

**Hearing Commencing 26 February 2024
Bundle 7 – Documentation relating to the
Cabinet Secretary’s Decisions
Volume 3 (of 3)**

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From: John Rayner [REDACTED]
Sent: 09 August 2019 10:15
To: STORRAR, Ian (NHS NATIONAL SERVICES SCOTLAND)
Cc: Paul Clinton; Dianne Halsey
Subject: RHCYP Non-critical ventilation
Attachments: 20190809-Vent-RHSC-Report.pdf

Dear Ian,

Please find attached a copy of my report. I will shortly be travelling to Cowes before the gales close off the ferries. I'll be in e-mail connection later today (I hope).

Best wishes.

John

Eur Ing John M Rayner, BSc (Eng), CEng, FIHEEM, FCMI, MIMechE, MEI, MIET, MSVHSoc, TechIOSH
Authorising Engineer

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**AUTHORISING ENGINEER
(VENTILATION)**

REPORT

FOR

NON-CRITICAL VENTILATION SYSTEMS

AT THE

**Royal Hospital for Children and Young People,
Edinburgh**

9 August 2019

Introduction

1. I was asked by Health Facilities Scotland (HFS) to prepare a report on the non-critical Ventilation systems at the new Royal Hospital for Children & Young People, Edinburgh (RHCYP) on 18 Jul 19. The requirement was to produce an initial Red/Amber/Green feedback for specific questions on this situation by 5 Aug, and a more full report by 26 Aug 19. Both of these time frames were subsequently shortened by HFS to 1 & 12 Aug respectively.
2. I agreed to visit the site over the period 1 – 2 Aug 19. I was sent copies of various papers and reports, including the draft Validation Summary from IOM and two schedules of ventilation plant (one for each plant room) dated 25 May 16. I was able to start assembling the data for site wide Air Handling Unit (AHU) Register before arriving on site. This data was later updated with help from Bouygues, and a full list is attached. I concluded that there are a total of 18 non-critical AHUs at the RHCYP.
3. I gave a verbal de-brief on my findings to Ian Storrar on Thu 1 Aug and then submitted an initial Red/Amber/Green (RAG) report by e-mail in the early morning of Fri 2 Aug. This RAG report was later updated that same day in one area following further discussions and on-site visits.

Executive Summary

4. There are a number of design and installation errors in the non-critical ventilation systems which do not generally impede the occupation of the RHCYP Hospital non-critical areas by staff, patients or the general public.
5. However, it is strongly recommended that the issues identified in this report are corrected in a reasonable time frame.
6. Clinicians should be made aware of the physical limits of the suitability of non-critical area use due to the limited ventilation systems provided. The clinicians should include the provision of suitable ventilation in all decisions regarding the temporary and longer term placement of patients, staff and general public.

Investigation Findings

7. Design Information. The final tender for the design for the new RHSC was dated December 2013. It was subsequently updated and incorporated an unknown series of comments and it was republished in August 2014. NHS Lothian assembled an on-site team to liaise with the main contractors. They held a short series of meetings in the summer months of 2016 concerning the Ventilation discipline.
8. It is unclear when and by whom the derogation of ventilation requirements laid down in SHTM 03-01, Appendix 1, Table A1: "Recommended air-change rates." was agreed. Of particular relevance to this report is that the requirement for General Wards was reportedly reduced from 6 air changes/hour to 4 air changes/hour. The latter figure was used as the design standard for these areas by the organisation carrying out the re-validation tests carried out by IOM.

9. The lack of clarity regarding this derogation process is a major concern. HFS is strongly advised to develop a system for formally agreeing derogations from the standards required by the relevant SHTM or other ruling document. A written proposal by any agency should be screened by an independent Chartered Engineer who has relevant experience in the field of Engineering in question (possibly the Board Authorising Engineer for that discipline). The screening Engineer should then produce a written report to support or deny the request for derogation. This report should be retained by all parties concerned.
10. In addition, the clinicians should be made aware of any ventilation derogations as this factor should be included in their Risk Assessments for positioning vulnerable patients.
11. Commissioning Information. The re-validation of the systems was being undertaken by IOM at the time of my visit. This work included measurements taken from over 2,000 ventilation grilles and the subsequent calculations of the air changes/hour achieved.
12. Initial findings reportedly indicate that some areas failed to achieve the derogated design requirements. The output of the AHUs supplying these areas will probably need to be enhanced to meet these minimum requirements. It is considered preferable to exceed them to approach the standards originally required in SHTM 03-01.
13. I was told that there are no Local Exhaust Ventilation units to be considered for this site. The on-site fume cupboards are subject to an independent inspection and maintenance regime and were not examined.
14. Equipment. I examined several AHUs in both plant rooms and noted that there are some common deficiencies in their design and installation against the requirements of SHTM 03-01.
15. I did not check the operation of the AHUs as this task is included in the current work being undertaken by IOM. It is understood that the detailed control of the ventilation systems is exercised by the BMS system. This was not examined during my site visit.
16. AHU Airtightness. SHTM 03-01, Part A, para 4.13 requires AHUs to have a high degree of air-tightness. The AHU penetrations by water pipes for heating and cooling batteries were often poorly made and left unsealed. AHU 04-03 and 04-07 were noted to be performing poorly against this requirement. All pipe penetrations of AHU surfaces should be checked and leakages sealed.
17. AHU Electrical services. SHTM 03-01, Part A, para 4.17 requires that services are not installed in positions that will reduce or impede access. The AHU major components have been fabricated off-site and installed on-site. The control cabling joints have been made by plug-in units which are then allowed to dangle in the airstream, causing some turbulence as well as unnecessary fatigue on the fittings themselves. These connections should be secured so that they do not impede the airstream.
18. SHTM 03-01, Part A, para 4.17 requires that services are not installed in positions that will reduce or impede access. AHU 04-05 access door is obstructed by an electrical conduit. All access doors in the AHUs should open unimpeded by other installations and fittings.

All AHU doors should be checked for full opening and corrective work instigated where necessary.

19. AHU Internal Lighting. SHTM 03-01, Part A, para 4.18 requires viewing ports to be at a convenient height. This has not been possible with the “double-deck” AHUs used on this site. Pulpit ladders have been provided in each plant room to allow easy access to the top deck of inspection windows. This is considered a reasonable way ahead.
20. SHTM 03-01, Part A, para 4.18 requires that all the lights in a unit should be operated by a single switch. This has been achieved, but these switches are sometimes positioned at about 3m above floor level – i.e., AHU 04-03. It is recommended that such switches are re-positioned to a convenient height from floor level as most inspection hatches are at the lower level.
21. Duct Changes in Section. SHTM 03-01, Part A, paras 5.35 and 5.36 define the allowable changes in duct section. It was noted that several AHU intake duct sections included severe changes in cross-section. All AHU ductwork section changes should be checked to ensure that they are within the allowable limits.
22. AHU Intake Louvres. SHTM 03-01, Part B, para 3.23 requires cleaning access to be provided by hinged louvres or by access doors behind the louver. The current louvres are not hinged. There is a small hatch in the intake section, but this is not large enough to admit a person to inspect and clean the anti-vermin screen. It is recommended that the louvres are re-configured to include at least a door sized hinged section.
23. SHTM 03-01, Part B, para 3.23 requires the duct behind the louver to be self-draining, or to be tanked and provided with a drainage system. None of the AHUs that I visited had this facility. This should be provided.
24. AHU Drainage. SHTM 03-01, Part B, paras 3.27 requires drain traps to be the clear (borosilicate) glass type. These were observed to be in use, but several were dirty or contained particulate matter. These traps should all be kept in a “sparkling clean” condition.
25. SHTM 03-01, Part B, para 3.30 requires that AHU drainage systems must have a discharge air gap of at least 15mm above the drainage receptor. The top surface of a grill situated above a floor drain should be taken as the lower reference for this measurement as the grill could support trash that would interrupt the waste water flow. Several air gaps were significantly less than this distance. These systems require critical examination and re-fitting.
26. SHTM 03-01, Part B, para 3.31 requires drainage pipework to have a fall of at least 1 in 60 in the direction of flow. Several drainage lengths were observed to be running parallel to the floor for significant distances. These drains should be carefully checked to ensure that the correct fall is maintained.
27. The drainage system installation for AHU 04-07 was poorly installed. In addition some supports were broken. This system should be replaced.

28. Duct Measurement Points. SHTM 03-01, Part B, para 3.62 requires all air-flow test-points to be clearly identified and size of the duct given. All the test-points found were well capped, but not labelled in any way. This situation should be corrected.
29. Some major branches to the main ducts did not appear to have air-flow test-points inserted. It is recommended that the positioning of all air-flow test-points is re-examined by an independent organisation.
30. In addition to the above, the ventilation system balance appears to be incorrect in places. This was noted particularly on Floor 1 where the corridors seem to be at a higher pressure than the surrounding rooms. This lack of compliance with the SHTM needs to be quantified and corrected. It is strongly recommended that all of the ventilation systems that have been re-balanced should now be re-commissioned.
31. Safe System of Work. I was briefed that Bouygues have started to set up a sound SSoW that utilises an in-house Permit-to-work system for intrusive works and an Authority-for-access system for non-intrusive work on ventilation systems. All plant rooms and AHUs have logbooks. This is considered sound practice.
32. Bouygues have engaged a reputable AE and plan to have at least two APs and two CPs to provide 24/7 cover. A third AP & CP will additionally be trained and appointed to provide cover for the duty personnel when they are on leave or sick. The training of the individuals has been hampered by an unusually high turnover of manpower during the initial months of this contract. Suitable individuals have now been identified to fill all of these requirements. The individuals are currently named as follows:
- a. AE: Paul Crothers.
 - b. APs: David Allan, Paul Crothers (until a second AP is trained and appointed), Jonathan Reynolds (requires training and appointment), Bill Whiteman (requires training and appointment).
 - c. CPs: Alan Herkes, Garry Ferguson, James Taylor (requires training and appointment).
33. A training and appointment regime should continue to be followed to ensure that adequate skilled manning levels are maintained.
34. Inspection & Maintenance. Bouygues reported that there is a site-wide system for planning downtime for the AHUs to allow for routine inspection and maintenance work. This system requires a 3-month notice period.
35. Bouygues reported that their current PPM system includes daily, weekly and monthly visual checks of the AHUs. They are planning to mark up the differential pressure gauges with green/red sectors to facilitate this process in conjunction with the current work of contractors who are calibrating the ventilation systems.

Recommendations

36. The following actions should be carried out to ensure optimum compliance of the non-critical ventilation systems with SHTM 03-01. They are not in any particular order, but have been SCART prioritised using the following agreed scale.

SCART Risk Grades	
5	Very High
4	High
3	Medium
2	Low
1	Very Low

Ser	Rating	Reference	Action Required
1	5	190809/01	A robust and accountable derogation process should be established and used.
2	5	190809/02	Clinicians should include any ventilation derogation levels when they are Risk Assessing the placement of their patients.
3	4	190809/03	All pipe penetrations of AHU surfaces should be checked and sealed to prevent air losses.
4	5	190809/04	Internal AHU control cabling joints should be removed from the airstream in a secure fashion.
5	5	190809/05	All AHU door openings should not be impeded by other service obstructions.
6	2	190809/06	All AHU lighting switches should be positioned to be easily accessible from ground level.
7	3	190809/07	Changes in duct section should be checked to ensure that they are within allowable limits.
8	5	190809/08	AHU intake louvres should be re-configured to allow easy access to the intake section of the plant ductwork.
9	5	190809/09	All AHU intake sections should be provided with drainage.
10	3	190809/10	Borosilicate drainage traps should be kept clean.
11	4	190809/11	AHU drainage pipes should discharge with the correct air-gap clearance from the receptor.
12	5	190809/12	The drainage installation for AHU 04-07 should be replaced.
13	5	190809/13	All air-flow test-points should be clearly labelled with the information required by SHTM 03-01, Part B, para 3.62.
14	4	190809/14	The provision of air-flow test-points should be analysed by an independent organisation. Additional test-points should be inserted where necessary.
15	5	190809/15	All non-critical ventilation systems that have been re-balanced should now be re-commissioned.

Conclusions

37. There are a number of design and installation omissions in the ventilation systems designated for the non-critical areas of the hospital. These are not considered to generally impede the occupation of the RHCYP Hospital non-critical areas by staff, patients or the general public.
38. However, it is strongly recommended that the issues identified above are corrected in a reasonable time frame.
39. Clinicians should be made aware of the physical limits of the suitability of area use due to the limited ventilation systems provided. The clinicians should include the provision of suitable ventilation in all decisions regarding the temporary and longer term placement of patients, staff and general public.
40. Bouygues have set up a sound inspection, maintenance and repair system to support the non-critical ventilation systems.



Eur Ing John M Rayner, BSc (Eng), CEng, FIHEEM, FCMI, MIMechE, MEI, MIET, MSVHSoc,
TechIOSH

Authorising Engineer (Ventilation)

TURNER PROFESSIONAL ENGINEERING SERVICES (TPES)

AHU Summary

AHU Number	Zone	Level	Departments served	AHU Status
02-01	2	02	Clinical Management Suite (R1)	Non-critical
02-02	3 & 4	02	Neurophysiology (M4), DCNT Therapies (M2), Equipment library (G2)	Non-critical
02-03	3	00	Radiology / X-ray (Q1)	Mixed purpose
02-04	3	00	Radiology / Gamma Camera (Q1)	Mixed purpose
02-05			Atrium / Main entrance	Non-critical
02-06	4	00	Child & Adolescent Mental Health Services (F1)	Non-critical
02-07	3	00	Staff changing (Q1), Basement level (I2), (S1), (S3), (S4), (S6)	Non-critical
02-08	3	01	Operating theatre support & RHSC Surgical Day Case unit (P1)	Mixed purpose
02-09	3	01	Operating Theatre 1 (RHSC)	Critical
02-10	3	01	Operating Theatre 2 (RHSC) Therapies (M2), Equipment Library (G2)	Critical
02-11	3	01	Operating Theatre 3 (RHSC)	Critical
02-12	3	01	Operating Theatre 4 (RHSC)	Critical
02-13	3	01	Operating Theatre 5 (RHSC)	Critical
02-14	3	01	Operating Theatre 6 (RHSC)	Critical
02-15	3	01	Operating Theatre 1 (DCN)	Critical
02-16	3	01	Operating Theatre 2 (DCN)	Critical
02-17	3	01	Operating Theatre 3 (DCN)	Critical
02-18	3	01	Angiography Procedures	Critical
02-19	3	01	Operating Theatre 4 (DCN)	Critical
02-20	3	01	Operating theatre support & RHSC Surgical Day Case unit (P1) (Intraoperative MRI Department)	Mixed purpose
02-21	4	02	DCN Implants (L2), Programme Investigations Unit (M3), DCN Wards / Health Records Support (N2), Isolation Lobby 2-L2-038, 2-L2-134	Non-critical
02-22	3	00	Radiology / MRI scanners (Q1)	Critical
02-23	4	01	Pediatric Acute Receiving Unit (A2), Spirit & Pastoral Care (J2), Isolation Lobby G-A2-074	Non-critical
02-24	4	01	DCN Acute Care (L1), On-Call Suite (G3), Isolation Lobby 1-L1-104	Non-critical
02-25	3	00	DCN Outpatients (M1), Radiology / CT Scan (Q1)	Mixed purpose

02-26	4	00	Emergency (A1), PARV/Emergency/Radiology shared (A3)	Non-critical
02-27	3	02	Central staff changing (S5), Basement Level – Domestic (S3), Materials Management (S4), Store (S7)	Non-critical
04-01	2	00	RHSC Main Outpatients (D1), Cardiology & Respiration (D2), Family Support Services (K1), Pediatric Dentistry (D5), Social Work (D8), Pod (E1)	Non-critical
04-02	2	03	Family Hotel (K2)	Non-critical
04-03	2	04	RHSC Main Outpatients (D1), RHSC Therapies (D6), Plastics Dressing Clinic (D7), Orthoptics (D4), Audiology (D4)	Non-critical
04-04	2	04	Clinical Education Suite (H3)	Non-critical
04-05	3 & 4	04	Health Records ((R2), Child Life & Health (H1)	Non-critical
04-06	4	01	PICU HDB (B1), Bereavement Suites (J1), Clinical Research Facility (H2)	Mixed purpose
04-07	3	03	Neuroscience (C1.3), Haematology/Oncology Inpatients & Day Care (C1.4), Med/Neuro/Surg/Haemo support (C1.5), Pediatric neurophysiology (C1.7), Special Feeds Unit (C3), Shelled Space (U1)	Non-critical
04-08	3	03	Medical inpatients (C1.1), Surgical Long stay Inpatients (C1.2), Adolescent Shared Accommodation (C1.6), Surgical Short stay Inpatients (C1.8), Wards support areas (C2), Sleep Lab (C4), Medical Day-care Unit (D9)	Non-critical
04-09	2	04	Classroom (C5), Clinical/Management Suite (R1), Restaurant (S7)	Non-critical

Draft**RHCYP/DCN: Commissioning/Ventilation**

Note of a meeting held at 4.00 pm on Monday 12 August 2019 in Meeting Room 5, Waverley Gate, Edinburgh.

Present: Susan Goldsmith, Finance Director (chair); Carol Calder, Infection Prevention and Control Nurse; Jacquie Campbell, Chief Officer, Acute Services; Brian Currie, RHCYP/DCN Project Director; Tim Davison, Chief Executive; Tracey Gillies, Medical Director; Iain Graham, Director of Capital Planning and Projects; Alex Joyce, Employee Director; Ian Laurenson, Consultant Microbiologist; Judith Mackay, Director of Communications; Alex McMahon, Nurse Director.

In Attendance: Bryony Pillath, Committee Administrator (minutes).

Apologies: Lindsay Guthrie, Lead Infection Prevention and Control Nurse; Donald Inverarity, Consultant Microbiologist.

1. Minutes of the Meeting held on 5 August 2019

1.1 Minutes approved as a correct record.

2. Oversight Assurance Board Feedback

2.1 Susan Goldsmith gave a verbal update. The meeting had been positive but next steps were not yet clear. It had been agreed that the fire safety and electrical safety inspections would be brought forward by Health Facilities Scotland.

3. Ventilation Tracker

3.1 The tracker for all ventilation issues had been previously circulated. A further report from IOM was awaited specifying which of the air handling issues were areas of non compliance and which part of the SHTM standards applied to them. This applied air handling for all units.

3.2 The current position was that IHSL maintained that the units were compliant with standards, but Health Facilities Scotland did not agree. The IOM inspection report stated that if action was taken to resolve the issues identified with the air handling units the hospital would be safe to occupy. By the next Oversight Assurance Board meeting on 22 August it there needed to be agreement on which specific areas needed to be resolved before this would be the case.

3.2 Separate to the general air handling issues, a change had been requested for the air handling in the critical care unit. A timeline and agreement for this was awaited from IHSL.

3.3 It was agreed that the ventilation group meeting twice per week would be used to drive a resolution as progress on coming to an agreement had been slow.

4. Water Report

- 4.1 Alex McMahon spoke to the previously circulated paper which followed the water safety workshop held on 29 July 2019. The results of the water sampling completed met the required SHTM and showed no systemic problems. There were some isolated issues that were being dealt with.
- 4.2 Health Protection Scotland would carry out further non routine testing for fungi so that the situation was known. If fungi was found in area that was the same as that which caused problem at the Queen Elizabeth Hospital in Glasgow then mitigating actions could be considered either before occupation of the hospital or after.
- 4.3 It was agreed that there should be a separation between compliance with the required standard which was evidence based, and identification of problems associated with the incident in Glasgow where learning was still in development. It was noted that some of the mitigating actions taken following the incident at the Queen Elizabeth Hospital had had adverse effect on the water quality. Jackie Reilly at Health Protection Scotland agreed with this approach. Dr Laurensen advised that the main focus should be on keeping the water systems separated from the patient areas. It was agreed that the two areas of water testing would be reported in separate papers to ensure the distinction.
- 4.4 The water engineer from Bouygues had produced a Water Management Plan which outlined a robust flushing action plan to be used while the hospital was unoccupied. Estates were aware that no further flushing was required in addition to this which was currently the responsibility of Bouygues and would be handed over to NHS Lothian when the hospital became occupied.
- 4.5 Members accepted the recommendations laid out in the paper. The action plan and paper would also be submitted to the next Oversight Assurance Board.

AMcM

5. Drainage

- 5.1 A paper had been previously circulated. Most of the issues identified by Health Facilities Scotland were in relation to plumbing rather than drainage. Drainage would be considered in their next inspection the next day.
- 5.2 Brian Currie gave a summary of the previous settlement agreement regarding drainage. Initially there had been two sump pumps in place; one was in a basement near the kitchens and would be taking drainage from clinical areas. This was not suitable and following agreement an enhanced management system was put in place and a third pump installed. NHS Lothian was content with this arrangement.

- 5.3 It was noted that Health Facilities Scotland had also been asked to inspect other newly completed hospitals in Scotland but that this had not been started to be organised yet and was not expected to delay inspection of the RHCYP.

6. Commercial Position and Contract Management

- 6.1 A summary and drawings showing the specific areas of the hospital where the critical care standard applied had been previously circulated. This would be sent to Health Facilities Scotland and Health Protection Scotland for agreement before being issued to IHSL. These were the areas that would require 10 air changes per hour. As part of the contract NHS Lothian was entitled to provide the definition of the critical care services and this made the definition clear.

- 6.2 The first formal commercial negotiation meeting between NHS Lothian and IHSL would take place the next day on 13 August 2019. Brian Currie, Ian Laurenson and Susan Goldsmith would attend from NHS Lothian and Multiplex was also expected to attend.

7. KPMG Report

- 7.1 The response from the investigation was being consolidated. A teleconference had been held earlier that day and the response seemed comprehensive.

8. Communications

- 8.1 This would be added as a standing agenda item at future meetings. Topics would be agreed for staff update at the Oversight Assurance Board and these would be issued to all staff fortnightly or monthly as agreed.

- 8.2 The Royal Hospital for Sick Children Medical Staff Association group would meet at the end of August. Fiona Mitchell, Eddie Doyle, Tracey Gillies, Alex McMahon, Tim Davison and Susan Goldsmith would attend. They would meet beforehand to discuss the update they would give and this may need to be agreed by the Cabinet Secretary. This could also be used as a basis for update to all staff.

- 8.3 The Cabinet Secretary had agreed to meet staff side representatives on 13 August to give an update and answer questions, at there had been no update to them so far. Alex Joyce would be leading discussion at the meeting.

9. Any Other Competent Business

9.1 Visits to the new hospital

- 9.1.1 It was agreed that the planned visit from Ian Murray MP to the new hospital would be postponed.

- 9.1.2 Susan Goldsmith had suggested that the Cabinet Secretary should be invited to visit the hospital to show that it would provide greatly improved accommodation for services. This was agreed. **SG**

9.2 Paediatric Migration Plan

9.2 This would be ready for the meeting on Thursday 15 August 2019, and could also be discussed at the Oversight Assurance Board on 22 August 2019.

10. Date and Time of Next Meeting

10.1 The next meeting would be held at 4.00 pm on Thursday 15 August 2019 in Meeting Room 5, Waverley Gate, Edinburgh.

Project title Royal Hospital of Sick Children

Subject Ventilation Meeting Minutes

Location NHSL Project Office, Clinical Mangement Suite, RHCYP, Edinburgh

Date and time of meeting 13/08/2019 10:00

Recorded by: RS

Circulation: Via Email

Attendees

Name	Initials	Company/organisation
Ken Hall	KH	Multiplex (MPX)
Craig Simpson	CS	Integrated Health Solution Lothain (IHSL)
Graeme Salmon	GS	Integrated Health Solution Lothain (IHSL)
Elham Khatamzas	EK	Infection Control (NHSL)
Wullie Evans	WE	Infection Control (NHSL)
Ronnie Henderson	RH	National Health Service Lothain (NHSL)
Brian Currie	BC	National Health Service Lothain (NHSL)
Ross Southwell	RS	Mott MacDonald
Ian Brodie	IB	Mott MacDonald
Colin Macrae	CM	Mott MacDonald
David Gordon	DG	Bouygues (BYES)
Lee Beard	LB	Bouygues (BYES)

Apologies

Name	Initials	Company/organisation
Ian Storrar	IS	Health Facilities Scotland (HFS)
Wallace Weir	WW	Integrated Health Solution Lothain (IHSL)
George Curley	GC	National Health Service Lothain (NHSL)
Billy Loudon	BL	Currie & Brown
Donald Inverarity	DI	Consultant Microbiologist (NHSL)
Lindsay Guthrie	LG	Infection Control Lead (NHSL)

Item	Text	Action
1.	<p><u>Remedial Works/Ventilation Board Change</u></p> <p>CS/GS said that he was trying to get a view on the status of progress but no knowledge at this point in time. CS stated that there was a response from WW noting that the issue will be discussed this afternoon. BC confirmed the current status and asked if there was any big hurdles at this time. CS stated that as an informal summary, it would be difficult, complex but doable. GS mentioned that preliminary discussions had been identified physical constraints due to large airflow, how to adequately provide cooling, AHU location and other possible concerns. It was noted that discussions are taking place over these areas. KH confirmed that DW is having weekly meetings with TUV-SUD</p> <p>BC stated that the legal contractual matter should be separate and appreciates that nothing can be started until this is confirmed. BC mentioned that it would be beneficial to use these meeting for technical matters.</p> <p>DG stated that there are a number of items such as CDM, permits and documentation to be agreed and signed off before commencement of work on site and these should be prepared and ready to be signed when construction work</p>	IHSL

starts in order to reduce the time to complete all remedial works.

BC asked IHSL if they are absolutely clear on what is being asked. IHSL were happy about the technical requirements from NHSL.

For reference:

[Ventilation Meeting Minutes 02/08/19](#)

DW had been engaging technically with TUV-Sud. These discussions were around the following:

- *Preliminary discussion about power – Will there be a need for dual supplies for the new AHU*
- *Air pressure stabilisers are needed in all rooms? 1 no. rooms that have doors at both sides of each floor. How is the pressure regime maintained when both doors are open?*
- *Openable windows – Looking at these to be locked and shutoff.*
- *AHU – heating and cooling – Looking into a heat pump arrangement*
- *AHU - Looking at acoustic outputs of the external condenser, potentially pushing them over to the energy centre.*
- *Looking at different ceiling types (DW stated his preference would be plasterboard ceiling).*
- *Would air permeability tests need to be carried out in these rooms?*
- *Any expectations on pressure gauges (visual indication required?).*
- *Neonatal – single room that opens to 3 bed cot – treat the whole area as 10 Pa? RH stated he had indicated this on walk around.*

2.

Ventilation Issues Log

Please refer to ventilation issues log for more updates.

RH stated that there he has sent a separate issues log for AHU related items to DW. KH will be check with DW and come back. RH did ask for a timescale to DW and would be good to get an update on this. EK asked for the AHU issue log to be issued to them.

**MPX
NHSL**

3.

General Ventilation

[Ventilation Meeting Minutes 09/08/19:](#)

RH stated that there were checks today with IOM/H&V at 11:30am today to come to a consensus on measurement methodology and to confirm the method of testing. RH did state that this meeting did take place and a methodology has been discussed. Duct traverse measurements were taken as well as grille measurements as there were differences with flow rates taken from the same type of measurement device although the traverse readings aligned. RH stated that IOMs results fluctuated at the grille and the cause is not known at this time. Members speculated that this may be due to the fan fluctuating and this would be investigated. IOM video to be sent to KH. CS noted that duct traverse usually used for commissioning.

NHSL

IOM has completed the general ventilation surveys. RH stated that IOM will be issuing a draft report and this will be sent to MPX to be reviewed and any rooms to be rectified.. RH had initially thought that they may indicate the third floor as the issue, with other possible smaller areas. GS confirmed that when IOMs report is issued, IHSL will review and comment..

NHSL

[Ventilation Meeting Minutes 09/08/19:](#)

DI mentioned that HFS talked about microbiological sampling in previous meetings and wanted to know if any progress had been made. No response yet from HFS.

4.

AOCB

BC asked what is everyone's feeling about how long it will take to get all the issues resolved. KH said they are looking to fast track the AHU issues. BC gut feeling said 8 weeks regarding all the AHU issues. DG stated that this may be

similar to the critical path for the water issue. Other ventilation issues can be closed out quicker. BC confirmed with KH that there is 18 weeks period from placing the order on the AHU. BC asked everyone around the table again to confirm that the requirements are clear. Everyone was in agreement and said it will be reiterated at the design workshops with TUV-SUD going forward.

5.

Date of Next MeetingFriday 16th August 2019 @ 10:00 Warlow

From: [REDACTED]
Sent: 13 August 2019 10:55
To: DG Health & Social Care
Cc: Cabinet Secretary for Health and Sport; McLaughlin C (Christine); Bell D (Donna); Summers Y (Yvonne)
Subject: Lothian Escalation
Attachments: NHS Lothian - Escalation - letter to Tim Davison - 5 August 2019.docx

Please find attached a copy of a letter to CEO NHS Lothian as our response to request for support re Level 3 Escalation.

