annum, this infers a PV string of circa 25 to 30 kWp. Consider overall payback achieved through services strategy including PV, mains electricity and heating from gas fire boilers. PV may provide payback in 15 years but heating from gas fired boilers will not provide any financial payback. Approach to BREEAM is to target credits that will achieve real value. Confirm origin of BREEAM target note, is this solely to achieve BREEAM Excellent or credits generally? At this time the Ene01 credit is 3 (not 5). The BREEAM ENE01 scoring is based solely on regulated energy and not actual operational energy. The credit is consistent with an EPC 'D' rating. Regulated energy use assessment: 148 kWh/m2 y Actual operational energy assessment: 287 kWh/m2 y On review of PV related to section 6 compliance, it is understood that a pass will still be achieved without PV. Therefore, with queries on installation cost (and correlated financial payback) and passing section 6 without PV, Confirm rationale for PV inclusion. Additional comments based on reports provided as follows: The use of appropriate lighting controls could decrease lighting energy consumption by between 5 to 18%. With LEDs, will this ever achieve a payback? Confirm value of inclusion of controls?	No payback offered or proposed on Gas Fired Boilers. PV should pay back within 15 years based on 23,000kWhr per annum yield and indicative £23,000 market tested installation costs (not including contractor's mark-ups, maintenance/life cycle costs. Cost consultant to provide if more accurate payback required).			Refer to PSCP response.	Discharged	
75		Sustainable operation - Supply and confirm accurate TOTAL kWh/m2 (incl non-regulated). Target TBC by early FBC, but expect improvement on existing hospital & benchmarks in HTM07-02: e.g. Elec 90 kWh/m2 and Thermal 190 kWh/m2. TBC	DISCHARGED: Information provided July 2020 provided DSM outputs of Elec 86 kWh/m2 & Heat 201 kWh/m2 for a total of = 287 kWh/m2. Which is well within an acceptable tolerance.				Discharged	Discharged	
76		Resilience - explore key life safety systems & equipment for resilience. Test various failure scenarios in workshops; risk assess; plus, design wherever possible to 'keep it simple 'NOT DISCHARGED – Further info required, incl. risk assessments confirming the key systems will achieve the level of resilience required by the users.	PARTIALLY DISCHARGED – See comments in M&E Engineering Section 12b and confirm what resilience is allowed for.				Refer RDD submissions and NHSH approval	Discharged	
77		Public sector duties – develop proposals, e.g. waste; SUDS; greenspace NOT DISCHARGED – Further info required, including optimisation studies	PARTIALLY DISCHARGED – Information provided that details ongoing engagement with local authority and status of all planning conditions. Engagement includes proposals related to greenspace and art work. Confirm engagement with local authority will continue through development of project and that project will work with conditions established. Surface water management plan submitted as part of NDAP information confirming strategy relative to SUDS.				Refer RDD submissions and NHSH approval	Discharged	
Advisory only									
78	A	That the technical & engineering design be further developed to confirm best value and sustainability is optimised across all disciplines, plus then tested for future clinical and climate adaptability options. TBC	NOT DISCHARGED: Bus stop looks to be in excess of 50m but noted that plans are being developed for bus service to utilise drop off area at entrance. Provide any update on this proposed utilisation and ensuring adequate provision for potential future use. Confirmed a covered shelter and turning point will be provided for future use as a bus stop should a bus operator extend the current service. Confirm engagement with local council and bus operators will continue in an effort to provide more local access to public transport.	NHSH to advise			Refer RDD submissions and NHSH approval	Discharged	

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79		M&E - We recommend early development of ERM (equipping responsibility matrix) and commissioning documentation, see SCIM. We recommend team confirms adequate plant/duct space, in correct location, for replacement / updating future services. We recommend all services pipework e.g. heating, hot & cold water, follow SHTM 04-01 & recent Estates & Facilities Alerts. PARTIALLY DISCHARGED – Submit details of ERM, Commissioning and Plant, equipment and system replacement strategy.	PARTIALLY DISCHARGED – refer to comments on sustainability in section 13c. Climate adaptability confirmed in DSM information provided – Confirm testing for and strategy for future clinical and climate adaptability options. Confirm approach to achieving value and sustainability for technical and engineering disciplines. PARTIALLY DISCHARGED: Draft ERM referred to but not found in folder location. Submit ERM details. Commissioning Master Plan document confirms equipment and equipping strategies but does not note replacement strategies. Confirm system replacement strategy.				Refer RDD submissions and NHSH approval	Discharged	
80		Energy & Sustainability - To ensure VfM, sustainability targets, and continuous improvement, we recommend the Board's contract ensures Contractor & their Supply chain will, annually: • review actual electrical and gas demand figures for each year of operation and update contract with provider, to minimise operational costs to Board. • review energy performance for each year, provide an improvement report to minimise operational costs/ actual energy use to Board • provide & prominently display a NHSScotland Display Energy Performance (NDEP) annual certificate, or agreed equivalent (e.g. DEC), showing table comparison in kWh/m2 to design model targets & NDAP benchmarks (below), plus the trend of actual energy used, over min. last 3yr period of contract. • NDAP benchmarks for this project: TOTAL 280 kWh/m2 (Elec. 90; Thermal 190 - based on 25% improvement on HTM07-02 benchmarks) –confirm prior to FBC submission. NOT DISCHARGED – provide evidence of inclusion	NOT DISCHARGED – Confirm NHSH sustainability manager will undertake these reviews and provide output information.	NHSH to advise	NHSH		Refer RDD submissions and NHSH approval	Discharged	
Essential Recommendations									
81		That the operational efficiency and flexibility (DS2.5) of the NHS service areas be substantively developed, with learning from similar service projects being delivered elsewhere in the country incorporated where appropriate, e.g. theatre suite footprint. To meet this, the proposal must address: Theatre suite efficiency, resilience and patient dignity to be clarified and confirmed. Particularly for Ophthalmology, queries relate to throughput, case mix, quantity, sizes, ventilation, workflows, support space, maintenance, daylight and acoustics. GJNH ECC Highland ECC 40 Eye or Day Theatre 50 12 Prep 14 8.5 Scrub 7 (width too narrow) 10 Dirty Utility 9.5 6 Exit bay 12 18 Corridor 26 Anaesthetic 19.5 94.5 sqm 138 sqm	Discharged				Discharged	Discharged	
82		OPD suite efficiency, resilience and patient dignity to be clarified and confirmed. GJNH ECC Highland ECC ~500 sqm OPD suite~1000 sqm	PARTIALLY DISCHARGED: Route noted below is clinical access route passing a series of rooms which will also see activity between the rooms and waiting areas. This has potential to be a busy congested corridor that can adversely impact the arrival process and clinical process. Investigate opportunities to amend layout to better suit activity within. No detail provided, therefore ensure consideration that corridor width increase is deemed sufficient to ease congestion concern. Have any clinical spaces been adversely impacted through reduction in size?	Note: a wider corridor has been implemented to ease congestion.			All Layouts and clinical flows /routes etc. Have been subject to robust review by Clinical Stakeholders and have been deemed acceptable.	Corridor from Main entrance reception to Ophthalmology outpatients has been designed as wider corridor to enable great volumes of patient traffic to flow into the outpatient department. The rooms in the this corridor are an essential starting point of the clinical patient pathway and are frequently accessed en-route to the outpatient department. On this basis, the widened corridor facilitates ease of movement and patient flow.	

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83		That opportunity for integration and joint learning between the various staff at the facility are better enabled in the plan. Currently staff from the NHS and UHI/HIE would park in separate areas, come in through different entrances, work and socialise in different places. Although corridors link the facilities allowing staff from one to get to the other without going outside, and there's shared touchdown and dining space for UHI/HIE staff, NHS staff would largely use separate areas socialise, rest and do desk based work. Therefore, the layout falls short of the Design Statement's benchmarked standard for sections 2.3 & 2.4.	DISCHARGED:				Discharged	Discharged	
84		That the layout of the building and external spaces be significantly developed, to address the above and the following issue: Improve the access experience and reduce the impact of car access on the building form and inpatient experience. Driving through a pend under the building, and walking back to the entrance is generally an unpleasant experience as such areas are dark and noisy when cars go through them, and can act as wind tunnels funnelling and increasing the effect of wind which would be significant so close to the north sea (contrary to DS1.2). In addition this noise impacts the spaces around and above especially the ability to have bedroom windows open for fresh air (DS1.8). Car pends also attract clutter and misuse and make the building less thermally and more expensive to build due to the high surface to volume ratio and large structural spans.	UHI/HIE no longer part of proposals. Design does consider a phase 2 project for primary care and notes a physical connection is not anticipated.	Note that consultation in these rooms is undertaken first therefore located at beginning of journey			Refer current design information. Updated to address.	The effect of the wind at the main entrance doors was reviewed as part of the design development. With the main access being sheltered in the north elevation away from the prevailing winds, the entrance is less susceptible to wind. To mitigate this further, a chicane entrance was designed to prevent any northly winds driving into the main reception and waiting areas.	
85		That the layout of the building and external spaces be significantly developed, to address the above and the following issue: Improve the privacy of consulting rooms on the ground floor as most windows are currently shown directly adjacent to public paths (to rear of the building) or external patient areas (children's play pen) contrary to DS1.7.	Accommodation provided on 1st floor confirmed as suitably flexible for learning needs of those staff who will occupy the building. Site will provide links with Raigmore Hospital and therefore associated accommodation that can be utilised for integration and joint learning.				Refer current design information. Updated to address.	Discharged	
86		That the layout of the building and external spaces be significantly developed, to address the above and the following issue: Provide useable external space for therapy not directly associated with the inpatient ward as required by (DS 1.7d) and walking routes (DS3.2)					Refer current design information. Updated to address.	First floor courtyard facilitates accessible external space on the upper levels of the building. Further to this, accessible walking routes throughout campus and direct adjacent landscape. The combination provides a diverse range of areas, surfaces and environment which therapy can be undertaken to aided patient recovery. Further enhancement will be made to these areas by NHSH commitment to the therapeutic arts post completion as these will be funded by various charities.	
87		That the layout of the building and external spaces be significantly developed, to address the above and the following issue: Improve access to external space from wards (DS1.8). All but one of the courtyards at the upper floor are shown without doors to access them in the drawings received on 10th June so very little accessible space is described, and the one accessible court is barely large enough to get a couple of chairs in so of very limited amenity to the 50% of inpatients able to access it.					Refer current design information. Updated to address.	As above	

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88	3.1	That the layout of the building and external spaces be significantly developed, to address the above and the following issue: Enable inpatient rooms to look out on something other than access routes, parking and service areas (DS1.7)	PARTIALLY DISCHARGED: Access proposals have changed significantly with redesign and loss of UHI/HIE. Parking generally set well back from building, turning circle crop off and turning in close proximity to main entrance – whole space looks to be drop off enclosed with bollards. This area could become congested and have issues with vehicle idling close to entrance doors. It has however been confirmed that no parking will be permitted here and the space will be clearly defined as drop off for reduced mobility patients only. Clear directional signage confirmed to direct all other users to car park. Vehicle access route past south & east of site before entry and visibility of building . entrance. Landscaping along route past should be of high quality and encourage use and activity. Current proposals for this space have limited seating with a large area of green space that could be better developed to provide addition rest / seating areas and the ability to wander to enjoy the areas or ornamental shrubbery for patients, staff and visitors. Confirmed that opportunities for additional seating and enhancing the area will be sought through charitable funding. Entrance doors and building shape may create wind tunnel and poor internal environment. Item was discussed during interim review of 26th August – provide supporting summary detail of approach to mitigate internal environment being adversely impacted by external elements. Has a wayfinding strategy been developed? Notes that entrance door wind tunnel concern was discussed. - confirm impact on proposals. Wayfinding details to be provided	Yes, wayfinding plans provided and are represented in Interior Design Proposal document and external images.			Wayfinding currently under review with meeting arranged for 28/10/21. Refer current design for latest information.	The effect of the wind at the main entrance doors was reviewed as part of the design development. With the main access being sheltered in the north elevation away from the prevailing winds, the entrance is less susceptible to wind. To mitigate this further, a chicane entrance was designed to prevent any northly winds driving into the main reception and waiting areas.	
89		That the layout of the building and external spaces be significantly developed, to address the above and the following issue: Provide staff external respite area away from public/patient view (DS2.6) and identify appropriate space for quiet contemplation and religious observance.					Refer current design information. Updated to address.	As above	
	3.2	Improve the privacy of consulting rooms on the ground floor as most windows are currently shown directly adjacent to public paths (to rear of the building) or external patient areas (children's play pen) contrary to DS1.7.	DISCHARGED: Landscaped design amended to provide privacy – path relocated and area immediately adjacent to a mix of shrubs and cobbles / pebbles.				Landscaping incorporated to discourage access adjacent to building. Discharged	Discharged	
	3.3	Provide useable external space for therapy not directly associated with the inpatient ward as required by (DS 1.7d) and walking routes (DS3.2)	PARTIALLY DISCHARGED: Paths provided around building, walking route to Raigmore noted but no coordinated detail of routes out with the immediate site. Cycle route noted but no wider context of Southern NHS Cycle Route. Confirm these routes can be coordinated out-with the immediate site and that information promoting access will be developed and made available. Noted that a vision plan showing the potential for therapeutic art will be put together. Confirm this work will continue and funding sources sought to incorporate. Wayfinding details to be provided. Confirm progress of works related to therapeutic art.	Refer to current wayfinding proposals			Planning condition for Active Travel link is discharged. Campus cycle routes have been established. Wayfinding to be confirmed at meeting on 28/10/21. Art Funding is included in FBC approved budget and secured.	First floor courtyard facilitates accessible external space on the upper levels of the building. Further to this, accessible walking routes throughout campus and direct adjacent landscape. The combination provides a diverse range of areas, surfaces and environment which therapy can be undertaken to aided patient recovery. Further enhancement will be made to these areas by NHSH commitment to the therapeutic arts post completion as these will be funded by various charities.	
	3.4	Improve access to external space from wards (DS1.8). All but one of the courtyards at the upper floor are shown without doors to access them in the drawings received on 10th June so very little accessible space is described, and the one accessible court is barely large enough to get a couple of chairs in so of very limited amenity to the 50% of inpatients able to access it.	PARTIALLY DISCHARGED: Courtyard space provided on 1st floor with access from out-with the ward areas. Noted that reception area can provide observation, what are access and observation procedures when reception is closed? View out from quiet room which may adversely impact quiet room if it gets noisy. Confirm design to protect privacy. Strategy to be confirmed and is this coordinated with privacy? Manifestation will provide visual privacy but restrict views out and not aid acoustics.	NHSH to confirm access and security requirements/locking management strategy. Manifestation to be provided on quiet room windows.	NHSH		Refer to current design	Observation of courtyard space will be via the inpatient reception during normal hours of use. In the event that the reception is not in use, the courtyard will be closed unless the patients/visitors are accompanied by a member of staff - such as therapy. The quiet room's privacy is maintained with manifestations and a privacy blind.	

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	3.5	Enable inpatient rooms to look out on something other than access routes, parking and service areas (DS1.7)	DISCHARGED: Views do include access routes, parking and service areas but landscaping and green space is immediately visible from inpatient rooms. Distant views are also offered and demonstrated in 3d sketches showing views from in-patient bedrooms. Treatment to plant area has been confirmed and shown in 3d sketches. Also noted that those rooms facing on to the service yard may require manifestations to add privacy and dignity.				Discharged	Discharged	
	3.6	Provide staff external respite area away from public/patient view (DS2.6) and identify appropriate space for quiet contemplation and religious observance.	PARTIALLY DISCHARGED: External space identified to West of theatres, it is concealed and accessible from staff room and can accommodate up to 12 staff. Staff also have access to and will be encouraged to make use of the other landscaped areas within the site. Connectivity to these areas is provided through the perimeter path. Opportunity for additional and varied spaces may still be achievable as noted in recommendation 3.1. Confirm works will continue on preparation of a brief for charitable funding, and others, that may assist you to achieve. Still to be confirmed	NHSH to confirm charitable funding / plans / brief.	NHSH		NHS Highland accept and will develop.	A private staff external courtyard is provided at the rear of the building. This is directly accessed from the staff room and landscaped to be sheltered from other activities at the rear of the building. The space is private from general public.	
90	4.1	The internal circulation diagram be significantly improved to: If the west entrance to the NHS section remains intended for patient and staff access, improve visibility and connections to reception to match standards achieved from the east and DS1.3. If not, how does this achieve campus links required.	DISCHARGED: Confirmed West entrance is for staff only and allows ease of access to changing, entrance foyer, staff room, access stairs, first floor admin and wards. Staff access route connected with other landscaping through perimeter path.				Discharged	Discharged	
91	4.2	The internal circulation diagram be significantly improved to: Improve the visibility of the stair access to the upper floor from the arrival space to encourage use for those able to do so; only the lifts are shown as visible (DS1.3).	DISCHARGED: Stairs straight ahead from entrance lobby so will be easily visible. Stairs located behind reception area so location should also be found intuitively.				Discharged	Discharged	
92	4.3	The internal circulation diagram be significantly improved to: Provide a route to wards for visitors out of hours that does not require them to "venture through large areas of vacant… unsupervised building" (DS3.1) and enable phased shut down, security (DS2.7) and sustainability.	PARTIALLY DISCHARGED: Confirmed visitors will be using main entrance for out of hours access and that direct route to 1st floor inpatient area is provided. Ground floor has few discrete areas and clinical room doors which will need to be locked otherwise access to outpatient's areas is possible. Security and access control strategy for clinic 2 to be provided. Provide over marked plan of how out of hours and weekend hours ward strategy will work to avoid sporadic occupancy and to ensure both security and safety for patients and staff. Still TBC	NHSH to confirm access and security requirements/locking management strategy.	NHSH		Refer to agreed security strategy and drawings.	Security strategy to be issued for confirmation of design specifically related to Clinic 2.	