Many thanks

[REDACTED]
JOHN CONNAGHAN

[REDACTED]

Business Case. It might be beneficial that we invite you in to SAH to provide a brief presentation to SG colleagues so we can understand how best to support you in delivery of these key assets for sustainability around Scheduled Care. My office will be in touch with you to arrange a suitable date.

I think we are both keen that the work currently being carried out by the North of England Commissioning Unit will prove fruitful in identifying where we can have quick wins to improve performance and to utilise both our workforce and physical infrastructure assets better within NHS Lothian. This work should conclude within a matter of a few weeks. We should therefore meet immediately after that to agree any further action or support.

4. **Unscheduled Care** – All NHS Boards are expected to deliver the four hour A&E target of 95% (working towards the 98% standard) this is to ensure patients receive the most appropriate assessment, treatment, support and service at the right time, in the right place and by the right person. We would expect that the milestones laid out in the Director General's letter of 17 June on the Annual Operational Plan will be achieved within this financial year. Can I convey my thanks to the staff (both management and clinical staff) in the RIE who have engaged with the SG team/NECS over the last few months to refocus our efforts on improving performance at RIE. I note that we have now seen major performance improvement with a month to date (July 2019) performance in Lothian of 93%. Much of this is driven by the significant improvements we have seen in the RIE through adoption of the new front door model/four pod system.

Our expectations of NHS Lothian are that this improvement is now sustained such that we have full delivery of the national targets as expressed in your Annual Operational Plan.

5. **Paediatric Services at SJH** – Thank you for the updates on the partial reopening of the St John's paediatric ward. Our expectation is that we expect to see a full reinstatement of the services from the Autumn onwards as agreed with the Cabinet Secretary.
6. **Mental Health Services** – we have had ongoing engagement with your Mental Health Team and have received some assurance on the trajectory to bring CAMHS and Psychological Therapies waiting times in line with the standards by December 2020. However, we have not yet been able to sign off your AOP due to uncertainty about funding of the plans. The intention to use monies earmarked in 2018/19 to deliver Action 15 of the Mental Health Strategy (additional workers in key setting – A & E, Custody, Prisons and GP practices) to fund additional staff to deliver waiting times standards in 2019/20 is a matter for ongoing concern. We will require assurance that there will be no reduction in the recruitment of staff in these settings and expect that the planned level of recruitment for Action 15 staff will be delivered.

In addition we are aware that the plans for additional bed capacity at the REI, or to provide alternative provision, have not yet been put in place. We know that this has resulted in patients being accommodated inappropriately. This raises serious concern. While we support your plans to build sustainable arrangements with your IJB colleagues, this situation requires immediate action.

We met with your team on 8 August and will continue to follow up both of these issues. We also expect that they will form part of future engagement on recovery planning.

7. **Support arrangements and liaison with Scottish Government** – In the original letter from the Director General dated 12 July 2019 he advised that we would appoint a lead Director within Scottish Government to provide oversight of the development and delivery of your Recovery Plans. Can I advise that I will take that coordinatory role on behalf of Scottish Government. The current issues which are associated with the Royal Hospital for Children and Young People will still be coordinated through Christine McLaughlin's Directorate. I would therefore propose that we form an Oversight Group on behalf of Scottish Government to maintain regular contact with yourself and your lead Directors for their aspects of the Recovery Plans. We will wish to supplement that small core group from time to time with other Directorates interests depending on the agenda and any cross-cutting risks that might emerge. I would propose in the first instance that we meet every two weeks between now and the end of October with the objective of having a satisfactory Recovery Plan (with a demonstration of progress) against each of the escalated issues by that point in time. We will arrange appropriate Directorate attendance from SG colleagues for the first meeting to ensure we cover all interests.
8. **Support Package** - In paragraph 8 of your letter you have set out the main elements of the support package that you require. We are content to provide some financial support in relation to the senior programme/director/management resource that you require in relation to recovery, mental health and support for waiting times improvement. To this extent we will make available £500k on a whole year basis in 20/21 to support the additional costs of this resource.

As regards the support you need for pathway management Whole System Unscheduled Care and Redesign and support to Edinburgh HSCP in relation to accelerating its bed base review and its future model of care we consider that these are business as usual tasks and to that extent we would expect NHS Lothian to specify the requirements, identify the providers and take this forward within its own allocated resources.

Last but not least I know that the Director General's office is in contact with yours to agree a suitable time/date such that you can present in more detail some of the change and transformation work taking place in Lothian and within your partnerships. I look forward to working with you and your team over the course of the next few months.

Yours sincerely



JOHN CONNAGHAN CBE

Chief Performance Officer, NHSScotland and Director
of Delivery and Resilience

From: Graham, Iain
Sent: 05 September 2019 06:57
To: Currie, Brian
Cc: Cosens, Sorrel
Subject: FW: Other ventilation issues per IOM report appendix 2
Attachments: AHU related Comments 22 08 19.xlsx; RHCYPDCN remedial matrix 230819 V5.docx; Ventilation Issues Summary Report 190819.docx

Looks good?

Iain

Iain F Graham
Director of Capital Planning and Projects, NHS Lothian

From: "Bradbury, Nick" [redacted]
Sent: 5 Sep 2019 00:02
To: "Graham, Iain" [redacted]
Subject: FW: Other ventilation issues per IOM report appendix 2

Iain, sorry, last late-night email from me hopefully. Thanks for offering to help – can you have a look over the paragraph below and see if you think it summarises the position, and send on to Alan if so? Tried to keep it very high level, which seemed to be what Alan was looking for, and have assumed it to be only relating to the IOM report into critical ventilation systems.

“The draft report issued by IOM following their independent validation of critical ventilation systems identified 54 items of concern. These were developed into an action plan to inform remedial works. Of these, there are seven items where remedial works may be disruptive, and these have been prioritised. None of the remaining items are considered of a significant nature, and the remedial works required not disruptive. As at 19th August, over half the 54 items have been closed.”

Reluctant to get into detail about what the 7 items are, but could say something like ‘The seven items identified relate to design of the ventilation systems, including resilience within the system, and questions on the placement of physical ventilation infrastructure. If Alan wants a summary of the other 47 items then I’m probably struggling.

Nick

From: Henderson, Ronnie
Sent: 26 August 2019 09:09
To: Bradbury, Nick; Greer, Graeme
Subject: RE: Other ventilation issues per IOM report appendix 2

Nick,

There are 2 additional logs other than the original 54 item one.

1. Log that Ian Graham started with Water, Vent, Drainage, & Electrical on it.

2. Abbreviated log focusing entirely on issues relating to air handling units

I have also attached a summary report I was asked to prepare

Not sure if any of these is what you are looking for but these are the only ones we are using apart from the 54 item list.

Regards

Ronnie

Ronnie Henderson
Commissioning Manager Hard FM
RHSC & DCN - Little France
NHS Lothian

[REDACTED]

[REDACTED]

From: Bradbury, Nick
Sent: 26 August 2019 08:33
To: Greer, Graeme; Henderson, Ronnie
Subject: RE: Other ventilation issues per IOM report appendix 2

Graeme, not urgent enough to rearrange school run! Can definitely wait until later this morning.

It's a summary rather than the list – Brian said this has been summarised for something else?

Nick

From: Greer, Graeme [REDACTED]
Sent: 26 August 2019 08:17
To: Bradbury, Nick; Henderson, Ronnie
Subject: Re: Other ventilation issues per IOM report appendix 2

Morning Nick,

Sorry on the school run this morning and don't have to hand, Ronnie I think closer to detail and might have straight away.

Is it the list of 54 items you need?

If Ronnie not about will be able to have a look at 10am if that ok ? Or if urgent I can rearrange things here?

Thanks
Graeme

Get [Outlook for iOS](#)

From: Bradbury, Nick [REDACTED]
Sent: Monday, August 26, 2019 7:39:19 AM
To: Henderson, Ronnie [REDACTED]; Greer, Graeme
[REDACTED]
Subject: FW: Other ventilation issues per IOM report appendix 2

Ronnie / Graeme, I understand from Brian that there is a short, more up to date summary of the IOM issues around somewhere (prepared for a different, internal NHS purpose). The SG are looking for something similar - can you send on?

Thanks
Nick

PS hope you both had a nice weekend

-----Original Message-----

From: [REDACTED]
Sent: 22 August 2019 13:39
To: Bradbury, Nick; [REDACTED]
Cc: Currie, Brian; [REDACTED]
Subject: RE: Other ventilation issues per IOM report appendix 2

Hi Nick,

I've not managed to catch you so have left a rambling voicemail...

I don't have the note referenced to in the below but, as Alan mentioned, KPMG need a paragraph (at Christine's request) on the 'other' ventilation issues. We want to make sure this is accurate, both technically and in terms of context/ the picture being presented. We would want an such text agreed with NHSL and given the expertise required to succinctly and accurately explain the other issues (and KPMG did not review these this para is just for context), I'd be grateful if a paragraph could be provided for us to review and to then pass to KPMG this week.

I'm not around but Alan will be if you'd like to discuss.

Many thanks,

Rowena

Rowena Roche
Directorate of Health Finance
[REDACTED]

Please note that I do not work on Thursday afternoons or on Fridays.

-----Original Message-----

From: Bradbury, Nick [REDACTED]
Sent: 16 August 2019 09:28
To: Morrison A (Alan) [REDACTED]
Cc: Roche R (Rowena) [REDACTED]; Currie, Brian [REDACTED]
Subject: Re: Other ventilation issues per IOM report appendix 2

Yes, to be fair that is what Rowena told me, but with so much else going on we were inclined to let KPMG do the summarising...

We can do that if necessary - talk to you later.

Nick

Sent from my BlackBerry 10 smartphone on the EE network.

Original Message

From: [REDACTED]
Sent: Friday, 16 August 2019 09:05
To: Bradbury, Nick
Cc: [REDACTED]; Currie, Brian
Subject: RE: Other ventilation issues per IOM report appendix 2

Thanks Nick. In the KPMG report they have a placeholder saying *paragraph* (my emphasis) for other ventilation issues, so this might be too much detail (though without having read the note too closely, I am not sure it is possible to succinctly summarise the issue). I will pick this up with you later this afternoon.

alan

-----Original Message-----

From: Bradbury, Nick [REDACTED]
Sent: 16 August 2019 08:54
To: Morrison A (Alan) [REDACTED]
Cc: Roche R (Rowena) [REDACTED]; Currie, Brian [REDACTED]
Subject: Fw: Other ventilation issues per IOM report appendix 2
Importance: High

Alan,

This is the updated information that Rowena was looking for yesterday. I think everything's there, summary and detail.

Could this be sent on to kpmg, for them to draw out what they want?? Would you need more from us? Key point I think is that there are a number of items, but the majority have been dealt with already (and would not themselves have prevented the hospital opening).

Nick

Sent from my BlackBerry 10 smartphone on the EE network.

From: Currie, Brian [REDACTED]
Sent: Thursday, 15 August 2019 11:19
To: Goldsmith, Susan; Bradbury, Nick; Graham, Iain; Pryor, Michael
Subject: FW: Other ventilation issues per IOM report appendix 2

Suggest that Ronnie's update (in red below) is forwarded to Scot Gov?

Regards

Brian

Brian Currie
Project Director - NHS Lothian

[REDACTED]

[REDACTED]

[REDACTED]

[PHNC cyan secondary FOR
[REDACTED]

From: Henderson, Ronnie
Sent: 15 August 2019 11:02
To: Currie, Brian
Subject: RE: Other ventilation issues per IOM report appendix 2
Importance: High

Hi Brian,

I have summarised the current position against each item below and added some explanatory notes all in red italics.

Hopefully I have interpreted Rowena's request correctly but let me know if you need any amendments.

Regards

Ronnie

Ronnie Henderson
Commissioning Manager Hard FM
RHSC & DCN - Little France
NHS Lothian

[REDACTED]

[REDACTED]

From: Currie, Brian
Sent: 15 August 2019 08:02
To: Goldsmith, Susan; Bradbury, Nick; Pryor, Michael
Cc: Henderson, Ronnie
Subject: RE: Other ventilation issues per IOM report appendix 2
Importance: High

V3 tracker, updated yesterday afternoon, will hopefully answer all or most of these queries.

Will check through with Ronnie this morning and report back.

Assume we will be required to provide a response in a format other than the V3 tracker to Scottish Government by 12 noon today?

We will work on that basis.

Regards

Brian

Brian Currie
Project Director - NHS Lothian
RHCYP + DCN

[REDACTED]

[REDACTED]

[REDACTED]

From: Goldsmith, Susan
Sent: 14 August 2019 20:14
To: Bradbury, Nick; Pryor, Michael; Currie, Brian
Subject: RE: Other ventilation issues per IOM report appendix 2

Hi All very concerned that Rowena is listing so many issues. Suggest we pick up in the morning, this level of detail certainly not for kpmg and especially out of context. If they are to be listed we need to say what was being done with them

Susan

From: Bradbury, Nick [REDACTED]
Sent: 14 August 2019 18:30
To: Pryor, Michael [REDACTED]; Goldsmith, Susan
[REDACTED]; Currie, Brian [REDACTED]
Subject: Re: Other ventilation issues per IOM report appendix 2

Michael,

Assume the 7 issues summary was for HFS, or a previous SG enquiry?

This isn't something we've gone into detail on for kpmg (that I'm aware of) so nothing we can pull out off the shelf. Brian, would this be something Ronnie / Graeme could look at, or have produced for HFS?

Nick

Sent from my BlackBerry 10 smartphone on the EE network.
From: Pryor, Michael
Sent: Wednesday, 14 August 2019 17:38
To: Goldsmith, Susan; Currie, Brian; Bradbury, Nick
Subject: FW: Other ventilation issues per IOM report appendix 2

Hi all

This just appeared in my in-box – not sure if Iain is in today so thought I'd better send it on to you, given the deadline.

Thanks

Michael

From: [REDACTED]
 Sent: 14 August 2019 17:17
 To: Graham, Iain [REDACTED]; Pryor, Michael [REDACTED]
 Cc: [REDACTED]; [REDACTED]
 Subject: Other ventilation issues per IOM report appendix 2

Iain and Michael,

Christine has asked that the KPMG report include a note on the other ventilation issues, beyond critical care, identified by IOM (per appendix 2 of their report) for completeness and context. I am aware that you provided a summary of 7 issues previously and :i) I have expanded on this slightly to try to make the technical nature of the issues more understandable in terms of likely impact; ii) noted a number of other issues that I don't think are covered by the 7 but I'm not sure as I don't have the required expertise/understanding.

Grateful if you could: i) check that the explanation of the 7 issues that I've noted below is factually accurate; ii) advise as to how the other issues listed below fit it to the 7 issues or confirm that they don't. If they don't fit into the list of 7, what is the reason for them being excluded (e.g. already rectified?). With apologies for the short deadline, could you come back to me on this by noon tomorrow (Thu) please? Happy to chat through if that is easier and faster.

During their validation of critical care ventilation systems, IOM identified further ventilation issues: (1) very limited extract in theatre corridors affecting pressure in the corridors and pressure differentials between corridors and theatres; IHSL are progressing with a design to resolve this and are currently assessing two options. (2) cabling and cable connectors inside air handling units (AHU) giving rise to potential electrical issues and fire risk; IHSL will provide a proposal to resolve this which will be reviewed and agreed with participation from HFS. A demonstration unit will then be put forward for inspection prior to carrying out the work on all unit. (3) excessive flexible ductwork in theatre ceilings that does not meet recommended length, layout or fire rating; IHSL are currently reviewing and rectifying. (4) concerns on pressure control on AHUs leading to the risk of fluctuating airflows within ultra clean ventilation (UCV) canopy theatres; IHSL have carried out monitoring and will submit report by 16/08/19. (5) within AHU incorrect location of scrub extract grills which is sub optimal for reducing the risk of aerosols becoming airborne in theatre spaces; IHSL consider they have provided a solution which exceeds compliance, IHSL are required to demonstrate this (TBA) (6) some AHU motors running at 95% speed leaving limited scope to overcome any pressure drop and to maintain system performance; IHSL are reviewing and have thus far sampled 70% by simulating a dirty filter condition, we have been verbally informed that all have passed so far and expect a report on completion. (7) back up arrangements appear to be very complex and as such likely to be challenging in event of failure IHSL to demonstrate safe operation of this system to the satisfaction of NHSL, HFS and Bouygues.
 RH 15/08/19 Update– The 7 items above were identified as issues that would be more disruptive to resolve while hospital was fully operational.

A Ventilation Design Group, supported by HFS, is assessing each of these issues, along with the critical care ventilation issue and corresponding remedial requirements.

Other issues listed in IOM report, appendix 2: Please note the vast majority of the items below are simple and straightforward to rectify with minimum or no disruption to the ventilation and these have been identified with an asterisk* While some of the below can be cross referenced to item 2 above these have been updated/actioned separately for ease of closing out individual listed items in the IOM report.

- incorrect calculation of air supply volumes to theatres and required adjustments to overcome this have eroded capacity to overcome further system pressure changes which occur in the normal course of use; There is a difference of opinion among experts (IOM, HFS, HFS appointed expert) as to whether the open bay scrub should be included in the theatre volume, however as in item 6 above IHSL are testing in dirty filter condition and if this passes it can be deemed able to accommodate system pressure changes.
- out of balance design of supply ductwork to theatres leaving ultra clean ventilation (UCV) canopy theatres vulnerable to going out of (pressure) balance over time; Systems currently balanced and rechecked each year in line with guidance, any adjustments can be made at this time. Internal NHSL discussions ongoing on whether to instruct an increase in frequency of these revalidation checks*
- limited access to maintenance for UHUs [what does this stand for?] which could lead to excessive downtime in the event of any issue; All parties (NHSL, IHSL, Bouygues, & IOM) agreed on a sample fan removal activity at an AHU. This was demonstrated to the satisfaction of all on 08/08/19 – Item Closed
- The air system design for dirty utility rooms should be one grille supply but is not meaning both theatres must be run when one is in use which wastes energy and would result in both theatres becoming unusable in the event of failure of shutdown. IHSL have tested this and achieved compliant results (report awaited for review by NHSL/HFS) which mean that theatres can operate individually with no risk or detriment.
- Concerns on alarms/indicators for AHU not operating correctly in theatres 34 and 39 and recommendation to retest to confirm correct operation Rectified by IHSL, will be checked and verified 15/08/19 by IOM*
- No user control or indication panel in angio procedure room, needed for users to control the plant and to indicate that it is operational. IHSL have been informed that this is currently non compliant, awaiting proposal to rectify*
- Excessive noise levels in some rooms. Rectified and evidenced by IHSL – Item Closed
- Several isolation rooms on one AHU leading to risk of significant impact in the event of failure of that AHU. In addition, air changes and pressure under maintenance mode does not meet Health Building note requirements. See item 7 above
- Concerns raised over use of thermal wheels in theatres and recommendation that manufacturer attend to verify use and fitting. IHSL currently checking, report expected W/C 19/08/19*
- Inaccessible volume control dampers in some theatres. Rectified by IHSL – Item Closed
- Insufficient access for cleaning of some parts of the system. Additional access provision currently being installed by IHSL, expected completion 23/08/19*
- Some duct travers points in poor locations and some holes not plugged or capped Rectified by IHSL – Item Closed
- Surplus drip tray in most AHUs and drip tray drain is not blanked off. Rectified by IHSL – Item Closed
- Incorrect filter pleat orientation. Replacement filters ordered by IHSL, short duration activity to replace on each AHU*
- Theatre 32 AHU inspection lights do not operate when unit is isolated which is required for maintenance Demonstrated to be in compliance – Item Closed
- Most glass traps dirty, connected wrong way around and with inadequate air gaps IHSL in process of rectifying, expected completion 23/08/19*
- Cooling coil drip tray hard to clean IOM to further examine and update 15/08/19*
- Scale of the graduations on magnahelic gauges too large to give accurate readings on the filter pressure drop and not marked to show clean and dirty pressure limits. IHSL in process of rectifying, expected completion 23/08/19*

- Motorised dampers take a long time to open and close, impacting speed of auto-changeover. In addition, they do not appear to be spring return (motorised dampers should close in the event of the power failure). IHSL currently reviewing update expected W/C 19/08/19*
- Auto change over arrangements need to be fully tested. Some MD's do not close on plant isolation and some units will not re-start after both motors have been isolated. Cross refers to item immediately above. Both motors require manual intervention to restart after both fail as part of a safety protocol which does not attempt to automatically restart motors which may be faulty – Item partially closed, open part in bold can be included in item immediately above.
- Noisy quadrant fan in the canopy of theatre 38 so this has limited life. Rectified and evidenced by IHSL – Item Closed
- Plant does not seem to benefit from close control. Theatre 35 air volumes are erratic and give differing readings at different times. Several theatres do not achieve the close temperature control as would be expected from modern controls (eg theatres 34 and 35 had fluctuating temperatures which were mirrored by altering RH readings suggesting that temperature control is partially being met by use of cooling rather than closure of heating valves, i.e. heating and cooling batteries compensating for each other. It is essential that the underlying reasons for these fluctuations is understood and resolved by changes to controls. Currently being monitored by IHSL, report expected W/C 19/08/19*
- Plant labelling incorrect and shows incorrect areas served. Some direction arrows on ductwork are incorrect and branch ducts where they leave plant areas are not fully marked up to show areas served. IHSL in process of rectifying, expected completion 23/08/19*
- Communication problems between the BMS (?)and one AHU. Rectified by IHSL – Item Closed
- unable to locate any duct traverse test points on the Angio and MRI AHUs so could not fully confirm air supply volumes to the area. Air change rates compliant in these areas IOM to confirm if item can be closed, update expected 15/08/19*
- It is not clear if critical plant will operate in stand-alone mode in the event of issues with the BMS or communications systems. IHSL confirmed local stand alone control is provided, to be demonstrated to Bouygues, expected completion W/C 19/08*

Many thanks,

Rowena

Rowena Roche
Directorate of Health Finance
Scottish Government

Please note that I do not work on Thursday afternoons or on Fridays.

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Dh'fhaodadh gum bi teachdaireachd sam bith bho Riaghaltas na h-Alba air a chlàradh neo air a sgrùdadh airson dearbhadh gu bheil an siostam ag obair gu h-èifeachdach neo airson adhbhar laghail eile. Dh'fhaodadh nach eil beachdan anns a' phost-d seo co-ionann ri beachdan Riaghaltas na h-Alba.

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No	Area	Item	Issue	Multiplex (inc TUV-Sud / Mercury) Comments 12/07/19 & 17/07/19, 23/07/19, 26/07/19, 30/07/19, 02/08/19 - Red, NHS Blue.	Update Comment 07/08/19 - IOMs comments from AHU Manufacture (Q-nis) meeting	ACTION	Mercury/Specialist Comments
29	AHUs	cabling inside AHU also cable connectors inside AHU, potential for electrical faults to cause as source of fire within the airstream. Potential for smoke/fume to enter clinical areas. Cables and connectors will be difficult to clean and soapy water used to clean AHU internals may impact on connections	Similar situation was found at an NHS hospital in the NorthEast 2016 all wiring had to be removed from AHUs before handover to Trust	The connectors are made from a Polyamide PA6.6 which is resistant to biogenic elements. The material is self-extinguishing. Note that the AHU is also fitted with in duct mounted smoke detector. In the event of smoke being detected the AHU will shut down and the associated CSFD close to prevent the spread of smoke and fire into the theatre. HFS to review. Mercury to issue data sheets on cabling to confirm smoke and fire rating. MPX to confirm IP rating of internal fittings and equipment. MPX to confirm AHU's are SHTM 03-01 compliant Comment 26/07/19 - AHU inspected and current cabling bypassing pre-filter, to be rectified. Verification of SHTM 03-01 compliance still outstanding. 30/7 Manufacturer and agent to visit next week. 02/08/19 MPX - manufacture attending site to review 07/08/19	Witnessed the following comment The AHU's have excessive amounts of cabling, containment within the airstream as identified within theatre AHU's. Cabling in airstream - SHTM 03-01 Part A Para 4.12 - "The plant and its distribution system must not contain any material or substance that could cause or support combustion."	HFS / MPX / Mercury	1. WAGO connectors 231-602 & 231-103/026-000 are made from an insulating material Polyamide 66 which has a melting temperature of 255°C. Polyamide 66 (PA66) is a self-extinguishing material and is classified as V-O under UL94: Standard of Flammability of Plastic Material for Parts in Devices and Appliances testing. V-O: burning stops within 10 seconds on a vertical specimen; drips of particles allowed as long as they are not inflamed (DIN EN 60695-11-10B). Under the design conditions of the AHU this material does not cause or support combustion and is compliant to SHTM 03-01 Part A Para 4.12. 2. Internal wiring: Power cabling for Fans and lighting circuits: LAPP KABEL OLFLEX CLASSIC 115 CY. Screened PVC outer sheath, Flame Retardant according to IEC 60332-1-2. Environmental temperature range for fixed installations: -40°C to +80°C. Under the design conditions of the AHU this material does not cause or support combustion and is compliant to SHTM 03-01 Part A Para 4.12. Control Cabling circuits: BELDEN cable as specified by BMS contractor via Mercury. Screened PVC outer sheath, Flame retardant according to IEC 60332-1-2. Operating temperature range of -20°C to +60°C. Under the design conditions of the AHU this material does not cause or sustain combustion and is compliant to SHTM 03-01 Part A Para 4.12. 3. Cleaning of AHU Internals: Please refer to the AHU O&M manual. It is recommended that the internals of the AHU are cleaned with a wet rag/cloth. The AHU manufacturer does not recommend that the internal of the AHU should be cleaned with excessive amounts or jets of Water. 4. Fan motors are fitted with internal thermistor
30	AHUs	Filter pleat orientation incorrect on top row of final filters	Should be vertical	Filters checked and adjusted as required - Bouygues to confirm. 26/07/19 - Close once confirmed.	SHTM 03-01 Part A Para 8.26 - The quality of filter housing and in particular, the seals is a critical factor in maintaining the efficacy of the filtration system by ensuring that air does not bypass the filter panels. Therefore, the following checks should be made - filter seals should be fitted and in good condition; - filters should be installed correctly with respect to air flow; - bag filters should be installed so that the bags are vertical and their pockets free; - HEPA filters should be installed in a sealed housing and their seals tested to DIN 1946 if specified; - all filters should be checked to ensure they are free of visible damage; - the differential pressure indicators should be checked for accuracy and that they are marked with the initial and final filter resistance.	Bouygues	Mr Vent Ltd have supplied the AHUs with filter housings in compliance to SHTM 03-01 Part A Para 8.26. The AHU final filter frames are certified by Eurovent to a grade of F9 (higher standard to the required F7) and certified under EN1886.
31	AHUs	Pre filters showing signs of bypass		Filters checked and adjusted as required - Bouygues to confirm.	Witnessed the following comment Filter gauges reading low in some cases suggesting filter bypass. Final filter clamping mechanism is ineffective in some units leading to filter bypass. Additionally air flow pushing filters onto the housing. SHTM 03-01 Part A Para 4.117 - "Filters must be securely housed and sealed in well-fitting frames that minimise air by pass. Air by pass significantly reduces filter efficiency, the higher the filter grade the greater the effect. Mounting frames should be designed so that the air flow pushes the filter into its housing to help minimise air bypass. Mounting frames that withdraw so that the filter can be changed without having to reach into the unit are preferred."	Bouygues	"Witnessed the following comment Filter gauges reading low in some cases suggesting filter bypass." - These units have been selected with low velocities and as such the pressure drops across the filters are low. It is imperative that the correct AHU Data Sheets applicable to each unit are consulted while inspecting the units with regards to checking how each component should be functioning. Please review the AHU data sheets which clearly show the Initial, Design & Final filter pressure drops. SHTM 03-01 Part A Para 4.117 - "Filters must be securely housed and sealed in well-fitting frames that minimise air by pass" - The filter frames provided within the units are EN1886 and Eurovent certified and are constructed such that they house the filters securely and minimise air bypass to within the allowable limits as set out under EN1886 standard. "Mounting frames should be designed so that the air flow pushes the filter into its housing to help minimise air bypass" - The pre-filter frames provided within the units have been constructed such that the airflow pushes the filter into its housing to help minimise air bypass. "Mounting frames that withdraw so that the filter can be changed without having to reach into the unit are preferred." - The filter frames provided within the units have been constructed such that they allow the filters to be withdrawn from the access side of the unit in order to avoid personnel entering the unit. The standard EN 1886 states classification for filter bypass/leakage from G1 to F9 filters. Pre-filters G1 to M5 -6% leakage rate for by-pass. Fine filters F7- 2% leakage rate of by-pass. For example at an airflow rate of 1m3/s to maintain classification the allowable leakage rate according to the standard EN1886 is 0,02 m3/s 72 m3/h. Our filter frame is Eurovent certified for F9 filters, that means to maintain classification a leakage rate of 1,5 % leakage rate should be maintained, which is 0,015 m3/s 54 m3/h.
32	AHUs	Magnahelic gauges not marked for clean and dirty limits		All filters monitored by BMS and will alarm when dirty. -Gauges to be labelled clean / dirty as SHTM03-01 clause 4.120. 26/07/19 - Labels ordered.	Mamometer/filter gauges - SHTM 03-01 Part A Para 4.120 - "All filters should be provided with a means of visually checking the differential pressure across them. Direct-reading dial-type gauges marked with clean and dirty sectors are preferred."	MPX / Mercury	This is a preference not a necessity.
40	AHUs	Plant labelling incorrect and shows incorrect areas served.	Temporary labelling installed. Needs to be permanent.	Only incorrect item on permanent label was Theatre number (original number) - temp labels added, new labels awaited. MPX to confirm when permanent labels fitted. Comment 26/07/19 - Now ordered.	Identification of laelling - SHTM 03-01 Part B Para 3.60 - "All supply and extract ventilation systems should be clearly labelled. The label should identify both the AHU and the area that it serves. The lettering should be at least 50mm high and be mounted in an easily visible place near the fan of the unit. Any sub-systems and the principal branch ducts should be similarly labelled." Identification of laelling - SHTM 03-01 Part B Para 3.61 - "The direction of air-flow should be clearly marked on all main and branch ducts." Identification of laelling - SHTM 03-01 Part B Para 3.62 - "All air-flow test-points should be clearly identified and the size of the duct given."	MPX / Mercury	We will change the theatre labels.