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93	5	That the location and function of receptions be improved to meet the standards in Design Statement clause 1.4, particularly so that they are not immediately adjacent to seating and so that staff security can be managed without the need for enclosing partitions but by safe egress to secure staff area. Neither appear to be met in any of the 3 service reception facilities, and it's unclear how staff safety may be managed in the reception/info desk dotted into the plan. The location of the electronic check in- whilst close to the entrance is distant from assistance for those having difficulty using it.	DISCHARGED: Proposals for reception areas, checking in and waiting areas have changed significantly with redesign and loss of UHI/HIE. Interim queries on redesign have been reviewed as confirmed as follows: Is there a reception on the ground floor? Manned reception confirmed which is located where it can provide observation of waiting areas and self-check-in facility. Lounge and café seating areas identified but is there any observation of waiting areas other than from café? Confirmed and demonstrated that observation will be provided from reception desk. GF waiting looks to only be in the outpatient's areas only. Lounge function confirmed as an initial area with specific areas identified for patients as they continue through the clinical pathway. 1st floor has reception in place with small waiting area beside lifts. Interior Design Proposal document demonstrates arrangement of space. Waiting areas in 3 locations and potentially the lounge. 2 x outpatients and 1 x admissions for orthopaedics. GF locations much smaller than previous notes and do have direct visual and physical links to outside. 1st floor has views and access to courtyard. Clinic route diagrams confirmed for access to waiting areas. Reduction in waiting area sizes confirmed as an overall impact of VE. Limited detail on overall quality of design for all spaces. Provide information to demonstrate quality. Information to include internals as well as those linked with relative external spaces. Interior Design Proposal document demonstrates overall design quality for all relevant spaces. Confirm how will spaces be arranged and clarity on waiting area numbers to be provided. Seating numbers for each area confirmed in room layout drawings.			Discharged	Discharged	
94	6.1	That the location and design of the waiting areas be significantly developed to provide the nature and range of environments noted in clause 1.5 of the Design Statement, including daylight, views and access to external space. The current proposals would mean: Over 50 people in the main waiting area arranged into large groups in the centre of a single storey circulation area; so providing an internalised atmosphere with little variety of space for those who may need time away and no direct access to external space or places for children to occupy themselves. The space, being internal with a high occupancy load, would also rely on artificial ventilation and have little volume to dissipate any noise from those waiting, moving around the space or conversing at the receptions.	DISCHARGED: As noted in 5: Proposals for waiting areas have changed significantly with redesign and loss of UHI/HIE. Interim queries on redesign have been reviewed as confirmed as follows:	Confirm how will spaces be arranged and clarity on waiting area numbers to be provided. Seating numbers for each area confirmed in room layout drawings.	NHSH		Discharged	Discharged	
95	6.2	That the location and design of the waiting areas be significantly developed to provide the nature and range of environments noted in clause 1.5 of the Design Statement, including daylight, views and access to external space. The current proposals would mean: Up to 30 surgery patients to sit for extended periods in a formally planned internal room with rows of 11 people facing each other with its only views (most seats don't face these) being into another deep-plan large waiting area with a rooflight for over it. This provides no external view, no direct daylight and little borrowed light, which would be reduced further if visual screens are introduced for privacy.					Refer to the current interior design proposals	Discharged	

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96	6.3	That the location and design of the waiting areas be significantly developed to provide the nature and range of environments noted in clause 1.5 of the Design Statement, including daylight, views and access to external space. The current proposals would mean: Up to 40 people in outpatients sub-wait to sit in an internalised top-lit room with rows of seating, providing an environment much like the benchmark image marked with a cross of what was not acceptable.					Refer to the current interior design proposals	Discharged	
97	6.4	That the location and design of the waiting areas be significantly developed to provide the nature and range of environments noted in clause 1.5 of the Design Statement, including daylight, views and access to external space. The current proposals would mean: Only the children's waiting area appears close to meeting the standards described for waiting, provided a door is added to the plans to give access to the external play area included on the landscape drawings and the enclosure to this area can be realised to provide privacy whilst looking attractive both for those in the play area and those approaching the building. The current proposals include a bespoke 'fun' metal screen to address the conflict in needs caused by the location.					Refer to the current interior design proposals	Discharged	
98	7	The location and design of meeting/ training rooms, informal touchdown areas and waiting areas be significantly developed to enable third sector use (3.2).	DISCHARGED: Offices and learning spaces included. AS noted in 2: Accommodation provided on 1st floor confirmed as suitably flexible for learning needs of those staff who will occupy the building. Site will provide links with Raigmore Hospital and therefore associated accommodation that can be utilised for joint learning.				Discharged	Discharged	
99	8	That the urban and architectural response to the brief and place be developed significantly to meet the standards in clauses 1.2 and 2.2 of the design statement and respond more positively to the campus masterplan (DS4.3).	DISCHARGED: Due to extent of redesign, those comments under 8.1, 8.2 & 8.3 are no longer relevant. Review of section 8 generally has been undertaken generally based on the redesign and we report on those proposals along with interim queries as follows: Visibility of drop off area possible from café seating area, does lounge area arrangement allow for visibility too? Glazed entrance lobby and glazing of the café will enable the drop off areas to be visible from the lounge. This has been confirmed and demonstrated through the Interior Design Proposal document. Confirm provision of reliable information on bus / taxi arrival. Real-time transport display confirmed to be provide in lobby space. Confirm works to provide access from bus stop. Landscape plans show works across access road – assume this is to bus stop? Confirmed a resin bound pathway will provide connection between the entrance area and campus bus stop. Building shape leads helps create direction towards entrance. DS1.2 looks for an obvious entrance - Elevations & 3d images don't match for certain elements including design approach to entrance area. Confirm which proposal is current. Views in external envelope presentation confirmed as current. Confirm approach to revised building setting, biodiversity and wayfinding. Discussed during meeting of 26th August 2020 with information confirming approach provided in doc ref: NDAP – 220920- Rev9 (002) by project team. Confirm provision of emergency transfer & support within 10mins of call. Is this a design, infrastructure or process response? Confirmed as a process response. Information showing quality of internal areas sought. DS2.2 looks for the area not to look like a hospital. Provided in Interior Design Proposal document and external envelope presentation.				Discharged	Discharged	

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100	8.1	8.1.The design (from recent plans and hand sketched 3D drawings sent on the 27th April, no elevations have been received in the recent information to update these to include a 3rd storey of plant over the theatres) does not appear a cohesive response to a brief that is about integration and an ethos of wellbeing. A reasonable amount of planting and social space has been incorporated into the campus face to soften the appearance of the development, but the overall impression is a group of unrelated forms joined together and punctuated by with a number of different entrances facing the public realm. The choice of largely metallic finishes (different for NHS and UHI/HIE areas) and boxy forms lack the softness of many of the benchmarked images in DS1.2 and 2.2 that are achieved through texture and forms of a human scale (though 2-3 stories as the proposal).					Refer to current design	Discharged	
101	8.2	The design would rely heavily on signage to help people choose which of the 2 car parks to pick (the one for patients being hidden behind the building) and which of the 3 obvious entrances to use.					Public car park is situated to the north of the building. The staff car park and controlled access is situated to the west of the building.	Discharged	
102	9	That the technical and engineering design issues of Appendix A attached, be considerably developed early in the next stage to confirm its anticipated support of the equality, comfort, safety, sustainability and flexibility requirements set for this project, by evidencing an optimised, multi-disciplinary approach, e.g. HAI Scribe, Equality assessment; health promotion assessment; flexibility assessment; realistic energy & thermal DSM modelling assessment, BREEAM.	Any outstanding information for this section has been requested within the comments under Appendix A.	refer to Appendix A section			HAI scribe assessment have been carried out. HAI scribe Stage 4 assessment will be carried out on handover. Energy and Thermal modelling studies are available. BREEAM Report is available.	Discharged	
103	10.a	Quality - Board to complete and record as early as practicable any project self assessments and community consultations for this design stage, including Design Statement section 5.					3P Stakeholder Events carried out. Design Brief AEDET Stakeholder consultations meetings held. Patient Representation included on Project Board.	NHSH to confirm self assessment was completed.	Self-Assessment will be undertaken through the Soft Landings process, as part of Post-Occupancy Evaluation.
104	10.b	Equality Act - Confirm Equality Impact Assessments undertaken, i.e. independent/ community reviews (SDEF / DSDC); plus HFS HBN 08-02, DDA & Dementia checklists, BS 8300-2018. In particular consider design of approach, entrances, receptions, waiting, WCs, staff changing, offices etc, for gender and age accessibility, e.g. visual & hearing impairment, scooter and other mobility aids. Provide windows and acoustic treatment in all areas that people spend time, unless clinical justification, e.g. theatres.					Local ACCESS group have been consulted.	Impact assessment underway. NHSH to provide outcomes and confirm comments are taken on board.	Accessibility review has been instructed through ABT Safety Ltd. An initial site visit and review has been undertaken (15/10/22) and a further visit will take place in late November once external works are complete. The report will follow and can be issued to HFS.
105	10.c	Privacy & Dignity–develop brief, design and equipment to optimise practical visual and acoustic solutions to deliver privacy, dignity and equality best practice e.g. receptions/ staff bases, waiting open-plan to clinical rooms, theatres, windows & doors; alarms, bins. In particular evidence practical proposals for those in a "vulnerable condition"; also at multiple entrances, all waiting spaces, out-patient areas, and theatre suites.					Visual and acoustic considerations have been optimised in the design. Full acoustic report available. Blinds and fritting have been included on sensitive glazed areas.	Discharged	
106	10.d	TADS (Therapeutic Art & Design Strategy) see SCIM – still to be developed; then coordinated with rest of project, in particular, FM, HAI, Fire, security and Equality.					Funding secured as part of FBC. Proposals being developed.	NHS to confirm commitment to therapeutic arts strategy post completion.	A budget has been allocated for an Arts Strategy, and this is being progressed by the Project SRO in collaboration with a local artist.

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107	10.e	Brief - Confirm current ACRs; list any NHS guidance derogations, with technical reasons for each, and if each deviation meets or exceeds current guidance/ good practice.					Refer approved derogation schedule.	NHS to confirm governance was undertaken and that all relevant stakeholders were consulted..	All derogations have been signed off by the Project Board, following extensive reviews by the NHS Highland Technical team.
108	11	Fire strategy – Develop a specific life safety, fire layout, alarm systems, spec etc for the safe evacuation to appropriate space for all users, particularly patients on upper floor(s). Review to ensure safe egress is away from the fire/ smoke, is also operationally and clinically achievable and resilient for those in a "vulnerable condition"; and those under Equality Act, e.g. theatre evacuation to an adjacent, appropriate clinical compartment; and unless appropriate staff no always available provide lobby protected bed/stretcher fire escape lifts. Bedroom door design should protect escape routes, be easy to operate and maintain and fail safe, protecting room and all other users from fire and smoke. Provide both visual and audible alarms for all potential spaces with lone users to comply with Equality Act, plus multi sensor L1 detection to reduce false unwanted fire alarms.	NOT DISCHARGED: The fire strategy Appendix C submits a justification for the omission of fire resisting walls to corridors serving sleeping accommodation, however the proposals do not meet the functional requirements of the regulations by protecting the corridors from the effects of fire and smoke. The strategy states that progressive horizontal evacuation will form the escape strategy from sleeping accommodation, however, it is not demonstrated how this will be achieved. A two stage alarm should not be implemented for healthcare premises with sleeping accommodation, however there may be value in installing a system that has this capacity as a future proofing measure. The strategy has included an identification of fire hazard rooms based on the building standards technical handbook and this is useful as a guide, however the determination of fire hazard rooms should also be based on a risk assessment of the fire loading within a room. It has not been confirmed that fire alarm system will support multi state smoke detectors and that this type of detector will be fitted to areas that may be subject to unwanted fire alarm signals.	The fire strategy has originated from NHSH preference.			Fire resisting wall have now been included in bedrooms. Refer to current Fire Safety design.	Following meeting with Bill Connelly, all comments were taken on board in design and compartmentation upgrade to suit suggestions provided by HFS.	
109	11B	External envelope will be part of fire risk assessment, and we welcome a non-combustible or low combustible cladding as part of the design development and specification.	NOT DISCHARGED: Information to be provided.	refer to Mott MacDonald Fire Strategy revision F.4 which states classification of materials proposed	PSCP		Refer to Fire Engineers report and current proposals. Fully detailed and compliant.	OA to confirm.	
110		We understand HAI SCRIBE risk assessments being undertaken for this stage. Multi-disc workshops required as the design and operational models develop. Confirm appropriate flows, details etc. We recommend early sketch diagram of clean and dirty flows, incl. theatres, staff changing, stairs, decontamination and key plant access routes.	PARTIALLY DISCHARGED: HAI-Scribe stage 1 and 2 included as part of NDAP submission. Content within stage 2 document notes further review is required on elements such as waste protocols, laundry, clean / dirty utility separation and theatre storage. Confirmed further reviews have taken place and design solution provide in 1/50s and ADBs. Comments on proposals for IPS and staff changing also included. Confirmed and evidenced as implemented. Confirm status of stage 3 HAI-Scribe review and sign off.	NHSH to confirm date for HAI scribe review meeting for RIBA 4 design update and PSCP and design team to be invited to attend	NHSH / PSCP		HAI SCRIBE Stage 3 undertaken and signed-off in Jan 2021. HAISCRIBE Stage 4 will be arranged prior to handover/operation.	Stage 3 HAI scribe was completed. Evidence can be provided as required.	
111	11D	Security strategy – still to be developed; then coordinated with FM, fire strategy, TADS, and existing hospital.	PARTIALLY DISCHARGED: Access control information has been provided but as per 4.3 - Security and access control strategy for clinic 2 to be provided. Confirmed overall security strategy is currently being developed. Provide confirmation the strategy will be developed collaboratively and coordinated with FM, fire strategy, TADS, and operational hours.	NHSH to confirm access and security requirements/management strategy	NHSH		Refer to current security strategy and design.	Security strategy to be issued for confirmation of design specifically related to Clinic 2.	
Advisory (2)									
112		Provide evidence that site location is served by public transport to meet standards in DS1.1&1.2 and connections to existing hospital meet standards in DS2.2, and if not describe the mitigating measures being put in place to ensure accessibility to patients and connectivity for staff.	Still TBC				Bus route now operational to/from the Inverness Campus and Inverness city centre.	NHSH confirm that the bus route is now operational. Buses currently stop a short distance from the main entrance however discussion will remain open regarding bringing buses directly to the hospital front door. The current design provides the turning circle and bus stop shelter for this to commence at any time if agreed.	
113	B	Feeding room be placed where it can have a window with discrete outlook: where women feel unable to feed babies in public they should not need to do so in a room that feels like a store cupboard.	DISCHARGED: Feeding room provided with window and of a good size. Confirm approach to privacy with window adjacent to external landscaped area for public. Confirmed blind will be installed to provide privacy.				Discharged	Discharged	

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114	C	We question why perimeter fencing is being proposed between the gravel footpath (providing wider access and walking routes around the campus) given the multiple and free access around the site provided by the plan means that it serves no security purpose but limits access to exercise opportunities. We recommend this investment could be better spent elsewhere.	DISCHARGED: Perimeter fencing not noted on landscape proposals, confirm this has been omitted. Confirmed that the perimeter is defined by beech hedging, and a combination of existing and proposed stone walls to tie in with similar boundary treatment within and surrounding the UHI campus.				Discharged	Discharged	
115	D	Reduce the number of escape doors onto the public realm, many of which are more visible from parking and pedestrian routes than the entrance, effecting wayfinding and potentially adding to security issues (particularly those into covered pends where people may gather overnight unobserved). The number of these have been increased by the introduction of pends into the plan which results in separate escape doors from upper and lower areas as they cannot be combined through stair locations.	DISCHARGED: Escape doors better arranged in current plan with distant from the main entrance to reduce confusion.				Discharged	Discharged	
116	10A	Quality - Board to complete and record as early as practicable any project self assessments and community consultations for this design stage, including Design Statement section 5.	NOT DISCHARGED: Design report notes Design Statement self-assessment forms part of supporting information. Confirmed that consultation has taken place through the planning process. Confirm that NHSH will complete self-assessment and that it will continue to include community consultation as part of the process. Still TBC	NHSH to confirm	NHSH		3P Stakeholder Events carried out. Design Brief AEDET Stakeholder consultations meetings held. Patient Representation included on Project Board.	NHSH to confirm self assessment was completed.	Self-Assessment will be undertaken through the Soft Landings process, as part of Post-Occupancy Evaluation.
	10B	Equality Act - Confirm Equality Impact Assessments undertaken, i.e. independent/ community reviews (SDEF / DSDC); plus HFS HBN 08-02, DDA & Dementia checklists, BS 8300-2018. In particular, consider design of approach, entrances, receptions, waiting, WCs, staff changing, offices etc, for gender and age accessibility, e.g. visual & hearing impairment, scooter and other mobility aids. Provide windows and acoustic treatment in all areas that people spend time, unless clinical justification, e.g. theatres.	NOT DISCHARGED: Design report notes that an equality and impact assessment will be carried out by the Inverness Access panel. Confirm independent review / community review will take place. Noted as Access Audit Report has been provided but independent review still sought. Still TBC	NHSH to confirm/Progress	NHSH		3P Stakeholder Events carried out. Design Brief AEDET Stakeholder consultations meetings held. Patient Representation included on Project Board. Local ACCESS Group consulted	As above	Accessibility review has been instructed through ABT Safety Ltd. An initial site visit and review has been undertaken (15/10/22) and a further visit will take place in late November once external works are complete. The report will follow and can be issued to HFS.
117	10C	Privacy & Dignity–develop brief, design and equipment to optimise practical visual and acoustic solutions to deliver privacy, dignity and equality best practice e.g. receptions/ staff bases, waiting open-plan to clinical rooms, theatres, windows & doors; alarms, bins. In particular evidence practical proposals for those in a “vulnerable condition”; also at multiple entrances, all waiting spaces, out-patient areas, and theatre suites.	PARTIALLY DISCHARGED: Acoustics report submitted showing consideration of site location and noting compliance with SHTM 08-01 provided the acoustic design is adopted is subsequent design stages. Confirmed the recommendations of the acoustic report, along with the VE recommendations have been adopted in the design. Also confirm approach and compliance with BS 8233, HBN 08-02, and Equality Act duty which aid recovery/ reduce stress, e.g. reduce unwanted noise, reduce reverberation time from hard finishes, and use layout, shapes, furniture, fittings, art and planting to mitigate. The Board to also consider new equipment specification e.g. soft closer bins, phones/bleep settings, curtains, soft furnishings etc. Implementation of recommendations from acoustic report confirmed. Information presented in the Interior Design Proposal document and landscape proposals demonstrate an approach that considers the above. Confirm remaining items such as soft closer bins, phones/ bleep settings will be further considered and implemented to reduce unwanted noise etc. Confirm approach to provide privacy and dignity to Ophthalmology, Optometry and Orthoptic areas. 2 corridors provide access to each central waiting area and go past clinical rooms. Provision of dignity and privacy will be through interstitial blinds to glazed screens. Note under 1.2 regarding opportunities to review the layout may improve privacy and dignity solution here. Still TBC	NHSH to review/advise and develop?	NHSH		Refer Acoustic report which is being complied with. Refer to Equipping Responsibility Matrix, ADBs, Equipping Schedule and Specifications. Rear to current design in respect of provision of blinds and fritting to sensitive areas.	NHS confirm that HFS equipping engaged to facilitate procurement of all equipment and that this was review was undertaken during that process.	Agreed

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Report v1.3 received by email 27-11-20

No.	Ref	Item	FBC NDAP Report Status	PSCP / Design Team comments	Owner	Action	Responses PSCP/NHSH 22.10.21	OA Response 14.10.22	NHSH Response 19.10.22 (Rows 103, 104, 106, 107, 165,166,168,169)
	10D	TADS (Therapeutic Art & Design Strategy) see SCIM – still to be developed; then coordinated with rest of project, in particular, FM, HAI, Fire, security and Equality.	NOT DISCHARGED: Submission does not appear to include a developed TADS. Noted that NHSH are developing this strategy for the building artwork internally and discussing with Inverness Campus and The Highland Council externally. Confirm commitment to continue this approach with stakeholders noted as well the project team to ensure coordination of any artwork internally and externally. Still TBC	NHSH to review/advise and develop?	NHSH		Funding secured at FBC. Proposals being developed.	NHS to confirm commitment to therapeutic arts strategy post completion.	A budget has been allocated for an Arts Strategy, and this is being progressed by the Project SRO in collaboration with a local artist.
	10E	Brief - Confirm current ACRs; list any NHS guidance derogations, with technical reasons for each, and if each deviation meets or exceeds current guidance/ good practice.	PARTIALLY DISCHARGED: Derogation list included as part of NDAP submission and has been updated based on comments raised through Assurance Review. Items are noted as Active and some require further review and confirmation to close. Confirm engagement, review and agreement process that will be followed to establish derogation outcome i.e. derogation accepted or design element amended to provide compliance. Still TBC	Derogation list will be part of contract. NHSH needs to sign off the schedule line by line	NHSH		Refer to agreed Derogation Schedule	NHS to confirm governance was undertaken and that all relevant stakeholders were consulted..	All derogations have been signed off by the Project Board, following extensive reviews by the NHS Highland Technical team.

				Score						Reviewers	Comments and Observations
	1 AGREED NON-NEGOTIABLES FOR SERVICE USERS			1	2	3	4	5	6		
				Poor	Fair	Average	Good	V.good	Excellent		
1	**Non-Negotiable Performance objectives**		**Benchmarks**								
	What the design of the facility must enable (what it needs to do)		*The physical characteristics expected and/or some views of what success might look like for each (what you expect there to be)*								
1.1	Both booking systems and access arrangements to the facility must make attending easy and convenient, especially for those coming from remote communities, to lower stress.		Booking systems to enable appointments to align with transport options. Within ??mins travel by bus of major train & bus hubs serving highlands (bus transfer min ?? frequency without changing bus) with route from bus stop to meet walking standards noted below. Within ??m of multiple bus routes serving local populations, ?? min frequency during operating hours, with route from bus stop to meet walking standards noted below. Within ??m of an A-class road, and ?? mins driving of ???.			x					Work required to develop the system.
1.2	The experience of arriving must be safe, calming and obvious; providing a welcoming, professional, and uplifting first impression.		The facility should have clear identity, conveying what it's for, so you know you're in the right place. *Some views of what a success might look like for initial impression (building and site/landscape) that conveys welcome/professional/calming/innovative/uplifting/spiritual/non-clinical/durable* There must be: Reliable parking, organised so that it's easy to find your way around (no doubling back), with priority spaces for those in greatest need. Bus stop and drop off spaces within ??m of the public entrance, visible from an internal space to allow people to wait on the in the warm with reliable information on bus arrival times and taxi pick-ups. The experience of arriving by foot or public transport should be at least as nice as for those walking from their parked car, i.e. parking and roads should not dominate the experience of arrival by other means, and walking routes from parking should not be generally shorter than routes from public transport or pedestrian arrival, and in any case not more than ??m. Walking routes, including routes in parking areas, to be level or low gradient (max 1in??) with non slip surface, good lighting and visibility across areas to allow observation, and for the space to be observed from occupied buildings so you do not feel alone. Walking routes should take precedent over driving routes so there are not repeated steps/ramps/other					x			

				Score						Reviewers	Comments and Observations
	1 AGREED NON-NEGOTIABLES FOR SERVICE USERS			1	2	3	4	5	6		
				Poor	Fair	Average	Good	V.good	Excellent		
1.3	The initial entrance space must be a place to deal with whatever you need, with immediate onward direction to services. It must have a good vibe, to help you feel better and reduce anxiety, and communicate the ethos of the facility, a place of excellence and innovation and healing.		The entrance door and space must be large enough to allow groups, and people with buggies etc, to fit through easily, and detail to prevent dirt tracking in without obstacles to movement. There should be a clear/obvious view from the entrance to: check-in facilities, toilets, food/refreshments, vertical circulation, ?wheelchair availability? and person who can help you. See also 1.6 for onward routes and wayfinding. The entrance space should provide places with different scales and opportunities - spaces for socialising, children's play and quiet escape etc. Good natural daylight (without glare), colour, texture, views to something interesting, art and direct access to useable landscape area for a breath of fresh air should all combine to provide a positive impression and an environment where any extended waiting, or time needed to think after an appointment, is a relaxing experience. The spaces must be observable from staff stations so help is available when needed and to aid a feeling of security. Space to communicate the work of the facility, the organisations that are part of it and any innovations, awards etc					x			
1.4	Reception facilities must allow for personal preferences and accommodate multiple patient needs with ease. The privacy of sensitive conversations must be maintained.		Check-in systems organised so you need check-in only once and all onward appointments (tests, therapy, and consultation) will be aware of your arrival. Options for electronic and face to face check-in, with immediate feedback on likely wait till first appointment so you can decide what to do next and where to go to wait and obtain help you need for the onward journey. Reception desks must not be immediately adjacent to waiting areas so that conversations are not readily overheard.								