No	Area	Item	Issue	Multiplex (inc TUV-Sud / Mercury) Comments 12/07/19 & 17/07/19, 23/07/19, 26/07/19, 30/07/19, 02/08/19 - Red, NHS Blue.	Update Comment 07/08/19 - IOMs comments from AHU Manufacture (Q-nis) meeting	ACTION	Mercury/Specialist Comments
57	AHUs	Inverters	There are some units with inverters also within the airstream		SHTM 03-01 Part A Para 4.12 - "The plant and its distribution system must not contain any material or substance that could cause or support combustion."	MPX / Mercury	The Schneider inverters mounted within the AHUs are designed to operate in ambient operating air conditions of -10 °C to +40°C. The inverters have 14 types of protection integral to the drive: Thermal power stage: drive Overheating protection: drive Short-circuit between motor phases: drive Input phase breaks: drive Overcurrent between output phases and earth: drive Overvoltages on the DC bus: drive Break on the control circuit: drive Against exceeding limit speed: drive Line supply overvoltage and undervoltage: drive Line supply undervoltage: drive Against input phase loss: drive Thermal protection: motor Motor phase break: motor With PTC probes: motor They are also protected by means of a fuse located in the AHU power panel. Under the design conditions of the AHU the inverters installed internally do not cause or sustain combustion and are compliant to SHTM 03-01 Part A Para 4.12. Schneider advise cleaning these inverters using dry compressed air. Manufacturing drawings were submitted by Mr.Vent Ltd and approved to show location of inverters when installed internally inside AHU.
58	AHUs	Dampers	Some of the backdraught dampers fitted had deteriorated badly and were in need of repair			MPX / Mercury	We will replace faulty blades.
63	AHUs	Thermal Wheels	The thermal wheels are on the suction side of the ahu fan meaning any leakage will be entrained into the supply air.		Position of heat recovery device - SHTM 03-01 Part A Figure 1 (Page 21) shows it after fan. Position of heat recovery unit - SHTM 03-01 Pat A Para 4.26 - "The AHU should be arranged so that the majority of items are under positive pressure. Any item of plant requiring a drain should be on the positive pressure side of the fan. A recommended layout is given in schematic in Figure 3." Contradicted by SHTM 03-01 Part A Para 4.36 - "The following arrangement of plant components is typical although in many instances not all elements will be required - fresh air intake; - motorised isolation damper; - frost / fog coil; - pre-filter; - energy-recovery device; - attenuator; - fan; - last plate; - attenuator; - chiller battery; - eliminator; - heater battery; - humidifier; - final filter; - isolation / volume control damper. There may be instances where the above arrangement is not appropriate and the plant arrangement should be planned accordingly. and confirmed by Figure 1 in SHTM 03-01 Part A (Page 21)	MPX / Mercury	The layout of the AHU components are as per SHTM 03-01 Part A para 4.36
64	AHUs	Inlet Section	No self-drain arrangements on inlet sections to ahu's		Fresh air inlet drainage - SHTM 03-01 Part A Para 5.10 - "In inherently wet areas, such as the base of fresh air inlet ducts and some extract systems, the ductwork may require draining to prevent a build-up of standing water. The layout of the drains should be as specified in Paragraphs 4.20 - 4.25." SHTM 03-01 Part A Para 3.70 - "The duct behind louvres should be self-draining. If this is not practicable, it should be tanked and provided with a drainage system."		We will review and action as required.

RHCYP / DCN – Remedial works and reports matrix v.5.0

<u>Ref</u>	<u>Issue</u>	<u>IOM ref</u>	<u>Sub issues/ items</u>	<u>Position reported to IMT</u>	<u>Next Steps / action owner</u>	<u>Commercial impact</u>	<u>Close out: Planned/ Actual</u>
V1	Air Handling Units (AHU) - Confirm AHU comply with the requirements of SHTM 03-01, including fan change, filter bypass, air leakage etc.	29 P	Cabling inside AHU	<p>Identified by IOM as a potential fire / smoke risk and difficult to clean.</p> <p>Site inspections including HFS / HPS, IPC etc, identified potential air bypass of filters via poor fitting and cable position.</p>	<p>7/8/19 site meeting including manufacturer, supplier and fitter – Actions arising: NHSL / IOM – schedule SHTM 03-01 against line items; MPX – will create a benchmark AHU for validation by NHSL / HFS / HPS (and BYES); Including moving inverters out of the unit (to reduce heat / fire risk), validate thermal wheel spillage / controls, sheathing all cables, proving seals and accessibility.</p> <p>Additional schedule of AHU items requiring attention against SHTM issued to IHSL 8/8/19.</p> <p>MPX to respond with a rectification proposal, timeline indeterminate.</p> <p>16/08 Update – MPX/Mercury surveys and assessment have taken place, response awaited</p> <p>23/08 Update – Manufacturer pushing back on several</p>	<p>7/8/19 – Definition of compliance against betterment to be confirmed (NHSL / HFS) Mercury very defensive, particularly against BYES seeking improvements for maintenance etc. Not all components fire rated but assured that power to internal parts, cables, etc. would trip if overheating or shorting. Potential remedial works (following benchmarking) will result in a programme of work- TBC.</p> <p>Alternative of replacing all AHU would probably require DRP at least as significant redesign required.</p> <p>9/8/19 – IHSL / MPX (Callum Tuckett) keen to see detail of non compliance items as MPX, supplier and manufacture still adamant that AHU compliant as signed off by IT.</p> <p>Indications are that MPX will rectify at their expense – remains to be confirmed.</p> <p>23/08 Update – Push back from manufacturer who states that AHU installation complies with SHTM 03-01. MPX will progress with options for remedial works and report back</p>	<p>MPX continue to be pressed for prog. Some 2 -3 months duration likely.</p>

<u>Ref</u>	<u>Issue</u>	<u>IOM ref</u>	<u>Sub issues/ items</u>	<u>Position reported to IMT</u>	<u>Next Steps / action owner</u>	<u>Commercial impact</u>	<u>Close out: Planned/ Actual</u>
					items. MPX progressing with intent to carry out remedial works although scope may alter in light of manufacturers response.	next Friday (30/8)	
		30	Filter orientation		Filters checked and adjusted as required - Bouygues to confirm. 23/08 Filters due to arrive Tuesday 27/08	Addressed by BYES 14/08/19 – Filters ordered by BYES, will be installed on arrival.	TBC
		31	Evidence of airflow bypassing filters		Filters checked and adjusted as required - Bouygues to confirm. See V1 for assurance steps 16/08 Update – Once new filters installed, AHU's to be rechecked to confirm if better fit. See V1, cabling issue needs resolved to fully prevent bypass	See V1 14/08/19 – Filters ordered by BYES, will be installed on arrival.	See V1
		32	Magnahelic gauges not marked for clean and dirty limits		See V1 - @ 7/8/19 26/07/19 - Labels ordered.	See V1	See V1
		34	CLOSED				
		35	Surplus drip tray not blanked off		Caps ordered for drains and will be fitted. MPX to confirm when complete.	See V1	Complete 09/08/19
		36	CLOSED				
		37	Incorrect trap arrangements		See V1 - @ 7/8/19	See V1	See V1
		38	CLOSED				

<u>Ref</u>	<u>Issue</u>	<u>IOM ref</u>	<u>Sub issues/ items</u>	<u>Position reported to IMT</u>	<u>Next Steps / action owner</u>	<u>Commercial impact</u>	<u>Close out: Planned/ Actual</u>
		39	CLOSED				
		40	Plant labelling incorrect		See V1 - @ 7/8/19	See V1	See V1
		41	Branch ducts not generally marked up		Labelling of branch ducts serving theatres needs to be applied by MPX 23/08 Update – MPX request that NHSL provide SHTM reference for this item.	See V1	30/08/19
		42	Auto change over to be tested (see also 27)		See V1 - @ 7/8/19 23/08 Update – Witnessed by BYES and NHSL 21/08/19 Item can be partially closed as item regarding Motorised Dampers is still open	See V1	See V1
		43 P	SOME motors running at over 95% speed – maintenance & service issues flow from that		MPX - Review of all fan speeds as commissioned detailing remaining capacity to overcome dirty filters. 26/07/19 - Aiming to complete by 09/08/19 16/08 Update – Review complete, report awaited. 23/08 Update – Witnessed by BYES and NHSL on 21/08/19 motors able to overcome dirty filter condition 95% refers to percentage of design set point not capacity of fan. MPX to provide report on % of max capacity of fan.	With IHSL to confirm compliance / meet guidance. 9/8/19 – ventilation / IOM meeting: review ongoing 70% complete update expected 16/8/19	MPX – 23/8/19

<u>Ref</u>	<u>Issue</u>	<u>IOM ref</u>	<u>Sub issues/ items</u>	<u>Position reported to IMT</u>	<u>Next Steps / action owner</u>	<u>Commercial impact</u>	<u>Close out: Planned/ Actual</u>
		44	CLOSED				
		45	Maintenance access to AHUs	CLOSED	Restriction removed and maintenance access achieved - CLOSED		02/08/19
		46	Thermal wheels		Schneider to complete survey and report on performance against design. 16/08 Update – Report received from MPX, currently being reviewed	See V1	30/08/19
		50P And 52	AHU Pressure controls and Plant Controls (both BMS)	The use of pressure control sensors downstream of AHU but upstream of UCV canopy has been shown at other hospitals to cause fluctuating or hunting airflows within UCV canopy.	02/08/19 MPX - Trend logs now downloaded and being collated - to be issued by 07/08/19 9/8/19 – IHSL advised that back with MPX as Trend logs had not been set correctly. 16/08 Update – Report received from MPX, currently being reviewed	None anticipated	30/08/19
		51	Ultra Clean Ventilation and Theatre Surgeons panel alarms	When the UCV was operational in THE 39 but the AHU was not running there was no alarm on the Surgeons panel. Similarly in THE 34 the surgeons panel indicated healthy when the AHU was	02/08/19 MPX - rectified and checked. to be demonstrated to IOM 05/08/19		15/08/19 16/08 Update - CLOSED

<u>Ref</u>	<u>Issue</u>	<u>IOM ref</u>	<u>Sub issues/ items</u>	<u>Position reported to IMT</u>	<u>Next Steps / action owner</u>	<u>Commercial impact</u>	<u>Close out: Planned / Actual</u>
				not running			
V2	External doors to plant rooms	n/a		To be reported @ 6/8/19	NSS report that - Ensure that excessive gaps are removed and appropriate anti vermin measures are applied to all the doors and screens.	Should be a helpdesk reportable item (i.e. no commercial impact)	
V3	Air intake location – Air intakes are sited in the well below the helipad but information has not been provided on the impact of downdraft on air flows and pressures or entrainment of contaminants.	n/a			<p>NSS report that - Demonstrate the effect of helicopter landing on air flows through measurement or modelling.</p> <p>NHSL - Site live test to be coordinated with engineering / validation support (September 2019?) – Live test supported by AOB 8/8/19</p> <p>Modelling undertaken by MPX to be demonstrated.</p> <p>NHSL to demonstrate protocols (note live site validation required)</p>	<p>Assuming modelling supports the installation, no commercial impact.</p> <p>If changes to be made, may require Board change. (note: Site live test etc required for PA validation following PCo change.)</p>	Sept 2019?
V4	Ventilation (Isolation rooms and the areas containing them) Isolation rooms are not served by a single ventilation system for each	25	Resilience of systems, protocols and potential impact to be proven and agreed by all parties.	Construction of footprint did not provide sufficient space for individual AHU's for each isolation room (19 total). <i>All parties aware of this solution at an early stage</i> [statement to be	7/8/19 - IHSL to be advised to: Prove that bypass connections to adjacent ventilation systems will allow safe operation of both areas and / or explain service provision strategy for loss of each area including isolation rooms. IOM have witnessed air	Operational compromises and protocols, assuming the systems are proven to be resilient, will be required – alternative is to instruct additional units as Board change but noting insufficient space allowed for additional units.	TBC

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	room as recommended in SHPN4 Supplement 1. The arrangement provided where ventilation systems serve an area of the building including contained isolation rooms has not yet been proven in the event of failure of an air handling unit and the implications for service impact are not yet understood.			verified]. Solution is compliant with design for a high building	change rates and pressure cascade and all ok (confirmation numbers to be provided by IOM to NHSL). Bypass arrangement still to be demonstrated. Opportunity to mitigate this issue for critical care with the ventilation redesign. This was suggested to IHSL, further details to follow		
	Isolation rooms	26	Some isolation rooms not achieving 10 ach		29/7/19 - Demonstration of meeting design requirements to be verified by IOM / NHSL 16/08 Update – Witnessed and verified by IOM on 15/08/19	None if verified; commercial issues may arise if validation fails.	29/7/19 16/08 Update - CLOSED
V5	Ventilation Theatres - The ability of the	22 P		Per MPX - All operating theatres were designed with a	NSS report that - Show that mixing and extract in scrub rooms effectively prevents	None if verified; commercial issues may arise if validation fails.	23/8/19

<u>Ref</u>	<u>Issue</u>	<u>IOM ref</u>	<u>Sub issues/ items</u>	<u>Position reported to IMT</u>	<u>Next Steps / action owner</u>	<u>Commercial impact</u>	<u>Close out: Planned/ Actual</u>
	single high level extract of linear scrub rooms should be demonstrated or additional low level ventilation provided.			high level grille as per RDD issued schematics. mechanical extract. Grilles were designed to be located at high level as this was deemed best to remove moisture laden air.	contaminants being dispersed into theatres or provide additional extract. TUV Sud response 26/07/19 - SHTM03-01 A clause A4-27 details that open bay areas (such as scrub) has no requirement for additional ventilation, as noted extract was added to assist with removal of moisture laden air - HFS reviewed (& update to be passed to IHSL - RH). 16/08 Update – IHSL to demonstrate performance meets or exceeds SHTM 03-01 requirements 23/08 Update – TUV Sud pushing back stating that they are compliant with SHTM 03-01 NHSL to review		
V6	Ventilation Theatres - Anaesthetic rooms 31 and 34 do not demonstrate a clean air flow path to reduce exposure of staff to gasses.	23			Move ceiling supply to opposite side of room from extract. In room 30, move supply away from door. HFS responded, smoke test required to verify 16/08 Update – IHSL to demonstrate performance meets or exceeds SHTM 03-		

<u>Ref</u>	<u>Issue</u>	<u>IOM ref</u>	<u>Sub issues/ items</u>	<u>Position reported to IMT</u>	<u>Next Steps / action owner</u>	<u>Commercial impact</u>	<u>Close out: Planned / Actual</u>
					<p>01 requirements</p> <p>23/08 Update – MPX state they are in compliance, all party required to close this out.</p>		
V7	Ventilation Theatres - Theatre utility rooms Extract ventilation means theatres have to be used in pairs and taking a theatre out of service reduces extract in utility room too low.	11		<p>MPX - As per original design. 26/07/19 MPX - Confirmation that interlock between the two AHU is operational and demonstrate to IOM - Proposed Completion - 02/08/19. 02/08/19 MPX - Interlocks now operational and to be demonstrated to IOM</p>	<p>NSS report that - Add supplementary extract ventilation to allow for one theatre being out of service or demonstrate resilience following the loss of a pair of theatres.</p> <p>IOM Requested to MPX check utility room pressure cascade with one Theatre operational and one in setback</p> <p>IHSL have carried out testing, cascade can be achieved in setback, results awaited.</p> <p>23/08 Update – results received 23/08 NHSL to review and IOM to verify</p>	MPX position is that this is compliant – therefore Board change would be required for any changes.	23/08/19
V8	Ventilation Theatres - Theatre corridor extract and pressure differentials do not	3 P		Pressure cascade is designed to flow from theatres through ancillary rooms out to corridor (reference point / pressure)Corridors	<p>NSS report that - Modify theatre corridor ventilation to comply and test and commission.</p> <p>02/08/19 MPX - Additional extract will be required. two</p>	MPX appear to be progressing changes without commercial challenge.	Final design solution to be advised w/c 12/08. Work

<u>Ref</u>	<u>Issue</u>	<u>IOM ref</u>	<u>Sub issues/ items</u>	<u>Position reported to IMT</u>	<u>Next Steps / action owner</u>	<u>Commercial impact</u>	<u>Close out: Planned / Actual</u>
	comply with requirements.			designed to be positive pressure to the adjacent departments and circulation areas and are in excess of 7ac/h out flow. Noting that the dirty Utility extract draws air from the corridor contributing to the air change rate. ACTION - Confirmation / evidence that 7ac/h are being achieved and that contaminated air is not discharging to hospital corridor. 23/07/19 MPX stated that adjustments had been made, MPX to confirm if this is now compliant with requirement for 7 ac/h and 0 pressure.	options being reviewed, one with additional extract fans in plantroom, second being adding additional branch duct to theatre extract. 16/08 Update – MPX progressing with option of installing additional extract fan. Proposed target date of 30/09 confirmed as realistic.		programme to follow. 30/9/19
V9	Ventilation Theatres - Provision for maintenance without unnecessarily affecting service appears poor.	33	Insufficient access arrangements into the AHU		For each area, the Board should have the maintenance and failure contingencies mapped and agreement of clinical colleagues for the expected impact on room availability. BYES to compile / demonstrate protocols	IHSL (MPX) have identified previous cleaning without problems. BYES position appears to be looking for improvements. MPX fitting additional access hatches.	Access hatches – MPX – w/c 9/8/19 Protocols – BYES / NHSL – TBC 23/08

<u>Ref</u>	<u>Issue</u>	<u>IOM ref</u>	<u>Sub issues/ items</u>	<u>Position reported to IMT</u>	<u>Next Steps / action owner</u>	<u>Commercial impact</u>	<u>Close out: Planned/ Actual</u>
					Sample removal evidenced to all parties satisfaction on 08/08/19. BYES to review Access and Maintenance strategy for detail.		Update - CLOSED
n/a	Isolation rooms ventilation – back up	27	Back up arrangement appears very complex	Some remedial works completed.	MPX Currently reviewing issues with 04-06 and 04-07 maintenance bypass Still outstanding See V4	Should be none	w/e 23/08/19
V10	Ventilation Theatres - Fire dampers in some locations cannot be adequately tested as duct access has not been provided. Also, locations of fire dampers and fire rated ductwork has been questioned.	n/a			NSS report that - Provide access so all fire dampers can be readily visually inspected to verify operation. Review fire damper provision and fire rated ductwork and confirm appropriate provision. Not shared with IHSL/MPX as yet. (14/08/19) 16/08 Update – This is part of the Malcolm Thomas report and not for onward distribution as yet, pending issue of NSS report.	Should be none, to comply with guidance.	
V11	Ventilation Theatres? - On inspection the ventilation systems throughout the	n/a			NSS report that - A full snagging of the ventilation systems should be undertaken and rectification put in place. E.G. air handling unit leaks, filter bypass, dust in AHUs and ductwork,		

<u>Ref</u>	<u>Issue</u>	<u>IOM ref</u>	<u>Sub issues/ items</u>	<u>Position reported to IMT</u>	<u>Next Steps / action owner</u>	<u>Commercial impact</u>	<u>Close out: Planned/ Actual</u>
	building had clearly not been snagged and were not ready for validation or operation.				missing duct access, fire stopping, fire dampers. 8/8/19 – AOB advised by NSS that background to such quotes would be provided to NHSL to explain context of opinion. HFS input awaited 14/08/19 16/08 Update – This item is covered by V1		
		18	Excessive flexible ductwork in theatre ceilings		Theatre 35 flex to be altered - MPX - Material ordered and will be installed 06/08/19 Outstanding – identification of any other areas. action? 9/8/19 – IHSL advised that engineer turned up on site with wrong fittings. MPX – to be instructed by IHSL to do full survey 23/08 Update – MPX will rectify in known locations only and so not intend to survey all areas as theatre ventilation has been balanced successfully with this in place	None – defect / failure to meet guidance	23/8/19
W1	Critical care	n/a	Pseudomonas found in		All taps (not just TMT/TMV) to be disinfected and retested.	9/8/19 - See attached draft change instruction 084	Up to 15 week

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			taps, in critical care areas		<p>Follow guidance. Replace tap strainers and cartridges in CCU TMT taps. Showers require to be disinfected. Implementation plan required.</p> <p>Suggested methodology from Westfield Caledonian and Board AE to be implemented via board change after internal and HFS review.</p> <p>23/08 Update – BYES to provide disinfection method from other sites. Board change to reflect this</p>	Costs to be identified once full scope of works known	return to service protocol therefore requires urgent action
W2	Non critical care	n/a	Swarf and biofilm found in tap strainers.		<p>Replace tap strainers in all areas.</p> <p>See W1</p>		
W3	Showers (all areas)		Shower hose lengths do not comply with Scottish Water bye laws and guidance.		<p>Shorten hose length or fit retaining ring to ensure that head cannot reach WC or drain Disinfect hose and drain after rectification.</p> <p>BYES are ordering retaining ring to prevent hose reaching floor/wc</p>		
W4	Water (general)		Testing has found		The water system should be disinfected and re-tested.	9/8/19 - See attached draft change instruction 086	

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			widespread fungal contamination			Costs to be determined	
W5	Water (general)		Legionella risk assessment.		<p>The Legionella Risk assessment Feb 2019 identified a range of actions. The Action Tracker does not demonstrate that the issued raised have been resolved or a timeline provided for resolution.</p> <p>The risk assessment is too heavily focussed on Legionella and not taking into account other organisms in line with patient type.</p> <p>There is no categorisation of patient type anywhere in what we have been provided and consideration to susceptibility.</p> <p>BYES have an action plan which will be shared with the Board</p>		23/08/19
W6	Water (general)		Designated roles and responsibility.		It has not been demonstrated that there are authorised persons or competent persons for the water services as defined in SHTM 00 and SHTM 04-01. In addition, a responsibility matrix and interface to NHSL water management group is required.		

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					<p>The current Responsible Person has not been appointed in writing and uncertain as to whether received RP training. Additionally, has no previous experience of healthcare.</p> <p>BYES to provide info some evidence seen by board rep.</p>		
W7	Water (general)		Water tanks		<p>The Raw Water and Filtrate water tanks are interconnected at the drain. These must be separated.</p> <p>To be reported as a defect</p>		30/08/19
W8	Water (general)		Expansion vessels should be checked for susceptibility to bacterial growth.		<p>Bladder from expansion vessels to be inspected.</p> <p>See W1</p>	Change order anticipated	
W9	Water (general)		Hot and cold water temperatures / Flushing.		There was an issue with raised cold water temperatures during the boiler outage – this requires investigation.		
W10	Water (general)		Filtration Plants		From work done at Glasgow microbiological Growth potential was identified as part of the Backwash cycle. Suggest Chlorine dioxide addition to backwash water tank to aid microbiological		

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					and biofilm development on filters.		
W11	Water (general)		ZIP & HYDRO Units		These were found to be contaminated and are required to be disinfected and tested to demonstrate safe water delivery.		
D1	Drainage / plumbing		Sinks drains		Initial testing indicates that these are not significantly contaminated, however they need to be disinfected periodically prior to and post occupancy to maintain their condition. Suggest utilising the Hysan methodology being employed at QEUH and RCH Glasgow.	9/8/19 - See attached draft change instruction 085	
D2	Drainage / plumbing		Bottle traps		There would appear to be an inconsistency of installation and potential of back-feed from trap to drain. This requires review		
D3	Drainage / plumbing		Trough Sinks		The drains in trough sinks have been identified as high risk potential. This requires review and treatment strategy considered.		
D4	Drainage / plumbing		Pumped Drainage		The Rainwater drainage system presents the potential for flooding on pump failure and requires review		

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E1	Electrical		Not inspected yet due to priority put on water, ventilation and drainage.		HFS reviewing on site as of 12/08/19		
F1	Fire		Not inspected yet due to priority put on water, ventilation and drainage.		HFS reviewing on site as of 14/08/19		
G1	Medical Gases		Not inspected yet due to priority put on water, ventilation and drainage.				
n/a	DESIGN DEVELOPMENT and NEW WORKS – raising the air change rate and improving pressure regime for CRITICAL	28			Agree Board Change technical specification – NHSL (BC) with input from HFS / HPS 8/8/19 – agreed in principle at AOB*; subject to more details being provided to NSS (IG) *SEE ATTACHED REPORT & supporting information.	Consider the mechanisms for Board change, particularly: 1. Reserving rights to pursue (e.g. negligence, etc) 2. Indemnity to IHSL and supply chain 3. VfM tests 4. Step in / alternative procurement routes.	TBC by IHSL but shortest prog as Plan A likely to be 24 weeks from any agreement

Ref	Issue	IOM ref	Sub issues/ items	Position reported to IMT	Next Steps / action owner	Commercial impact	Close out: Planned/ Actual
	CARE				<p>Fast Track Board Change Request Process to be adopted as agreed with IHSL on 13/8/19.</p> <p>Letter of intent being drafted to enable design to progress (SG). If agreeable to MPX, further letter of intent to be drafted to enable AHU to be ordered once system designed (SG).</p> <p>MPX will not accept an "agreement to agree" and are seeking a waiver from the Board to any right to pursue MPX for any alleged non compliance in respect of ac/hr in relation to CC single bed and four bedded rooms.</p> <p>Above draft documents to be tabled at OSG on 22/08/19 (SG).</p>	<p>9/8/18 – MPX indicated that basis of draft board change would be sufficient to keep TUV SUD engaged for design phase.</p> <p>Plan A – Use Board Change and letter of intent to allow MPX/TUV SUD to design.</p> <p>Plan B – Use Board Change to instruct IHSL to procure alternative designer should wording on letter of intent not be agreeable to MPX.</p> <p>Plan C – Board exercise their "step in" rights.</p> <p>Board to consider temporary waiver to not exercise their rights to terminate the PA on a rolling review basis (SG).</p>	<p>of letter of intent.</p> <p>Plans B + C</p> <p>considerably longer.</p>
n/a	Confirmation of compliance for general single rooms and 4 bedded bays - air change rates		6 Air Changes per hour, mixed mode v 4 ACH supply	At OAB 8/8/19 – NSS advised that they were working through analysis;	<p>Update to be reported to next OAB</p> <p>23/08 Update – Response expected from MPX 23/08 with supporting information on difference between 6 and 4 air changes</p>	Not defined at present	TBC

Notes:

23 August 2019

This matrix will be updated to reflect relevant Guidance (eg SHTM 03-01) against line items. Also to include relevant approvals given.

- a. Cross referencing of IOM Ventilation report to SHTM 03-01 clauses being undertaken by IOM / NHSL (RH) to support clarification with IHSL (MPX, Mercury and AHU plant manufacturers and suppliers. Many line items are picked up in general statements in the SHTM, rather than as specific item definitions; for example, potential difficulties for maintenance have an impact on clinical service delivery if prolonged down time is encountered, but have TO DATE been accepted by BYES as fit for purpose – 7/8/19
- b. Actions to be translated into a programme for monitoring and interdependencies including prioritisation.
- c. Commercial approach and position to be developed as individual task clarified.
- d. Verification of IT approvals, against issues being found, to be undertaken based on the review outputs.
- e. Items highlighted are seen as priority / long lead time elements
- f. Operational management implications will need consideration – for example, issues identified on this list could / should be logged on the helpdesk and deductions under the payment mechanism will flow (to BYES through IHSL).
- g. Items 1 & 15 from previous IOM schedule (Use of swirl diffusers and noise slightly high in UCV theatres) have been closed at Ventilation meeting 9/8/19.
- h. Items W1 to W11 and D1 to D4 inclusive require discussion with HFS to form a joint view prior to any further communications to IHSL

Ventilation Issues Summary Report

19th August 2019

1.0 Introduction & Background

1.1 Since initial reports of problems with the critical care ventilation system by IOM during independent validation there have been twice weekly meetings held to progress each identified issue to a conclusion. Several items have been closed off but others, including some significant works, remain open. The current position is outlined in the following sections.