				Score						Reviewers	Comments and Observations
	1 AGREED NON-NEGOTIABLES FOR SERVICE USERS			1	2	3	4	5	6		
				Poor	Fair	Average	Good	V.good	Excellent		
1.5	Booking and patient planning systems should reduce waiting times, but where patients will wait (such as pre and post surgery or between tests and other appointments), waiting areas must be comfortable, pleasant and positive distractions (views/IT). Patients must feel not forgotten and be able to deal with their human needs (toilet, refreshments etc). Waiting while in a vulnerable condition (during and just post treatment, and on discharge) must be discretely located to maintain people's privacy and dignity. Additionally, waiting while 'quarantined' pre-treatment must be separated from general patient areas.		Waiting areas within sight of staff based for sense of security and access to information and assistance as needed. Systems to allow an update on timing of appointment, either delays or if it can be brought forward. Toilets within ??m, and location visible from waiting area. Good natural light and views in all spaces where people may wait for more than ??mins Seats grouped to allow personal choice in environment and some feel of a defensible space. Patient access to Wi-Fi and charging points (where waiting for more than ??mins. Waiting, including temporary sub-waits within departments, must not feel like a seat in a corridor with people pushing past you. Good sound attenuation/acoustics (?? Max reverb time)			x					Requires further development
1.6	Routes around the building – both to, from and between appointments/ testing/therapy - must be simple, efficient and pleasant to use, reducing stress and likelihood of people becoming lost, supporting patients to retain their independence and control. Using these routes must not compromise the privacy and dignity of the patient or others. Also make the most of the setting to provide positive distractions and therapeutic opportunities (see below for additional needs and priorities of particular experiences).		Patient routes must minimise walking distance by not requiring patients to double back through the sequence of progressing though the building. Routes where the destination is not visible at the start of the journey (which are preferable) should have areas of character end route so that people can be directed by 'landmarks' as well as by signage (supported as appropriate by another). Good clear inclusive signage to support intuitive wayfinding strategy. Routes to and between departments must not go through the service areas, or discrete sub-waits where people may be in a more vulnerable condition. Routes where people may be on a trolley or partially dressed must not be through public areas.								
1.7a	Consulting Spaces							x			
1.7b	Surgery and Other Treatments		Waiting areas for immediately pre/post treatment within ??m (to standards given in 1.4 above), with discrete route (not through public or main waiting areas) to and from surgery to maintain privacy of patient and not alarm those waiting for similar treatments. Visual distractions on ceilings where patients are prostrate It must be possible to control temperature of the room and play music etc as positive distraction. *Some views of what success might look like for surgery space*					x			

			Score						Reviewers	Comments and Observations
	1 AGREED NON-NEGOTIABLES FOR SERVICE USERS		1	2	3	4	5	6		
			Poor	Fair	Average	Good	V.good	Excellent		
1.7c	Testing/Diagnostics	Light levels must be controllable, with the ability to easily black-out the space when needed (and return to daylight again) so patients aren't in darkened internal spaces when not necessary. Visual distractions on ceilings where patients are prostrate. *Some views of what success might look like for testing rooms*					x			
1.7d	Activity based therapies must promote a lifestyle change, not be a 'clinic'. They must be non clinical and calming to reduce anxiety.	Spaces designed to provide a range of 'normal' experiences and situations. Both internal and external spaces must not be 'on show' to public areas. External therapeutic spaces within ??m of internal spaces.				x				
1.8	Inpatient areas must help patients feel secure, connected and able to make personal choices for privacy, social interaction and own environment, and normalise the day as much as possible to aid recovery. Wards and bedrooms must enable rehabilitation.	Space for private consultations prior to surgery (wither in bedroom to standard below, or consulting space to standard in 1.7 above). Staff areas and the life of the ward (to see other's progressing) visible from the bed, and a view outside to an interesting view while seated/lying. ??ability to control environment in room/light levels, heating etc, and natural ventilation. ?? distractions/IT/TV?? Space within the ward to come together with other patients and a choice of environment. Good use of colour, art and furnishings to provide softer appearance. External space within ??m of bedroom (visible from staff spaces and routes) to allow a breath of fresh air without the need for staff to accompany.					x			
	2 AGREED NON-NEGOTIABLES FOR STAFF									
	In the section below 'staff' includes all those employed to work at the site, be that by NHS, UHI or businesses located in the facility. The sections below describe elements that are different, or additional, to those described above.									
2	**Non-Negotiable Performance objectives**	**Benchmarks**								
	What the design of the facility must enable	*The physical characteristics expected and/or some views of what success might look like for each*								

				Score						Reviewers	Comments and Observations
	1 AGREED NON-NEGOTIABLES FOR SERVICE USERS			1	2	3	4	5	6		
				Poor	Fair	Average	Good	V.good	Excellent		
2.1	Coming to work must be convenient, inspiring and help you feel part of something big and important.		See section 1 for accessibility standards and initial impression.				x				
2.2	The facility must be located and designed so that functional and learning links with allied services/businesses are enabled, aiding both service provision and the attractiveness of the working environment to staff.		Reliable emergency transfer/support (within ??mins of call). Proximity (??mins walk/drive) to major hospital and or medical collage to enable joint use of meeting/learning resources (others and the ones within the facility) to share learning and keep services at the cutting edge of thinking and research, and demonstrate pride in the service. Initial impression and main spaces designed to look 'open for business' (not like a hospital) so that the venue will be attractive to partner organisations					x			
2.3	The layout of the facility must enable staff to share knowledge and learning, within and between institutions and develop practice based research. Staff must feel part of one place irrespective of the funding mix between institutions that support their post.		Staff routes around the facility to bring people together (not separated by department) as part of their normal use. Social spaces, particularly in the main space (1.3) to provide places for staff to meet and discuss work or socialise without being 'forced' to buy food/drinks. Space for impromptu discussions at 'bump' points such at the printer, water cooler etc. IT systems and spaces to allow staff to do administrative and learning work in a range of locations (not just consulting rooms) to encourage people out. Service areas designed to allow training/education and research. (need clearer success measure on this)				x				
2.4	Staff working environments (labs and offices) must encourage collaboration and communication whilst allowing for personal preferences and individuality.		Staff only areas designed to allow a range of spaces so you can meet, chat, or sit/work quietly without one disturbing the other, and have private phone calls and 1 to 1 meetings. They must have daylight and views and be stimulating places to work, not 2 class. Access to records within ??mins. *Some views of what success might look like for office/café working areas/pods/labs*				x				

				Score						Reviewers	Comments and Observations
	1 AGREED NON-NEGOTIABLES FOR SERVICE USERS			1	2	3	4	5	6		
				Poor	Fair	Average	Good	V.good	Excellent		
2.5	The facility must have the flexibility to manage different service patterns, changes in throughput of services and to develop better services.		Layout to allow services operating longer hours to do so without requiring patients, visitors or staff to use large areas of vacant, unsupervised building. Meeting/education and other flexible rooms located so that they can be used (in combination with the entrance space) for third sector/training/group support including out of hours. Departments arranged so that the number of rooms in each 'department' can flex and change in time without structural alterations. Rooms designed to common specification to allow multiple uses, and sized to allow kit to be used in a number of configurations to suit patent needs and treatment protocols. Storage areas located and sized so that kit can be shared between a number or rooms, with routes to rooms wide enough to allow man over (max ??m from store to place of use)				X				
2.6	Staff's wellbeing must be supported. They must be able to Know their belongings are secure, but accessible in breaks. Have a break, some food and a mental rest – feeling 'off duty' in their breaks – with the opportunity for a breath of fresh air or some exercise. Have access to toilets without going off duty. Come together socially, and increase familiarity with colleagues. Obtain formal and informal emotional support when needed.		Canteen (with storage for packed lunches and area for self prep food???) within ??mins walk of service areas to enable use within break, with seating etc organised to allow you to group with colleagues to be sociable, or sit more quietly. This space must be attractive enough to encourage staff away from their immediate work environment to meet; and a space of similar qualities must be provided within ??m or surgical areas to allow staff lunches without changing out of gowns etc. External area accessed from staff rest/eating spaces to allow use of both in one visit, and max ??mins walk from lunch area to wider walking routes. It must be possible to sit and rest or socialise away from public areas to allow staff to relax, release any steam, or discuss any emotional impacts of the day. Lockers not more than ??m off route from working areas to lunch areas, and not more than ??m off route from working to entrance/exit. Space for quiet contemplation, or religious observance within ??m of ??. Spaces (within ??m of departments) for 1 to 1 support of staff following difficult situations. *Some views of what success might look like for these social and respite spaces(internal and external)* No other staff photos				X				
2.7	Facilities management and security must be easy to manage without impacting experiences above.		Need some benchmarks on this – maintenance costs, max number of 'non service' personnel needed … something…					X			
	3 AGREED NON-NEGOTIABLES FOR VISITORS (FAMILY/FRIENDS/CARERS).										

				Score						Reviewers	Comments and Observations
	1 AGREED NON-NEGOTIABLES FOR SERVICE USERS			1	2	3	4	5	6		
				Poor	Fair	Average	Good	V.good	Excellent		
3	**Non-Negotiable Performance objectives**		**Benchmarks**								
	What the design of the facility must enable		*The physical characteristics expected and/or some views of what success might look like for each*								
3.1	People visiting inpatients during times when most of the facility is closed, must be able to do so safely and without increasing their stress.		External arrival routes to standards in 1.2 above. Internal layout of the plan to enable visitors to reach wards without venturing through large areas of vacant, unheated, unsupervised building.					x			
3.2	The facility must enable access to information and support for relatives/carers to promote their health and wellbeing.		Printed information and IT in waiting areas. The full range of services on offer should be clear in a manner that is attractive and engaging (not visual clutter), and in a range of formats to suit differing needs. Space for third sector groups to communicate what they can offer and meeting or other flexible rooms (also needed for other uses) situated so they can be used by third sector for support groups etc when available. Some views of what success might look like for this No photos								
3.3	There must be easy access to pleasant places to wander, sit, eat, and occupy yourself, and any accompanying children, while waiting for day surgery patients and others on extended visits.		Systems to be in place to allow carers to be called when they are needed, so they can leave to deal with their own needs in confidence. Wander routes and external rest/play areas to be visible from routes into the facility (or main foyer) so carers are aware they've available before they need them. *Some views of what success might look like for external spaces for waiting, wandering, respite, play etc…* Catering and main waiting/social area to have comfy seats for long waits and access to IT and other amusements. As in ??above, there must be good daylight and views for distractions.					x			
	4 ALIGNMENT OF INVESTMENT WITH POLICY										
	This section is about the additional benefits (not directly related to the service to be provided) that can be delivered, so things like contributing to regeneration or wider masterplanning principles, health promotion, good corporate citizenship etc See template benchmarks provided by Susan separately										

				Score						Reviewers	Comments and Observations
	1 AGREED NON-NEGOTIABLES FOR SERVICE USERS			1	2	3	4	5	6		
				Poor	Fair	Average	Good	V.good	Excellent		
4	**Non-Negotiable Performance objectives**		**Benchmarks**								
	What the design of the facility must enable										
4.1	Contribution to health promotion through landscape availability to community? Maybe through making services facilities within the building (like pharmacy) open to wider population.					x					Progress required
4.2	Need something on sustainability and future service change/expansion...										
4.3	Contribution to wider regeneration around chosen site in terms of townscape, links etc???						x				
4.4	Anything on future alterations or expansion???										
	5 SELF ASSESSMENT PROCESS										
	To be developed by project team.										

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Functionality

Use

		Weight	Score	Notes
A.01	The prime functional requirements of the brief are satisfied	1	4	
A.02	The design facilitates the care model	1	4	
A.03	Overall the design is capable of handling the projected throughput	1	4	
A.04	Work flows and logistics are arranged optimally	1	4	
A.05	The design is sufficiently flexible to respond to clinical /service change and to enable expansion	2	5	
A.06	Where possible spaces are standardised and flexible in use patterns	1	4	
A.07	The design facilitates both security and supervision	1	4	
A.08	The design facilitates health promotion and equality for staff, patients and local community	1	4	
A.09	The design is sufficiently adaptatable to external changes e.g. Climate, Technology	1	4	
A.10	The benchmarks in the Design Statement in relation to building USE are met	2	5	

Access

		Weight	Score	Notes
B.01	There is good access from available public transport including any on- site roads	1	4	
B.02	There is adequate parking for visitors/ staff cars/ disabled people	1	4	
B.03	The approach and access for ambulances is appropriately provided	1	4	
B.04	Service vehicle circulation is well considered and does not inappropriately impact on users and staff	1	4	
B.05	Pedestrian access is obvious, pleasant and suitable for wheelchair/ disabled/ impaired sight patients	1	4	
B.06	Outdoor spaces wherever appropriate are usable, with safe lighting indicating paths, ramps, steps etc.	1	4	
B.07	Active travel is encouraged and connections to local green routes and spaces enhanced	1	4	
B.08	Car parking and drop-off should not visually dominate entrances or green routes	1	4	
B.09	The benchmarks in the Design Statement in relation to building ACCESS are met	2		

Space

		Weight	Score	Notes
C.01	The design achieves appropriate space standards	1	4	
C.02	The ratio of usable space to total area is good	1	4	
C.03	The circulation distances travelled by staff, patients and visitors is minimised by the layout	1	4	
C.04	Any necessary isolation and segregation of spaces is achieved	1	4	
C.05	The design maximises opportunities for space to encourage informal social interaction & wellbeing	1	4	
C.06	There is adequate storage space	1	4	
C.07	The grounds provided spaces for informal/ formal therapeutic health activities	1	4	
C.08	The relationships between internal spaces and the outdoor environment work well	1	4	
C.09	The benchmarks in the Design Statement in relation to building SPACE are met	2		

Build Quality

Performance

		Weight	Score	Notes
D.01	The building and grounds are easy to operate	1	4	
D.02	The building and grounds are easy to clean and maintain	1	4	
D.03	The building and grounds have appropriately durable finishes and components	1	4	
D.04	The building and grounds will weather and age well	1	4	
D.05	Access to daylight, views of nature and outdoor space are robustly detailed	1	5	
D.06	The design maximises the opportunities for sustainability e.g. waste reduction and biodiversity	1	4	
D.07	The design minimises maintenance and simplifies this where it will be required	1	4	
D.08	The benchmarks in the Design Statement in relation to PERFORMANCE are met	2	5	

Engineering

		Weight	Score	Notes
E.01	The engineering systems are well designed, flexible and efficient in use	1	4	
E.02	The engineering systems exploit any benefits from standardisation and prefabrication where relevant	1	4	
E.03	The engineering systems are energy efficient	1	4	
E.04	There are emergency backup systems that are designed to minimise disruption	1	4	
E.05	During construction disruption to essential services is minimised	1	4	
E.06	During maintenance disruption to essential healthcare services is minimised	1	4	
E.07	The design layout contributes to efficient zoning and energy use reduction	1	4	

Construction

		Weight	Score	Notes
F.01	If phased planning and construction are necessary the various stages are well organised	0	4	
F.02	Temporary construction work is minimised	0	4	
F.03	The impact of the building process on continuing healthcare provision is minimised	1	4	
F.04	The building and grounds can be readily maintained	1	4	
F.05	The construction is robust	1	4	
F.06	Construction allows easy access to engineering systems for maintenance, replacement & expansion	1	4	
F.07	The construction exploits opportunities from standardisation and prefabrication where relevant	1	4	
F.08	The construction maximises the opportunities for sustainability e.g. waste and traffic reduction	1	4	
F.09	The construction contributes to being a good neighbour	1	4	
F.10	Infection control risks for options, design and construction recorded/ minimised using HAI Scribe	1	4	

Impact

Character and Innovation

		Weight	Score	Notes
G.01	There are clear ideas behind the design of the building and grounds	1	4	
G.02	The building and grounds are interesting to look at and move around in	1	4	
G.03	The building, grounds and arts design contribute to the local setting	1	4	
G.04	The design appropriately expresses the values of the NHS	1	4	
G.05	The project is likely to influence future designs	1	4	
G.06	The design provides a clear strategy for future adaptation and expansion	1	5	
G.07	The building, grounds and arts design contribute to well being and a sustainable therapeutic strategy	1	5	
G.08	The benchmarks in the Design Statement in relation to CHARACTER & INNOVATION are met	2	5	

Form and Materials

		Weight	Score	Notes
H.01	The design has a human scale and feels welcoming	1	4	
H.02	The design contributes to local microclimate, maximising sunlight and shelter from prevailing winds	1	4	
H.03	Entrances are obvious and logical in relation to likely points of arrival on site	1	4	
H.04	The external materials and detailing appear to be of high quality and are maintainable	1	4	
H.05	The external colours and textures seem appropriate and attractive for the local setting	1	4	
H.06	The design maximises the site opportunities and enhances a sense of place	1	4	
H.07	The benchmarks in the Design Statement in relation to FORM & MATERIALS are met	2	5	

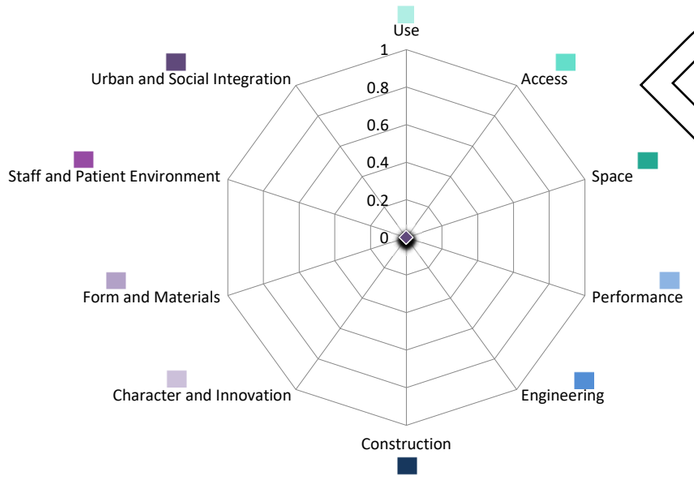
Staff and Patient Environment

		Weight	Score	Notes
I.01	The design reflects the dignity of patients and allows for appropriate levels of privacy	1	4	
I.02	The design maximises the opportunities for daylight/ views of green natural landscape or elements	1	4	
I.03	The design maximises the opportunities for access to usable outdoor space	1	5	
I.04	There are high levels of both comfort and control of comfort	1	4	
I.05	The design is clearly understandable and wayfinding is intuitive	1	4	
I.06	The interior of the building is attractive in appearance	1	4	
I.07	There are good bath/ toilet and other facilities for patients	1	4	
I.08	There are good facilities for staff with convenient places to work and relax without being on demand	1	4	
I.09	There are good opportunities for staff, patients, visitors to use outdoors to recuperate/ relax	1	5	
I.10	The benchmarks in the Design Statement in relation to STAFF & PATIENT ENVIRONMENTare met	2	5	

Urban and Social Integration

		Weight	Score	Notes
J.01	The height, volume and skyline of the building relate well to the surrounding environment	1	4	
J.02	The facility contributes positively to its locality	1	4	
J.03	The hard and soft landscape contribute positively to the locality	1	4	
J.04	The design contributes to being a good neighbour and is sensitive to neighbours and passers- by	1	4	
J.05	There is a clear vision behind the design, its setting and outdoor spaces	1	4	
J.06	The benchmarks in the Design Statement in relation to INTEGRATION are met	2	5	

AEDET Refresh FBC Summary



Target		Progress	
		Prev	Curr
4.2	Use	0.0	0.0
4.3	Access	0.0	0.0
4.2	Space	0.0	0.0
4.2	Performance	0.0	0.0
3.4	Engineering	0.0	0.0
4.0	Construction	0.0	0.0
4.2	Character and Innovation	0.0	0.0
4.3	Form and Materials	0.0	0.0
4.2	Staff and Patient Environment	0.0	0.0
4.3	Urban and Social Integration	0.0	0.0

Weighting	=	Target
2	= >	5 - 6
1	>	3 - 4
0	<	3

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Functionality

Use	Weight	Score	Notes
A.01 The prime functional requirements of the brief are satisfied	1	5	
A.02 The design facilitates the care model	1	5	
A.03 Overall the design is capable of handling the projected throughput	1	5	
A.04 Work flows and logistics are arranged optimally	1	5	
A.05 The design is sufficiently flexible to respond to clinical /service change and to enable expansion	2	5	
A.06 Where possible spaces are standardised and flexible in use patterns	1	5	
A.07 The design facilitates both security and supervision	1	5	
A.08 The design facilitates health promotion and equality for staff, patients and local community	1	5	
A.09 The design is sufficiently adaptatable to external changes e.g. Climate, Technology	1	5	
A.10 The benchmarks in the Design Statement in relation to building USE are met	2	5	

Access	Weight	Score	Notes
B.01 There is good access from available public transport including any on- site roads	1	5	
B.02 There is adequate parking for visitors/ staff cars/ disabled people	1	5	
B.03 The approach and access for ambulances is appropriately provided	1	5	
B.04 Service vehicle circulation is well considered and does not inappropriately impact on users and staff	1	5	
B.05 Pedestrian access is obvious, pleasant and suitable for wheelchair/ disabled/ impaired sight patients	1	5	
B.06 Outdoor spaces wherever appropriate are usable, with safe lighting indicating paths, ramps, steps etc.	1	5	
B.07 Active travel is encouraged and connections to local green routes and spaces enhanced	1	5	
B.08 Car parking and drop-off should not visually dominate entrances or green routes	1	5	
B.09 The benchmarks in the Design Statement in relation to building ACCESS are met	2	5	

Space	Weight	Score	Notes
C.01 The design achieves appropriate space standards	1	5	
C.02 The ratio of usable space to total area is good	1	5	
C.03 The circulation distances travelled by staff, patients and visitors is minimised by the layout	1	5	
C.04 Any necessary isolation and segregation of spaces is achieved	1	5	
C.05 The design maximises opportunities for space to encourage informal social interaction & wellbeing	1	5	
C.06 There is adequate storage space	1	5	
C.07 The grounds provided spaces for informal/ formal therapeutic health activities	1	5	
C.08 The relationships between internal spaces and the outdoor environment work well	1	5	
C.09 The benchmarks in the Design Statement in relation to building SPACE are met	2	5	

Build Quality

Performance	Weight	Score	Notes
D.01 The building and grounds are easy to operate	1	5	
D.02 The building and grounds are easy to clean and maintain	1	5	
D.03 The building and grounds have appropriately durable finishes and components	1	5	
D.04 The building and grounds will weather and age well	1	5	
D.05 Access to daylight, views of nature and outdoor space are robustly detailed	1	5	
D.06 The design maximises the opportunities for sustainability e.g. waste reduction and biodiversity	1	5	
D.07 The design minimises maintenance and simplifies this where it will be required	1	5	
D.08 The benchmarks in the Design Statement in relation to PERFORMANCE are met	2	5	

Engineering	Weight	Score	Notes
E.01 The engineering systems are well designed, flexible and efficient in use	1	5	
E.02 The engineering systems exploit any benefits from standardisation and prefabrication where relevant	1	5	
E.03 The engineering systems are energy efficient	1	5	
E.04 There are emergency backup systems that are designed to minimise disruption	1	5	
E.05 During construction disruption to essential services is minimised	1	5	
E.06 During maintenance disruption to essential healthcare services is minimised	1	5	
E.07 The design layout contributes to efficient zoning and energy use reduction	1	5	

Construction	Weight	Score	Notes
F.01 If phased planning and construction are necessary the various stages are well organised	0	5	YES
F.02 Temporary construction work is minimised	0	5	YES
F.03 The impact of the building process on continuing healthcare provision is minimised	1	5	
F.04 The building and grounds can be readily maintained	1	5	
F.05 The construction is robust	1	5	
F.06 Construction allows easy access to engineering systems for maintenance, replacement & expansion	1	5	
F.07 The construction exploits opportunities from standardisation and prefabrication where relevant	1	5	
F.08 The construction maximises the opportunities for sustainability e.g. waste and traffic reduction	1	5	
F.09 The construction contributes to being a good neighbour	1	5	
F.10 Infection control risks for options, design and construction recorded/ minimised using HAI Scribe	1	5	

Impact

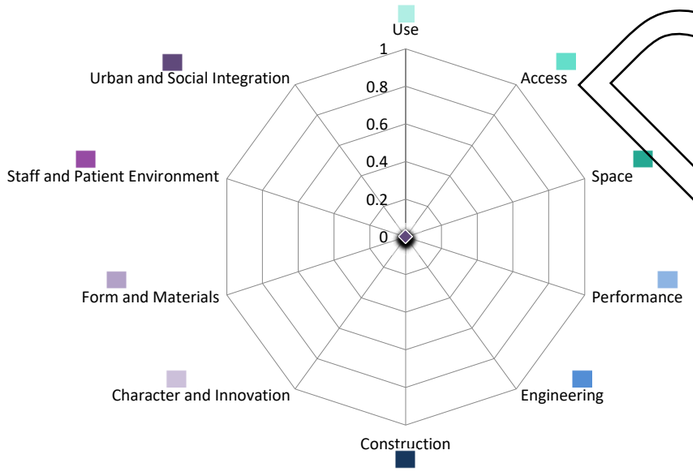
Character and Innovation	Weight	Score	Notes
G.01 There are clear ideas behind the design of the building and grounds	1	5	
G.02 The building and grounds are interesting to look at and move around in	1	5	
G.03 The building, grounds and arts design contribute to the local setting	1	5	
G.04 The design appropriately expresses the values of the NHS	1	5	
G.05 The project is likely to influence future designs	1	5	
G.06 The design provides a clear strategy for future adaptation and expansion	1	5	
G.07 The building, grounds and arts design contribute to well being and a sustainable therapeutic strategy	1	5	
G.08 The benchmarks in the Design Statement in relation to CHARACTER & INNOVATION are met	2	5	

Form and Materials	Weight	Score	Notes
H.01 The design has a human scale and feels welcoming	1	5	
H.02 The design contributes to local microclimate, maximising sunlight and shelter from prevailing winds	1	5	
H.03 Entrances are obvious and logical in relation to likely points of arrival on site	1	5	
H.04 The external materials and detailing appear to be of high quality and are maintainable	1	5	
H.05 The external colours and textures seem appropriate and attractive for the local setting	1	5	
H.06 The design maximises the site opportunities and enhances a sense of place	1	5	
H.07 The benchmarks in the Design Statement in relation to FORM & MATERIALS are met	2	5	

Staff and Patient Environment	Weight	Score	Notes
I.01 The design reflects the dignity of patients and allows for appropriate levels of privacy	1	5	
I.02 The design maximises the opportunities for daylight/ views of green natural landscape or elements	1	5	
I.03 The design maximises the opportunities for access to usable outdoor space	1	5	
I.04 There are high levels of both comfort and control of comfort	1	5	
I.05 The design is clearly understandable and wayfinding is intuitive	1	5	
I.06 The interior of the building is attractive in appearance	1	5	
I.07 There are good bath/ toilet and other facilities for patients	1	5	
I.08 There are good facilities for staff with convenient places to work and relax without being on demand	1	5	
I.09 There are good opportunities for staff, patients, visitors to use outdoors to recuperate/ relax	1	5	
I.10 The benchmarks in the Design Statement in relation to STAFF & PATIENT ENVIRONMENTare met	2	5	

Urban and Social Integration	Weight	Score	Notes
J.01 The height, volume and skyline of the building relate well to the surrounding environment	1	5	
J.02 The facility contributes positively to its locality	1	5	
J.03 The hard and soft landscape contribute positively to the locality	1	5	
J.04 The design contributes to being a good neighbour and is sensitive to neighbours and passers- by	1	5	
J.05 There is a clear vision behind the design, its setting and outdoor spaces	1	5	
J.06 The benchmarks in the Design Statement in relation to INTEGRATION are met	2	5	

AEDET Refresh POE Summary



Target	Progress	
	Prev	Curr
4.2 Use	0.0	0.0
4.3 Access	0.0	0.0
4.2 Space	0.0	0.0
4.2 Performance	0.0	0.0
3.4 Engineering	0.0	0.0
4.0 Construction	0.0	0.0
4.2 Character and Innovation	0.0	0.0
4.3 Form and Materials	0.0	0.0
4.2 Staff and Patient Environment	0.0	0.0
4.3 Urban and Social Integration	0.0	0.0

Weighting	=	Target
2	= >	5 - 6
1	>	3 - 4
0	<	3

	AEDET Criteria		POE Function and Effectiveness		Design Statement	Questionnaire
	Functionality					
Ref:	**Use**	**Ref:**		**Ref:**		
A.01	The prime functional requirements of the brief are satisfied	U1	How well do functional requirements of the facility met with the brief?	All	Design statement review output. See proposed evaluation methodology	
A.02	The design facilitates the care model	U2	How well does the building express and facilitate the healthcare philosophy of the Board?	2.5	The facility must have the flexibility to manage different service patterns, changes in throughput of services and to develop better services.	
A.03	Overall the design is capable of handling the projected throughput	U3	How well does the building manage peak time user demands?			
A.04	Workflows and logistics are arranged optimally	U4	How well does the building work in terms of arrangement to minimize travel distances?	1.6	Routes around the building – both to, from and between appointments/ testing/therapy - must be simple, efficient and pleasant to use, reducing stress and likelihood of people becoming lost, supporting patients to retain their independence and control.	
A.05	The design is sufficiently flexible to respond to clinical change and to enable expansion					
A.06	Where possible spaces are standardized and flexible in use patterns	U5	How well does the building deal with flexibility of use?	2.5	The facility must have the flexibility to manage different service patterns, changes in throughput of services and to develop better services.	
A.07	The design facilitates both security and supervision	U6	How well does the building and its grounds facilitate good security and supervision?			
A.08	The design facilitates health promotion and equality for staff, patients and local community					
A.09	The design is sufficiently adaptable to external change e.g. Climate / Technology.	U7	How well is the building allowing adaptability to support change?	2.5	The facility must have the flexibility to manage different service patterns, changes in throughput of services and to develop better services.	
A.10	The benchmarks in the Design Statement in relation to building USE are met.			All	Design statement review output. See proposed evaluation methodology	
	Access					
B.01	There is good access from available public transport including any on-site roads	AC5	How well can occupants and visitors access the facility / building using public transport?	1.2	Reference to arrival and requirements for bus stop(s) in close proximity.	Question - see draft questionnaire
B.02	There is adequate parking for visitors / staff cars / disabled people	AC6	How sufficient is car parking for [visitors, staff and disabled users]?	1.2	Reference to arrival and requirements for car parking in close proximity.	Question - see draft questionnaire
B.03	The approach and access for ambulances is appropriately provided	AC7	How well can ambulances approach and access the facility / building?			
B.04	Service vehicle circulation is good and does not inappropriately impact on users and staff	AC3	How well can staff move around to facilitate their tasks?			
B.05	Pedestrian access is obvious, pleasant and suitable for wheelchair disabled / impaired sight patients	AC9	Pedestrian access routes [are they obvious, pleasant and suitable for wheelchair users and people with other disabilities / impaired sight];			Question - see draft questionnaire
		AC1	How well can occupants and visitors gain access to the building?			Question - see draft questionnaire
B.06	Outdoor spaces wherever appropriate are useable, with safe lighting indicating paths, ramps, steps, etc.					
B.07	Active travel is encouraged and connections to local green routes and spaces enhanced	AC10	How well does the solution facilitate active travel?			Question - see draft questionnaire
B.08	Car parking and drop-off should not visually dominate entrances or green routes	AC8	How well does service vehicle circulation work [consider impact on staff and service user experience]?			

	AEDET Criteria		POE Function and Effectiveness		Design Statement	Questionnaire
		AC2	How well can occupants and visitors move around the building?			
B.09	The benchmarks in the Design Statement in relation to building ACCESS are met.			All	Design statement review output. See proposed evaluation methodology	
	Space					
C.01	The design achieves appropriate space standards	SP1	Does the building have appropriate space standards?			
C.02	The ratio of usable space to the total area is good	SP2	Does the building have a good ratio of usable to total space?			
C.03	The circulation distances travelled by staff, patients and visitors are minimised by the layout	SP3	Does the building have good circulation space?			
C.04	Any necessary isolation and segregation of spaces is achieved	SP4	Does the building adequately create appropriate isolation / segregation spaces?			
C.05	The design maximises opportunities for space to encourage informal social interaction & wellbeing	SP5	Do spaces encourage informal social integration and well being?			
C.06	There is adequate storage space	SP6	Is there adequate storage space?			
C.07	The grounds provide spaces for informal / formal therapeutic health activities	SP7	Do external spaces allow for suitable informal and formal therapeutic activities?			
C.08	The relationships between internal spaces and the outdoor environment work well together					
		SP8	Any additional comments from FM Team / End User representatives?			
C.09	The benchmarks in the Design Statement in relation to building SPACE are met.			All	Design statement review output. See proposed evaluation methodology	
	Build Quality					
	Performance					
D.01	The building and grounds are easy to operate	Wa1	How well does the building allow ease of operation?			
D.02	The building and grounds are easy to clean and maintain	Wa2	How well does the building allow ease of cleaning and maintenance?			
D.03	The building and grounds have appropriately durable finishes and components	Wa3	How durable are the finishes and components?			
D.04	The building and grounds will weather and age well					
D.05	Access to daylight, views of nature and outdoor space are robustly detailed	Wa4	How well does the building provide access to daylight, views of the outdoors?			
D.06	The design maximises the opportunities for sustainability eg. Waste reduction and biodiversity	Wa5	How well does the building maximise sustainable opportunities?			
D.07	The design minimises maintenance and simplifies this where it will be required.					
		Wa6	How well does the building deal with HAI issues?			
D.08	The benchmarks in the Design Statement in relation to building PERFORMANCE are met.			All	Design statement review output. See proposed evaluation methodology	
	Engineering					
E.01	The engineering systems are well designed, flexible and efficient in use	Eg1	How effective / flexible are the buildings engineering systems?			
E.02	The engineering systems exploit any benefits from standardisation and prefabrication where relevant	Eg2	How well has the building exploited standardisation and prefabrication?			
E.03	The engineering systems are energy efficient					
E.04	There are emergency backup systems that are designed to minimise disruption	Eg3	How effective are emergency back up systems?			
E.05	During construction disruption to essential services is minimised					

	AEDET Criteria		POE Function and Effectiveness		Design Statement	Questionnaire
E.06	During maintenance disruption to essential healthcare services is minimised	Eg4	How effective is the building in facilitating maintenance and replacement systems without disrupting service delivery?			
		AC4	How well can FM staff get access to key areas for maintenance activities?			
		Eg6	How easy is it to access engineering systems?			
E.07	The design and layout contributes to efficient zoning and energy use reduction	Eg5	How effective is the buildings zoning in terms of maximising energy efficiency?			
	Construction					
F.01	If phased planning and construction is necessary the various stages are well organised					
F.02	Temporary construction work is minimised					
F.03	The impact of the construction process on healthcare provision is minimised	Cn1	How well did the construction process minimise any disruption of service?			
F.04	The building and grounds can be readily maintained					
F.05	The construction is robust	Cn3	Robustness of construction - joints, interfaces and materials			
F.06	Construction allows easy access to engineering systems for maintenance, replacement and expansion					
F.07	The construction exploits any benefits from standardisation and prefabrication where relevant					
F.08	The construction maximises the opportunities for sustainability eg. Waste and traffic reduction					
F.09	The construction contributes to being a 'good neighbour'					
F.10	Infection control risks for options, design and construction are recorded / minimised using HAI Scribe	Cn2	Minimisation of HAI risks during the construction process			
	Impact					
	Character and Innovation					
G.01	There are clear ideas behind the design of the building and grounds	Ci1	Does the building lift the spirits of occupants and visitors?			Question - see draft questionnaire
G.02	The building and grounds are interesting to look at and move around in	Ci2	Is the building and its grounds interesting to look at?			Question - see draft questionnaire
		Ci3	Is the building and its grounds interesting to walkaround?			Question - see draft questionnaire
G.03	The building, grounds and arts design contribute to the local setting	Ci4	Is the building and its grounds sensitive to its local environment?			
G.04	The design appropriately expresses the values of the NHS	Ci6	Do the building and its grounds provide a strong and positive image?			
G.05	The project is likely to influence future healthcare designs					
G.06	The design provides a clear strategy for future adaptation and expansion					
G.07	The building, grounds and art design contribute to well being and a sustainable therapeutic strategy	Ci5	Do the building and its grounds provide spaces of therapeutic value?			
G.08	The benchmarks in the Design Statement in relation to building CHARACTER and INNOVATION are met.			All	Design statement review output. See proposed evaluation methodology	
	Form and Materials					
H.01	The design has a human scale and feels welcoming	Fm1	Is the building of a human scale and feel welcoming?			
H.02	The design contributes to the local microclimate, maximising sunlight and shelter from prevailing winds	Fm2	Does the buildings maximise sunlight and shelter?			
H.03	Entrances are obvious and logical, in relation to likely points of arrival on site	Fm3	Are the buildings entrances and entry points logical?			

	AEDET Criteria		POE Function and Effectiveness		Design Statement	Questionnaire
H.04	The external materials and detailing appear to be of high quality and are maintainable					
H.05	The external colours and textures seem appropriate and attractive for the local setting	Fm4	Are the buildings colours and textures appropriate and or attractive?			
H.06	The design maximises the site opportunities and enhances a sense of place	Fm5	Does the building and its landscape enhance the sense of place and overall setting?			
H.07	The benchmarks in the Design Statement in relation to building CHARACTER and INNOVATION are met.			All	Design statement review output. See proposed evaluation methodology	
	Staff and Patient Environment					
I.01	The design respects the dignity of patients and allows for appropriate levels of privacy	Sp4	How effective is the building in respecting the dignity of patients and allowing for appropriate levels of privacy and company?	1.6-1.8	Routes and clinical spaces specifying requirements for privacy, choice, etc.	Question - see draft questionnaire
		Sp1	How positive was the patient experience of using the building and its grounds?			Question - see draft questionnaire
		Sp2	How positive was the visitor / friends and family experience of using the building and its grounds?			Question - see draft questionnaire
I.02	The design maximises opportunities for daylight/ views of green natural landscape elements	Sp5	Does the building maximise opportunities for daylight or natural landscape views?			
I.03	The design maximises opportunities for access to usable outdoor space	Sp3	How positive was the staff experience of using the building and its grounds?			
I.04	There are high levels both of comfort and control of comfort	SP6	Does the building provide high levels comfort [temperature / air quality etc] and control of comfort?			
I.05	The design is clearly understandable and wayfinding is intuitive	SP7	Is the building intuitive to navigate and understand?	1.6	Routes in and around the building	
I.06	The interior of the building is attractive in appearance	SP8	Does the building have an attractive interior appearance?			Question - see draft questionnaire
I.07	There are good bath/ toilet and other facilities for patients	SP11	How positive was the patient experience of bath / toilet facilities?			Question - see draft questionnaire
I.08	There are good facilities for staff, including convenient places to work and relax without being on demand	SP12	How positive is the staff assessment of facilities, a convenient place to work and relax?	2.1	Coming to work must be convenient, inspiring and help you feel part of something big and important.	
I.09	There are good opportunities for staff, patients and visitors to use outdoors to recuperate / relax					
		SP9	Does the building have suitable seating and resting areas?			Question - see draft questionnaire
		SP10	How appropriate were the reception and check in areas?	1.1-1.5	Refer to Design Statement Sections 1.1-1.5 relating to booking systems, arrival experience on site, entrance, reception, etc.	Question - see draft questionnaire
		SP13	How positive is the patient, visitors and staff experience of outdoor spaces?			Question - see draft questionnaire
		SP14	How safe do patients, visitors and staff feel when using the building?			Question - see draft questionnaire
I.10	The benchmarks in the Design Statement in relation to building STAFF & PATIENT ENVIRONMENT are met.			All	Design statement review output. See proposed evaluation methodology	
	Urban and Social Integration					
J.01	The height, volume and skyline of the design relate well to its setting					
J.02	The facility contributes positively to its locality	Sn1	How well does the buildings contribute positively to its locality?			
J.03	The hard and soft landscape contribute positively to the surrounding environment	Sn2	How well does the hard and soft landscaping contribute to its locality?			
J.04	The design contributes to being a good neighbour and is sensitive to neighbours and passers by	Sn3	How sensitive is the building and its grounds to its neighbours?			