2.0 Reports and Status

2.1 To date three reports have been produced into performance and compliance of the ventilation systems. These reports and their current status are:

- Independent validation of critical ventilation systems – Issued in Draft
- Independent validation of general ventilation systems – Draft expected imminently
- HFS Expert Review Report – Issued to HFS

2.2 The draft report issued after Independent validation of critical ventilation systems has been used as the basis for ongoing discussion and remedial works since it was issued in early July. It identified 54 items of concern and these were developed into an action plan which is updated at the twice weekly meetings.

2.3 IOM were further commissioned to assess performance of the general ventilation systems focusing on 100% of the clinical areas and a sample of non clinical locations. A draft of their report is expected this week however ahead of this some items have been identified in a similar vein and will be added to the current action plan.

2.4 As part of the audit currently being undertaken by HFS they commissioned a review by a known expert. His report has been issued to HFS but is at present unable to be issued to IHSL until a consolidated view and/or report is obtained from HFS

3.0 Critical Care Ventilation

3.1 Currently the largest single outstanding item relating to ventilation is the need to deliver a ventilation system capable of providing 10 air changes per hour at 10 pascals positive pressure to critical care areas. Initial discussions regarding concept design have taken place at the ventilation meetings however there is not yet full commitment to design development from IHSL supply chain. In order to

progress with design NHSL have agreed to issue a draft Letter of intent and supplementary agreement which will allow the design team to commit to the process.

3.2 Indications are that the design process will take 3 weeks from issue of letter of intent and the lead time for procurement of the air handling unit is estimated to be approximately 18 weeks. Delivery to site will be followed by a further 3 week period to install, commission, and validate, some time should also be allowed for slippage. During the lead time for procurement, the associated design and construction elements can be progressed to the point where they are completed prior to delivery of the air handling unit.

3.3 It is proposed that the ventilation meeting held every Tuesday be converted to a meeting specifically to progress this work package. An initial internal meeting will be held on 20th August with clinical stakeholders to brief and engage in the design process.

4.0 Action Plan and Matrix

4.1 An action plan was produced from the 54 items of concern in the draft IOM report and to date 28 are closed. Items identified during the general ventilation discussions will be added to this list and Multiplex will update and re-issue. From the initial 54 items, the seven in section 5.0 below were identified as works that may be disruptive were they to be carried out while the hospital is fully operational and special emphasis has been placed on progressing these at the ventilation meetings. At present, except for the seven below, it is felt that none of the remaining items in the initial 54 and the latest additions are of a significant nature and could be carried out whilst the hospital is occupied with little or no disruption to activity.

4.2 A further matrix has been produced to update the IMT and contains water, drainage, and Electrical items as well as ventilation, this has been updated and issued today, 19th August, as version 4. It includes items from HFS appointed experts initial reports which have not yet been shared with IHSL and NHSL currently await an update or report from HFS confirming their view prior to issuing.

5.0 7 Major Items

5.1 **Very limited extract in theatre corridors** – Multiplex are proceeding with a design and installation to provide more extract to the corridor via a secondary fan. Expected completion 30th September

- 5.2 **Excessive flexible ductwork in theatre ceiling spaces** – Extent and compliance status of this item is unknown as flexible ductwork up to certain length and form is permitted. Multiplex have been made aware of locations that may be an issue and will survey to establish impact. If identified as excessive, remedial works will be short duration but would be very disruptive if theatres were in use.
- 5.3 **Scrub extract grilles** – According to guidance the extract grille in the scrub area should be low level, Multiplex have designed and installed these at high level and have provided their rationale for doing so. Multiplex are required to demonstrate that their installation meets or exceeds the performance of a low level grille. If it does not, work will be required to duct these to low level and would be very disruptive if theatres were operational.
- 5.4 **Isolation room back up arrangements appear to be very complex** – Multiplex have designed a back-up system which during periods of maintenance to air handling units serving isolation rooms can be operated to borrow air from less critical locations to maintain the integrity of the environment in the isolation room. This has yet to be fully demonstrated and if unsuccessful may require disruptive works to remedy. This would be difficult to achieve if the isolation rooms were occupied.
- 5.5 **Cabling and electrical items in airstream within air handling units** – Electrical components and cabling not normally designed within air handling units have been installed. If deemed non compliant, Multiplex will submit a proposal for review followed by sample works to one unit for agreement before proceeding to remediate all units. This item covers some of the less disruptive items on the action plan and it is intended that these will be rectified at the same time. NHSL are pushing for timescales for this item.
- 5.6 **Some motors running at 95%** - Controls appear to indicate that there is little spare capacity to overcome dirty filters in air handling units as fan motors are running at close to full speed. Multiplex have carried out a survey and have verbally indicated that the readings have been misinterpreted and show only that they are running at 95% of design and have adequate spare capacity above these values. Report and evidence is expected this week, if satisfactory, this item can be closed upon receipt of confirmation.
- 5.7 **AHU pressure controls** – During inspection IOM noted some fluctuations in pressures and suggested it may be due to the location and type of sensor. Multiplex have logged performance over a significant period and submitted results on 16th August for review by NHSL. If satisfactory this item can be closed,

if not remedial works although small and short duration will be disruptive if theatres are operational.

6.0 Conclusion

6.1 Until further information in the form of reports and recommendations from HFS and IOM are received the foregoing represents the current status of ventilation issues known to the two parties. It is recognised that some of the remedial work is fairly significant and may take a reasonable time to rectify, however the vast majority of items could be done whilst the hospital is fully operational with little or no disruption or impact on performance.

The 7 items listed in section 5.0 above represent the most disruptive works and the focus and expectation is that these will be rectified before the hospital is fully operational.

Provided no other significant issues arise from the HFS and IOM reports, the duration of design and installation works required to provide the necessary ventilation to critical care areas mean that this element is likely to be the last of the items mentioned above to be completed.

Ronnie Henderson 19th August 2019

Cabinet Secretary for Health and Sport**EDINBURGH CHILDREN'S HOSPITAL - UPDATE****Purpose**

1. To provide an update on the current situation regarding the new Edinburgh Children's Hospital.

Priority

2. Routine.

Background

3. This note provides a further update on the current actions being taken to resolve the various issues previously identified.

Operational Impact and Support

4. In the past week, the NHS Lothian Children's Hospital Helpline received 7 calls; this compares to 5 and 3 calls in the previous two weeks. The helpline will remain open until you are satisfied that it is no longer required. Services impacted by the postponed move to the new building are now working as business as usual with all appointments being communicated and managed through the Board's normal processes.

Critical Care Ventilation

5. The solution for critical care ventilation has been finalised, and it is now subject to final review and sign off by HFS. NHS Lothian are working through commercial considerations on how the rectification works will be procured.

Other Ventilation Issues

6. Work to finalise all other ventilation issues that need to be rectified is progressing. This work includes agreeing where the responsibility for rectifying the issues lies. If there is a defect and Multiplex accept responsibility, they will be liable for the cost. If there is a defect and Multiplex do not accept responsibility, it will take time to work through where the cost liability lies.

Phased Migration

7. At their next meeting on 22 August, the Oversight Board will provide advice on plans for phased migration of services as they are developed.

External Review – NHS National Services Scotland (NSS)

8. Phase 1 of the review is progressing to plan and we are still expecting an interim position by close 21 August with a final report in early September. The scope and approach for the final phase (fire, electrical and medical gases), is under discussion as they are considering whether it would be possible to bring the completion of that work in line with phase 1.

9. A workshop to review and assess the impact of support requirement for other capital projects (ie phase 2 and 3) took place on 13 August and it was decided that due to the level of resources required to complete the work at the Edinburgh Children's Hospital, the preliminary work on the other projects would be delayed until completion of phase 1.

KPMG Audit of Governance

10. KPMG are conducting factual accuracy checks and will submit an initial draft of their findings to Scottish Government by close of play tomorrow, 15 August. Preliminary findings indicate that the information from all parties is providing a consistent and not conflicting picture, governance appears to have been appropriate (the right people appear to have been involved at the right times); there was lack of clarity on ventilation requirement from the outset across parties involved and the relevant guidance; escalation appears appropriate at the point NHS Lothian became aware of the critical care ventilation issue but there was a lack of contingency planning ahead of this. The finalised report is still expected next week, as planned.

Cabinet Secretary for Health and Sport**Meeting with NHS Lothian Joint Staff Side**

11. You met with staff side on Tuesday 13 August and overall the meeting went well. You were able to assure staff that there has been no instruction from Scottish Government for NHS Lothian to withhold relevant information from staff. It was agreed that in addition to you writing to all staff updating them on the current position, you would also write to the Employee Director with an update which includes the Terms of Reference from the KPMG review, the NSS review and the Oversight Board. It was also agreed that having a staff side representative on the Oversight Board would be helpful and the Employee Director has been asked to provide a nomination.

Oversight Board

12. The Oversight Board met for the first time on Thursday 8 August where it was agreed in principle that a communication would be issued on a fortnightly basis. As noted above, it was agreed at the meeting with NHS Lothian Joint Staff Side, that a representative would join the Oversight Board.

Media and Communications

13. Following media reports on various issues, there has been an influx of Parliamentary Questions and FOI requests, including 32 PQs from Alex Cole-Hamilton. Health Finance are working to adopt a practical approach to responding to these requests to minimise the work required by NHS Lothian, whose priorities are to resolve the issues in the new hospital. One comprehensive answer will be drafted and referenced in answer to individual PQs; all questions are due to be submitted to Private Office by 22 August.

Summary

14. You are invited to note the current position. A further update will be provided on Friday following receipt of the draft KPMG report.

Barbara Crowe, Health Finance
14 August 2019

From: McCormick, Andrew [REDACTED]
Sent: 15 August 2019 09:22
To: Matthew Templeton; Huband, Tim; Spencer, Adam; Bigwood, Ian; Alex Jones [REDACTED];
'Stefano Attici' [REDACTED]; Edo Kalan [REDACTED]
Cc: Stephen Gordon; Richard Osborne (MacCap); Viv Cockburn; Wallace Weir;
[REDACTED]
Subject: RE: RHSC: Lender Update

Matt,

Many thanks for your update and we are pleased to see things are moving forward.

We will update Hogan Lovells on the proposals so they are warmed up ahead of any documentation which may be coming their way in due course.

Kind regards,

Andrew



Andrew McCormick
Director
Project and Infrastructure Finance

[REDACTED]

From: Matthew Templeton [REDACTED]
Sent: 15 August 2019 08:34
To: Huband, Tim [REDACTED]; McCormick, Andrew [REDACTED]; Spencer, Adam [REDACTED]; Bigwood, Ian [REDACTED]; Alex Jones [REDACTED]; 'Stefano Attici' [REDACTED]; Edo Kalan [REDACTED]
Cc: Stephen Gordon [REDACTED]; Richard Osborne (MacCap) [REDACTED]; Viv Cockburn [REDACTED]; Wallace Weir [REDACTED]
Subject: RHSC: Lender Update

Dear all,

Following our call on Monday I agreed to provide feedback on our meeting with NHS Lothian (NHSL), to discuss commercials around progression of Critical Care ventilation design/works and Payment Mechanism Warning Notices.

The meeting with NHSL, Multiplex and IHSL was very positive. Susan Goldsmith presented a proposal to IHSL which enables the progression of the design and installation of the Critical Care ventilation amendments and a moratorium period on termination as a consequence of breaching Warning Notice/Deduction thresholds.

The meeting was attended by legal advisors from all three parties, and MacRoberts (acting on behalf of NHSL) will confirm the proposal in writing shortly, however I have summarised key points below from the meeting:

Critical Care Ventilation

NHSL has requested this is progressed in the same manner (and with the same risk profile) as a Board Change, although all parties agree that the strict procedure in the Change Protocol need not be followed in order to save time. Key principles outlined by Susan Goldsmith:

- NHSL accept responsibility for the costs associated with the requested amendments to the Critical Care ventilation;
- NHSL acknowledge the Critical Care ventilation as designed and built complies with the contract;
- NHSL will issue a Letter of Intent to allow the design works to commence in the next week; with a Supplemental Agreement 2 to follow for the construction works. The Letter of Intent will confirm NHSL are responsible for the design costs (with a noted cap) and waive any reservation of rights with respect to the critical care ventilation (as designed and built). See bullets below;
- In respect of the waiver of reservation of rights in the Letter of Intent/ Supplemental Agreement 2 with respect to the current critical care design & construction, NHSL propose we use the drafting structure in the SA, whereby the existing design and construction will be a "Released Claim" and the amended design of 10 air changes and positive pressure will be the new "Agreed Resolution".
- Multiplex and MacRoberts to agree the drafting of the waiver to be provided in the Letter of Intent. This is a very important condition upon which Multiplex and their designers will be prepared to proceed and an agreement to agree will not be sufficient.
- NHSL advised that the reason for splitting the Board Change into 2 parts is firstly to allow design works to commence quickly, but also they may wish to add in other items raised through the Scottish Gov't/HFS Technical Reviews.
- Lastly, we discussed that if the Board Change/Supplemental Agreement 2 was not in place, NHSL would provide a further Letter of Intent to enable key items of plant with long lead-times such as Air Handling Units to be ordered.

Subject to the agreement of the waiver drafting and drafting of the Board Change, Letter of Intent and Supplemental Agreement 2, this seems broadly acceptable to IHSL and Multiplex. A back to back supplemental agreement with Bouygues will also be required in order to reflect any adjustments to their Services and/ or lifecycle obligations (again such costs will be the responsibility of NHSL).

The project will require lenders cooperation and support in processing this variation, which we can discuss on our next call.

Warning Notices

NHSL advised that on the basis the above progresses, NHSL will provide a moratorium period upon which they will not terminate the PA as a consequence of Warning Notices/Deductions breaching thresholds for a specific period. NHSL will not rescind the two existing Warning Notices, and Deductions will continue to apply where agreed and determined.

The moratorium period was not advised, however IHSL stated we would require the period to be of sufficient length such that the two existing Warning Notices ceased to remain effective.

I hope this provides lenders with an update and lenders are as equally encouraged as IHSL with the positive pathway proposed. It is fair to say all parties remain anxious at the potential observations of the HFS Technical Review. The project parties recognise the design standards can be interpreted in a number of ways, and we have collectively agreed our interpretation for this project, therefore the context around design decision making is key. We hope this is acknowledged and understood in the review.

Our next call is scheduled for 19th August at 2:30pm. An invite will be issued shortly.

Regards

Matt

Matt Templeton | Director
Dalmore Capital



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**RHCYP/DCN – INCIDENT MANAGEMENT TEAM MEETING
THURSDAY 15 AUGUST 2019 – 4.00-5.30
MEETING ROOM 5, LEVEL 5, WAVERLEY GATE**

AGENDA

1. Apologies
2. Previous Minute – 12 August 2019 (Attached)
3. Technical Updates
 - Ventilation Tracker as of 12 August BC
 - Water AMcM
 - Drainage BC
4. Commercial Position and Contract Management – IHSL SG (To follow)
5. RHSC UKAS Accreditation J C (Attached)
6. Comms/Staff Update JMck (Verbal)
7. AOCB
8. Dial-in Details:
 - T: [REDACTED] (or if dialling internally [REDACTED])
 - Participants Code: [REDACTED]
 - Moderator Code: (Susan Goldsmith only) [REDACTED]

Draft**RHCYP/DCN: Commissioning/Ventilation**

Note of a meeting held at 4.00 pm on Monday 12 August 2019 in Meeting Room 5, Waverley Gate, Edinburgh.

Present: Susan Goldsmith, Finance Director (chair); Carol Calder, Infection Prevention and Control Nurse; Jacquie Campbell, Chief Officer, Acute Services; Brian Currie, RHCYP/DCN Project Director; Tim Davison, Chief Executive; Tracey Gillies, Medical Director; Iain Graham, Director of Capital Planning and Projects; Alex Joyce, Employee Director; Ian Laurensen, Consultant Microbiologist; Judith Mackay, Director of Communications; Alex McMahan, Nurse Director.

In Attendance: Bryony Pillath, Committee Administrator (minutes).

Apologies: Lindsay Guthrie, Lead Infection Prevention and Control Nurse; Donald Inverarity, Consultant Microbiologist.

1. Minutes of the Meeting held on 5 August 2019

1.1 Minutes approved as a correct record.

2. Oversight Assurance Board Feedback

2.1 Susan Goldsmith gave a verbal update. The meeting had been positive but next steps were not yet clear. It had been agreed that the fire safety and electrical safety inspections would be brought forward by Health Facilities Scotland.

3. Ventilation Tracker

3.1 The tracker for all ventilation issues had been previously circulated. A further report from IOM was awaited specifying which of the air handling issues were areas of non compliance and which part of the SHTM standards applied to them. This applied air handling for all units.

3.2 The current position was that IHSL maintained that the units were compliant with standards, but Health Facilities Scotland did not agree. The IOM inspection report stated that if action was taken to resolve the issues identified with the air handling units the hospital would be safe to occupy. By the next Oversight Assurance Board meeting on 22 August it there needed to be agreement on which specific areas needed to be resolved before this would be the case.

3.2 Separate to the general air handling issues, a change had been requested for the air handling in the critical care unit. A timeline and agreement for this was awaited from IHSL.

- 3.3 It was agreed that the ventilation group meeting twice per week would be used to drive a resolution as progress on coming to an agreement had been slow.

4. Water Report

- 4.1 Alex McMahon spoke to the previously circulated paper which followed the water safety workshop held on 29 July 2019. The results of the water sampling completed met the required SHTM and showed no systemic problems. There were some isolated issues that were being dealt with.
- 4.2 Health Protection Scotland would carry out further non routine testing for fungi so that the situation was known. If fungi was found in area that was the same as that which caused problem at the Queen Elizabeth Hospital in Glasgow then mitigating actions could be considered either before occupation of the hospital or after.
- 4.3 It was agreed that there should be a separation between compliance with the required standard which was evidence based, and identification of problems associated with the incident in Glasgow where learning was still in development. It was noted that some of the mitigating actions taken following the incident at the Queen Elizabeth Hospital had had adverse effect on the water quality. Jackie Reilly at Health Protection Scotland agreed with this approach. Dr Laurenson advised that the main focus should be on keeping the water systems separated from the patient areas. It was agreed that the two areas of water testing would be reported in separate papers to ensure the distinction.
- 4.4 The water engineer from Bouygues had produced a Water Management Plan which outlined a robust flushing action plan to be used while the hospital was unoccupied. Estates were aware that no further flushing was required in addition to this which was currently the responsibility of Bouygues and would be handed over to NHS Lothian when the hospital became occupied.
- 4.5 Members accepted the recommendations laid out in the paper. The action plan and paper would also be submitted to the next Oversight Assurance Board.

AMcM

5. Drainage

- 5.1 A paper had been previously circulated. Most of the issues identified by Health Facilities Scotland were in relation to plumbing rather than drainage. Drainage would be considered in their next inspection the next day.
- 5.2 Brian Currie gave a summary of the previous settlement agreement regarding drainage. Initially there had been two sump pumps in place; one was in a basement near the kitchens and would be taking drainage from clinical areas. This was not suitable and following agreement an enhanced management system was put in place and a third pump installed. NHS Lothian was content with this arrangement.

- 5.3 It was noted that Health Facilities Scotland had also been asked to inspect other newly completed hospitals in Scotland but that this had not been started to be organised yet and was not expected to delay inspection of the RHCYP.

6. Commercial Position and Contract Management

- 6.1 A summary and drawings showing the specific areas of the hospital where the critical care standard applied had been previously circulated. This would be sent to Health Facilities Scotland and Health Protection Scotland for agreement before being issued to IHSL. These were the areas that would require 10 air changes per hour. As part of the contract NHS Lothian was entitled to provide the definition of the critical care services and this made the definition clear.
- 6.2 The first formal commercial negotiation meeting between NHS Lothian and IHSL would take place the next day on 13 August 2019. Brian Currie, Ian Laurenson and Susan Goldsmith would attend from NHS Lothian and Multiplex was also expected to attend.

7. KPMG Report

- 7.1 The response from the investigation was being consolidated. A teleconference had been held earlier that day and the response seemed comprehensive.

8. Communications

- 8.1 This would be added as a standing agenda item at future meetings. Topics would be agreed for staff update at the Oversight Assurance Board and these would be issued to all staff fortnightly or monthly as agreed.
- 8.2 The Royal Hospital for Sick Children Medical Staff Association group would meet at the end of August. Fiona Mitchell, Eddie Doyle, Tracey Gillies, Alex McMahon, Tim Davison and Susan Goldsmith would attend. They would meet beforehand to discuss the update they would give and this may need to be agreed by the Cabinet Secretary. This could also be used as a basis for update to all staff.
- 8.3 The Cabinet Secretary had agreed to meet staff side representatives on 13 August to give an update and answer questions, at there had been no update to them so far. Alex Joyce would be leading discussion at the meeting.

9. Any Other Competent Business

9.1 Visits to the new hospital

- 9.1.1 It was agreed that the planned visit from Ian Murray MP to the new hospital would be postponed.

9.1.2 Susan Goldsmith had suggested that the Cabinet Secretary should be invited to visit the hospital to show that it would provide greatly improved accommodation for services. This was agreed. **SG**

9.2 Paediatric Migration Plan

9.2 This would be ready for the meeting on Thursday 15 August 2019, and could also be discussed at the Oversight Assurance Board on 22 August 2019.

10. Date and Time of Next Meeting

10.1 The next meeting would be held at 4.00 pm on Thursday 15 August 2019 in Meeting Room 5, Waverley Gate, Edinburgh.

Brief paper for IMT 15.8.19 prepared by Dr Ian Laurenson

Three reports (one duplicated), a number of sample results and other files (unable to open ? significance – possibly none) in email received from Professor McMahon 130819

He had received these from Prof Jacqui Reilly who had received these from Eddie McLaughlin, Assisants Director Engineer, Environment and Decontamination at HFS/NSS.

The emails include a statement that the information is not complete or concluded and that HFS has not yet taken a view on them.

Two reports relate to ventilation and one to water.

The latter is relatively favourable. Water issues/sampling very acceptable in the main and better than others' reports. Refers to QEUH issues and context of current sampling and actions/uncertainties. Multiple reports on environmental sampling, yet to be concluded and put in context. Other files I was unable to open.

My recommendation:

1. We should ask what time scale of HFS discussions/view on these reports and work with them towards any recommendations and risk assessments.
2. Meantime: Gap analysis by the relevant ventilation and water group of issues raised in these reports with IOM and water reports we have at IMT to confirm no any major anticipated issues not already noted.

The reports are addressed to Ian Storrar, HFS.

1. John Rayner for HFS:

Turnerpes Authorising Engineer (Ventilation) HFS

Report for Non-critical ventilation systems at the RHCYP Edinburgh 9th August 2019-08-15
9 pages

Executive Summary :

4. There are a number of design and installation errors in the non-critical ventilation systems which do not generally impede the occupation of the RHCYP Hospital non-critical areas by staff, patients or the general public.
5. However, it is strongly recommended that the issues identified in this report are corrected in a reasonable time frame.
6. Clinicians should be made aware of the physical limits of the suitability of non-critical area use due to the limited ventilation systems provided. The clinicians should include the provision of suitable ventilation in all decisions regarding the temporary and longer term placement of patients, staff and general public.

RAG report discussed with Ian Storrar 2/8/19

Needs clarity on how ventilation derogations arrived at, when and by whom.

AHU issues of airtightness, electrical devices dangling in airstream obstructed access to AHUs, system balance is incorrect (eg corridor positive to ward area).

Staff supervision and training.

SCART recommendations risk 1-5 low-high. Total 15: 9 red, 3 amber, 2 yellow, 1 green.

2. **By Malcolm Thomas (Lead author HTM 03-01), Consulting Engineer: Children's Hospital Report, Edinburgh Site Visit 25th July 2019**

To Ian Storrar, HFS.

Visited site on 25 July to gain an appreciation of the ventilation system as installed. The Hospital is new and yet to be taken into use.

Number of issues including: Helicopter Landing Pad: unhappy at location. Downdraft will have adverse effect on performance of air supply intakes and extract discharges in the vicinity
Various issues with adequacy of ventilation, resilience

Conclusions:

Taken overall the design and provision of ventilation in this development has I consider made insufficient allowance for the routine operation and maintenance of the systems. As a consequence resilience is very poor. Breakdowns and unforeseen stoppages will result in significant portions of the hospital without active ventilation. It should be remembered that ventilation is provide in critical areas such as theatres, isolation rooms and critical care in order to reduce the possibility of infection by the airborne route.

The ventilation installation itself is below the standard that would be expected with many outstanding issues that are yet to be resolved. I recommend a full snagging inspection of each systems from its supply intake right through to the discharge position. This should be followed by “cause and effect” testing to prove the control and indication functions.

The fire dampers also need to have their operation proved. Note that in many locations inspection access panels have not been installed so the action of the fire dampers cannot be directly observed. This needs to be rectified.

It is evident that much remains to be done before the hospital can accept patients.

Malcolm Thomas
Consulting Engineer
Lead Author HTM 03-01 – Specialised Ventilation for Healthcare Premises

3. Water: by Tim Wafer

Draft Interim Review of Hot and Cold Water Systems

Company: Water Solutions Group, part of H2O (Europe) – also working with HFS in Glasgow

Tim Wafer (FRSPH, MIHEEM, MWMSoc - Authorising Engineer Water and Chlorine Dioxide)

Client: Health Facilities Scotland 15 pages

Report Title: Review of Hot and Cold Water Systems

Site: Royal Hospital for Children and Young People

For Contact: Ian Storrar

Organisation: NHS National Services Scotland

Caveat: This is an interim report and issued to provide feedback on the investigation to date. Whilst highlighting a number of issues, this report does not represent any recommendations in respect of the occupancy of the building. This will need to be part of a review meeting, as yet to be convened.

2.0 Executive Summary

The Royal Hospital for Children and Young People is a new development in Edinburgh's Bio Quarter Campus adjacent to the Royal Infirmary of Edinburgh. Questions have been raised at governmental level regarding the suitability of this facility for occupation by patients and staff. The Scottish government have enlisted assistance from Health Facilities Scotland and Health Protection Scotland to determine that the domestic water systems within the building are fit for purpose given the profile of patients undergoing treatment.

A number of specialists have been asked to assist Health Facilities Scotland and H2O Solutions (Europe) LLP, an operating subsidiary of the Water Solutions Group has been enlisted for specialist technical and analytical support, based on their work at the Queen Elizabeth University Hospital, Glasgow.

H2O Solutions (Europe) LLP are supported by the Intertek Group, who are providing in-depth microbiological assistance and specialist analytical services as deemed appropriate (UKAS 4065).

Assessing the results of the sampling undertaken by H2O Solutions (Europe) LLP against the Water Supply Regulations, Private Water Supply Regulations and ACOP L8 (HSG 274 Part 2), the results comply with all of these regulations.

All samples tested for Legionella species achieved results of less than 50 cfu/l - not detected (the laboratory's limit of detection). The total viable count results for both 22C and 37C are not covered in the regulations. There were guidance levels supplied in previous versions of such regulations but have since been removed. The Total Viable Count results do show some areas with slightly elevated levels, but these would not be considered excessive in this case.

As the building is not yet open, it must be considered that as the building is not in use, that there will be a considerable reduction in the movement of water around the system. Because of this, the ambient water temperature in the system would be expected to be higher than normal. These two factors would allow the background bacteria in the system to multiply, and is the possible reason for the slightly elevated Total Bacteria Counts observed.

Given this, we would expect the Total Bacteria levels of the water to reduce when the building is fully operational. It should also be noted that reduced movement of water in the system over a prolonged period of time could have a negative impact on the ongoing water quality in the system.

When comparing H2O Solutions (Europe) LLP's set of sample results with the guidance parameters, there is no indication from the microbiological results to suggest that the water system is not fit for use.

However, when we widen the microbiological scope to include other organisms identified at QEUH Glasgow, then currently the results are inconclusive and awaiting further investigation.

An extension of the sampling (based on Glasgow experience) was an evaluation of the drains at wash hand basins within Neonatal. To this end, the drain outlets were swabbed and sent for culture and analysis. Other than an elevated TVC count, nothing else was identified.

h) In respect of Pseudomonas aeruginosa, there appears to be a degree of variance between the sample results undertaken by various parties over the previous months. Our sampling results did not identify Pseudomonas aeruginosa, whereas sampling by others produced positive results. This has the potential to bring into question the sampling methodology. The actual taking of samples for Pseudomonas aeruginosa is very clearly defined within SHTM and PHE guidance. However, where we have seen variance in results, this has been attributed to a) transportation and b) time at laboratory awaiting processing. The samples (as per the guidance) were taken by ourselves at first water and prior to any flushing. These were then immediately transferred into a temperature controlled vehicle by 10am and were being processed in the laboratory by 2pm.