	AEDET Criteria		POE Function and Effectiveness		Design Statement	Questionnaire
J.05	There is a clear vision behind the design, its setting and outdoor spaces					
J.06	The benchmarks in the Design Statement in relation to building INTEGRATION are met.			All	Design statement review output. See proposed evaluation methodology	

	Questionnaire	Score						Comments and Observations
		1	2	3	4	5	6	
Ref:		Poor	Fair	Average	Good	V.good	Excellent	
B.01	How good is accessibility to the NTC using public transport?							
B.02	How sufficient do you think car parking is for people of all needs?							
B.05 / AC1	How good are the access routes and entrance to the NTC for people of all needs?							
B.07	How well does access to the facility work for active travel? Walking, running, cycling, scooting, etc.							
G.01/G.02	How good do you think the design of the building and grounds is?							
I.01	How good do you think the design of the building respects patient dignity and allows privacy where required?							
Sp1 / Sp2	How would you rate your experience of using the building and its grounds?							
	See above							
I.06	How attractive do you think the interior of the building is?							
I.07	Can you please rate your experience of using toilet and shower facilities as relevant?							
SP9	How suitable are the seating and resting facilities?							
SP10	Can you please rate your experience of using the reception and check-in facilities?							
SP13	How would you rate your overall experience of using the outdoor spaces? Including Arriving on site and your route to the front door.							
SP14	How would you rate the level of safety you felt when using the building?							

APPENDIX E - Project Cost Monitoring

Project Cost Monitoring

Capital / Equivalent Investment Cost Monitoring Form:

Project Title:	NTC-Highland			
Floor Area (GIA):	6,926			
	IA	OBC	FBC	Actual
Construction Cost	14,847,667	16,783,721	32,819,447	35,800,735
Design Fees	1,781,720	2,014,046	-	-
Advisor Fees	742,383	839,186	-	-
Statutory Fees and Surveys	75,000	75,000	-	-
Total Fees	-	-	2,303,631	2,311,131
Equipment	2,227,150	2,517,558	1,700,000	3,591,679
Risk	2,951,088	3,334,427	4,944,161	0
Inflation	864,275	2,878,499	-	-
Total Costs:	**23,489,283**	**28,442,437**	**49,135,636**	**49,805,304**
Site acquisition:	900,000	900,000	1,340,000	1,334,111
UHI/HIE Reimbursement	-	-	-581,519	-575,951
VAT	4,193,036	5,117,841	6,028,397	6,767,648
Total Development Costs:	**25,582,319**	**34,460,278**	**48,554,117**	**49,229,353**

There are several reasons for cost changes between each stage, and a sample of these is listed below:

- The clinical brief, and project brief is not very well defined at Initial Agreement stage, therefore the cost estimates can only be viewed as estimates, with several assumptions across each aspect of the project.
- Area of the building changes during each stage as clinical requirements are defined and approved.
- Costs change as the brief and scope of the project evolves during each design stage.
- Inflation allowances change over time.
- Assessment of risk changes as the project develops, and in line with market conditions and macro-economic factors.

- Unforeseen events such as the Covid-19 pandemic, and the war in Ukraine have caused delays and increased material costs.
- Unforeseen additional costs are incurred through Planning Conditions relating to off-site matters e.g., Active Travel routes.
- Additional costs are incurred through the NHS Assure Assurance processes e.g., additional electricity generators included for resilience.
- Additional costs through prolongation of the construction duration.

Operational Revenue Cost Monitoring Form:

Project Title:	**NTC-Highland**			
Floor Area (GIA):	6,926			
	Existing	**OBC**	**FBC**	**Actual**
Clinical Services staff costs:	2,182,180.83	8,149,676.67	9,089,572.50	5,780,877.50
Additional itemised costs:	-	-	-	-
Non-Clinical Services staff costs:	691,673.33	2,499,686.67	2,399,345	2,510,138.33
Additional itemised costs:	-	-	-	-
Building occupancy / running costs:	2,996,796.67	6,033,491.67	4,846,617.50	4,345,373.33
Additional itemised costs:	-	-	-	-
Income contribution / costs:	-	-	-	107,158.33
Other recurring costs:	-	-	-	-
Additional itemised costs:	-	-	-	-
Allowance for Optimism Bias	-	-	-	-
Total Cost before VAT:	5,870,650.83	16,682,855.01	16,335,535	12,743,547.49
VAT:	1,174,130.17	3,336,571	3,267,107	2,548,709.50
Total Estimated / Actual Cost:	7,044,781	20,019,426.01	19,602,642	15,292,256.99

Construction Cost Plan:

	ELEMENT	Element				
		Total Cost £	Cost per m² GIFA	Unit Quantity		Unit Rate
1	SUBSTRUCTURE	1,112,827.30	133.99		m²	
2	SUPERSTRUCTURE					
2.1	Frame	1,558,569.84	187.67		m²	
2.2	Upper Floors	320,783.31	38.63		m²	
2.3	Roof	778,824.33	93.78		m²	
2.4	Stairs and Ramps	223,770.80	26.94		Nr	
2.5	External Walls	1,190,957.15	143.40		m²	
2.6	Windows and External Doors	569,279.08	68.55		m²	
2.7	Internal Walls and Partitions	1,652,703.06	199.00		m²	
2.8	Internal Doors	1,407,090.19	169.43		Nr	
	Total Superstructure	7,701,977.76	927.40			
3	INTERNAL FINISHES					
3.1	Wall Finishes	624,604.77	75.21		m²	
3.2	Floor Finishes	419,669.85	50.53		m²	
3.3	Ceiling Finishes	600,757.32	72.34		m²	
	Total Internal Finishes	1,645,031.94	198.08			
4	FITTINGS, FURNISHINGS AND EQUIPMENT	1,777,677.82	214.05		m²	
5	SERVICES					
5.1	Sanitary Installations	264,883.27	31.89		Nr	
5.2	Services Equipment		-		Nr	
5.3	Disposal Installations	168,483.46	20.29		Nr	
5.4	Water Installations	596,835.55	71.86		m²	
5.5	Heat Source	640,885.44	77.17		kW	
5.6	Space Heating and Air Conditioning	573,782.07	69.09		m²	
5.7	Ventilation Systems	1,327,442.79	159.84		m²	
5.8	Electrical Installations	1,536,273.80	184.98		m²	
5.9	Fuel Installations	959.71	0.12		m²	
5.10	Lift and Conveyor Installations	268,898.57	32.38		Nr	
5.11	Fire and Lightning Protection	1,045,609.72	125.90		m²	
5.12	Communications, Security, and Control Installations	906,180.46	109.11		m²	
5.13	Specialist Installations	1,403,971.62	169.05		m²	
5.14	Builders Work in Connection with Services	238,546.37	28.72		m²	
	Total Services	8,972,752.83	1,080.40			
6	PREFABRICATED BUILDING AND BUILDING UNITS	-	-	n/a	m²	n/a
7	WORK TO EXISTING BUILDING	-	-	n/a		n/a
7.1	Minor Demolition and Alteration Works	-		n/a	m²	n/a
	Total Work to Existing Building	-		n/a		n/a

	ELEMENT	Element				
		Total Cost £	Cost per m² GIFA	Unit Quantity		Unit Rate
	BUILDING SUB-TOTAL	21,210,267.65	2,553.92			
8	EXTERNAL WORKS					
8.1	Site Preparation Works	495,010.08	59.60		m²	
8.2	Roads, Paths, Pavings and Surfacings	921,757.37	110.99		m²	
8.3	Soft Landscaping, Planting and Irrigation Systems	299,784.00	36.10		m²	
8.4	Fencing, Railings and Walls	300,295.53	36.16		m²	
8.5	External Fixtures	198,829.93	23.94		m²	
8.6	External Drainage	573,209.63	69.02		m²	
8.7	External Services	720,041.27	86.70		m²	
8.8	Minor Building Works and Ancillary Buildings	102,577.50	12.35		m²	
	Total External Works	3,611,505.31	434.86			
0	FACILITATING WORKS					
0.1	Toxic/Hazardous/Contaminated Material Treatment	-	0.00		m²	
0.2	Major Demolition Works	-	0.00		m²	
0.3	Temporary Support to Adjacent Structures	-	0.00		m²	
0.4	Specialist Ground Works	-	0.00		m²	
0.5	Temporary Diversion Works	-	0.00		m²	
0.6	Extraordinary Site Investigation	-	0.00		m²	
	Total Facilitating Work	-	£-			
9	MAIN CONTRACTOR'S PRELIMINARIES	4,914,264.18				
10	MAIN CONTRACTOR'S OVERHEAD & PROFIT	2,409,827.91				
	TOTAL CONSTRUCTION / INVESTMENT COST* (excluding contingencies and fees)	32,145,865.05	£2,988.78			
11	PROJECT / DESIGN TEAM FEES					
12	OTHER DEVELOPMENT / PROJECT COSTS	2,869,246.82				
13	QUANTIFIED CONSTRUCTION RISK	-				
	TOTAL CONTRACT / PROJECT COST	785,623.51				

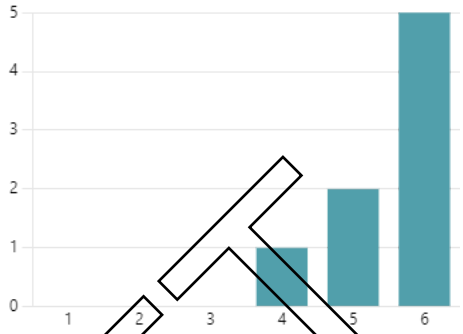
APPENDIX F – Service User Survey Results

National Treatment Centre - Highland

19 Responses | 00:56 Average time to complete | Active Status

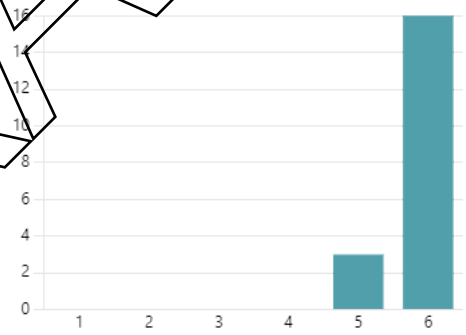
1. How good is accessibility to the NTC-H using public transport?

5.50
Average Rating



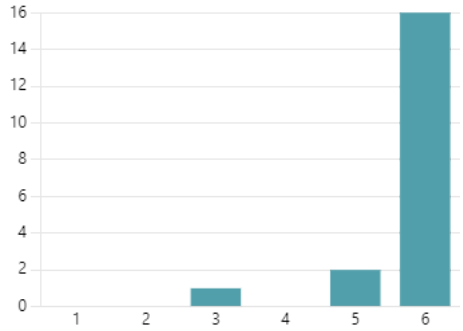
2. How sufficient do you think car parking is for people of all needs?

5.84
Average Rating



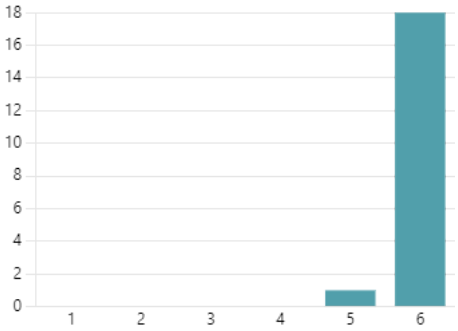
3. How good are the access routes and entrance to the NTC-H for people of all needs?

5.74
Average Rating



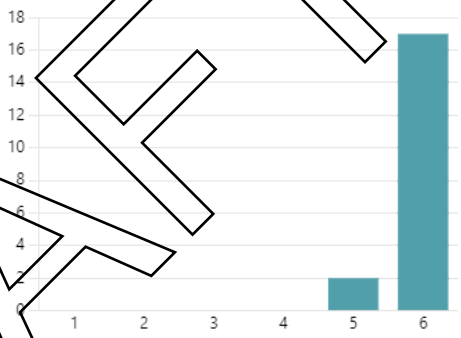
4. How good do you think the design of the building and grounds is?

5.95
Average Rating



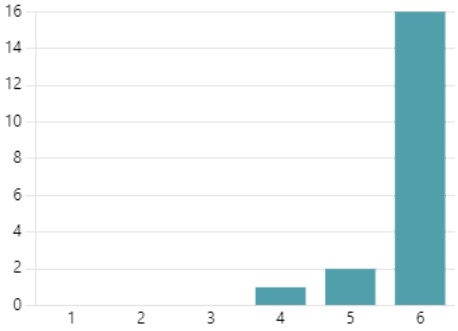
5. How good do you think the design of the building respects patient dignity and allows privacy where required?

5.89
Average Rating



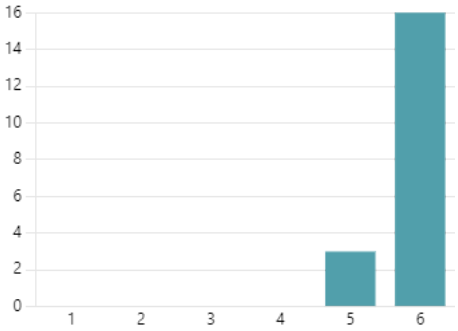
6. How would you rate your experience of using the building and its grounds?

5.79
Average Rating



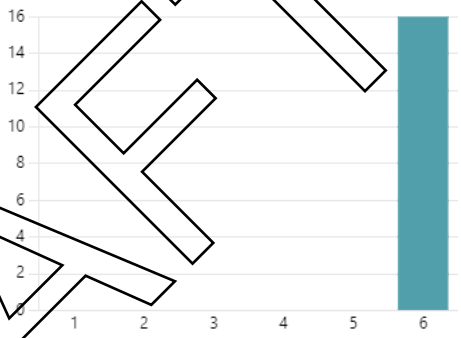
7. How attractive do you think the interior of the building is?

5.84
Average Rating



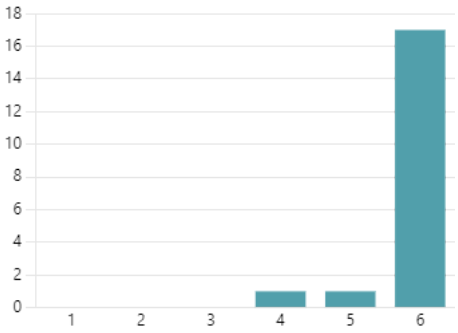
8. Can you please rate your experience of using the toilet facilities?

6.00
Average Rating



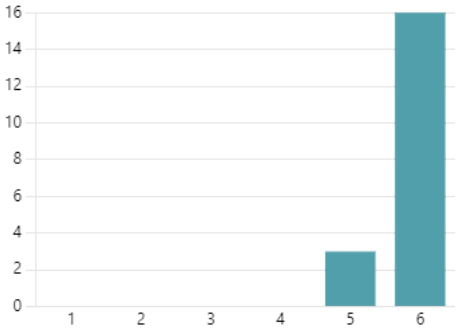
9. How suitable are the seating and resting facilities?

5.84
Average Rating



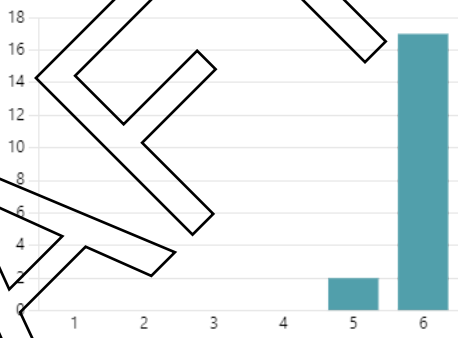
10. Can you please rate your experience of using the reception and check-in facilities?

5.84
Average Rating



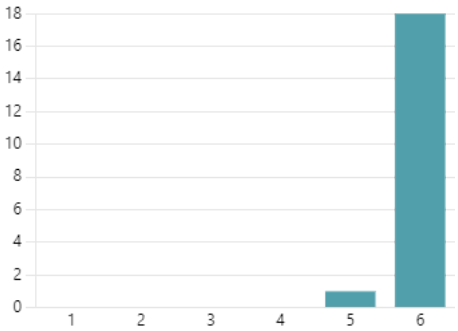
11. How would you rate your overall experience of using the outdoor spaces? Including arriving on site and your route to the front door.

5.89
Average Rating



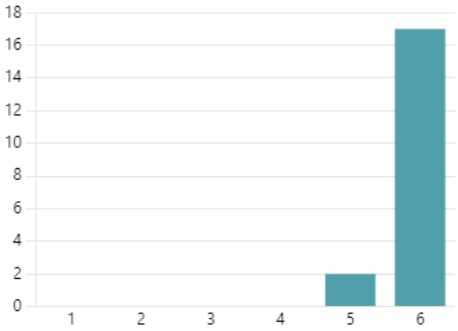
12. How would you rate the level of safety you felt when using the building?

5.95
Average Rating



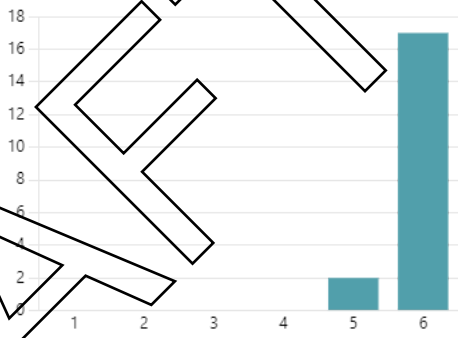
13. How would you rate your experience of the NTC-H teams?

5.89
Average Rating



14. How would you rate your overall experience of the NTC-H?

5.89
Average Rating



15. Is there anything else you would like to add about your experience at the NTC-H?

19
Responses

Latest Responses

"*No.*"

"*No*"

"*I felt as though I won the lotto being admissioned here. This was a fantastic ...*

3 respondents (**16**%) answered **staff** for this question.

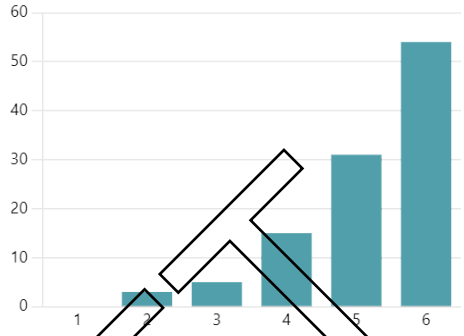
APPENDIX G – Team Survey Results

National Treatment Centre - Highland

108 Responses | 07:22 Average time to complete | Active Status

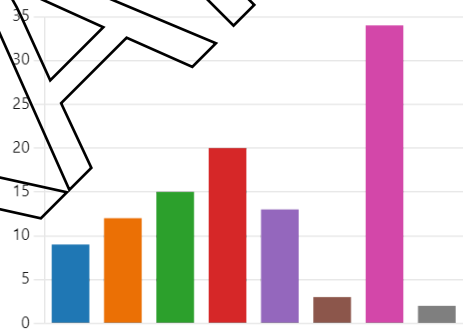
1. How sufficient do you think car parking is for people of all needs?

5.19
Average Rating



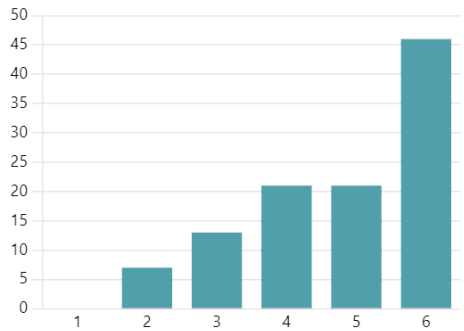
2. How good is accessibility to the NTC using public transport?

1 - Poor	9
2 - Fair	12
3 - Average	15
4 - Good	20
5 - Very Good	13
6 - Excellent	3
N/A	34
Very good	2



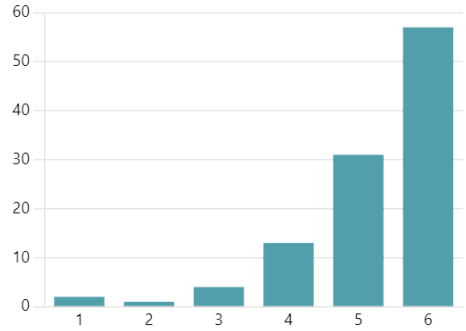
3. How good are the access routes and entrance to the NTC-H for people of all needs?

4.80
Average Rating



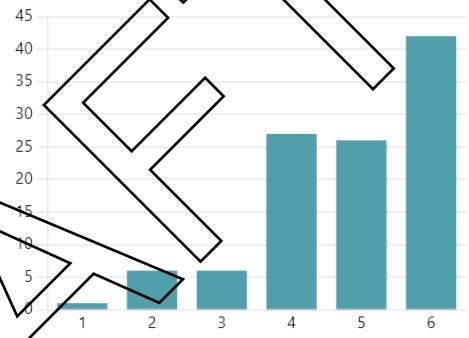
4. How well does access to the facility work for active travel? Walking, running, cycling, scooting, etc.

5.23
Average Rating



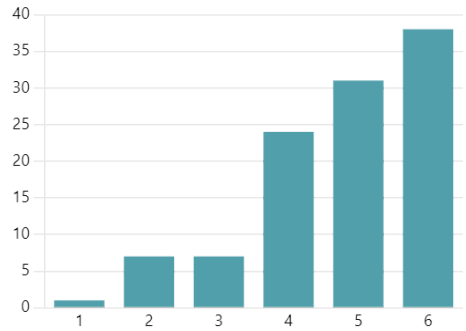
5. How good do you think the design of the building and grounds are?

4.82
Average Rating



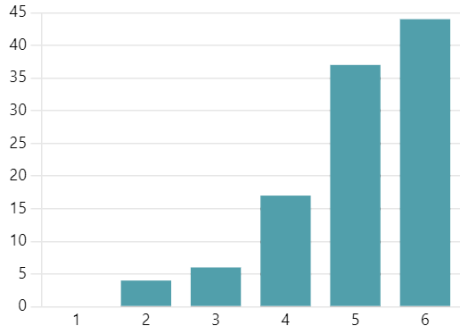
6. How good do you think the design of the building respects your dignity and allows privacy where required?

4.77
Average Rating



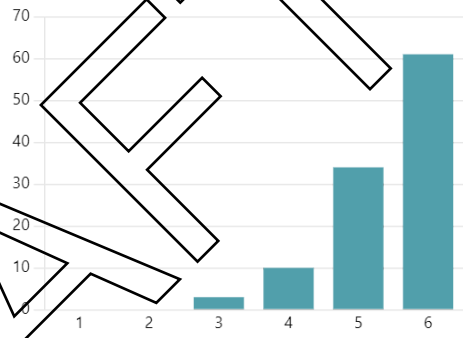
7. How would you rate your experience of using the building and its grounds?

5.03
Average Rating



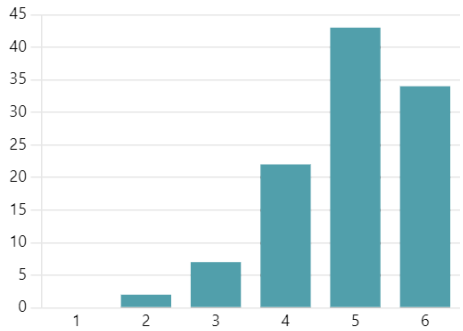
8. How attractive do you think the interior of the building is?

5.42
Average Rating



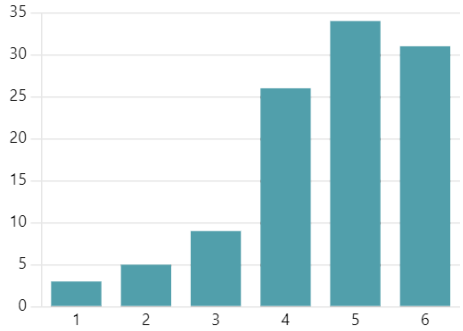
9. Can you please rate your experience of using toilet and shower facilities as relevant?

4.93
Average Rating



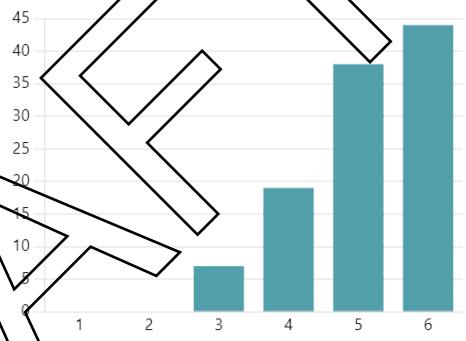
10. How suitable are the seating and resting facilities?

4.63
Average Rating



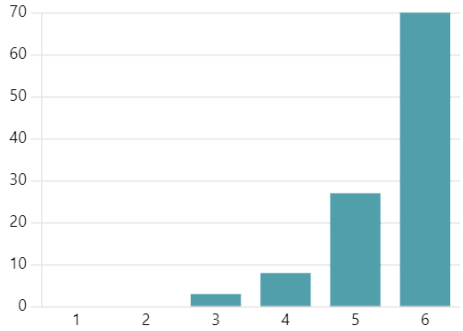
11. How would you rate your overall experience of using the outdoor spaces? Including arriving on site and your route to the team entrance.

5.10
Average Rating



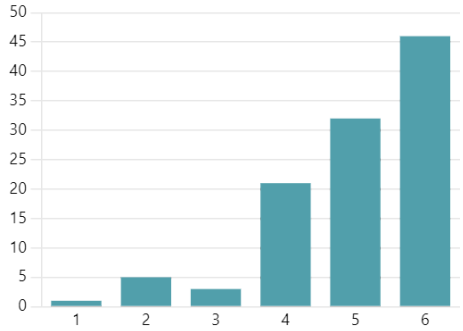
12. How safe do you feel when working within the NTC-H?

5.52
Average Rating



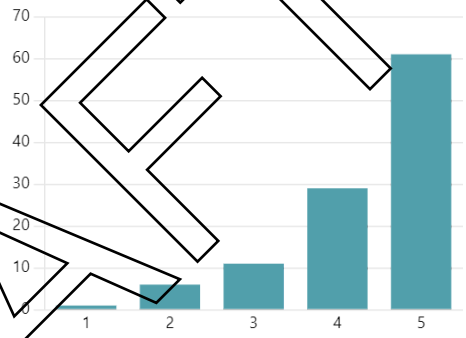
13. How would you rate your experience of working in the NTC-H in year one?

5.00
Average Rating



14. Overall, how happy are you working within the NTC-H?

4.32
Average Rating



15. Is there anything that could have been done differently to improve your working experience?

108
Responses

Latest Responses

"Generally there are few/no lockers available. "

"Better transport for patients who travel by Bus The building was designed o...

"Happy!"

22 respondents (**20**%) answered **staff** for this question.

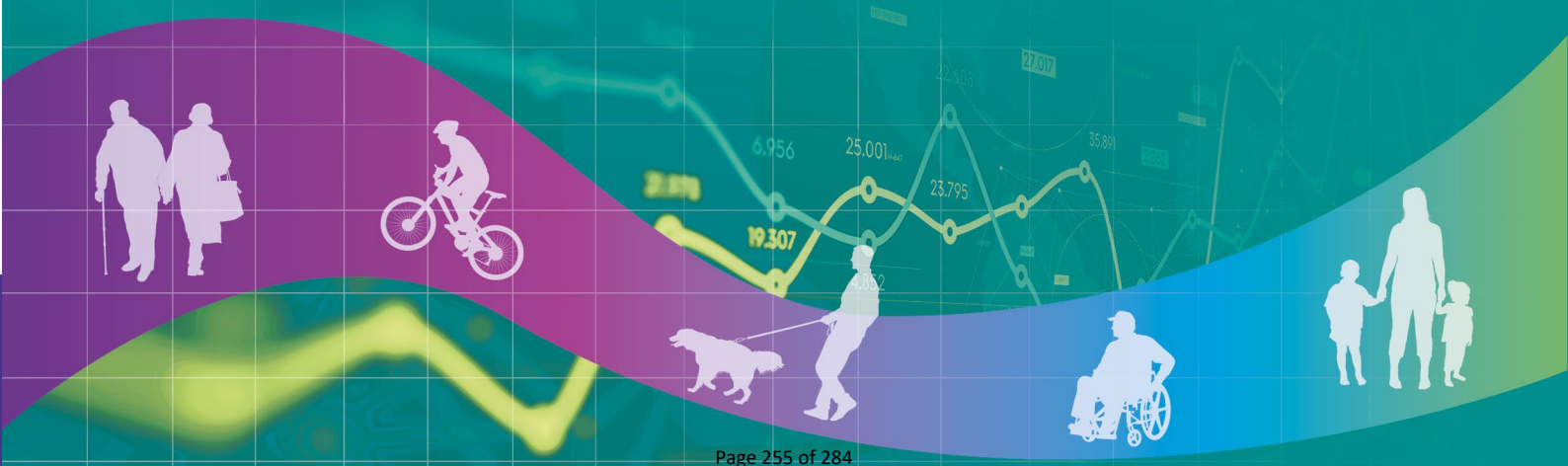
APPENDIX H - Scottish Arthroplasty National Report/ ERAS

Public Health Scotland

Scottish Arthroplasty Project National report 2024

A Management Information release for Scotland

Publication date: 6 August 2024



Translations and other formats are available on request at:

phs.otherformats@phs.scot

0131 314 5300

Public Health Scotland is Scotland's national agency for improving and protecting the health and wellbeing of Scotland's people.

www.publichealthscotland.scot

This is a Management Information publication

Published management information are non-official statistics which may be in the process of being transitioned into official statistics. They may not comply with the UK Statistics Authority's Code of Practice with regard to high data quality or high public value but there is a public interest or a specific interest by a specialist user group in accessing these statistics as there are no associated official statistics available.

Users should therefore be aware of the aspects of data quality and caveats surrounding these data, all of which are listed in this document.

Find out more about Management Information on the **UK Statistics Authority website**.

Contents

Introduction

The committee of the Scottish Arthroplasty Project (SAP) would like to thank their colleagues across Scotland, who continue to support the ongoing work of the SAP. The 2024 report presents data on the outcomes of joint replacement surgery across Scotland and includes data from the calendar year 2023. The report is backed up by an accompanying release, examining certain aspects of the full report in more detail.

Overall activity shows that the volume of primary hip replacements is at the same level as 2019 and for primary total knee replacement this is approaching the same volume but remains lower. This demonstrates that the decreased activity since 2020 onwards, related to the COVID-19 pandemic, shows recovery towards pre-pandemic levels. This reflects work done by all NHS boards across Scotland to restore activity for planned essential arthroplasty operations and includes the opening of 2 national treatment centres (NTCs) in NHS Highland and Fife. With the increase in procedures being carried out, it is re-assuring to note that the 90-day mortality after primary hip and knee arthroplasty remains similar to 2022. Comparisons of the inpatient length of stay in this year's data show an ongoing reduction compared with figures pre-2020.

A significant volume of hip and knee arthroplasty procedures were carried out in the independent sector during 2023, however there does not appear to be a significant increase in volume compared with 2022, with the proportion of NHS patients treated in the independent sector decreasing.

The 2024 report includes for the first time, a joint analysis with the Arthroplasty Rehabilitation In Scotland Endeavour (ARISE) project providing granular data on the arthroplasty procedures carried out. This allows comparison of units and procedures to help improve both standardisation and quality of the procedures carried out across Scotland.

The core role of the SAP, since it started 20 years ago, is to provide individual feedback to surgeons on their patient outcomes from joint replacement surgery. All surgeons have access to their own 'live' data through the Public Health Scotland (PHS) website. This allows surgeons to track their cases and audit their own results.

The SAP operates an early warning outlier notification system which is designed to detect runs of complications for surgeons. Surgeons are asked to reflect on the cases that have resulted in complications, discuss these cases with a colleague and identify any measures that might prevent further complications. The response is reviewed by the SAP committee and constructive feedback offered. We encourage surgeons to discuss outlier reports openly within their units so that colleagues may benefit from their reflection and systemic problems may be identified. This function of the SAP has continued through 2023 and the audit data collected by SAP have been moved from the existing Tableau software to R Shiny which should allow the report data to be presented via an efficient and easier to use interface.

The current SAP research fellows have worked hard, focusing on revision knee and hip replacement as well as looking at changes in the length of stay and waiting times over the past 20 years of the SAP data collection. They have submitted and presented their work to both national and international meetings. The fellowship programme is run by Mr Jon Clarke at the Golden Jubilee University National Hospital and enquiries from those interested in the fellowship should be directed to him or the SAP chair for further information.

Mr Phil Walmsley

Consultant Trauma & Orthopaedic Surgeon, NHS Fife

Chair, Scottish Arthroplasty Project

SAP steering committee members

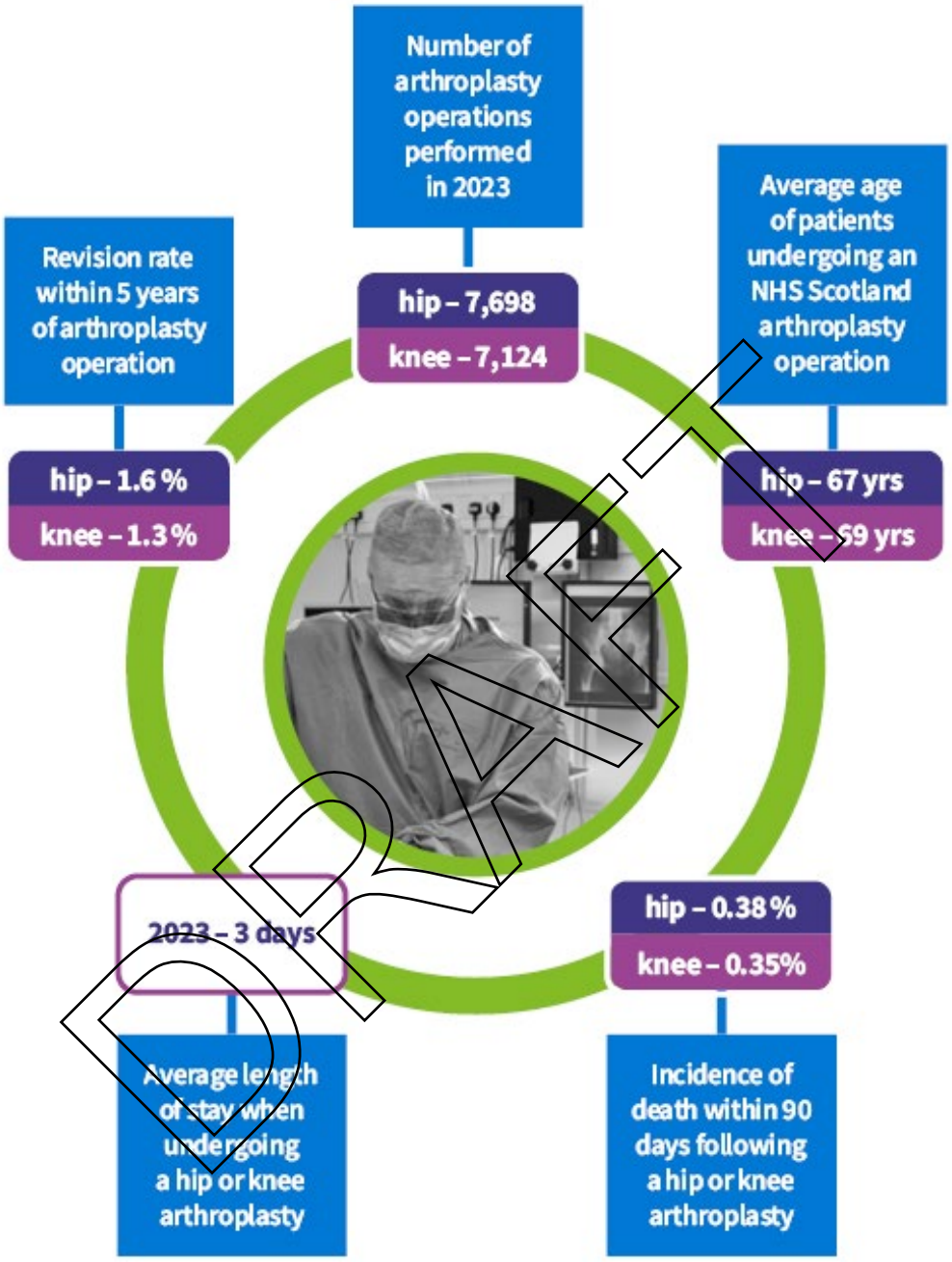
Name	Organisation	Role
Phil Walmsley	NHS Fife	**Chair**, SAP Orthopaedic consultant
Alan Howieson	NHS Forth Valley	**Vice chair**, SAP Orthopaedic consultant
Karen Adam	Scottish Government	Trauma & orthopaedic performance manager
Isaac Ahmed	NHS Lothian	Orthopaedic consultant
Stuart Baird	PHS	Service manager
Petros Boscainos	NHS Tayside	Orthopaedic consultant
Stephen Bridgman	PHS	Consultant in public health medicine
Andrew Brunt	Golden Jubilee University National Hospital	Clinical research fellow
Jon Clarke	Golden Jubilee University National Hospital	Orthopaedic consultant
Rutha Coventry	NHS Grampian	Anaesthetics consultant
Graham Dall	NHS Borders	Orthopaedic consultant
Hazel Dodds	PHS	Senior nurse
Luke Farrow	NHS Grampian	Clinical research fellow
Stephen Grant	NHS Lanarkshire	Orthopaedic consultant
Mark Jenkinson	NHS Greater Glasgow & Clyde	Orthopaedic consultant
Joe Lakey	PHS	Senior information analyst
Jane McKenna	Scottish Government	National performance lead for trauma & orthopaedics
David McDonald	Scottish Government	Head of programme
Matthew Moran	NHS Lothian	Orthopaedic consultant
Christopher Munro	NHS Grampian	Orthopaedic consultant
Graham Nicol	NHS Tayside	Orthopaedic consultant
Martin O'Neill	PHS	Principle information analyst

Craig Reston	NHS Highland	Orthopaedic consultant
Subodh Srivastava	NHS Dumfries & Galloway	Orthopaedic consultant
Andrew Stark	NHS Greater Glasgow & Clyde	Orthopaedic consultant
Kirsty Ward	PHS	National clinical coordinator
Peter Young	NHS Ayrshire & Arran	Orthopaedic consultant

Acknowledgement

The SAP Committee Steering Group would like to thank Mr Ken Hays for providing the number of hip and knee arthroplasties carried out in the Private Sector in Scotland in 2023.

Key points from 2024 annual report



Scottish National Audit Programme governance

The Scottish National Audit Programme (SNAP) governance process provides a framework for identifying where patient outcomes and performance may be significantly different in individual hospitals and mandates investigation to better understand why this may be the case. The responses from these investigations (for hospitals appearing more than three standard deviations (SD) from the Scottish mean), or a repeat two to three standard deviation, are included below each chart.

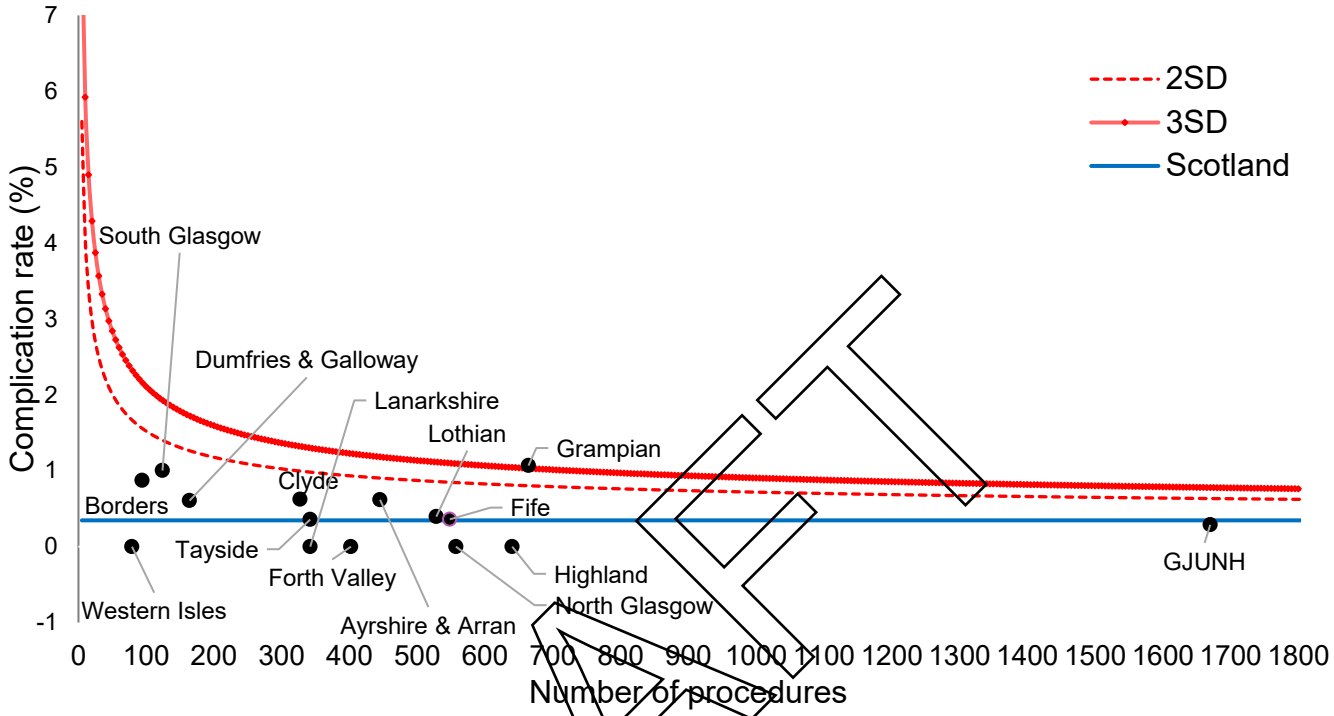
For more information regarding the SNAP governance policy please email the SNAP mailbox at **phs.snap@phs.scot**

The SAP has chosen to include complications for both primary hip and knee procedures in this process. These are:

- mortality within 90 days;
- infection within 1 year; and
- revision within 3 years.