This means there was minimal delay in the processing of the samples. It is a well established fact that delay can influence the results

End

Notably:

Strainers need action. See photos.

Main concern is adequacy of water management plan and training of those individuals who will be carrying it out on the ground. Bouygues say complete but evidence awaited.

RHCYP / DCN – Remedial works and reports matrix v.3.0

<u>Ref</u>	<u>Issue</u>	<u>IOM ref</u>	<u>Sub issues/ items</u>	<u>Position reported to IMT</u>	<u>Next Steps / action owner</u>	<u>Commercial impact</u>	<u>Close out: Planned/ Actual</u>
V1	Air Handling Units (AHU) - Confirm AHU comply with the requirements of SHTM 03-01, including fan change, filter bypass, air leakage etc.	29 P	Cabling inside AHU	Identified by IOM as a potential fire / smoke risk and difficult to clean. Site inspections including HFS / HPS, IPC etc, identified potential air bypass of filters via poor fitting and cable position.	7/8/19 site meeting including manufacturer, supplier and fitter – Actions arising: NHSL / IOM – schedule SHTM 03-01 against line items; MPX – will create a benchmark AHU for validation by NHSL / HFS / HPS (and BYES); Including moving inverters out of the unit (to reduce heat / fire risk), validate thermal wheel spillage / controls, sheathing all cables, proving seals and accessibility. Additional schedule of AHU items requiring attention against SHTM issued to IHSL 8/8/19. MPX to respond with a rectification proposal, timeline indeterminate.	7/8/19 – Definition of compliance against betterment to be confirmed (NHSL / HFS) Mercury very defensive, particularly against BYES seeking improvements for maintenance etc. Not all components fire rated but assured that power to internal parts, cables, etc. would trip if overheating or shorting. Potential remedial works (following benchmarking) will result in a programme of work- TBC. Alternative of replacing all AHU would probably require DRP at least as significant redesign required. 9/8/19 – IHSL / MPX (Callum Tuckett) keen to see detail of non compliance items as MPX, supplier and manufacture still adamant that AHU compliant as signed off by IT. Indications are that MPX will rectify at their expense – remains to be confirmed.	MPX continue to be pressed for prog. Some 2 -3 months duration likely.
		30	Filter orientation		Filters checked and adjusted as required - Bouygues to confirm.	Addressed by BYES 14/08/19 – Filters ordered by BYES, will be installed on arrival.	TBC
		31	Evidence of airflow		Filters checked and adjusted as required - Bouygues to	See V1	See V1

<u>Ref</u>	<u>Issue</u>	<u>IOM ref</u>	<u>Sub issues/ items</u>	<u>Position reported to IMT</u>	<u>Next Steps / action owner</u>	<u>Commercial impact</u>	<u>Close out: Planned/ Actual</u>
			bypassing filters		confirm. See V1 for assurance steps	14/08/19 – Filters ordered by BYES, will be installed on arrival.	
		32	Magnahelic gauges not marked for clean and dirty limits		See V1 - @ 7/8/19 26/07/19 - Labels ordered.	See V1	See V1
		34	CLOSED				
		35	Surplus drip tray not blanked off		Caps ordered for drains and will be fitted. MPX to confirm when complete.	See V1	Complete 09/08/19
		36	CLOSED				
		37	Incorrect trap arrangements		See V1 - @ 7/8/19	See V1	See V1
		38	CLOSED				
		39	CLOSED				
		40	Plant labelling incorrect		See V1 - @ 7/8/19	See V1	See V1
		41	Branch ducts not generally marked up		Labelling of branch ducts serving theatres needs to be applied by MPX	See V1	30/08/19
		42	Auto change over to be tested (see also 27)		See V1 - @ 7/8/19	See V1	See V1
		43 P	SOME motors running at over 95% speed – maintenance & service issues flow from that		MPX - Review of all fan speeds as commissioned detailing remaining capacity to overcome dirty filters. 26/07/19 - Aiming to complete by 09/08/19	With IHSL to confirm compliance / meet guidance. 9/8/19 – ventilation / IOM meeting: review ongoing 70% complete update expected 16/8/19	MPX – 23/8/19
		44	CLOSED				

<u>Ref</u>	<u>Issue</u>	<u>IOM ref</u>	<u>Sub issues/ items</u>	<u>Position reported to IMT</u>	<u>Next Steps / action owner</u>	<u>Commercial impact</u>	<u>Close out: Planned/ Actual</u>
		45	Maintenance access to AHUs	CLOSED	Restriction removed and maintenance access achieved - CLOSED		02/08/19
		46	Thermal wheels		Schneider to complete survey and report on performance against design	See V1	16/8/19
		50P And 52	AHU Pressure controls and Plant Controls (both BMS)	The use of pressure control sensors downstream of AHU but upstream of UCV canopy has been shown at other hospitals to cause fluctuating or hunting airflows within UCV canopy.	02/08/19 MPX - Trend logs now downloaded and being collated - to be issued by 07/08/19 9/8/19 – IHSL advised that back with MPX as Trend logs had not been set correctly.	None anticipated	16/8/19
		51	Ultra Clean Ventilation and Theatre Surgeons panel alarms	When the UCV was operational in THE 39 but the AHU was not running there was no alarm on the Surgeons panel. Similarly in THE 34 the surgeons panel indicated healthy when the AHU was not running	02/08/19 MPX - rectified and checked. to be demonstrated to IOM 05/08/19		15/08/19
V2	External doors to plant rooms	n/a		To be reported @ 6/8/19	NSS report that - Ensure that excessive gaps are removed and appropriate anti vermin measures are applied to all the doors and screens.	Should be a helpdesk reportable item (i.e. no commercial impact)	
V3	Air intake location – Air intakes are sited	n/a			NSS report that - Demonstrate the effect of helicopter landing on air flows	Assuming modelling supports the installation, no commercial impact.	Sept 2019?

<u>Ref</u>	<u>Issue</u>	<u>IOM ref</u>	<u>Sub issues/ items</u>	<u>Position reported to IMT</u>	<u>Next Steps / action owner</u>	<u>Commercial impact</u>	<u>Close out: Planned/ Actual</u>
	in the well below the helipad but information has not been provided on the impact of downdraft on air flows and pressures or entrainment of contaminants.				through measurement or modelling. NHSL - Site live test to be coordinated with engineering / validation support (September 2019?) – Live test supported by AOB 8/8/19 Modelling undertaken by MPX to be demonstrated. NHSL to demonstrate protocols (note live site validation required)	If changes to be made, may require Board change. (note: Site live test etc required for PA validation following PCo change.)	
V4	Ventilation (Isolation rooms and the areas containing them) Isolation rooms are not served by a single ventilation system for each room as recommended in SHPN4 Supplement 1. The arrangement provided where ventilation systems serve an area of the	25	Resilience of systems, protocols and potential impact to be proven and agreed by all parties.	Construction of footprint did not provide sufficient space for individual AHU's for each isolation room (19 total). <i>All parties aware of this solution at an early stage</i> [statement to be verified]. Solution is compliant with design for a high building	7/8/19 - IHSL to be advised to: Prove that bypass connections to adjacent ventilation systems will allow safe operation of both areas and / or explain service provision strategy for loss of each area including isolation rooms. IOM have witnessed air change rates and pressure cascade and all ok (confirmation numbers to be provided by IOM to NHSL). Bypass arrangement still to be demonstrated. Opportunity to mitigate this issue for critical care with the ventilation redesign. This was	Operational compromises and protocols, assuming the systems are proven to be resilient, will be required – alternative is to instruct additional units as Board change but noting insufficient space allowed for additional units.	<i>TBC</i>

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	building including contained isolation rooms has not yet been proven in the event of failure of an air handling unit and the implications for service impact are not yet understood.				suggested to IHSL, further details to follow		
	Isolation rooms	26	Some isolation rooms not achieving 10 ach		29/7/19 - Demonstration of meeting design requirements to be verified by IOM / NHSL	None if verified; commercial issues may arise if validation fails.	29/7/19
V5	Ventilation Theatres - The ability of the single high level extract of linear scrub rooms should be demonstrated or additional low level ventilation provided.	22 P		Per MPX - All operating theatres were designed with a high level grille as per RDD issued schematics. mechanical extract. Grilles were designed to be located at high level as this was deemed best to remove moisture laden air.	NSS report that - Show that mixing and extract in scrub rooms effectively prevents contaminants being dispersed into theatres or provide additional extract. TUV Sud response 26/07/19 - SHTM03-01 A clause A4-27 details that open bay areas (such as scrub) has no requirement for additional ventilation, as noted extract was added to assist with removal of moisture laden air	None if verified; commercial issues may arise if validation fails.	23/8/19

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					- HFS reviewed (& update to be passed to IHSL - RH).		
V6	Ventilation Theatres - Anaesthetic rooms 31 and 34 do not demonstrate a clean air flow path to reduce exposure of staff to gasses.	23			Move ceiling supply to opposite side of room from extract. In room 30, move supply away from door. HFS responded, smoke test required to verify		
V7	Ventilation Theatres - Theatre utility rooms Extract ventilation means theatres have to be used in pairs and taking a theatre out of service reduces extract in utility room too low.	11		MPX - As per original design. 26/07/19 MPX - Confirmation that interlock between the two AHU is operational and demonstrate to IOM - Proposed Completion - 02/08/19. 02/08/19 MPX - Interlocks now operational and to be demonstrated to IOM	NSS report that - Add supplementary extract ventilation to allow for one theatre being out of service or demonstrate resilience following the loss of a pair of theatres. IOM Requested to MPX check utility room pressure cascade with one Theatre operational and one in setback IHSL have carried out testing, cascade can be achieved in setback, results awaited.	MPX position is that this is compliant – therefore Board change would be required for any changes.	23/08/19
V8	Ventilation Theatres - Theatre corridor extract and	3 P		Pressure cascade is designed to flow from theatres through ancillary rooms out to	NSS report that - Modify theatre corridor ventilation to comply and test and commission.	MPX appear to be progressing changes without commercial challenge.	Final design solution to be

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	pressure differentials do not comply with requirements.			corridor (reference point / pressure)Corridors designed to be positive pressure to the adjacent departments and circulation areas and are in excess of 7ac/h out flow. Noting that the dirty Utility extract draws air from the corridor contributing to the air change rate. ACTION - Confirmation / evidence that 7ac/h are being achieved and that contaminated air is not discharging to hospital corridor. 23/07/19 MPX stated that adjustments had been made, MPX to confirm if this is now compliant with requirement for 7 ac/h and 0 pressure.	02/08/19 MPX - Additional extract will be required. two options being reviewed, one with additional extract fans in plantroom, second being adding additional branch duct to theatre extract.		<i>advised w/c12/08. Work programme to follow. 30/9/19</i>
V9	Ventilation Theatres - Provision for maintenance without unnecessarily affecting service	33	Insufficient access arrangements into the AHU		For each area, the Board should have the maintenance and failure contingencies mapped and agreement of clinical colleagues for the expected impact on room availability.	IHSL (MPX) have identified previous cleaning without problems. BYES position appears to be looking for improvements. MPX fitting additional access hatches.	<i>Access hatches – MPX – w/c 9/8/19 Protocols – BYES / NHSL -</i>

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	appears poor.				<p>BYES to compile / demonstrate protocols</p> <p>Sample removal evidenced to all parties satisfaction on 08/08/19. BYES to review Access and Maintenance strategy for detail.</p>		TBC
n/a	Isolation rooms ventilation – back up	27	Back up arrangement appears very complex	Some remedial works completed.	<p>MPX Currently reviewing issues with 04-06 and 04-07 maintenance bypass</p> <p>Still outstanding</p> <p>See V4</p>	Should be none	w/e 23/08/19
V10	Ventilation Theatres - Fire dampers in some locations cannot be adequately tested as duct access has not been provided. Also, locations of fire dampers and fire rated ductwork has been questioned.	n/a			<p>NSS report that - Provide access so all fire dampers can be readily visually inspected to verify operation. Review fire damper provision and fire rated ductwork and confirm appropriate provision.</p> <p>Not shared with IHSL/MPX as yet. (14/08/19)</p>	Should be none, to comply with guidance.	
V11	Ventilation Theatres? - On inspection the ventilation	n/a			NSS report that - A full snagging of the ventilation systems should be undertaken and rectification put in place. E.G. air handling		

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	systems throughout the building had clearly not been snagged and were not ready for validation or operation.				unit leaks, filter bypass, dust in AHUs and ductwork, missing duct access, fire stopping, fire dampers. 8/8/19 – AOB advised by NSS that background to such quotes would be provided to NHSL to explain context of opinion. HFS input awaited 14/08/19		
		18	Excessive flexible ductwork in theatre ceilings		Theatre 35 flex to be altered - MPX - Material ordered and will be installed 06/08/19 Outstanding – identification of any other areas. action? 9/8/19 – IHSL advised that engineer turned up on site with wrong fittings. MPX – to be instructed by IHSL to do full survey	None – defect / failure to meet guidance	23/8/19
W1	Critical care	n/a	Pseudomonas found in taps, in critical care areas		All taps (not just TMT/TMV) to be disinfected and retested. Follow guidance. Replace tap strainers and cartridges in CCU TMT taps. Showers require to be disinfected. Implementation plan required. Suggested methodology from	9/8/19 - See attached draft change instruction 084 Costs to be identified once full scope of works known	Up to 15 week return to service protocol therefore requires urgent action

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					Westfield Caledonian and Board AE to be implemented via board change after internal and HFS review.		
W2	Non critical care	n/a	Swarf and biofilm found in tap strainers.		Replace tap strainers in all areas. See W1		
W3	Showers (all areas)		Shower hose lengths do not comply with Scottish Water bye laws and guidance.		Shorten hose length or fit retaining ring to ensure that head cannot reach WC or drain Disinfect hose and drain after rectification. BYES are ordering retaining ring to prevent hose reaching floor/wc		
W4	Water (general)		Testing has found widespread fungal contamination		The water system should be disinfected and re-tested.	9/8/19 - See attached draft change instruction 086 Costs to be determined	
W5	Water (general)		Legionella risk assessment.		The Legionella Risk assessment Feb 2019 identified a range of actions. The Action Tracker does not demonstrate that the issued raised have been resolved or a timeline provided for resolution. The risk assessment is too heavily focussed on Legionella and not taking into account other organisms in		

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					<p>line with patient type. There is no categorisation of patient type anywhere in what we have been provided and consideration to susceptibility.</p> <p>BYES have an action plan which will be shared with the Board</p>		23/08/19
W6	Water (general)		Designated roles and responsibility.		<p>It has not been demonstrated that there are authorised persons or competent persons for the water services as defined in SHTM 00 and SHTM 04-01. In addition, a responsibility matrix and interface to NHSL water management group is required.</p> <p>The current Responsible Person has not been appointed in writing and uncertain as to whether received RP training. Additionally, has no previous experience of healthcare.</p> <p>BYES to provide info some evidence seen by board rep.</p>		
W7	Water (general)		Water tanks		<p>The Raw Water and Filtrate water tanks are interconnected at the drain. These must be separated.</p> <p>To be reported as a defect</p>		14/08/19

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W8	Water (general)		Expansion vessels should be checked for susceptibility to bacterial growth.		Bladder from expansion vessels to be inspected. See W1	Change order anticipated	
W9	Water (general)		Hot and cold water temperatures / Flushing.		There was an issue with raised cold water temperatures during the boiler outage – this requires investigation.		
W10	Water (general)		Filtration Plants		From work done at Glasgow microbiological Growth potential was identified as part of the Backwash cycle. Suggest Chlorine dioxide addition to backwash water tank to aid microbiological and biofilm development on filters.		
W11	Water (general)		ZIP & HYDRO Units		These were found to be contaminated and are required to be disinfected and tested to demonstrate safe water delivery.		
D1	Drainage / plumbing		Sinks drains		Initial testing indicates that these are not significantly contaminated, however they need to be disinfected periodically prior to and post occupancy to maintain their condition. Suggest utilising the Hysan methodology	9/8/19 - See attached draft change instruction 085	

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					being employed at QEUH and RCH Glasgow.		
D2	Drainage / plumbing		Bottle traps		There would appear to be an inconsistency of installation and potential of back-feed from trap to drain. This requires review		
D3	Drainage / plumbing		Trough Sinks		The drains in trough sinks have been identified as high risk potential. This requires review and treatment strategy considered.		
D4	Drainage / plumbing		Pumped Drainage		The Rainwater drainage system presents the potential for flooding on pump failure and requires review		
E1	Electrical		Not inspected yet due to priority put on water, ventilation and drainage.		HFS reviewing on site as of 12/08/19		
F1	Fire		Not inspected yet due to priority put on water, ventilation and drainage.		HFS reviewing on site as of 14/08/19		

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G1	Medical Gases		Not inspected yet due to priority put on water, ventilation and drainage.				
n/a	DESIGN DEVELOPMENT and NEW WORKS – raising the air change rate and improving pressure regime for CRITICAL CARE	28			<p>Agree Board Change technical specification – NHSL (BC) with input from HFS / HPS 8/8/19 – agreed in principle at AOB*; subject to more details being provided to NSS (IG) *SEE ATTACHED REPORT & supporting information.</p> <p>Fast Track Board Change Request Process to be adopted as agreed with IHSL on 13/8/19. Letter of intent being drafted to enable design to progress (SG). If agreeable to MPX, further letter of intent to be drafted to enable AHU to be ordered once system designed (SG). MPX will not accept an “agreement to agree” and are seeking a waiver from the Board to any right to pursue MPX for any alleged non</p>	<p>Consider the mechanisms for Board change, particularly:</p> <ol style="list-style-type: none"> 1. Reserving rights to pursue (e.g. negligence, etc) 2. Indemnity to IHSL and supply chain 3. VfM tests 4. Step in / alternative procurement routes. <p>9/8/18 – MPX indicated that basis of draft board change would be sufficient to keep TUV SUD engaged for design phase.</p> <p>Plan A – Use Board Change and letter of intent to allow MPX/TUV SUD to design. Plan B – Use Board Change to instruct IHSL to procure alternative designer should wording on letter of intent not be agreeable to MPX. Plan C – Board exercise their “step in” rights.</p> <p>Board to consider temporary waiver to not exercise their rights to</p>	<p>TBC by IHSL but shortest prog as Plan A likely to be 24 weeks from any agreement of letter of intent. Plans B + C considerably longer.</p>

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					compliance in respect of ac/hr in relation to CC single bed and four bedded rooms. Above draft documents to be tabled at OSG on 22/08/19 (SG).	terminate the PA on a rolling review basis (SG).	
n/a	Confirmation of compliance for general single rooms and 4 bedded bays - air change rates		6 Air Changes per hour, mixed mode v 4 ACH supply	At OAB 8/8/19 – NSS advised that they were working through analysis;	Update to be reported to next OAB	Not defined at present	TBC

Notes:

This matrix will be updated to reflect relevant Guidance (eg SHTM 03-01) against line items. Also to include relevant approvals given.

- a. Cross referencing of IOM Ventilation report to SHTM 03-01 clauses being undertaken by IOM / NHSL (RH) to support clarification with IHSL (MPX, Mercury and AHU plant manufacturers and suppliers. Many line items are picked up in general statements in the SHTM, rather than as specific item definitions; for example, potential difficulties for maintenance have an impact on clinical service delivery if prolonged down time is encountered, but have TO DATE been accepted by BYES as fit for purpose – 7/8/19
- b. Actions to be translated into a programme for monitoring and interdependencies including prioritisation.
- c. Commercial approach and position to be developed as individual task clarified.
- d. Verification of IT approvals, against issues being found, to be undertaken based on the review outputs.
- e. Items highlighted are seen as priority / long lead time elements
- f. Operational management implications will need consideration – for example, issues identified on this list could / should be logged on the helpdesk and deductions under the payment mechanism will flow (to BYES through IHSL).
- g. Items 1 & 15 from previous IOM schedule (Use of swirl diffusers and noise slightly high in UCV theatres) have been closed at Ventilation meeting 9/8/19.
- h. Items W1 to W11 and D1 to D4 inclusive require discussion with HFS to form a joint view prior to any further communications to IHSL

RHSC & DCNMEETING BETWEEN NHSL, IHSL AND MPX 13 AUGUST 2019NOTE OF AGREED ACTIONS

1. NHSL explained the importance of prioritizing / fast tracking the requisite ventilation works to critical care to increase the air change rate from 4 per hour to 10 per hour with the associated change in pressure regime (“Ventilation Works”) urgently in order to ensure the safe opening of the hospital as soon as possible. NHSL stressed that any deal would come under political pressure and financial scrutiny.
2. It was recognized that it would take time to agree the commercial terms for a Supplemental Agreement for IHSL / MPX to undertake the Ventilation Works (“SA2”) and therefore it was proposed by NHSL that the design of the Ventilation Works was undertaken now by IHSL / MPX based upon a letter of intent with NHSL underwriting the costs of the design up to an agreed cap whilst the commercial terms for SA2 were worked up in parallel.
3. IHSL / MPX stated that they willing to assist and that they anticipated the design work would take approximately three weeks. However, neither IHSL / MPX nor Wallace Whittle (the specialist subcontractor) were in a position to undertake design work until they received (i) an undertaking from NHSL to underwrite the costs associated with the Ventilation Works; and (ii) a waiver from NHSL of any rights and remedies that may be available to them as a result of the original design and construction of the critical care ventilation.
4. Following discussion, it was agreed that NHSL would prepare a draft letter of intent instructing IHSL / MPX to undertake the design of the Ventilation Works with (i) an undertaking from NHSL to underwrite the costs associated with the design of the Ventilation Works; and (ii) a waiver from NHSL of any rights and remedies that may be available to it against IHSL / MPX as a result of the original design and construction of the critical care ventilation being 4 air changes per hour, said waiver being qualified on the basis that it would be subject to IHSL / MPX agreeing acceptable commercial terms with NHSL for SA2.
5. It was agreed that the draft letter of intent together with a draft SA2 would be issued to IHSL / MPX by the end of this week. **[Susan: we may wish to discuss whether draft SA2 will be ready for issue this week; we can discuss this afternoon]**
6. There was then a detailed discussion about the operational challenges currently facing IHSL and their supply chain, in particular focused upon the remedying of defects. NHSL indicated that provided they received co-operation from IHSL / MPX in relation to the letter of intent and SA2, NHSL was prepared to provide a limited undertaking to IHSL that NHSL would not exercise their discretion to issue further Warning Notices and / or exercise the default triggers for a limited period of time subject to review monthly and / or where there was any change in circumstances. NHSL agreed to issue a draft proposal to IHSL in this regard by Friday 23 August.

MacRoberts LLP
15 August 2019

Situation

NHSL Laboratory Medicine is unable to maintain UKAS accreditation status (UKAS assessment to ISO standard 15189:2012) of the Blood Sciences laboratory at the RHSC site.

Background

The Blood Science (Haematology and Biochemistry) laboratory at RHSC was scheduled to close on 10 July 2019 with all routine paediatric blood science services for RHCYP to be provided from the RIE laboratory. In light of the recent last minute sudden and unexpected decision to postpone indefinitely the move from RHSC to RHCYP, and following consultation with RHSC clinical teams, it was decided to continue provision of core hours blood science service at RHSC (9am-4pm Monday-Friday; 9am-12 noon Saturday/Sunday) until the move to Little France.

UKAS registration (a rigorous external assessment of a laboratory service test repertoire and its quality management system against international ISO standards) is compulsory for all NHS Scotland laboratories since October 2003; thus, all laboratories within NHSL Laboratory Medicine have been assessed by an external quality assurance body since 2004 – for example, the RHSC Blood Science laboratory is UKAS accredited but was due an assessment visit by UKAS in July 2019 in order to maintain its accreditation status.

(Ref - Health Department Letter (HDL) (2003) 45 *Compulsory registration in accreditation schemes for NHS pathology laboratories in Scotland*) – embedded document **Appendix 1**)

In early 2019, an agreement was reached with UKAS that its planned assessment visit to the RHSC Blood Science laboratory in July 2019 would not go ahead given that the hospital was scheduled to close. In line with that agreement (and in preparation for the move to Little France), the RHSC site testing repertoire was reviewed and streamlined with some specialist services moved to new laboratory locations (for example, the metabolic biochemistry service was moved to the WGH laboratory); in parallel, staff/workforce levels, equipment and other resources were reviewed and amended/aligned appropriately in preparation for the move (for example, the move of analysers to other sites).

Currently, the blood science service at RHSC is supported by the RIE laboratory during the transition phase so that the RHSC site may continue to offer its quality assured service on site. However, the approach places a considerable strain on resources and the NHSL blood science service as a whole. Thus, it is no longer possible to prepare for, and participate in, an UKAS assessment visit to the RHSC laboratory.

Assessment

The Blood Science laboratory at RHSC can continue to provide an excellent core service to the site with support from other NHSL laboratories; however, it **cannot** any longer meet the requirements of an UKAS assessment visit. Thus, the RHSC service faces two choices: **(1)** voluntarily relinquishing accreditation; **(2)** facing an UKAS assessment visit and the highly probable removal/withdrawal of UKAS accreditation; the latter approach is **not** an option for the service (and is strongly advised against by UKAS).

Robyn Gunn, Mike Gray, Nadine Wilkinson, Ingo Johannessen
NHSL Laboratory Medicine – 8 August 2019:
RHSC Blood Science Laboratory Service – Voluntarily Relinquishing UKAS Accreditation

Voluntarily relinquishing UKAS accreditation would not affect the blood science service that is currently provided at RHSC or its internal quality assurance, participation in external quality assurance schemes or compliance with NHSL Laboratory Medicine's rigorous quality management system. NHSL Laboratory Medicine has a single quality management system across all of its laboratories and this continues to meet the required international standards as regularly assessed (and accredited) by UKAS. It is important to note that not all of NHS Scotland's laboratory medicine services have as of yet attained UKAS accreditation (for example, services in Western Isles and Forth Valley).

Recommendation

The recommendation is voluntarily relinquishing UKAS accreditation for the RHSC Blood Science laboratory service. Attached is a proposed letter to be issued by the Clinical Director of NHSL Laboratory Medicine to UKAS.

Appendix 1



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Proposed Letter



RHSC suspension
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DRAFT

RHCYP/ DCN: Commissioning / Ventilation

Note of a meeting of the Incident Management Team held at 4.00 pm on Thursday 15 August 2019 in Meeting Room 5, Waverley Gate, Edinburgh.

Present: Susan Goldsmith (Chair); Janis Butler; Carol Calder; Jacquie Campbell; Brian Currie; Tim Davison; Tracey Gillies; Iain Graham (by Teleconference); Ian Laurenson; Judith Mackay and Alex McMahon.

In Attendance: Sorrel Cosens and Douglas Weir.

Apologies for Absence were received from: Lindsay Guthrie and Donald Inverarity.

1. Minutes of the Meeting held on 12 August 2019

- 1.1 The Minutes were approved as a correct record subject to Minute 3.2 second sentence reference to IOM being replaced by HFS.

2. Technical Updates

- 2.1 It was noted that HFS and HPS had taken away reports and would provide recommendations. Ian Laurenson referred to his circulated paper in respect of 3 reports (2 on ventilation and 1 on water). He advised that the water report was positive with the main concern being around governance and the training regime and that this had been echoed in other documents. In terms of the ventilation reports although areas of concern had been reported there was nothing that NHS Lothian had not previously been aware of. It was noted that Michael Thomas had been frank in his comments and there was a need to go back and seek further clarification particularly in respect of issues around the impact of the down draft from helicopters and required protocols. Brian Currie advised that a SOP was in place for closing windows in advance of helicopters landing of which advance warning would be received. It was agreed that it would be important to await the views of HPS/HFS on this issue. It was noted that work was underway to clarify with HFS their timescale for reporting back. It was noted that reports on the 3 systems (ventilation, water and drainage) were due to be concluded by Wednesday of the following week. It was hoped that copies of the reports would be available for consideration at the Oversight Assurance Board to be held on Thursday 22 August 2019 and in the absence of these a verbal report would be made.
- 2.2 Ventilation – Brian Currie provided an overview of the current position advising that the circulated matrix represented version 3 which had been updated following a meeting on Tuesday with Multiplex. A further meeting would be held the following day.