The charts below show the outliers identified and as noted above through the SNAP governance process, individual NHS boards that have exceeded three SDs have been contacted and investigative reports and action plans for improvement have been received.

Figure 1a: Patients who died within 90 days of knee arthroplasty by NHS board of treatment



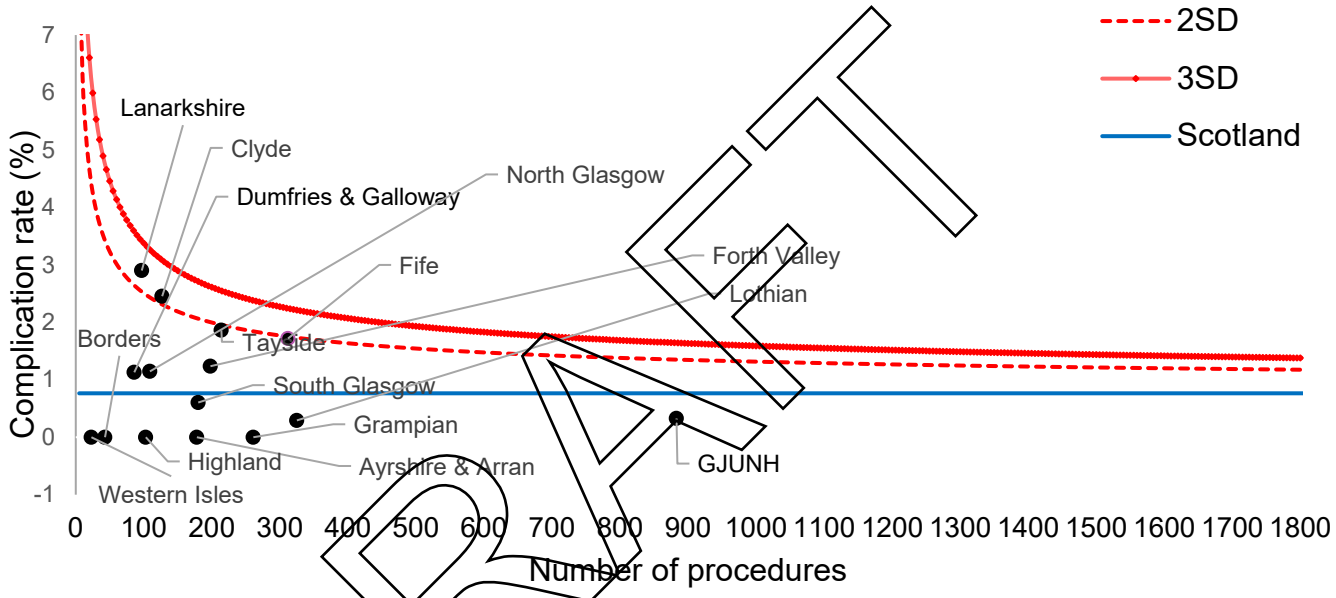
NHS Grampian response:

This is the first year of being an outlier for patients who died within 90 days of knee arthroplasty. This finding is not replicated for patients who died within 90 days of hip arthroplasty. Both cohorts of patients undergo identical pre-assessment checks prior to surgery, undertaken by the same nursing and anaesthetic team. Mortality related to two cases do not appear related to the primary knee replacement procedure. Mortality related to remaining cases appear related to the primary knee replacement. Local policies for elective procedures in relation to body mass index (BMI) should be discussed and upheld so that common practice is adhered to across sites.

Two of the cases were probably not directly related to the surgery as such and a reasonable gap followed the surgical date.

All of the cases had different surgeons across two separate sites (Woodend Hospital, Aberdeen and Dr Gray's Hospital, Elgin). There appear to be no common themes. One had a significant amount of comorbidities and developed an infection.

Figure 1b: Patients who had a knee revision within 3 years by NHS board of treatment



NHS Greater Glasgow and Clyde response:

None of the Clyde procedures were identified as particularly difficult. Two were performed by the same consultant. None of the revisions were due to loosening or implant failure. A common theme was revision due to infection, however all organisms isolated were different on each occasion.

It is also worth noting that Clyde is below the Scottish mean for knee infections within 1 year.

For all the SNAP Governance charts, please see the dashboard associated with this release.

Arthroplasty Rehabilitation In Scotland Endeavour

The arthroplasty rehabilitation in Scotland endeavour (ARISE) was formed following an initial consensus meeting held at the Royal College of Surgeons, Edinburgh in May 2019. The meeting was convened to help address variation in surgical and anaesthetic management with the aim of developing a national pathway for enhanced recovery after surgery (ERAS). The Consensus Statement for the Perioperative care in Total Hip and Total Knee Replacement[1] formed the basis of pathway.

The subsequent formation of the ARISE group has sought to lead pan Scotland development of ERAS pathways both by benchmarking outcomes (including mobilisation, length of stay and measures of return to normal function) but also sharing ideas and agreed minimum standards to help support units progress local pathways.

In 2022, the ARISE Perioperative Care Protocol for Same Day Primary Total Hip/ Knee or Unicompartmental Knee document was published detailing agreed standards including for example routine use of tranexamic acid and minimum 10mg of dexamethasone.

Since inception, the group has gradually grown to now have all NHS arthroplasty units in Scotland contribute data which should allow more powerful analysis in future. The group has witnessed the post pandemic challenges with patient flow, theatre, and staff shortages - however this is now mostly improving around the country.

For the first time in the SAP report, addition of the ARISE data enables greater understanding of patient demographics, processes within surgery and recovery and immediate outcomes. Over time, the data demonstrate the gradual reduction in the use of intrathecal opioids as per the national consensus guidance, improvements in early mobilisation on the day of surgery and resultant length of stay reductions across Scotland.

The new NTCs offer opportunities to scale efficiencies and can promote rapid recovery techniques, but also offer challenges with interpreting data from around the

country with some existing centres managing higher concentrations of comorbid and frail patients.

The ARISE programme will publish a more detailed summary report later in the year and as we move forward with the SAP look to align further data and reporting as able.

Figure 2a: Percentage of patients by Body Mass Index (BMI) and Hospital for patients admitted in 2023

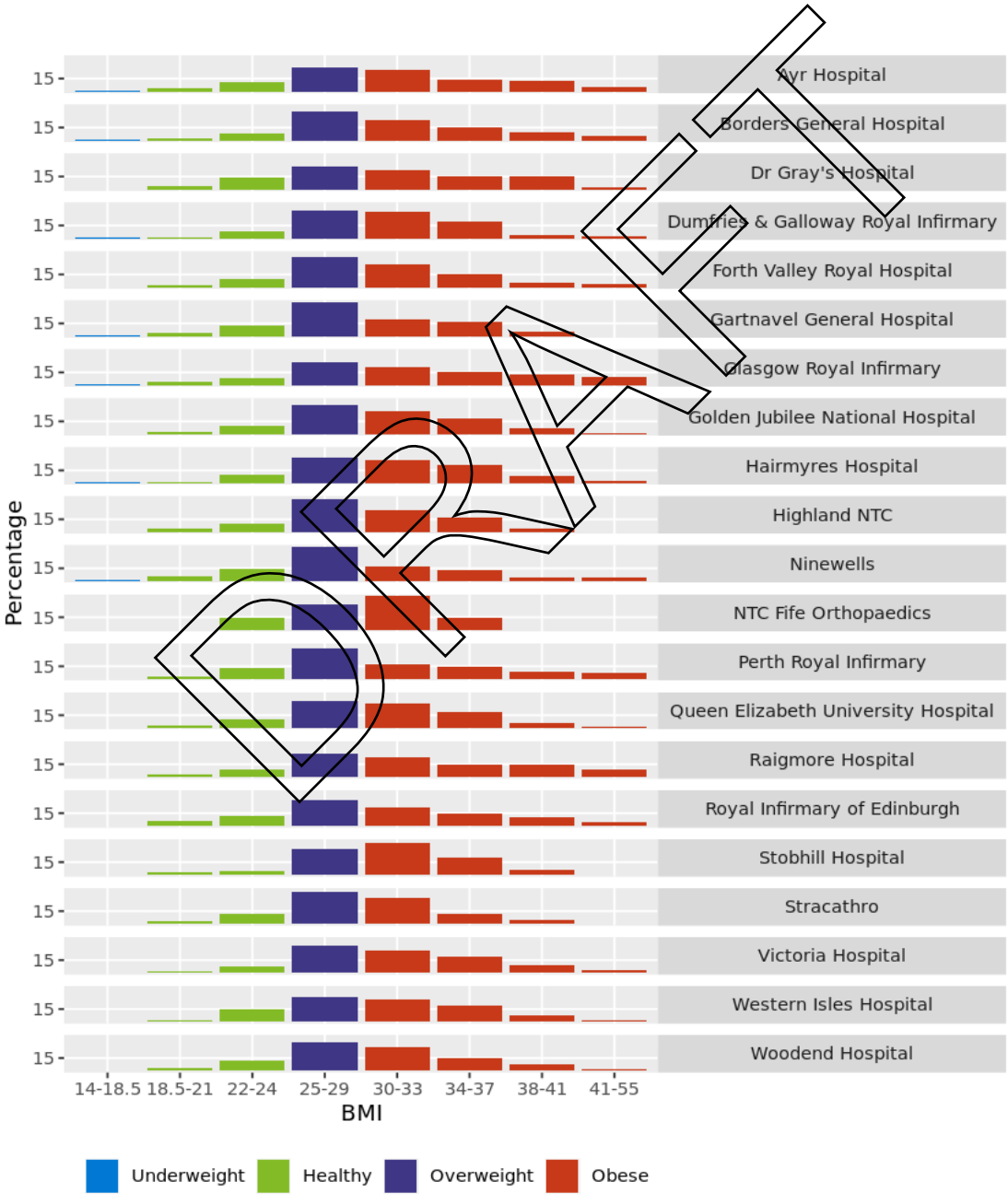


Figure 2b: Percentage of patients by Clinical Frailty Scale score and Hospital for patients admitted in 2023

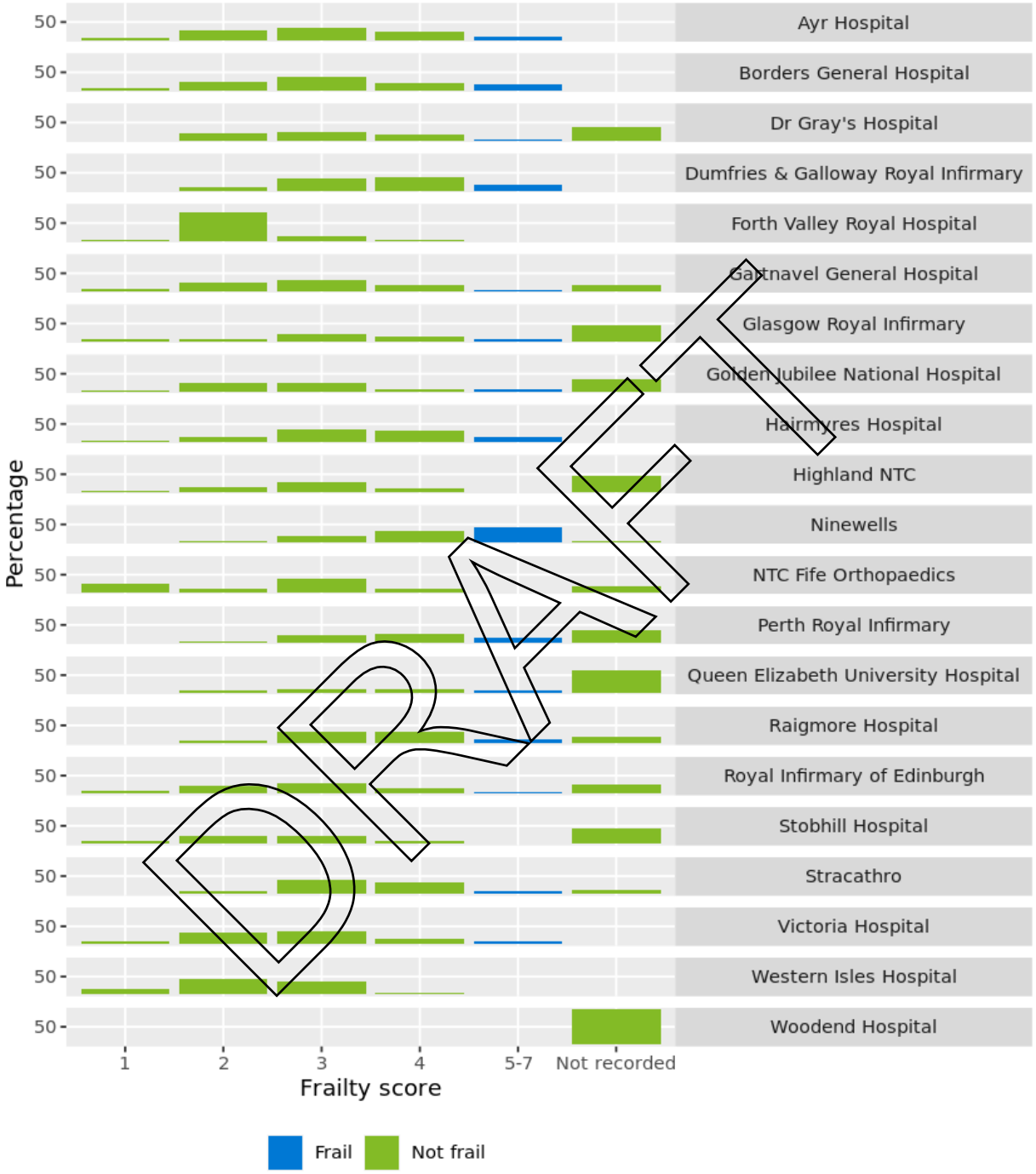


Figure 2c: Percentage of patients by ASA physical status classification and Hospital for patients admitted in 2023

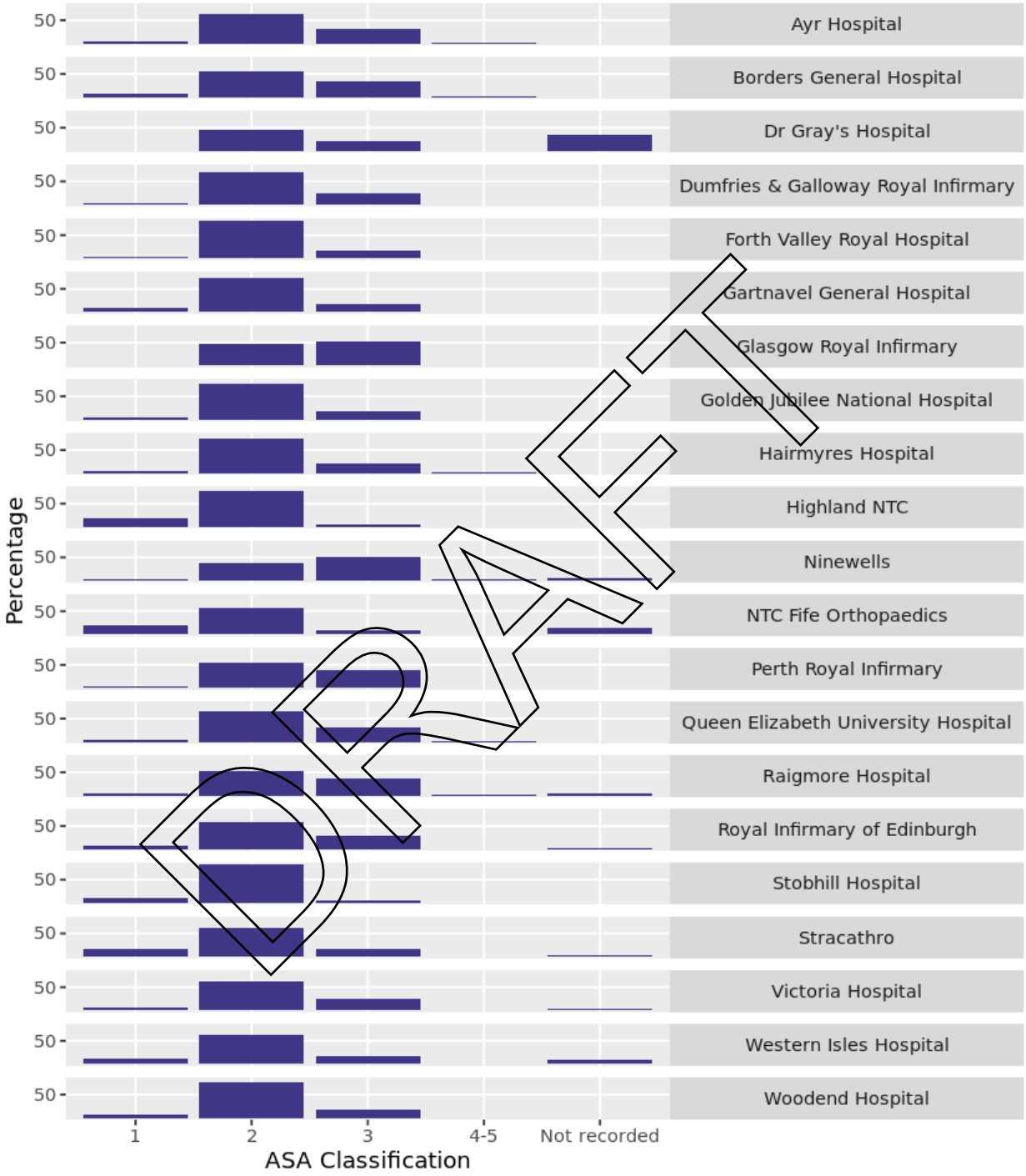


Figure 2d: Percentage of cases using intrathecal morphine within spinal anaesthesia for patients admitted in 2023

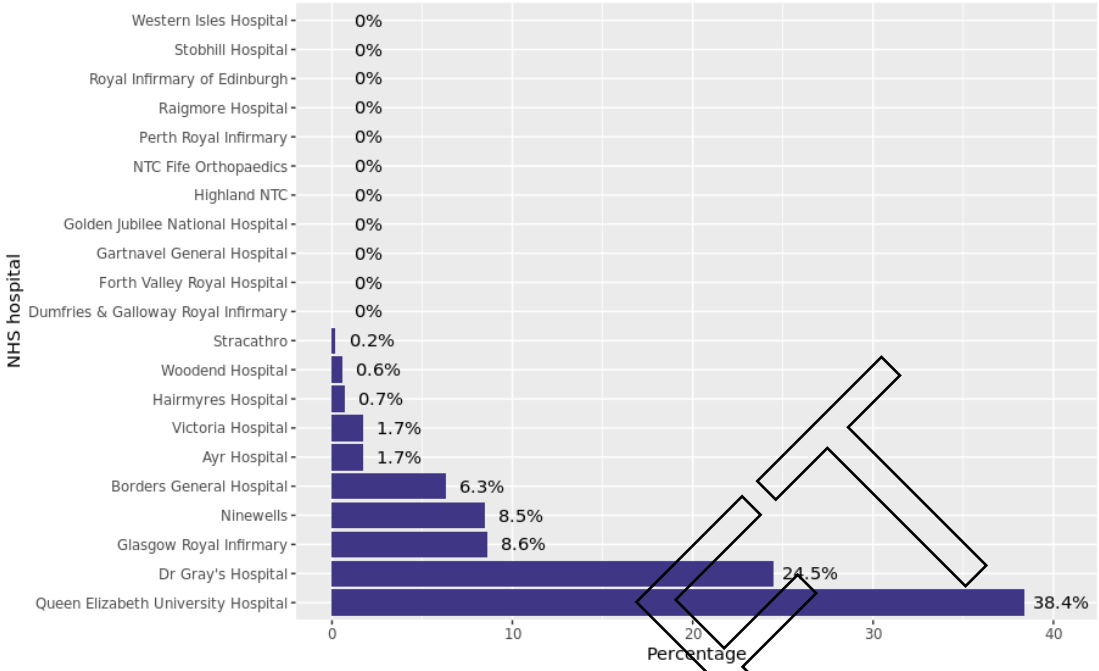


Figure 2e: Percentage mobilised on day of theatre for patients admitted in 2023

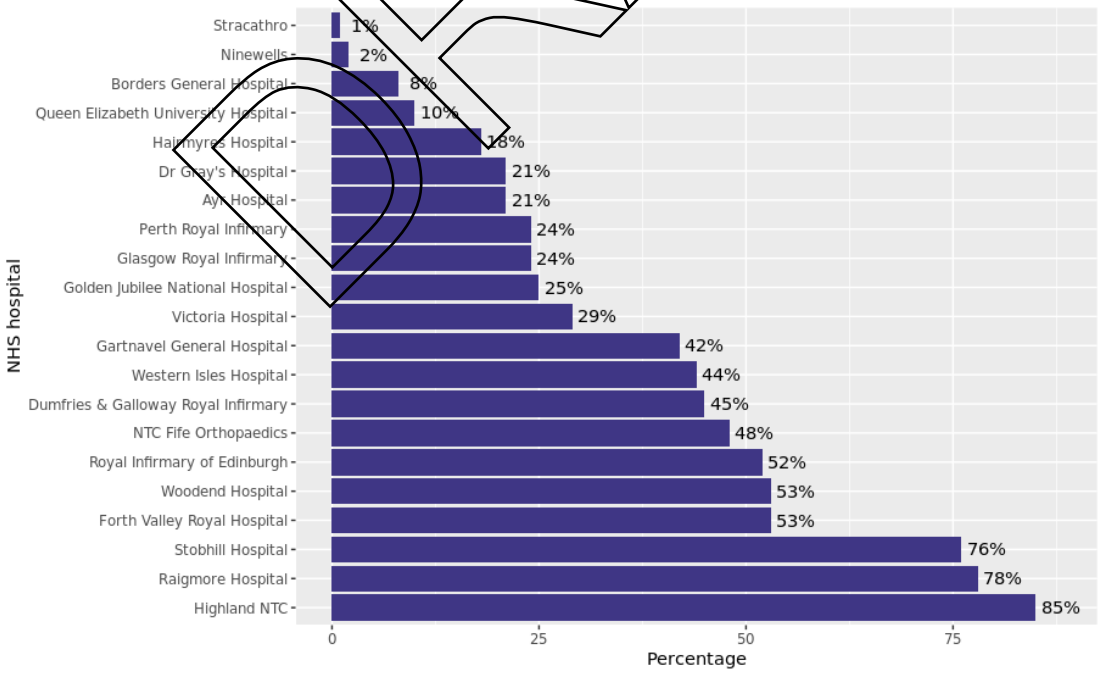


Figure 2f: Percentage of patients admitted in 2023 discharged by post-operative day 3