- 2.2.1 It was reported in terms of air handling units that issues had been referred back to Multiplex and IHSL through the provision of a compliance list with their response being awaited although early indicators were that it was unlikely that there would be any pushback from them, subject to their supply chain accepting liability. It was anticipated that the roll out of remedial work in respect of air handling units could take 2 to 3 months. Brian Currie commented that HFS had been of the mind that these issues would stop patients moving into the new facility although this differed from the IOM position and there was a need to obtain a final view on this. Susan Goldsmith advised that there would be a need to escalate timelines in respect of responses to the list of compliance issues with IHSL and she would escalate this through a conference call that was scheduled for the following week.
- 2.2.2 Tim Davison commented that if there was a difference of opinion on whether air handling issues would stop services moving into the new building it would be important to clarify whether a fix for this position was available. Brian Currie advised that he was hopeful that IHSL would undertake the fix although the current HFS view would inhibit patients moving in. He commented however that there was a need to see the detail of the MPX's response and report. Tracey Gillies commented that given that air handling units supported critical patient areas there would be an issue around the sequencing of work with an additional subtlety that some units were critical in the delivery of services. Brian Currie advised that a prioritised programme would be established. It was noted that Multiplex were also making positive noises in respect of the need to address ventilation extract issues to corridors outside theatres. Isolation room air quality issues were discussed with it being anticipated that the provision of 2 CCU air handling units would provide more resilience. Brian Currie advised that updates had been provided to the Scottish Government in respect of the ventilation issues raised by IOM to inform the KPMG Report. It was noted that IHSL/MPX would not commit to timelines until their supply chain issues had been confirmed.
- 2.2.3 Tracey Gillies commented that V10 fire dampers seemed to be an emerging issue and questioned whether this had been shared with Multiplex. Brian Currie advised that this was not a new issue but had not yet been broached with Multiplex and further advised that this had not featured on the IOM tracker.
- 2.2.4 Brian Currie advised in respect of the fuller survey of all clinical areas and a sample of non clinical areas that IOM had been requested to undertake that the report was due from them by the end of the week and would hopefully be available for the IMT meeting on Monday. It was not anticipated that this would report on anything dramatic with it being positive that engineers seemed to be aligning measurement methodologies.
- 2.2.5 Ian Laursen advised that in one of the reports concerns had been raised about the decision-making process around how it had been decided to change air change specifications. It was noted that both HFS and KPMG had been provided with this information. It was noted that HFS had a focus on the 6:4 air change issue. It was anticipated that KPMG would have an interest around the derogation process but not technical aspects of the reasons for the change. It was not known at this stage whether KPMG would cover the reasons for moving from 6-4 air changes. Brian Currie reminded colleagues that 6 air changes were currently being obtained through a mixed mode approach.

- 2.2.6 The point was made that other hospitals had helipads on the roof and protocols in place around the opening of windows. Discussion was held about the need to agree at the Oversight Assurance Board the critical issues that needed to be addressed from the IOM and HPS reports and whether these needed to be fixed and tested. Susan Goldsmith felt that clarity around the HFS position would be available soon although it was proving more difficult to pin down timelines with IOM and IHSL. Tracey Gillies suggested that at the meeting the following week it would be important to agree mission critical issues and accept that timelines would need to come back to the IMT in order to agree issues around the 8 week lead time for some services like DCN to migrate to the new facility.
- 2.3 Drainage – It was noted that the HFS report would cover water, ventilation and drainage. They were also interested in fire and electrical issues with information having been provided to them in this respect. It was noted that for Wednesday of the following week it was anticipated that the HFS report would be available. It was noted that an NHS Lothian Fire Officer had been present during the HFS visit with initial feeling having been that there was nothing of significance that had been raised as a concern although it would be important to await the final report.
- 2.3.1 Susan Goldsmith commented in respect of water that the internal report was being finalised and would be discussed at the meeting on Wednesday. Tracey Gillies stressed that NHS Lothian was in receipt of a report against standards which stated that there were no issues of significance and that the detail of this report was being taken forward through the water safety plan. She commented that the HPF speculative testing report needed to be discussed and its significance considered although it would be important not to conflate this with the existing internal report confirming there were no significant issues of concern. Tim Davison referred to the previous agreement to adopt the draft HPS guidance that was extant in England. Susan Goldsmith reported that this would require a Board Change and that this process could put in place following the meeting on Wednesday of the following week.
- 2.3.2 Alex McMahon commented that there was a need to look at the water quality action plan and consider whether there were any gaps that needed to be addressed. It was noted that a paper would be submitted to the meeting to be held on Wednesday of the following week which would be chaired by Tracey Gillies. It was noted that at this point no actions had been agreed and that NHS Lothian Estates and Facilities would not progress any work until the detail of any Board Change had been agreed. The point was made that a Board Change would be needed in respect of zip taps and new baths. This would be considered next week and brought back to the IMT. An overriding principle was agreed that all Board Changes needed to be co-ordinated and agreed by the IMT.
- 2.3.3 Iain Graham commented that the papers discussed the previous meeting had covered 3 draft Board Changes and were available and could be circulated for information to HFS for their opinion. The benefits of obtaining HFS/HPS sign-off was discussed.
- 2.3.4 Brian Currie advised that there was a need to take a balanced view on Arjo bathswith full clinical team consultation.. It was noted that the baths were currently used at the

Royal Hospital for Sick Children and were well cleaned and maintained with no noted problems.

3. Commercial Position and Contract Management – IHSL

- 3.1 Susan Goldsmith referred to the circulated note of agreed actions emerging from a meeting between NHS Lothian, IHSL and Multiplex held on 13 August 2019.
- 3.2 Susan Goldsmith advised that the key proposition was in order to fast track the Board Change process that NHS Lothian would need to give up its rights to issue further warning notices, on a temporary and continuous review basis, to IHSL in respect of performance. This had been agreed in principle. The point was made that in order to accelerate the timescale for the agreement of the revised supplemental agreement that it had been agreed that NHS Lothian would issue a letter of intent to get the design work done first. Susan Goldsmith reported that as referred to in the circulated paper that IHSL and Multiplex were seeking a letter from NHS Lothian confirming they would pay for ventilation work and provide a waiver confirming that they would not be pursued for rights and remedies against the design for the single bed and multi bedded rooms in Critical Care that they had implemented. McRoberts were drafting a letter covering the issues discussed. It was agreed for audit trail purposes there would be benefit in getting the proposal and draft letter and waiver signed-off by the Oversight Assurance Board meeting the following week. It was anticipated that the narrative would be finalised the following day. The proposal would come with an estimated cost of £1.8m-£1.9m. The options available in respect of not agreeing to the waiver were discussed.
- 3.3 Brian Currie advised that approx £1m worth of deductions had been calculated to date and that the Board would be ensuring full recovery. This was not disputed by IHSL at the recent meeting of the 13th August with them.
- 3.4 Susan Goldsmith advised that the design of the rectification of critical care had not been received with it being noted that this would only be forthcoming once the Board Change and Letter of Intent had been agreed with IHSL/MPX. It was noted that further clarification and approval was awaited from HPS/HFS in relation to the specification of the Critical Care Ventilation. Additional information in respect of room plans and sequenced numbers has been provided to HFS/HPS to assist them in their decision.
- 3.5 Brian Currie advised that he was chasing IHSL around timescale with early indications being that it would be March 2020 at the earliest before work would be completed, assuming design commences shortly. Tim Davison advised that this was consistent with the position that he had reported to the Cabinet Secretary.
- 3.6 Jacquie Campbell updated on a risk assessment process that Fiona Mitchell had undertaken on the potential for the migration of some paediatric and ambulatory care services. This had concluded that work across 2 sites would not be possible. Fiona Mitchell was pulling together a summary of her considerations which would be discussed at the IMT meeting on Monday and thereafter at the Oversight Assurance

Board on Thursday 22 August.. Tracey Gillies commented that there would be significant equipment issues around DCN. Jacquie Campbell advised that the risk assessment around DCN had not been predicated on other services.

4. RHSC UKAS Accreditation

- 4.1 Jacquie Campbell referred to the circulated correspondence which noted that the Blood Science Laboratory at the Royal Hospital for Sick Children would continue to provide an excellent core service to the site with support from other NHS laboratories. However it could no longer meet the requirements of an UKAS assessment visit. The service therefore faced 2 choices the first being the voluntary relinquishing of accreditation or facing an UKAS assessment visit with a high probability of removal/ withdrawal of UKAS accreditation. The service felt that the latter approach was not an option and this was agreed by the IMT. It was agreed that this recommendation would be taken to the Oversight Assurance Board meeting the following week and Jacquie Campbell would provide a revised narrative which would take account of issues like the storage of tissues in a non-UKAS accredited laboratory.

5. Communications / Staff Update

- 5.1 Judith Mackay advised that there was a need to consider a further update to staff in terms of openness and transparency and also in order to avoid unhelpful speculation. It was agreed following discussion that it would be appropriate and helpful at this stage to issue a statement confirming that significant work continued behind the scenes and that staff would be kept apprised of further progress. It would be important at the Oversight Assurance Board meeting the following week to confirm that the issuing of operational staff messages did not need to be cleared by the Scottish Government.
- 5.2 Tim Davison suggested that this discussion should be progressed in two parts. The first should be to produce a proposed staff release for sign-off by the Oversight Assurance Board. The second issue would reflect on the meeting with the Cabinet Secretary where it had been agreed that Trade Unions would be represented on the Oversight Assurance Board. This should mean that operational updates would be for NHS Lothian to decide upon. These would be shared but not approved by the Scottish Government.
- 5.3 The IMT noted that a number of PQs and FOIs were starting to filter into the system. Sorrel Cosens provided an update on the current position and the general themes of the enquiries.
- 5.4 Tim Davison commented that there would be merit in producing a standard letter of response which would be capable of being tweaked to address bespoke issues. Sorrel Cosens confirmed that queries were being collated and hopefully can be

managed in this way. It was agreed that this tracker should be shared with the Oversight Assurance Board.

- 5.5 Susan Goldsmith had asked Sorrel Cosens to progress work with a view that downstream further information or representation might be requested from the Health and Sport or other Parliamentary Committees.

6. Any Other Competent Business

- 6.1 KPMG – Susan Goldsmith advised that she had met with KPMG in terms of clarifying language around the governance section. They had asked for further information in respect of work around ventilation and what was in the IOM report. It was noted that the Scottish Government had asked for this to be included as an Annex to the KPMG report. Susan Goldsmith commented that some of the ventilation issues were being dealt with by NHS Lothian and that Christine McLaughlin was currently on holiday.

- 6.1.1 The process for agreeing the KPMG report was discussed with it being noted that a Cabinet Secretary view on whether NHS Lothian would be able to comment on the accuracy of the final report had not yet been received.

- 6.2 Frequency of Future IMT Meetings – It was agreed that the frequency of meetings would now reduce to weekly on Mondays only. The Thursday meetings should be removed from diaries with immediate effect. It was noted that Sorrel Cosens was working on terms of reference for the revised group including a name change to reflect the fact that an incident management team approach was no longer being adopted. This work would consider relationships with the Oversight Assurance Board and also the Programme Board which would remain in place.

7. Date and Time of Next Meeting

- 7.1 The next meeting of currently named Incident Management Team would be held at 4:00pm on Monday 19 August 2019 in Meeting Room 5, Waverley Gate, Edinburgh.

From: MCLAUGHLAN, Edward (NHS NATIONAL SERVICES SCOTLAND)
Sent: 15 August 2019 21:47
To: [REDACTED]
Cc: JAMES, Gordon (NHS NATIONAL SERVICES SCOTLAND); STORRAR, Ian (NHS NATIONAL SERVICES SCOTLAND); RANKIN, Annette (NHS NATIONAL SERVICES SCOTLAND); IMRIE, Laura (NHS NATIONAL SERVICES SCOTLAND); REILLY, Jacqui (NHS NATIONAL SERVICES SCOTLAND); Reducing-Risk-Hce (NHS NATIONAL SERVICES SCOTLAND); [REDACTED]; Currie Brian (NHS Lothian);
Subject: RE: Critical Care ventilation design - RHCYP / DCN
Attachments: 2019-08-15 comment sheet critical Ventilation -considerations rev4.docx

Iain

Having had a chance to review your attachments relating to the proposed works to the CCU ventilation I have attached some comments for your consideration. Some of the points will have relevance beyond the current stage but better to give them to you as early as possible. In terms of our recording of points raised, we're treating CCU ventilation separately from the review of the whole hospital so each list of points starts at one. I will forward comments on the contractor instructions when they are ready.

Give me a call if anything isn't clear.

Kind regards,

[REDACTED]

Eddie McLaughlan
Assistant Director
Engineering, Environment and Decontamination
Health Facilities Scotland
Procurement, Commissioning and Facilities
NHS National Services Scotland

[REDACTED]

www.hfs.scot.nhs.uk

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From: JAMES, Gordon (NHS NATIONAL SERVICES SCOTLAND)
Sent: 14 August 2019 08:56
To: STORRAR, Ian (NHS NATIONAL SERVICES SCOTLAND); MCLAUGHLAN, Edward (NHS NATIONAL SERVICES SCOTLAND); RANKIN, Annette (NHS NATIONAL SERVICES SCOTLAND); IMRIE, Laura (NHS NATIONAL SERVICES SCOTLAND); REILLY, Jacqui (NHS NATIONAL SERVICES SCOTLAND); Reducing-Risk-Hce (NHS NATIONAL SERVICES SCOTLAND)
Subject: Critical Care ventilation design - RHCYP / DCN
Importance: High

Eddie / Ian,

Attached is the SBAR as discussed on the specification for the works to complete a ventilation design solution for the Critical Care Unit. It also has now attached CAD drawings specifying the rooms as well as an abstract for the rooms. Can you please review and let me / Ian know if you have any comment?

Annette / Laura / Ian,

Iain has also attached the draft board change documents (3) for water related works identified in the remedial matrix, post their local IMT.

Thanks
Gordon.

From: Graham, Iain [REDACTED]
Sent: 13 August 2019 15:26
To: JAMES, Gordon (NHS NATIONAL SERVICES SCOTLAND) [REDACTED]
Subject: Critical Care ventilation design - RHCYP / DCN
Importance: High

Gordon,

Yesterday, our Incident Management Team approved the attached, as per earlier discussions at the Oversight Assurance Board last week. Can I have confirmation from HFS / HPS that this is in order to issue.

Happy to discuss if required.

Regards

Iain

Draft board change document (1) for the ventilation, with the addition of drawings (2) to confirm the location and associated clinical uses (1).

The patient groups will be included as:

Critical Care is made up of 3 distinct areas:-
Intensive Care
High Dependency
Surgical Neonates

For the 1st two groups these patients can come from any speciality

For surgical neonates this will be any surgical speciality.

For completeness, I have also attached the draft board change documents (3) for water related works identified in the remedial matrix.

Iain F Graham
Director of Capital Planning and Projects
NHS Lothian

[Redacted]

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NHS Lothian
RHCYP Review (Critical Care Ventilation)
HFS/HPS Comments
Date 15th August 2019 revision 3

Item	Document	Clause / Page	Comment Date	Date Generated	Response	Date
			Considerations			
1.		SBAR - Critical Care Ventilation – proposed technical specification	The SBAR advises that the engagement with clinical stakeholders has been through the project team and management lines but it's not clear that they have the understanding of building services to appreciate the implications of the proposals. In particular, given the strategy identified of ventilating the bed spaces, rather than the whole CCU floor plate, have they considered the need to keep doors closed to maintain the pressure regimen and the impact of this on the operation of the critical care unit?	15/08/2019		
2.		As above	Have clinical stakeholders understood and agreed that patients out with the spaces highlighted in the SBAR will have a lower standard of protection.	15/08/2019		
3.		As above	What consideration has been given to windows? Do these currently open and should they be fixed closed?	15/08/2019		
4.		As above	What allowance is required for spare plant Capacity and associated ductwork?	15/08/2019		
5.		As above	What are the requirements for backup systems for downtime / Maintenance, including the design of backup/alternate systems to ensure simple and efficient change over procedures?	15/08/2019		
6.		As above	What contingency plans are to be in place to maintain conditions in the event of plant failure or maintenance? Does the clinical service provision plan take account of the impact of plant failure?	15/08/2019		
7.		As above	The resilience of the system will need to match the expected clinical service provision and given the expectation that plant will be sited externally, its resilience in relation to its environment, environmental/climate change, power, etc. need to be considered.	15/08/2019		
8.		As above	The instruction refers to maintenance of other services but it should also take care to allow for maintenance of any service serving areas elsewhere that might be occupied whilst the works take place.	15/08/2019		
9.		As above	There will be the need to be consideration of additional controls, logic and BMS graphics as part of this installation, as well as the interface to the fire strategy and fire system.	15/08/2019		
10						

Project title Royal Hospital of Sick Children

Subject Ventilation Meeting Minutes

Location NHSL Project Office, Clinical Mangement Suite, RHCYP, Edinburgh

Date and time of meeting 16/08/2019 10:00

Recorded by: RS

Circulation: Via Email

Attendees

Name	Initials	Company/organisation
Graeme Salmon	GS	Integrated Health Solution Lothain (IHSL)
Pota Kalima	PK	Infection Control (NHSL)
Wullie Evans	WE	Infection Control (NHSL)
Ronnie Henderson	RH	National Health Service Lothain (NHSL)
Brian Currie	BC	National Health Service Lothain (NHSL)
Ross Southwell	RS	Mott MacDonald
Colin Macrae	CM	Mott MacDonald
David Gordon	DG	Bouygues (BYES)
David Wilson	DW	Multiplex (MPX)
David Cunningham	DC	Currie & Brown

Apologies

Name	Initials	Company/organisation
Ian Storrar	IS	Health Facilities Scotland (HFS)
Ian Brodie	IB	Mott MacDonald
Wallace Weir	WW	Integrated Health Solution Lothain (IHSL)
George Curley	GC	National Health Service Lothain (NHSL)
Billy Loudon	BL	Currie & Brown
Donald Inverarity	DI	Consultant Microbiologist (NHSL)
Lindsay Guthrie	LG	Infection Control Lead (NHSL)

Item	Text	Action
1.	<p><u>Remedial Works/Ventilation Board Change</u></p> <p>CS has no information at this time regarding contractual matters. RH asked if there was any further background progress. DW stated Stuart McKechnie (TUV-SUD) is off on holiday until next week. Liane Edwards-Scott has been engaged with HLM and RBG. DW said the technical discussions have been progressing similar to last week but awaiting the agreement on wording of engagement.</p> <p>For reference:</p> <p>Ventilation Meeting Minutes 02/08/19</p> <p><i>DW had been engaging technically with TUV-Sud. These dicussions were around the following:</i></p> <ul style="list-style-type: none"> - Preliminary discussion about power – Will there be a need for dual supplies for the new AHU - Air pressure stabilisers are needed in all rooms? 1 no. rooms that have doors at both sides of each floor. How is the pressure regime maintained when both doors are open? - Openable windows – Looking at these to be locked and shutoff. - AHU – heating and cooling – Looking into a heat pump arrangement - AHU - Looking at acoustic outputs of the external condenser, potentially 	IHSL

- pushing them over to the energy centre.*
- *Looking at different ceiling types (DW stated his preference would be plasterboard ceiling).*
- *Would air permeability tests need to be carried out in these rooms?*
- *Any expectations on pressure gauges (visual indication required?).*
- *Neonatal – single room that opens to 3 bed cot – treat the whole area as 10 Pa? RH stated he had indicated this on walk around.*

2. **Ventilation Issues Log**

Please refer to ventilation issues log for more updates.

RH asked DW to combine the new AHU issues log (with associated SHTM compliance clauses) into the original ventilation issues log and to hide closed items and retain numbering. DW agreed to amalgamate the 2 documents and issue on the back of this meeting.

MPX

3. **General Ventilation**

[Ventilation Meeting Minutes 09/08/19:](#)

DI mentioned that HFS talked about microbiological sampling in previous meetings and wanted to know if any progress had been made. No response yet from HFS.

NHSL

RH stated that IOM are preparing the report and will issue a draft next week. RH did mention, from his understanding, that in general it is okay but indicated that the third floor will be identified as an issue but could not confirm until report available. DW stated they are going through each AHU and record any issues on the back of the IOM general survey.

NHSL

4. **AOCB**

DC stated that drafted wording has been developed and should be issued at some point today. DW agreed that this can start the process and hopefully get the AHU ordered soon.

In the event of a worst case scenario that Q-nis require extensive remedial works to be completed on existing AHU's, RH/BC would issue a priority list of areas to be completed in order.

RH asked everyone around the table to confirm they had no issues with the wording of the change including all aspects of the environmental requirements. He stated that this does not exclude any other requirements. BC agreed that this will be confirmed at the preliminary workshops with TUV-SUD. DW said that MPX will arrange a programme of works to be issued when these workshops happen. BC stated that IHSL confirmed in a previous meeting that there would be 3 weeks from the date of agreement to allow for design to be progressed to a point to order the ventilation unit(s). DW did confirm that operational construction requirements on access are being discussed. RH stated that there should be a focus on resilience for critical care remedial works.

DW gave an update regarding the visit to Royal Infirmary Department 215 (Critical care). RH confirmed that the design was for 10 AC/H at positive pressure but could not confirm the pressure level i.e. 10 pa.

DG asked if the workshops could stay on a Tuesday/Wednesday. Members agreed. CS asked how we are handling this project on an operational stage. BC stated that this will follow the contract process.

It was concluded that there was no requirement for a formal meeting next Tuesday and this meeting to be next held on Friday 23th August.

5. **Date of Next Meeting**

Friday 23th August 2019 @ 10:00 Warlow

From: Wright M (Malcolm)
Sent: 11 September 2019 08:51
To: DG Health & Social Care
Subject: FW: Further briefing for statement
Attachments: 2019-20 - Health Finance and Infrastructure - Edinburgh Sick Kids - KPMG Report- 16 August 2019.docx

Pls let me have a copy of the response before I head down to parliament

From: Corr A (Andrew) [REDACTED] **On Behalf Of** Cabinet Secretary for Health and Sport
Sent: 11 September 2019 08:30
To: Crowe B (Barbara) [REDACTED]; Morrison A (Alan) [REDACTED]; Cabinet Secretary for Health and Sport
Cc: Aitken L (Louise) [REDACTED]; McLaughlin C (Christine) [REDACTED]; Calderwood C (Catherine) [REDACTED]; Murray D (Diane) [REDACTED]; Smith G (Gregor) [REDACTED]; Rogers S (Shirley) [REDACTED]; Wright M (Malcolm) [REDACTED]; [REDACTED]; DG Health & Social Care [REDACTED]; Chief Medical Officer [REDACTED]; Hart S (Suzanne) [REDACTED]; Roche R (Rowena) [REDACTED]; Connaghan J (John) (Health) [REDACTED]; McCallum R (Richard) [REDACTED]; Neill S (Sean) [REDACTED]; Burkinshaw B (Beata) [REDACTED]; McQueen F (Fiona) [REDACTED]; Ives J (Josephine) [REDACTED]; Shepherd L (Lesley) [REDACTED]; Mair S (Suzi) [REDACTED]; Hutchison D (David) [REDACTED]; Kirkwood R (Robert) [REDACTED]; Lea-Ross S (Stephen) [REDACTED]; Birch J (Jason) [REDACTED]

Subject: Further briefing for statement

Alan/Barbara,


The Cabinet Secretary has been considering the attached submission which you sent up when the KPMG report was first made available to her (16th August). From this she would like the following information (grateful if you could provide answers beside the relevant section/para:

12. Who agreed financial close? Was there any SG involvement in taking that decision
14. Do we know why in resolving the air pressure issue the issue of impact on 4 critical care beds was not picked up?
15. Who were the 4 Exec Directors on Finance and Resource Committee - job titles don't need names
22. Why did we not intervene earlier?
23. Do we have any answers to the 4 questions posed here?

Further to this the Cabinet Secretary would like a step by step how and by whom major projects are currently agreed & once agreed what is current SG locus.
 If we could have this by 1200 today it would be most helpful.

Thanks,
 Andy

Andrew Corr
Private Secretary to the Cabinet Secretary for Health and Sport
The Scottish Government



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Cabinet Secretary for Health and Sport**EDINBURGH CHILDREN'S HOSPITAL – KPMG DRAFT REPORT****Purpose**

1. To provide an update on the KPMG working draft report on the 'Independent Assessment of Governance Arrangements' for the NHS Lothian Royal Hospital for Children and Young People (RHCYP) which was received on 15 August 2019.

Priority

2. Routine.

Background

3. Following the decision to delay the opening of the Hospital following final safety checks which revealed the ventilation system within the critical care department required further work to meet national standards, KPMG were instructed to independently establish the facts surrounding the decision to delay the move to the hospital. As part of the assessment KPMG were specifically instructed to consider the following areas:

- Establish what decisions were made by NHS Lothian, when these were made, by whom and on what basis these decisions were taken in relation to the air ventilation issues and any other material issues that led to the Delay;
- To determine the extent to which the design specification with regard to air ventilation complied with the Scottish Health Technical Memoranda (SHTM) at each stage of the project;
- To understand what professional and technical advice was given to the Board, in particular what derogations were proposed, who agreed them and what risk assessments were undertaken;
- To establish the governance arrangements in place.

Consultations

4. As part of the review KPMG held discussions with Mott McDonald (NHS Lothian's Technical Advisors), MacRoberts LLP (NHS Lothian's legal advisors), Integrated Healthcare Systems Lothian (IHSL – the SPV of the project), Institute of Occupational Medicine (IOM - specialist ventilation testers), Health Facilities Scotland and Arcadis NV (the Project's Independent Testers).

Summary of Findings

5. The key issue which led to the delay was the non-compliance with SHTM 03-01 for air change rates in some of the Critical Care areas of the Hospital which was identified by IOM and reported to the Project Team on 24 June and subsequently brought to the attention of the Board on 1 July 2019.

6. Throughout all stages of the project, references were made to the requirement to adhere to SHTMs, including specifically SHTM 03-01 which related to ventilation. However notwithstanding any contractual obligations, the report clearly identifies a picture of confusion between the parties as to the correct application of these Standards. This appears to have stemmed from a document produced by NHS Lothian at the tender stage in 2012 which was inconsistent with SHTM 03-01 and which was referred to throughout the project.

7. There is clear evidence that professional and technical advisors were involved throughout the project; specifically this includes involvement in relation to ventilation issues. However, there is no evidence that the problem was identified prior to June 2019.

8. Governance processes and procedures operated in line with the structure that was put in place. There was regular dialogue between NHS Lothian and Scottish Government throughout the project, with evidence of escalation where required, albeit this was focussed on financial rather than technical matters.

9. Once NHS Lothian's Board became aware of the air change issue, steps were taken to assess the impact. The Executive Team and the Project Team met to discuss the issues uncovered on 1 July 2019 and on the same day the issue was escalated to other members of the Board which resulted in

Cabinet Secretary for Health and Sport

an urgent internal meeting the following day at 9am. Later that day the Chief Executive and Chair briefed the Director General of Health and Social Care on the situation.

10. But for the issue of non-compliance in air change rates, KPMG understands from NHS Lothian that the Hospital would have opened as planned. While this is the view of KPMG, we believe this statement needs to be explored further as we are aware of the other ventilation issues beyond the air change rate in Critical Care.

Structure of the Report

11. After providing a summary of findings, the report is split into the following sections:
- Background to the Project and the Delay
 - Design specifications and air ventilation standards (see Annex 1)
 - Professional and Technical advice given to the Board
 - Governance and escalation structure with NHS Lothian

Background to the Project and the Delay

12. This section provides useful background on the whole project. One of the more significant observations include that at the time of financial close in February 2015, the designs of the Hospital had not been fully developed, including issues relating to the design of the ventilation (pressure regime).

13. In early 2017, the report notes that it became clear that the Hospital would not be completed in time and there were three main issues – ventilation (pressure regime), High Voltage resilience and MRI provision which could not be resolved and it left both parties considering court action before they agreed to move to a negotiated settlement.

14. In order to resolve the pressure in single rooms, the air change rate was adjusted from six to four with two air change rates to be provided through natural ventilation (a 'mixed mode' solution). However an issue remained regarding the pressure in multi-bed rooms. Fourteen multi-bed rooms were adjusted to have balanced or negative pressure, four of which were in Critical Care. Reference was made in the proposed resolution of this issue to an air change rate of four.

15. During that period, it became apparent that while some of the issues were being addressed, there were a significant number of technical issues emerging. On 22 February 2019, the Settlement Agreement was signed which covered the 76 identified problems, where 73 had an agreed solution and three technical issues (fire void detection, drainage and Heater Batteries) did not.

16. Following the signing of the Settlement Agreement, on the same day the Independent Tester provided a 'Certificate of Practical Completion' which meant the project moved from the construction phase to operational phase and the payment of the Annual Services Charge began. During this operational phase a significant number of outstanding works were required to be carried out by Project Co, while at the same time NHS Lothian began commissioning the Hospital.

Professional and Technical Advice

17. The report concludes that advice and support was provided to the Project Team by both technical advisors and internal clinical advisors.

Governance Arrangements

18. The governance structure surrounding the construction and commissioning of the Hospital was operating in line with that described and issues were escalated through appropriate channels. Oversight was delegated to the Finance and Resources Committee which included four Executive Directors.

19. KPMG saw evidence that the governance arrangements operated in practice and that it appears that at each stage of the Project, personnel with appropriate technical and clinical skills and experience were involved and that where appropriate external advice and guidance was sought.

Cost of the Report

20. Due to the uncertainties as to how long this review would take, the cost of the review would be based on a series of daily rates. The current cost is around £300k and further work will add to this position.

Publication

21. You have previously indicated that you would prefer to publish the KPMG and NSS review at the same time, we would be supportive of this approach as it would allow us to work with KPMG to clarify a number of issues in the report – would the hospital really have opened if the air rate change was sufficient and did the changes to the SHTM guidance in recent years contribute to the problem.

Summary

22. The main issue contained in the report is that a mistake included in the tender documentation was not picked up at any stage over the next seven years despite the fact that there was appropriate professional and technical involvement in the project and that the governance arrangements operated as planned. The other issue of focus is that because the report provides a comprehensive summary of each issue that this project has had to deal with, it brings attention to the unusually high number of problems which this project has experienced and we may be asked why we did not intervene earlier.

23. In addition to the obvious question as to why the ventilation problem was not identified by the Board or any of its technical advisors, criticisms of the project are likely to include questions about:

- why the contract was signed in February 2015 before the design was complete,
- why was the practical completion certificate signed in February 2019 while there remained a large number of issues that needed to be resolved,
- why are we paying a monthly charge for a Hospital we can't use and
- how can we have technical guidance on ventilation systems which 'lacks clarity' and is open to interpretation.

24. We will liaise closely with Comms to develop lines for each issue note above and we will discuss publication options too.

Summary

25. You are invited to note the summary of the working draft KPMG report; a final copy of which is expected later this month.

Alan Morrison
Health Finance
16 August 2019

Design specifications and air ventilation standards

Throughout all stages of the Project KPMG have seen references made to the requirements to adhere to SHTM, and specifically SHTM 03-01 in respect of ventilation standards; in particular within the Board Construction Requirements ('BCR') document which is the primary document at both tender and Project Agreement stage. The BCR stated that Project Co must comply with SHTM for the design of the Hospital and that all recommendations and preferred solutions contained with SHTMs must be adopted as mandatory.

It appears that there has been confusion between NHS Lothian and Project Co as to the application of these Standards throughout the Project. This appears to have stemmed from the Environmental Matrix ('EM') which was inconsistent with SHTM 03-01 from the tender process onwards.

The version of the EM document provided by NHS Lothian to bidders at the tender stage, included reference to both the single bed cubicles and four-bed rooms in Critical Care as requiring four changes of air per hour. This should have been 10 changes per hour and was not corrected in subsequent versions of the EM.

The guidance note at the front of the EM document, provided at the tender and Financial Close stages of the Project, suggested that all Critical Care Areas should be in accordance with SHTM 03-01 and 10 air changes per hour. This was inconsistent with the Matrix noted above. KPMG note that the inconsistency was removed after Financial Close in February 2015 by the insertion of the words 'for isolation cubicles' suggesting that isolation cubicles in Critical Care should have an air change rate of 10. NHS Lothian informed KPMG that this change was made by Project Co and was not flagged to them.

NHS Lothian told KPMG that they had not reviewed the EM in detail from a technical perspective and instead they looked at it for 'operational functionality'. NHS Lothian assumed that any changes to the EM would be highlighted for discussion and that it would be in compliance with SHTM 03-01. While KPMG understand that NHS Lothian and their advisors did not consider that they had an obligation to review the EM in detail, there are multiple instances of comments being provided by NHS Lothian on particular sections of the EM, including the four-bed rooms in Critical Care (though at no stage did they refer to air change rates).

KPMG have seen evidence where the Board's technical advisors reminded Project Co that they must comply with SHTM and in January 2019, the Board asked IHSL for specific assurance that all critical ventilation systems were to be '*inspected and maintained in line with SHTM 03-01*'. IHSL confirmed that all ventilation systems had been designed, installed and commissioned in line with SHTM 03-01.

On these issues KPMG make the following observations:

- There is a lack of clarity in the standards and they could be open to interpretation eg there is no definition of critical care;
- They have identified at least three specific instances when the air change error could have been identified;
- The Independent Tester saw their role as certifying that the design had been built in accordance with what had been agreed – not with what the standards require.

RHCYP / DCN – Incident Management Team 19 August 2019**Update on Critical Care Ventilation****Action Taken**

Following the IMT on 12 August, the SBAR on Critical Care Ventilation enhancement and associated documentation (Appendix 1) were issued to Health Facilities Scotland. They are currently considering the request for their support to the proposals; they have indicated that they are examining these outwith their programmed review of the facilities.

Initially HFS raised three questions of clarification on 14 August. These and the answers provided (*RH*) on 15 August were:

Can we identify the room / space number for cross reference to the rooms identified in the SBAR. <i>Room numbers are on the drawing but may be difficult to read, I have put room description to help with identification next to each number extracted from the SBAR below:</i>
1-B1-065 – Neo Natal 3 cot area including 1-B1-022 – <i>Corridor</i> , 1-B1-069 – <i>Staff Base</i> , 1-B1-066 – <i>Clean Utility</i> and 1-B1-071 – <i>Resus Bay</i> which are all open to 1-B1-065
1-B1-075 – Single cot cubicle neo natal
1-B1-063 – Open plan bay 4 bed
1-B1-037 – Single bed cubicle
1-B1-031 – Open plan bay 4 bed
1-B1-021 – Single bed cubicle
1-B1-020 – Single bed cubicle
1-B1-019 – Single bed cubicle
1-B1-009 – Open plan bay 4 bed
Can a revision number be added to any drawings we are sent for tracking? <i>Revision numbers are on all drawings</i>
Is there an accommodation schedule identifying all rooms within the Critical Care Unit. <i>Yes, Attached, Critical care is under the tab B1 [spreadsheet not included in the update paper]</i>

Also late on the evening of 15 August, HFS (EMcL) raised the question set at Appendix 2. These are being considered by the Project Team but some draft comments are included for consideration of IMT.

It should be noted that NHS Lothian, under the change mechanism in the NPD contract, would normally issue a high level output specification and supporting information to IHSL, to which IHSL should respond with detailed proposals from their contractors.

Next steps

Following support to the proposed “board change” from HFS, the following draft process for approvals and progression is suggested for consideration by the IMT:

1. Board change FOR THE DESIGN be issued in draft to IHSL for development (queries, timescales, confirmation that it is deliverable).
2. Sign off to the issue of a formal change by IMT, then Assurance Oversight Board (AOB) against a specific recommendation to also include any legal and commercial documentation (as developed at the date).
3. Formal issue of Board change and Letter of Intent (see separate paper) to IHSL
4. Receipt of proposals from IHSL (including cost and programme)
5. Consideration of the proposals by Project Team, Advisers, Management lines and through IMT
6. Consideration of the proposals and Board view by HFS / HPS
7. Combined / agreed NHSL and HFS / HPS to AOB
8. Sign off to proceed to next stage
9. Repeat for the next stage – construction and commercials including costs, etc. and completion of Supplemental Agreement

Assumptions:

1. Assumes IHSL and supply chain will work to an agreed Letter of Intent.
2. Parallel briefing and / or approvals to NHSL Board (especially Finance and Resources) will be required.
3. That the programme and cost for delivery from IHSL are acceptable to NHSL and government.
4. That a facility wide programme is established and maintained to manage any interfaces should partial occupation be undertaken.

Iain Graham, Director of Capital Planning and Projects, NHS Lothian

19 August 2019

UPDATE ON CRITICAL CARE VENTILATION: APPENDIX 1

Papers issued to HFS 13 August (IG)



RHCYP DCN AOG
080819.docx



Drawing showing
rooms affected Aug B.



Drawing showing
rooms affected Aug A.



Abstract from RHSC
Paed Critical Care Aug

UPDATE ON CRITICAL CARE VENTILATION: APPENDIX 2

NHS Lothian

RHCYP Review (Critical Care Ventilation)

HFS/HPS Comments [EMcL]

Date 15th August 2019 revision 3

Item	Document	Clause / Page	Comment Date	Date Generated	Response	Date
			Considerations			
1.		SBAR - Critical Care Ventilation – proposed technical specification	The SBAR advises that the engagement with clinical stakeholders has been through the project team and management lines but it's not clear that they have the understanding of building services to appreciate the implications of the proposals. In particular, given the strategy identified of ventilating the bed spaces, rather than the whole CCU floor plate, have they considered the need to keep doors closed to maintain the pressure regimen and the impact of this on the operation of the critical care unit?	15/08/2019	<i>DRAFT – [project team, CCU management team to advise on considerations to date?]</i>	
2.		As above	Have clinical stakeholders understood and agreed that patients out with the spaces highlighted in the SBAR will have a lower standard of protection.	15/08/2019	<i>DRAFT – [project team, CCU management team to advise on considerations to date?]</i>	
3.		As above	What consideration has been given to windows? Do these currently open and should they be fixed closed?	15/08/2019	<i>DRAFT – [project team to advise on relevance of this query; physical and differences to elsewhere in the department?]</i>	
4.		As above	What allowance is required for spare plant Capacity and associated ductwork?	15/08/2019	<i>DRAFT – [no additional spare capacity is being added into the specific requirement due to constraints on space, time and cost. NB constraints across the project / no definition put forward for "spare plant capacity".]</i>	
5.		As above	What are the requirements for backup systems for downtime / Maintenance, including the design of backup/alternate systems to ensure simple and efficient change over procedures?	15/08/2019	<i>DRAFT – [as per wider building BCR / PCPs?]</i>	
6.		As above	What contingency plans are to be in place to maintain conditions in the event of plant failure or maintenance? Does the clinical service provision plan take account of the impact of plant failure?	15/08/2019	<i>DRAFT – [project team, CCU management team to advise on considerations to date?]</i>	
7.		As above	The resilience of the system will need to match the expected clinical service provision and given the expectation that plant will be sited externally, its resilience in relation to its environment, environmental/climate change, power, etc. need to be considered.	15/08/2019	<i>DRAFT – [project team, CCU management team to advise on considerations to date?]</i>	
8.		As above	The instruction refers to maintenance of other services but it should also take care to allow for maintenance of any service serving areas elsewhere that might be occupied whilst the works take place.	15/08/2019	<i>DRAFT – [challenge to identify what areas might be occupied given the lack of clarity on phasing to date? Suggest that this follows on?]</i>	
9.		As above	There will be the need to be consideration of additional controls, logic and BMS graphics as part of this installation, as well as the interface to the fire strategy and fire system.	15/08/2019	<i>DRAFT – [this will form part of the Project Co proposals but will be signposted as part of the initial design request?]</i>	

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19/08/2019

19 August 2019

Susan Goldsmith

ROYAL HOSPITAL FOR CHILDREN & YOUNG PEOPLE/DEPARTMENT OF CLINICAL NEUROSCIENCES – WATER QUALITY**1 Purpose of the Report**

The purpose of this report is to set out the present situation regarding water quality on the building and to update the Incident Management Team (IMT) on whether there are any systemic failures of the water distribution system that would delay the occupation of the building. The report is based on the expert reports and testing and on the discussion at a workshop held to summarise knowledge related to water quality issues.

Any member wishing additional information should contact the Executive Lead in advance of the meeting.

2 Recommendations

- 2.1 To support the actions agreed at the Water Quality Workshop held on 29th July 2019 which are highlighted in the section marked next steps.
- 2.2 To note that the microbiological water sampling reported to date does **not** indicate evidence of systemic contamination of the water; water plant or water tank at RHCYP/DCN.
- 2.3 To note that Independent reports shared after the decision to postpone the hospital opening have highlighted some issues relating to the wider maintenance schedule undertaken prior to the settlement agreement and commissioning of the water system, which need to be addressed to provide ongoing assurance of the water quality and maintenance of the water system. This information was not part of the evidence used in June 2019 when it was recommended that remedial work to address water quality issues could be achieved while the building was occupied.
- 2.4 On the advice of HFS, the authorising engineers for NHS Lothian, and Bouygues, a detailed plan for water safety is required. This will list the interventions required to address the known issues, maintain water quality and safety until the building is partially or fully occupied and to undertake ongoing microbiological sampling in line with SHTM04-01 and HPS guidance. It will be owned by Bouygues in their role as Hard FM providers but agreed through the IMT.

3 Discussion of Key Issues

3.1 A multi-disciplinary team workshop was held on Monday 29th July 2019 to consider water quality. The following people (with the organisations they represent) attended:

- George Curley, Director of Facilities (NHS Lothian)
- Wallace Weir Project Co (IHSL)
- David Gordon, (Bouygues)
- Ian Clark, Authorising Engineer (Water) for Bouygues – By Phone
- Lindsay Guthrie, Infection Prevention & Control
- Dr Ewan Olson Consultant Microbiologist (NHS Lothian)
- Ronnie Henderson, (NHSL Project Team)
- Janice Mackenzie, NHSL Project Team (part meeting only)
- Dorothy Hanley (NHSL)

- David Wilson (Multiplex)
- Ian Storrar (Health Facilities Scotland) – By Phone
- Annette Rankin, (Health Protection Scotland) – By Phone
- Dennis Kelly, Authorising Engineer (Water) for NHS Lothian
- Tim Wafer Authorising Engineer (Water Solutions Group) for HFS – By Phone
- John Bryson (Westfield Caledonian)
- Craig Simpson (IHSL)

3.2 The focus of the workshop was to:

- review the design of the water systems
- draw conclusions from the sampling regimes undertaken by the principal partners, and
- agree recommendations.

It is important to stress that the resulting actions were discussed in the context of a building which all present understood to be unoccupied, with no confirmed date for transfer of clinical services onto site.

The workshop considered the following reports commissioned by NHS Lothian, which has been produced at the dates noted, further details of which are included later in the paper:

- Westfield Caledonian 1st -12th July 2019 – to sample water outlets in augmented care areas for *Pseudomonas aeruginosa* and assess the overall microbiological load of the water distribution system.
- Callidus: 21st & 22nd March 2019, 25th & 26th April 2019 – to undertake a high level assessment of Health & Safety Management including a review of compliance with statutory requirement for control of *Legionella*

The workshop discussions and recommendations were also based on current mandatory and best practice guidance:

- Scottish Health Technical Memorandum 04-01 (SHTM 04-01) Water safety for healthcare premises (Parts A-E) (2014)
- Health Protection Scotland (2018) *Pseudomonas aeruginosa* routine water sampling in augmented care areas for NHS Scotland

3.3 Prior to the decision made in early July 2019 by the Cabinet Secretary to postpone the opening of RHCYP/DCN, additional information and assurance was sought by the Infection Prevention and Control team and others in relation to water quality on the site. This was in response to:

- a) Publication of interim guidance by HPS for *Pseudomonas aeruginosa* routine water sampling in augmented care areas for NHS Scotland in September 2018, and
- b) Water related infections identified at the QEUH which had been linked to issues with the hospital water supply
- c) Limited information on potential contamination of water outlets at RHCYP with *P. aeruginosa* identified during commissioning by Multiplex.

3.4 With the support of the NHSL project team, Westfield Caledonian were commissioned by NHS Lothian as an independent expert to evaluate and confirm the bacteriological safety of

the water quality across the site, with a specific focus on *P. aeruginosa* in augmented care areas. At this time, in discussion with the project team, senior managers and others, it was felt that if water quality issues were identified, particularly in augmented care areas, that this would allow the board to instruct Bouygues to undertake appropriate remedial work in line with HTM04-01 and the draft HPS guidance to eliminate or mitigate any risk to patients from this organism in the water supply.

- 3.4 It was agreed that this remedial work to address localised microbiological water quality issues could reasonably be achieved while the building was occupied, in line with the approach to *P. aeruginosa* control taken on other NHS Lothian sites and would not preclude the planned move of clinical services onto the site.
- 3.4 Westfield Caledonian commenced water sampling on 1st July 2019 just before the announcement to postpone the move was made. In view of emerging concerns relating to other aspects of the hospital construction and commissioning, Westfield's remit was extended to include a wider review of the water distribution system.
- 3.5 The water results and the report from Westfield Caledonian were not available until after the decision was made to postpone the move.
- 3.6 An independent Health & Safety Review commissioned by NHS Lothian in March 2019 (the Callidus report) had highlighted significant concerns in relation to the Legionella controls required by legislation. Specifically, this included: inadequate evidence of water flushing regimes, inadequate evidence of appropriate Legionella risk assessments and water temperature control, evidence of water leaks/damage, and an absence of appropriate risk assessment or response. This report was not specifically referenced in the water safety workshop on 29th July. Concern around water temperature regulation was also highlighted in the Westfield Caledonian report.
- 3.7 The Callidus report was shared with the IMT on 22nd July 2019, some of whom were also members of the Water Safety workshop group held on 29 July, after the Westfield Caledonian report was available and following the Cabinet Secretary's decision.
- 3.8 It is difficult to determine the impact of hindsight bias that the information contained in the Westfield Caledonian and Callidus reports may have had on the assessment of risk at the 1st July 2019 and the previous decision to undertake corrective action to address water quality issues with patients in situ. The majority of the work proposed can be undertaken away from patient care delivery areas, and where work impacts on clinical areas, an HAI Scribe would be completed to determine control measures to mitigate any clinical risks associated with this. This has been our approach on other acute hospital sites when this type of work to address water quality issues has been undertaken.
- 3.9 Guidance for water sampling is set out in SHTM 04-01 Water Safety for healthcare premises Parts A and C. This set out that sampling should include total viable counts (TVC) of organisms, and *Escherichia coli* (*E.coli*) and *Pseudomonas aeruginosa* (*P. aeruginosa*) from selected outlets. However the document does not provide explicit guidance on the acceptable range of TVC counts or the actions required in response to these and does not cover *P. aeruginosa* control measures. SHTM04-01 Part C also advises sampling on the basis of risk assessment and system configuration, therefore the approach taken to which outlets to sample from by different parties may vary.

3.10 To date, scrutiny of the microbiological safety of the water system at RHCYP/DCN has been undertaken by:

- **Multiplex** –commissioning work as per SHTM04-01 including Total Viable Count (TVC), E.coli & limited outlets for *Pseudomonas aeruginosa* as the building provider, in Oct 2018, Jan 2019 and March 2019
- **Bouygues**– who accepted water management responsibility in July 2019 – further testing as per SHTM04-01 (TVC, Legionella, E.coli, Coliforms) – results awaited
- **Westfield Caledonian** –on behalf of NHS Lothian in July 2019 (TVC as per SHTM 04-01, *P. aeruginosa* as per HTM04-01 on all “blended” (mixed hot and cold) outlets in augmented care, other outlets including ZIP hydroboil taps and ARJO baths.
- **Tim Wafer** -on behalf of HFS & HPS to provide further evaluation of the water system and microbiological safety (TVC, *P. aeruginosa*; *Cuprivadus* spp; *Mycobacterium* spp) in July 2019 – results awaited

4 Workshop Findings

- 4.1 The procedures of respective sampling regimes of MPX, Bouygues and Westfield Caledonian were reviewed. Although the scope of sampling and methodology differed between providers, it was agreed by all parties that each was compliant with SHTM 04-01, and that the results available to date did **not** indicate any evidence of issues with water plant, water tank or systemic water contamination. Actions are however required to address the areas of known contamination identified.
- 4.3 The absence of a site specific water safety plan from Bouygues, the Hard FM providers for the site, for the workshop to consider meant that no conclusion could be reached about the adequacy of temperature controls, including whether or not the issues raised in the Westfield and Callidus reports had been addressed. However, Legionella was not detected in any samples collected by Westfield Caledonian.
- 4.4 Testing for *Pseudomonas aeruginosa*: MPX and Bouygues did not sample all outlets, and as part of routine sampling found very little *P. aeruginosa* other than in the untempered outlets. This is water provided without any temperature mixing. *P. aeruginosa* is not normally detected in such areas because water temperature which is maintained above at least 55°C as part of Legionella control is sufficient to kill other organisms including *P. aeruginosa*. Westfield Caledonian sampled all outlets within the augmented care areas specified by IPCT, and this demonstrated a number of positive outlets in 2 wards (Dalhousie ward & Ward 231). This included clinical hand wash basins and patient showers. In addition, ARJO baths and Zip taps were tested. With the exception of DCN Acute Care (L1), PDC and Castle Mey, the ARJO baths were found to be contaminated. In the augmented care areas, there are 3 hydrotaps and 1 of them tested positive for *P. Aeruginosa* (in Medical Inpatients Adolescent Recreation Room).
- 4.5 Debris in the system: on dismantling some of the taps, Westfield Caledonian found evidence of debris in in-line strainers within the water delivery system. Concern was raised that this debris may be present throughout the system. The automatic flushing “Kempar” system diverts water using venturi splitter valves. Concern was raised that debris might be compromising the “Kempar” system. This extent of this risk was not concluded at the meeting.

Further work was advised by Dennis Kelly (NHSL authorising engineer) subsequent to the meeting to assess this issue.

5 Review of Design at the workshop

- 5.1 The Westfield Report highlighted circulating water temperatures which are out of the range required to control Legionella growth; that is a cold water temperature $>20^{\circ}\text{C}$ (required range $\leq 20^{\circ}\text{C}$) and hot water temperatures $<55^{\circ}\text{C}$ (required range $\geq 55^{\circ}\text{C}$). Localised temperature difference does require further investigation and potentially adjustments to the temperature control elements to ensure the quality of the water supplied is adequate on a long term basis.
- 5.2 Given the delay in the occupation of the building due to the ventilation issues, Dennis Kelly, the Board's Authorised Engineer provided some further advice after the workshop, namely that it would be prudent to undertake (as a precautionary measure) to:
- revise or amend the water infrastructure to take account of the facts learnt from the Queen Elizabeth University Hospital and Dumfries General Hospital – mainly the possible need for secondary disinfection of water prior to occupation
 - Inspect an expansion vessel and include the bellow or membrane, depending on the design and also inspect some of the component parts including non return valves, pressure reducing valves
 - clarify where biofilm is located within the pipe works, what needs done to remove or suppress it and what the maintenance elements are to achieve this
- 5.3 On completion of this review, NHS Lothian will be able to confirm the extent and scope of any further corrective action required to provide assurance that the storage distribution system for water meets the required standards.

6 Next Steps agreed at the workshop on 29 July 2019

- 6.1 HFS required the parties present to provide a full water schematic and expressed concern that this was not currently available. Multiplex and Bouygues will work to provide this from existing documentation as a matter of urgency. It should be presented to the IMT for discussion
- 6.2 An acceptable site specific water safety plan (WSP) is to be developed and shared as a matter of urgency by Bouygues as the hard FM provider with responsibility for water management. This will contain the explicit detail on flushing regimes; maintenance action (for occupied and unoccupied building); temperature control for Legionella and the remedial actions that will be taken in response to any non conformances or positive water samples. The WSP will provide the level of detail on corrective action required, and will be discussed by the IMT before agreeing where it will be routinely reported.
- 6.3 The WSP will provide names against each of the prescribed roles contained in SHTM04-01 (e.g. authorised person, competent person) and Bouygues will require to demonstrate to HFS and NHS Lothian the competence of each of these named individuals against these roles.

- 6.4 NHS Lothian will instruct the work advised by Dennis Kelly, NHSL authorising engineer to confirm compliance of the water system to SHTM 04-01. This will include an assessment of the risk of debris compromising the Kempar system.
- 6.5 In line with HPS guidance (2018) a further programme of microbiological sampling will be required for clinical outlets which have tested positive for *P. aeruginosa* on completion of the corrective work. This regime comprises 3 consecutive negative samples over a 2 week period, after which the outlet can be returned to normal use. This is followed by additional weekly sampling for 4 weeks, moving to sampling every 3 months until a further 4 consecutive samples remain negative to provide assurance of ongoing water quality. This sampling regime will take 18 weeks in total before standard 6 monthly monitoring can resume. This mirrors the regime in place for sampling in existing occupied areas (eg Wards 20, 31, 32, 33 WGH, NICU and 111, RIE). The building can be occupied for the duration of this monitoring. If positive samples are returned, point of use filters can be attached to affected outlets as a remedial measure pending further corrective work. This approach is compliant with both SHTM 04-01 Part A and HPS 2018 guidance.
- 6.6 In addition to specific actions for management of *P. aeruginosa*, a detailed approach to address high TVC counts will be provided in the WSP – this will address removal or cleaning of contaminated inline filters, water temperature regulation, whole system disinfection and further microbiological water sampling as per SHTM 04-01 (TVC, E.coli) to confirm efficacy of control measures.
- 6.7 Representatives from ZIP and ARJO are to be requested to attend the site to provide specific maintenance and decontamination guidance for these products. It was proposed, subject to further discussion with the AE (Water), Dennis Kelly, for Lothian and Ian Storrar, HFS that the ARJO baths in Paediatric Oncology and Plastics Dressing Clinic and ward care area are removed and replaced with a suitable alternative. All other baths are to be reviewed, maintained and tested in line with the manufacturer's guidance, and overseen by the NHS Lothian Water Safety Management Group.
- 6.8 Although the risk of infection associated with ingestion of *P. aeruginosa* is low, the presence of this organism in the ZIP taps presents a risk of retrograde seeding of biofilm and wider contamination of the water system and outlets. Further guidance on the provision of drinking water to the highest risk patient group (Paediatric haematology oncology) has been requested from HPS/HFS. The HFS guidance document SUP05 is currently being revised by them.
- 6.9 Additional whole system disinfection (chemical disinfection) was proposed and accepted prior to clinical services moving onto site. The optimal time frame to complete this action is approximately one week before services move.
- 6.10 John Bryson (Westfield Caledonian) proposed to undertake a pilot study to establish the most proficient method to eradicate the bio film and *P. aeruginosa* from all types of outlets. This was agreed by all present. Once this method is confirmed and with agreement with the Lothian AE (Water), Dennis Kelly, and Ian Storrar HFS, this will be undertaken on all clinical outlets positive for *P. aeruginosa*.
- 6.11 NHS Lothian and Bouygues to seek advice from the manufacturer of the valves on the most appropriate compatible disinfectant product that would ensure a high level of disinfection of the whole system including the removal of bio film if present.

- 6.12 HFS via Tim Wafer will advise on the outcome of the additional microbiological testing conducted on their behalf. It was agreed that the actions discussed for inclusion in the water safety plan (flushing, remedial action etc) would address the presence of other organisms. In the absence of any clinical infections the purpose of this exercise remains unclear. No information about the expectation about testing regimes going forwards was discussed. It was highlighted again interpretation of this additional testing may be challenging in the absence of validated testing methodology.
- 6.13 Project Co advised that a Board Operational Change may be required to reflect action to address *P. aeruginosa* contamination in ward outlets as this is not explicit within SHTM 04-01 (the basis of the existing contract). It was noted that guidance is available within HTM04-01 and HPS Interim guidance (2018)
- 6.14 A further meeting of the Water Workshop was held on 7th August. The meeting was chaired by Professor Alex McMahon, NHS Lothian Executive Nurse Director and HAI Executive Lead. The following people (with the organisations they represent) attended:
- George Curley, Director of Facilities (NHS Lothian)
 - David Gordon, (Bouygues)
 - Ian Clark, Authorising Engineer (Water) for Bouygues
 - Lindsay Guthrie, Lead Nurse Infection Prevention & Control Nurse (NHS Lothian)
 - Dr Donald Inverarity, Consultant Microbiologist & Lead Infection Control Doctor (NHS Lothian)
 - Ronnie Henderson, (NHSL Project Team)
 - Janice Mackenzie, NHSL Project Team
 - David Wilson (Multiplex)
 - Dennis Kelly, Authorising Engineer (Water) for NHS Lothian
 - Craig Simpson (IHSL)
 - Ross Southwell (Mott MacDonald)
 - Graeme Salmon (IHSL)
- 6.15 Agreement was reached on prioritisation of the above steps, and all progress made in relation to these was updated on the meeting action log. A further meeting is planned for 21st August.

7 Timescale for the actions from the workshop on 29 July 2019

- 7.1 The overall timescale to complete all of the work outlined in next steps will be defined more clearly at the next planned water safety meeting on 7th August 2019. It is anticipated this will comfortably be achieved within the indicative timescales for the corrective actions on other critical systems on site (e.g. ventilation)
- 7.2 Until the building is occupied, maintenance of water quality will be achieved through a robust programme of water flushing (documented) as defined in the water safety plan, appropriate temperature control of circulating water and automatic system purging. This will be supported by NHS Lothian domestic staff undertaking appropriate cleaning in line with standard operating procedures.

8 Key Risks

8.1 The key risks if the above actions are not achieved include:

- Water safety is compromised and does not meet the standards set out in SHTM 04-01
- Risk of infection to patients
- Public health risk associated with inadequate control of Legionella
- Failure to comply with statutory and legislative standards

9 Risk Register

At this time there are no implications for the corporate risk register.

10 Impact on Inequality, Including Health Inequalities

This does not impact on any Equality and Diversity issues.

11 Duty to Inform, Engage and Consult People who use our Services

12 Resource Implications

The financial resource implications have to be confirmed with finance.