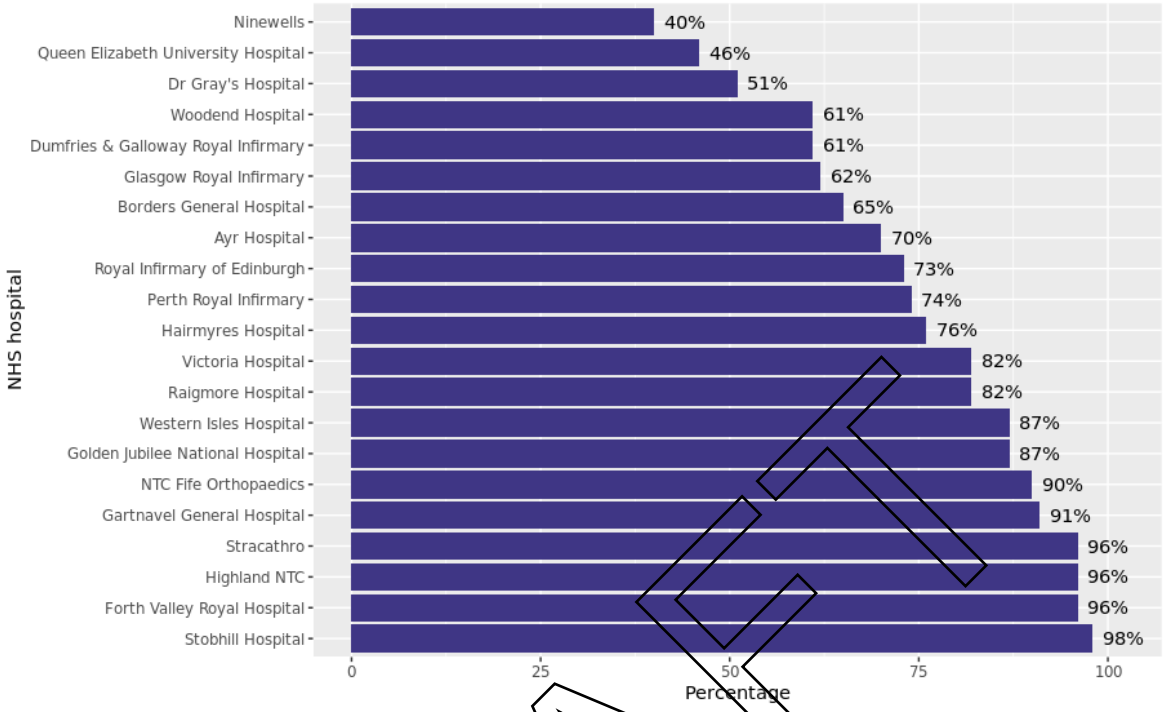


Figure 2g: Bundle compliance for patients admitted in 2023

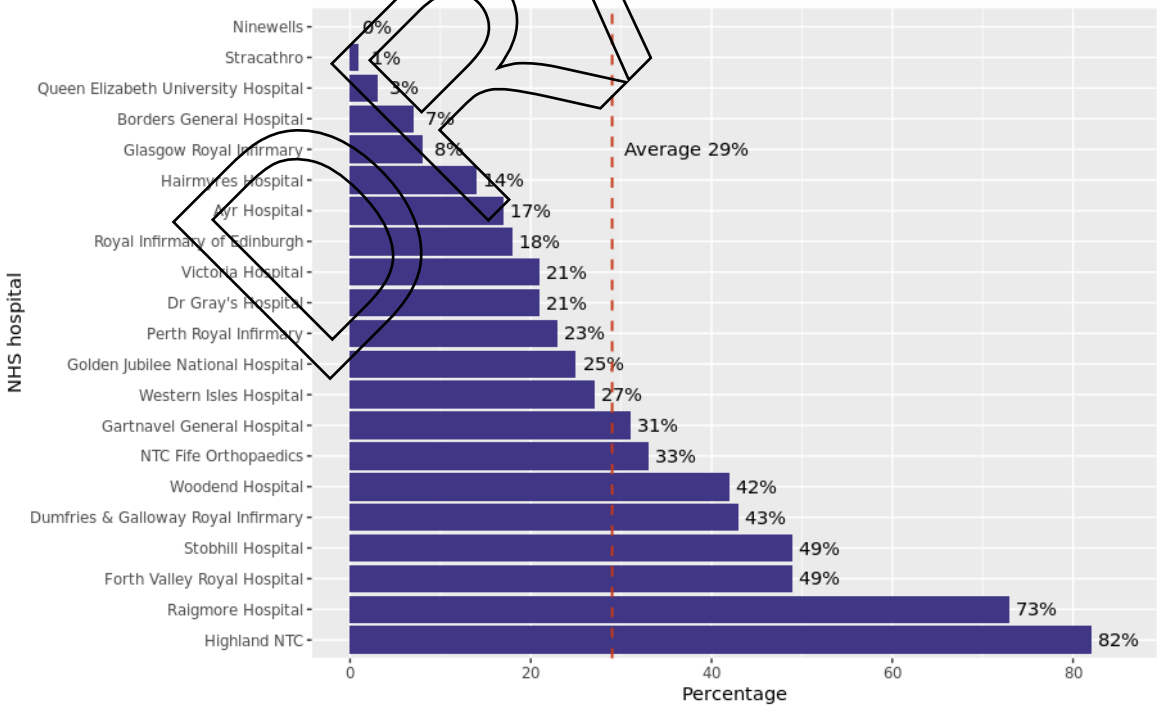
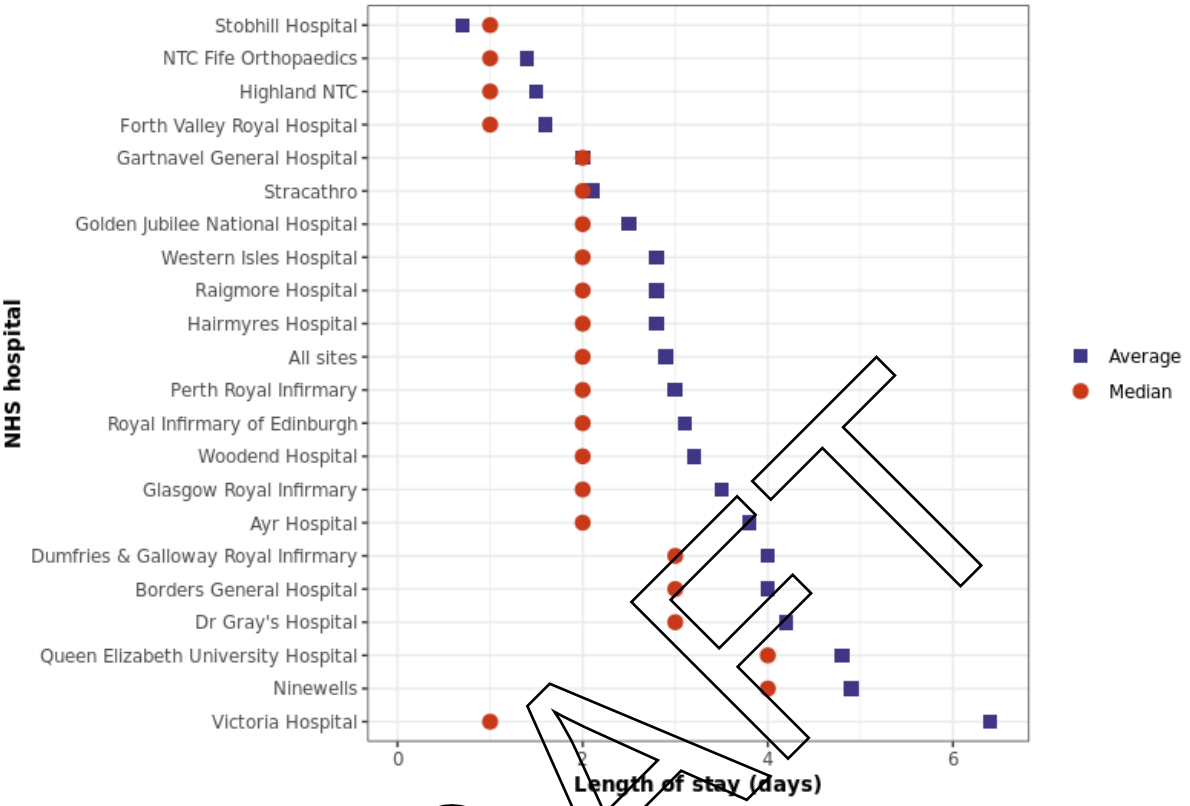


Figure 2h: Post operative length of stay for patients admitted in 2023



More data

For more data, please see our **main report**.

Contact

phs.arthroplasty@phs.scot

For all media enquiries please email **phs.comms@phs.scot** or call 0131 275 6105.

Further information

Further information and data for this publication are available from the **publication page** on our website.

The next release of this publication will be 05 August 2025.

Rate this publication

Let us know what you think about this publication via the link at the bottom of this **publication page** on the **PHS website**.

Appendices

Appendix 1 – Publication metadata

Publication title

Scottish Arthroplasty Project Report 2024

Description

This release by PHS presents data on the number of arthroplasty (joint replacement) operations in Scotland between 2001 and 2023 and on the frequency of complications such as infection or revision surgery following hip and knee replacements.

Theme

Arthroplasty

Topic

Arthroplasty

Format

RShiny Dashboard and PDF

Data source(s)

Scottish Morbidity Record (SMR01)

Date that data are acquired

1 April 2024

Release date

06 August 2024

Frequency

Annual

Accessibility

It is the policy of PHS to make its websites and products accessible according to

published guidelines. More information on accessibility can be found on the **PHS website**.

Official Statistics designation

Management Information

Last published

12 September 2023

Next published

05 August 2025

Date of first publication

10 September 2002

Help email

phs.arthroplasty@phs.scot

Appendix 2 – Early access details

Pre-Release Access

Under terms of the "Pre-Release Access to Official Statistics (Scotland) Order 2008", PHS is obliged to publish information on those receiving Pre-Release Access ("Pre-Release Access" refers to statistics in their final form prior to publication). The standard maximum Pre-Release Access is five working days. Shown below are details of those receiving standard Pre-Release Access.

Standard Pre-Release Access

Scottish Government Health Department

NHS Board Chief Executives

NHS Board Communication leads

Early Access for Management Information

These statistics will also have been made available to those who needed access to 'management information', ie as part of the delivery of health and care:

Early Access for Quality Assurance

These statistics will also have been made available to those who needed access to help quality assure the publication:

Appendix 3 – PHS and Official Statistics

About Public Health Scotland (PHS)

PHS is a knowledge-based and intelligence driven organisation with a critical reliance on data and information to enable it to be an independent voice for the public's health, leading collaboratively and effectively across the Scottish public health system, accountable at local and national levels, and providing leadership and focus for achieving better health and wellbeing outcomes for the population. Our statistics comply with the **Code of Practice for Statistics** in terms of trustworthiness, high quality and public value. This also means that we keep data secure at all stages, through collection, processing, analysis and output production, and adhere to the '**five safes**'.

References

1. Wainwright, T. W., Gill, M., McDonald, D. A., Middleton, R. G., Reed, M., Sahota, O., … Ljungqvist, O. (2019). Consensus statement for perioperative care in total hip replacement and total knee replacement surgery: Enhanced Recovery After Surgery (ERAS®) Society recommendations. *Acta Orthopaedica*, *91*(1), 3–19. **https://doi.org/10.1080/17453674.2019.1683790**

APPENDIX I - iWalk 3.0

Where to get your Knee Crutch

When deciding whether you should buy it is important to consult with a medical professional.

The primary company that produces hands-free knee crutches is “iWALK”. Unfortunately, at this time there is no company that provides a rental scheme for knee crutches, so purchase is your main option.

Purchase price: £187.95

Link for purchase in the United Kingdom: https://kneecrutches.co.uk/shop/hands-free-crutches/iwalk3-0/

Scan for QR for purchase info

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Additional Resources

Official iWALK Website: https://iwalk-free.com/

Official iWALK Video resources : https://iwalk-free.com/

References

1. Martin KD, Unangst AM, Huh J, Chisholm J. Patient preference and physical demand for hands-free single crutch vs standard axillary crutches in foot and ankle patients. Foot & Ankle International. 2019 Oct;40(10):1203-8.

2. Dewar C, Martin KD. Comparison of lower extremity EMG muscle testing with hands-free single crutch vs standard axillary crutches. Foot & Ankle Orthopaedics. 2020 Sep 2;5(3):2473011420939875.

3. Unangst A, Martin K, Mustovich A, Chisholm J. Foot and Ankle Patients Prefer a Hands-Free Single Crutch Compared to Standard Axillary Crutches. Foot & Ankle Orthopaedics. 2018 Sep 14;3(3):2473011418S00498.

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Hands-free Knee Crutch

What is a knee crutch?

The knee crutch is a walking aid that is primarily prescribed to patients who need to remain non weight baring for foot/ankle post-operative rehabilitation.

The knee crutch attaches to the knee of your affected leg and allows you put weight through your knee and into the crutch, giving you the ability to use your leg and walk normally. Due to how it attaches to the knee, the knee crutch is completely hands free.

Seen below is a picture of the knee crutch and further in the brochure you can see a picture of the knee crutch in use

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Is the Knee Crutch for you?

The knee crutch is a great mobility aid that provides an alternative to the traditionally used elbow crutches. Although gaining popularity, the knee crutch is not for everybody. If you cannot complete all the tasks in the list below, the knee crutch may not be for you. Most importantly, you should consult with a healthcare professional before using any walking aids.

As a rule of thumb, if you can walk up and down stairs without using a banister, then you possess the physical abilities to use a knee crutch.

- Your injury is below the knee
- Did not require a walking aid prior to the operation
- Can single leg stand for over 7s on each leg
- Can hold your full body weight through your knee
- You have average strength and balance
- You weigh less than 275 lbs / 124 kg / 19 stones 10 lbs
- You are between 4'10" – 6'6"

Scan for more information

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Pros of the Knee Crutch

- Hands free movement
- Normal gait pattern
- No strain of the upper limbs
- Easy to maneuver

Cons of the Knee Crutch

- High energy expenditure
- Slower movement
- Increased strain on the knee
- Not ideal for longer distances

Comparison to traditional elbow crutches

	Knee Crutch	Elbow Crutch
Hands Free	✓	X
Cost	X	✓
Normal Walking pattern	✓	X
Easy to use	✓	✓

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How to use a Knee Crutch

Important pointers:

- Make sure the knee crutch is fitted properly. Consult the owner's manual before using.
- Practice before you need it. It takes a few days to get used to it, so practicing before the surgery is helpful.
- Prepare your home. Remove any loose rugs or obstructions and leave a clear path.

Scan the QR code for more information

Evidence

Studies that have been done demonstrated that patients with foot or ankle injuries preferred a knee crutch over a pair of traditional elbow crutches [1,3].

The knee crutch has been shown to increase muscle activation and therefore reduce muscle loss in the hip muscles for the non-weight baring period [2].

The knee crutch has been shown to have a lower perceived fatigue and breathlessness when compared to traditional elbow crutches [3].

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Where to get your 4-Wheeled Knee Scooter

The primary company manufacturing knee scooters in the United Kingdom is: StrideOn.

When deciding whether you should buy your knee scooter or simply rent it, the most important factor is how long you require it. It is important to consult with a medical professional to determine how long that is.

Purchase price: £ 258.00
Rental Price per week: £ 19.80

If you are required to use the knee scooter for longer than 13 weeks, it makes more fiscal sense to buy it.

Comparatively, if you are required to use the knee scooter for less than 13 weeks, it makes more fiscal sense to rent it.

Link for purchase or rent in the Highlands: https://www.strideon.co.uk/product/Orthomate-Knee-Scooter

Scan for link to Buy or Rent the StrideOn Orthomate Knee Scooter

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Additional Resources

Customer reviews of the StrideOn – Orthomate Knee Scooter: https://www.strideon.co.uk/what-people-say

NHS study of the StrideOn Knee scooter: https://www.strideon.co.uk/nhs-tried-and-tested

References

1. Patel N, Batten T, Roberton A, Enki D, Wansbrough G, Davis J. A comparison of energy consumption between the use of a walking frame, crutches and a Stride-on rehabilitation scooter. The Foot. 2016 Aug 1;28:7-11.
2. Workman MI, Ettehadi H, Saragas NP, Ferrao PN. Knee scooter related injuries and satisfaction in patients following foot and ankle surgery. Foot and ankle surgery. 2022 Oct 1;28(7):887-90.
3. Kingston DC, Ferwerda S, Fontaine C, Keeping M, Stewart J, Ward R, Zapski J, Collins K, Essien SK, Zucker-Levin AR. Implications of Walking Aid Selection for Nonweightbearing Ambulation on Stance Limb Plantar Force, Walking Speed, Perceived Exertion, and Device Preference in Healthy Adults 50 Years of Age and Older. Foot & Ankle Orthopaedics. 2021 Mar 19;6(1):2473011421998939.

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4-Wheeled Knee Scooter

The 4-wheeled knee scooter is a great mobility aid that provides an alternative to the traditionally used elbow crutches. It is primarily prescribed to patients that are non-weight baring on one leg, after a foot/ankle injury.

The knee scooter is suitable for indoors and outdoors and allows for carrying items with the attachable basket.

The knee scooter works by the patient kneeling on the seat with the knee of their affected leg and propelling themselves with the opposite leg. The steering wheel is much like a bike with either 1 or 2 breaks.

Below is a picture of a 4-wheeled knee scooter and on page 2 you can find a picture of a knee scooter in use.

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Is the Knee Scooter for you?

The knee scooter is a great mobility aid that provides an alternative to the traditionally used elbow crutches. Although gaining popularity, the knee scooter is not for everybody. If you cannot complete all the tasks in the list below, the knee scooter may not be for you. Most importantly, you should consult with a healthcare professional before using any walking aids.

- Your injury is below the knee
- Did not require a walking aid prior to the operation
- Can single leg stand for over 7s on each leg
- Can hold your full body weight through your knee
- You have average strength and balance
- You weigh less than 25 stone/350lbs/159 kg

Scan for more information

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Pros of the 4-Wheeled Walker

- Low energy expenditure
- Easy to learn
- No strain of the upper limbs
- Ability to carry things (with basket attachments)

Cons of the 4-Wheeled Knee Scooter

- Not light / compact
- Small turning radius
- Not good in small spaces
- Potential for falls

Comparison to traditional elbow crutches

	Knee Scooter	Elbow Crutch
Able to carry things	✓	X
Energy required	✓	X
Cost	X	✓
Stairs	X	✓

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How to use a Knee Crutch

Important pointers:

- Make sure the knee scooter is fitted properly. Consult the owner's manual before using.
- Practice before you need it. It takes a few days to get used to it, so practicing before the surgery is helpful.
- Prepare your home. Remove any loose rugs or obstructions and leave a clear path.

Scan the QR code for more information

Evidence

The Orthomate knee scooter is NHS tested and Approved. Studies done have shown that using a knee scooter has the closest energy expenditure to normal walking, compared to using traditional crutches [1].

Additional studies have shown that knee scooters are “safe, and well-tolerated, mobility aid for patients requiring non-weight bearing during their recovery, with a high satisfaction rate” [2].

Knee scooters were preferred by patients over crutches and walkers [3].

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