George Curley

Director of Operations – Facilities
[REDACTED]

Lindsay Guthrie

Lead Nurse Infection Prevention & Control
[REDACTED]

List of Appendices

Appendix 1: Westfield Caledonian Pilot Study
Appendix 2: Definition of augmented care areas RHCYP
Appendix 3: Westfield Caledonian Report
Appendix 4: Callidus Report

Appendix 1 Westfield Caledonian Pilot Study: Corrective action for *P. aeruginosa*

The proposed pilot process would comprise of:

1. Select five Markwick taps which returned a high *P. aeruginosa* count (probably the 4 I used for my investigative sampling, plus 1 other), and remove, clean and sanitise the filter/NRT assembly of both hot and cold inlet barrels, on all four taps. Replace assemblies.
2. Carryout a thermal disinfection of the first, using the tappings provided behind the shrouds. This procedure is described in Section 10 of the Markwick 21 manual, and may require a slight increase of the DHWS circulating temperature.
3. Remove entire assembly of the Second, and autoclave. (This may not be possible, as the AS Maintenance manual seems to suggest only the spout is autoclavable – I am awaiting confirmation from AS in this respect).
4. Replace the cartridge on the Third tap with a new, sanitised one.
5. The Bouygues hygiene maintenance contractor who phoned into Monday's meeting (5^h Aug) advised they had a chemical sanitising procedure for this type of outlet – this should be implemented on the Fourth outlet, with details of the applied process provided.
6. The Fifth outlet should be left with just the strainer/NRT cleaned and sanitised.
7. On completion of these works, 3 samples should be retrieved as follows for each outlet, and analysed for the standard suite plus *P. aeruginosa*
8. Remove spout, and take an initial discharge sample from the cartridge chamber.
9. Replace spout and take an initial discharge sample from the complete unit
10. Flush outlet for > 1 minute, and take 3rd sample.
11. Samples should be taken by operating the lever all the way round to the full hot position.

Appendix 2: Augmented Care Areas: RHCYP

HTM04-01 states there is no fixed definition of augmented care area. However, HPS provide definition in the interim guidance for management of *Pseudomonas aeruginosa* in augmented care (2018) as:

1. Bone marrow transplant units
2. Haemato-oncology units
3. Neonatal units
4. Critical care and Intensive care units
5. Renal units
6. Respiratory units (including Cystic Fibrosis units)
7. Burns units
8. Other areas where patients have extensive breaches in their dermal integrity
9. Any other care are where patients are severely immuno-suppressed through disease or treatment

NHS Lothian also defines Neurosurgery as an augmented care area under criteria 8 &9. Medical Neurology is not included in this definition.

In the new building this includes:

1. Ward 230 (Neurosurgery) and DCN Acute care (ward 130)
2. Dalhousie Ward (Paediatric Medical In patient)
3. Lochranza Ward (Paediatric Haematology-Oncology)
4. Borthwick Ward (Paediatric Neurosurgery)
5. Dunvegan Ward (Burns and Plastics inpatient)
6. Paediatric Critical Care & Intensive Care (including Neonatal Unit)
7. Plastics Dressing Clinic
8. Paediatric Clinical Research Facility

Appendix 3: Westfield Caledonian Report



RHCYP & DCN Water
Condition Assessment

Appendix 4: Callidus Report



Callidus - Compliance
Report (Final).pdf

From: Currie, Brian
Sent: 20 August 2019 15:31
To: Goldsmith, Susan; [REDACTED]; Graham, Iain
Subject: RE: Sick Kids - weekly briefing to Cab Sec

Importance: High

Barbara

Ventilation update as follows:

1.0 Introduction & Background

1.1 Since initial reports of problems with the critical care ventilation system by IOM during independent validation there have been twice weekly meetings held to progress each identified issue to a conclusion. Several items have been closed off but others remain open. The current position is outlined in the following sections.

2.0 Reports and Status

2.1 To date, three reports have been produced in relation to performance and compliance of the ventilation systems. These reports and their current status are:

- Independent validation of critical ventilation systems (IOM)– Issued in Draft
- Independent validation of general ventilation systems (IOM) – Draft expected imminently
- HFS Expert Review Report – Issued to HFS

2.2 The draft report issued after Independent validation of critical ventilation systems has been used as the basis for ongoing discussion and remedial works since it was issued in July. It identified 54 items of concern and these were developed into an action plan which is updated at the twice weekly meetings.

2.3 IOM were further commissioned to assess performance of the general ventilation systems focusing on 100% of the clinical areas and a sample of non clinical locations. A draft of their report is expected this week however ahead of this some items have been identified in a similar vein and will be added to the current action plan.

2.4 As part of the audit currently being undertaken by HFS they commissioned a review by a known expert. His report has been issued to HFS but is at present unable to be issued to IHSL until a consolidated view and/or report is obtained from HFS

3.0 Critical Care Ventilation

3.1 Currently the largest single outstanding item relating to ventilation is the need to deliver a ventilation system capable of providing 10 air changes per hour at 10 Pascals positive pressure to critical care areas (single bedrooms and multi bedded rooms). Initial discussions regarding concept design have taken place at the ventilation meetings however there is not yet full commitment to design development from IHSL supply chain.

3.2 Indications are that the design process will take 3 weeks from issue of letter of intent and the lead time for procurement of the air handling unit is estimated to be approximately 18 weeks. Delivery to site will be followed by a further 3 week period to

install, commission, and validate, some time should also be allowed for slippage and holidays. During the lead time for procurement, the associated design and construction elements can be progressed to the point where they are completed prior to delivery of the air handling unit.

- 3.3 It is proposed that the ventilation meeting held every Tuesday be converted to a meeting specifically to progress this work package. An initial internal meeting will be held on 20th August with clinical stakeholders to brief and engage in the design process.

4.0 Action Plan and Matrix

- 4.1 An action plan was produced from the 54 items of concern in the draft IOM report and to date 28 are closed. Items identified during the general ventilation discussions will be added to this list and Multiplex will update and re-issue. From the initial 54 items, the seven in section 5.0 below were identified as works that may be disruptive were they to be carried out while the hospital is fully operational and special emphasis has been placed on progressing these at the ventilation meetings. At present, except for the seven below, it is felt that none of the remaining items in the initial 54 and the latest additions are of a significant nature and could be carried out whilst the hospital is occupied with little or no disruption to activity.
- 4.2 A further matrix has been produced to update the IMT and contains water, drainage, and Electrical items as well as ventilation, this has been updated and issued yesterday, 19th August, as version 4. It includes items from HFS appointed experts initial reports which have not yet been shared with IHSL. We await an update or report from HFS confirming their view prior to issuing.

5.07 Major Items

- 5.1 **Very limited extract in theatre corridors** – Multiplex are proceeding with a design and installation to provide more extract to the corridor via a secondary fan. Expected completion 30th September
- 5.2 **Excessive flexible ductwork in theatre ceiling spaces** – Extent and compliance status of this item is unknown as flexible ductwork up to certain length and form is permitted. Multiplex have been made aware of locations that may be an issue and will survey to establish impact. If identified as excessive, remedial works will be short duration but would be very disruptive if theatres were in use.
- 5.3 **Scrub extract grilles** – According to guidance the extract grille in the scrub area should be low level, Multiplex have designed and installed these at high level and have provided their rationale for doing so. Multiplex are required to demonstrate that their installation meets or exceeds the performance of a low level grille. If it does not, work will be required to duct these to low level and would be very disruptive if theatres were operational.
- 5.4 **Isolation room back up arrangements appear to be very complex** – Multiplex have designed a back-up system which during periods of maintenance to air handling units serving isolation rooms can be operated to borrow air from less critical locations to maintain the integrity of the environment in the isolation room. This has yet to be fully demonstrated and if unsuccessful may require disruptive works to remedy. This would be difficult to achieve if the isolation rooms were occupied.
- 5.5 **Cabling and electrical items in airstream within air handling units** – Electrical components and cabling not normally designed within air handling units have been installed. If deemed non compliant, Multiplex will submit a proposal for review followed

by sample works to one unit for agreement before proceeding to remediate all units. This item covers some of the less disruptive items on the action plan and it is intended that these will be rectified at the same time. NHSL are pushing for timescales for this item.

5.6 Some motors running at 95% - Controls appear to indicate that there is little spare capacity to overcome dirty filters in air handling units as fan motors are running at close to full speed. Multiplex have carried out a survey and have verbally indicated that the readings have been misinterpreted and show only that they are running at 95% of design and have adequate spare capacity above these values. Report and evidence is expected this week, if satisfactory, this item can be closed upon receipt of confirmation.

5.7 AHU pressure controls – During inspection IOM noted some fluctuations in pressures and suggested it may be due to the location and type of sensor. Multiplex have logged performance over a significant period and submitted results on 16th August for review by NHSL. If satisfactory this item can be closed, if not remedial works although small and short duration will be disruptive if theatres are operational.

6.0 Conclusion

6.1 Until further information in the form of reports and recommendations from HFS and IOM are received the foregoing represents the current status of ventilation issues known to the two parties. It is recognised that some of the remedial work may take a reasonable time to rectify, however the vast majority of items could be done whilst the hospital is fully operational with little or no disruption or impact on performance.

The 7 items listed in section 5.0 above represent the most disruptive works and the focus and expectation is that these will be rectified before the hospital is fully operational.

Provided no other significant issues arise from the HFS and IOM reports, the duration of design and installation works required to provide the necessary ventilation to critical care areas mean that this element is likely to be the last of the items mentioned above to be completed.

Regards

Brian

Brian Currie
Project Director - NHS Lothian
RHCYP + DCN

[Redacted signature block]

[Redacted signature block]

From: Goldsmith, Susan
Sent: 20 August 2019 14:50
To: [REDACTED]; Graham, Iain
Cc: Currie, Brian
Subject: RE: Sick Kids - weekly briefing to Cab Sec

Barbara

We had a legal meeting with IHSL and MPX last week based on the principles we agreed in the commercial paper that went to the Oversight Board. We agreed at the legal meeting that we would send a letter of intent to IHSL/MPX to commission the design first. We have to agree to pay for the design but MPX have also requested an indemnity from any claims against them for the existing critical care ventilation before they agree to commissioning the design. We issued a draft letter of intent last week and had their response last night. We had an internal legal meeting today and are aiming to meet with IHSL/MPX again tomorrow.

If we can agree the terms of the Letter of Intent then the design process will start. This will take approximately 3 weeks (our estimate) Once we have the design we will have to agree this with HFS/HPS and then commission the works to rectify. This requires a Supplemental Agreement with IHSL, so another legal process. However we are working on that now so that as soon as the design process is finalised we can move rapidly to the "works", assuming IHSL/MPX agree the terms of the Supplemental Agreement.

I have copied in Brian to give you a high level summary of where we are with the other ventilation issues which we are working through with IHSL and MPX. You should note that these are largely the Ventilation issues identified by the report we commissioned although there are also some issues raised by HFS/HPS.

However to date we have not received any formal report from HFS/HPS on water/drainage/ventilation/plumbing. I understand that is going to you first. Any associated issues can only be dealt with once we see the report

Regards

Susan

From: [REDACTED]
Sent: 20 August 2019 14:21
To: Goldsmith, Susan [REDACTED]; Graham, Iain
[REDACTED]
Subject: Sick Kids - weekly briefing to Cab Sec

Susan / Iain,

I am preparing the weekly briefing to the Cabinet Secretary. Do you have any updates since last week on the fix to critical care ventilation, the other ventilation issues or the other issues (e.g. drainage, plumbing)? Grateful for a prompt response.

Thanks,

Barbara

Barbara Crowe
Financial Accounting and Planning
Health Finance and Infrastructure Team
Directorate for Health Finance
Scottish Government

[REDACTED]

**RHCYP & DCN OVERSIGHT BOARD
NHS Lothian**

20 August 2019

Susan Goldsmith

CRITICAL CARE VENTILATION UPDATE**1. Purpose of the Report**

This paper sets out the proposed Design Specification for the Critical Care Ventilation remedial works.

2. Recommendations

- 2.1. To confirm the proposed technical specification for the Board Change for critical care ventilation design element
- 2.2. To support the specification proposals to be included in the Design Letter of Intent proposed to go to IHSL as part of the commercial negotiations
- 2.3. To confirm that HFS / HPS will work through the Board to approve the developed design and the Independent Tester be appointed as Certifier.

3. Discussion of Key Issues

The Oversight Board at its last meeting on 8th August supported a recommendation that NHSL should procure works required to rectify the ventilation air change rate in critical care and any other works identified as being required pre-occupation

The outline specification was prepared by NHS Lothian's project team and technical advisers. NSS were asked by the Oversight Board to review as part of the assurance process. Further information was provided to HFS and questions answered albeit most are part of the design development stage, anticipated in the three weeks post the issue and agreement of the Letter of Intent.

The **proposed specification** for approval is:

The design works are in accordance with Schedule Part 16 (Change Protocol). the Board requires Project Co to:

Design, Supply and Install a ventilation system or systems capable of delivering **10 air changes/hour at +10pa** as per SHTM 03-01, Appendix 1, Table A1 to the following rooms:

1-B1-065 – *Neo Natal 3 cot area including 1-B1-022 – Corridor, 1-B1-069 – Staff Base, 1-B1- 066 – Clean Utility and 1- B1-071 – Resus Bay* which are all open to 1-B1-065

1-B1-075 – *Single cot cubicle neo natal*

1-B1-063 – *Open plan bay 4 bed*

1-B1-037 – *Single bed cubicle*

1-B1-031 – *Open plan bay 4 bed*

1-B1-021 – *Single bed cubicle*

1-B1-020 – *Single bed cubicle*

1-B1-019 – *Single bed cubicle*

1-B1-009 – *Open plan bay 4 bed*

All environmental requirements for all spaces served by these systems shall be met – including but not limited to, temperature, lighting levels, noise, and humidity. These should be consistent to the agreed parameters throughout the facility adjusted as appropriate to meet the specific clinical and operational needs for the space.

The system installation, finishes and maintenance regime shall be in accordance with SHTM 03-01 requirements, together with clinical and operational constraints identified below:

All works to be carried out and monitored after and with reference to a collaborative full Stage 3 HAI SCRIBE assessment being approved by NHS Lothian.

The fire strategy and systems agreed for the facility will be maintained throughout the works and operational period. The works will integrate with these systems and all other building management systems.

The location of the installation within the rooms, external areas, route across such spaces and the take out of any windows, etc, will enable the current operational functionality and safety policies and procedures to be maintained.

The layouts etc will be agreed with the Project Director (and in turn the clinical service and related stakeholders) as part of the design development which will include input from the Board and all appropriate stakeholders.

On confirmation of support for the recommendations by the Oversight Board, NHS Lothian will continue negotiation of the Letter of Intent, and, with HFS and HPS, to develop the design for critical care ventilation.

The issue of the specification as part of the Letter of Intent will commence the formal design process. This will then include design development where engagement with IHSL and their supply chain will involve further dialogue. As part of the initial negotiations with IHSL and Multiplex, they have indicated that

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clarity on “sign off” to any design (and presumably any works thereafter) is required. It is suggested that HFS and HPS work through the Board and the Independent Tester be appointed to certify works. This process will require ongoing participation from the HFS and HPS with the Board’s project team but retains the level of assurance sought by the Oversight Board.

Iain F Graham

Director of Capital Planning and Projects, NHS Lothian

20 August 2019

**RHCYP & DCN OVERSIGHT BOARD
NHS Lothian**20 August 2019

Susan Goldsmith

COMMERCIAL POSITION AND CONTRACT MANAGEMENT UPDATE**1. Purpose of the Report**

This paper sets out the actions taken to progress the recommendations agreed by the Oversight Board on 8th August 2019 and a subsequent meeting with IHSL and Multiplex on 13th August 2019. It describes the overall commercial approach to contract management in this pre-occupation period, and progress with the measures taken to achieve rectification of the ventilation air change rate in critical care.

2. Recommendations

2.1. To continue to support the approach to commercial negotiations with IHSL as set out by the Oversight Board on 8th August 2019;

2.1.1. Agree that a Letter of Intent be negotiated with IHSL, addressing:

2.1.1.1. Waiver of the Board's right to legal challenge against the design and construction of the existing critical care ventilation system;

2.1.1.2. Suspension of the Board's issuing of Warning Notices arising from poor performance by IHSL during the Operational Phase.

2.2. To note that a Supplementary Agreement will be required to address the implementation of the critical care ventilation works and any other Board changes arising from the current reviews.

3. Discussion of Key Issues

The Oversight Board at its last meeting supported a recommendation that NHSL should procure works required to rectify the ventilation air change rate in critical care, and any other works identified as being required pre-occupation as a result of the ongoing review via IHSL. This should be done by way of a fast-track 'Supplemental Agreement' approach rather than via the Change Protocol set out in the Project Agreement. A mandate was given to NHSL and its advisors to work with IHSL to develop a form of agreement that would be acceptable to both parties, and that NHSL should procure works required to rectify the ventilation issues and any other issues identified from the ongoing review work via IHSL.

Following a meeting with IHSL and Multiplex, NHSL's legal advisors, Macroberts LLP, have prepared two documents that have been issued in draft form to IHSL:

- A letter of Intent; and
- A Supplemental Agreement – SA2 (SA1 being that which enacted the original commercial agreement).

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These documents are intended to fulfil the objective of allowing IHSL to progress with the design of the ventilation solution as quickly as possible, with the Letter of Intent providing the level of comfort required to allow this to occur while the SA, which will govern the implementation of the solution, is further developed and agreed.

3.1 Letter of Intent

The Letter confirms that NHSL intends (but is not obliged) to enter into the Supplemental Agreement No. 2 with IHSL for the design, construction, completion and commissioning, funding and maintenance, of the Ventilation Works.

In order to proceed with the Ventilation Works that are urgently required, certain advance design and activities associated with design are required to be carried out prior to execution and completion of the Supplemental Agreement 2. As such, the Letter confirms that NHSL wishes IHSL, and that IHSL agrees and undertakes, to move forward with the design process for the Works.

A two-stage process is set out in the Letter that broadly mirrors the Change Protocol in the PA but aims to shorten timescales to reach a solution. Stage 1 is the design of the ventilation works to achieve 10 air changes in order to permit the ordering of the air handling unit (the time critical equipment). Stage 2 is to provide NHSL with a detailed costing and programme for the construction works. This approach will maintain momentum and should provide certainty whilst the commercial terms of SA2 are being negotiated.

The design works will be advanced on the following basis:

- The design will satisfy all of NHSL's requirements and comply with all laws and consents, quality plans, health and safety requirements, and be conducted on an open book basis, without conflict of interest, with appropriate indemnities and insurances in place;
- That the timetable to be agreed will be adhered to, to commence as soon as the letter is agreed and until SA2 is entered into or an expiry date to be agreed. If the Letter expires before the design work is complete, work done to date will novate to NHSL;
- Payment for the design work will be due once SA2 is entered into. The advantage of this approach is that it incentivizes IHSL to enter into the SA2 swiftly.
- That there will be a maximum limit of expenditure also to be agreed, which NHSL will underwrite, but beyond which NHSL will have no liability. NHSL will be liable for the design costs incurred by IHSL (up to the agreed cap) in the event that SA2 is not entered into. Accordingly, NHSL are still underwriting the costs of design as agree in principle with IHSL;
- Waiver wording has been included that broadly mirrors SA1. This waiver is subject to acceptable commercial terms being negotiated for SA2 which again incentivizes IHSL but importantly also ensures they remain committed to carrying out the construction works;
- That IHSL will in effect leave the facility as they find it once the Design Works are carried out;
- That IHSL will appoint the necessary contractors to carry out the design.

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The Letter of Intent will provide IHSL and their supply-chain with the clear and clean instruction from NHSL to proceed with the required amendments to the Critical Care ventilation, beginning with the design work, backed up by an obligation on NHSL to pay for the design works up to a limit.

3.2 Supplemental Agreement

In response to the draft heads of terms for a Supplemental Agreement presented by IHSL, which contained a number of terms that would not be acceptable to the NHSL, a version has been developed and proposed to IHSL by NHSL's legal advisor which adopts the key attributes of the Change Protocol that cover transparency, timescale, governance and cost control, and which would become part of the Project Agreement and maintain its integrity.

The intention is that SA2 will be entered into once the design has been finalised and a detailed costing schedule and programme for the construction work has been produced by IHSL. In effect, at that stage, the ventilation works will be a Stage 2 Approved Project in line with the Change Protocol. A lump sum fixed price with payment on achievement on milestones, to be agreed, is proposed.

As is standard in a PA, the SA does not include provisions for liquidated damages in the event that the programme dates are not achieved. Accordingly, in order to incentivise IHSL to achieve the programme dates, the SA includes provisions obliging them (i) to meet the agreed programme (which will be agreed as part of stage 2 of the Letter of Intent); (ii) to obtain NHSL's consent for any changes to the programme; and (iii) for NHSL to step-in in the event that IHSL fail to meet the agreed programme.

In light of these provisions, the draft includes some of the Delay Event provisions permitting IHSL to seek an extension of time if the programme dates are not met because of matters that are not their fault. However, Compensation Event provisions have not been included because the works are being undertaken on a clean and empty site and IHSL are meantime obtaining full ASP. The draft also includes provisions entitling IHSL to an excusing cause (i.e. relief from Deductions directly applicable to areas affected by the Works) when undertaking the ventilation works.

The draft Letter of Intent and SA have been shared with IHSL. IHSL's initial response suggests that the terms of the Waiver may require further negotiation but the principles outlined above are achievable. Clarification of the certifying parties is required by IHSL.

4. Next Steps**4.1 Commercial negotiation**

Assuming continued support for the recommendations in section 2 by the Oversight Board, NHS Lothian will proceed with negotiation of the Letter of Intent. A further meeting is planned for 21st August 2019 so a verbal update can be provided to the Oversight Board on 22nd August. The aim is to issue the Letter of Intent by 23 August.

4.2 Design development and sign-off

It is assumed that HFS and HPS will review the design for critical care ventilation.

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The proposed design development processes to inform the board change and ensure delivery are as follows:

1. Board change: specification for design has been issued in draft to IHSL for development
2. Change instruction: as per separate paper to be signed off by Oversight Board (OB)
3. Letter of Intent: agreed with IHSL
4. Receipt of design proposals, including cost and programme, from IHSL
5. Review of proposals by Board, HFS, HPS and advisers to report to IMT
6. IMT to make recommendation to the OB
7. Sign off of Supplementary Agreement for IHSL to proceed

The process is based on the following assumptions:

- a) Parallel briefing and / or approvals to NHSL Board (e.g. Finance and Resources Committee) will be required.
- b) That the programme and cost for delivery from IHSL are acceptable to NHSL and government.
- c) That a facility wide programme is established and maintained to manage any interfaces should partial occupation be undertaken.

From: Henderson, Ronnie
Sent: 21 August 2019 11:53
To: Currie, Brian; Goldsmith, Susan
Subject: Ventilation
Attachments: V2 4 RA 4 Bedded Rooms.doc

Importance: High

Hi Brian, Susan,

As you know the main concerns with ventilation apart from the critical care compliance issue centre around **1. the change from 6 to 4 mechanical air changes in single bedrooms** and **2. the change from positive to balanced or slightly negative pressure regime in multi-bed bays.**

1. The change from 6 to 4 mechanical air changes in single bedrooms

Since financial close PCo's philosophy has been to deliver mixed mode ventilation at 4 air changes/hour by mechanical means and 2 air changes/hour by natural means all at balanced or slightly negative pressure. This was accepted by the board via the change process.

2. The change from positive to balanced or slightly negative pressure regime in multi-bed bays.

During the process of discussing the above change with PCo it became clear that they had designed the multi bed bays under the category 'general ward' in Table A1, Appendix 1 of SHTM 03-01 and had designed these to be at positive pressure to the surrounding area and with the same air change rates as single rooms. Clinical team felt that this impaired their ability to cohort patients with infection, see attached risk assessment, and that this would be better achieved with a balanced or slightly negative pressure regime similar to the single bedrooms.

Critical Care Single bed summary:

Design at Financial Close – 4 air changes mechanical and 2 natural with balanced or slightly negative pressure regime

Design Post SA – 4 air changes mechanical and 2 natural with balanced or slightly negative pressure regime

Conclusion – At no point compliant with Table A1, Appendix 1 of SHTM 03-01

Critical Care Multi-Bed Summary:

Design at Financial Close – 4 air changes mechanical and 2 natural. Positive pressure regime, exact pressure not specified but less than 10pa

Design Post SA – 4 air changes mechanical and 2 natural. Balanced or slightly negative pressure regime to satisfy clinical need to cohort patients

Conclusion – At no point compliant with Table A1, Appendix 1 of SHTM 03-01, important to note NHSL focus for this change was for amending pressure regime only, it was assumed all other aspects of compliance were being met.

Hopefully this helps to clarify how the various changes came about.

Regards

Ronnie

Ronnie Henderson
Commissioning Manager Hard FM
RHSC & DCN - Little France
NHS Lothian



Record of General Risk Assessment

Name of Assessor(s): Posts Held:	Janice Mackenzie, Clinical Director Dorothy Hanley, RHSC Commissioning Lead Fiona Halcrow, Project Manager	Date of Original Assessment:	05/07/17
Manager Responsible:	Janice MacKenzie		
Department:	RHSC & DCN Reprovision Project		
Subject of Assessment: Consider Task or Environment.			
<p>Bedroom Ventilation design in 4 bedded rooms does not meet the recommendations of SHTM 03-01, as the current design has the 4 bedded rooms as being positive pressure.</p> <p>To allow cohorting of patients with the same air-borne infections these rooms require to be balanced or negative pressure.</p> <p>Whilst the Board can rationalise the number of 4 bedded rooms where the ventilation needs to change it should be noted that this does reduce overall flexibility and future-proofing. Given the different patient groups related to specific wards, separate risk assessments have been undertaken (see attached). Individual risk assessments have identified that the need for cohorting of patients is only an issue for the Children's Service.</p> <p>The risk assessments have been discussed with the Children's CMT and Infection Control & Prevention who have confirmed that not having the ability to cohort patients is not acceptable from a patient safety perspective. In addition the Children's CMT highlighted that if the programme is going to be delayed in order to achieve compliance with the SHTM 03-01 in the 4 bedded rooms then should we not be considering achieving this in all 4 bedded rooms. As opposed to the ones that have been identified to reach a compromise solution which would ensure future proofing and flexibility within the building for service changes and avoid the need to retro-fit.</p>			
Step 1: What are the Hazards?			
<p>Overall Risks:-</p> <ul style="list-style-type: none"> • The inability to cohort patients with air-borne infections in a clinically safe environment • Clinical risk to isolating babies and children under two years of age with airway compromise i.e RSV • Need for increased staffing requirements due to the observation and interventions required in this patient group if nursed in single rooms • Reduction in overall flexibility and future proofing would be limited if change of use of a ward/s was required • Reputational risk as one of the key drivers, as outlined in the FBC, is to provide improved modern facilities that overcome the challenges currently faced within the existing facilities that cannot be adapted to provide the best services possible. <p>See separate risk assessments for inpatient ward/s as the risk rating for each ward/s is different dependent upon the patient group and clinical risk</p>			
Step 2: Who might be harmed and how?			
See separate risk assessments for specific ward/s			
Step 3: What are you already doing? (Existing Precautions)			
<p>Generic Precautions</p> <ul style="list-style-type: none"> • Isolation rooms have positive pressure lobby which acts as an air curtain and also have a hepa-filter to prevent the transfer of air-borne infection from the corridor into the room or the room into the corridor. • All single rooms have balanced or slightly negative pressure. • Increase in the number of single and isolation rooms (See separate risk assessment for the number of isolation and single rooms by ward) from 30% to 62%. • Within RHCYP wards there will be technology to remotely monitor patient oxygen saturation levels and heart rate 			

Summary of Risk by Ward/s

Ward/s	Proposed Action	Risk Rating If No Change	Risk Rating if Change Implemented
RHCYP - PARU	All three 4bedded rooms to have ventilation changed	15	4
RHCYP – Medical Inpts	All two 4bedded rooms to have ventilation changed	10	3
RHCYP – Critical Care	One 4 bedded room (B1-063) ventilation changed	9	3
RHCYP – Surgical Wards	No change to ventilation in 4 bedded rooms	3	
RHCYP - Neurosciences	No change to ventilation in 4 bedded rooms	3	
RHCYP – Haematology/Oncology	No change to ventilation in day care	3	
DCN – Inpatient Wards	No change to ventilation in 4 bedded rooms	1	

NB – Risk Scoring range is 1-25 (with 25 indicating an extreme consequence)

Step 4: Action Plan			
What further action is necessary?	Action By Whom	Action by when (dd/mm/yy)	Action completed. (dd/mm/yy)
<p>Clear Guidance in the Building Users Guide as to what 4 bedded rooms can be used to cohort patients with air-borne infections</p> <p>See separate risk assessments for specific actions by ward/s</p>	Jane Campbell	September 2017	

Step 5: Review Table			
Date (dd/mm/yy)	Reviewer	Reasons for review	Approved/Not Approved by (dd/mm/yy)

Record of General Risk Assessment

Name of Assessor(s): Posts Held:	Janice Mackenzie Dorothy Hanley Peter Campbell	Date of Original Assessment:	05/07/17
Manager Responsible:	Peter Campbell, Deputy Associate Nurse Director – Children's Services		
Department:	RHSC & DCN Re provision Project - RHCYP PARU (A2)		
Subject of Assessment: Consider Task or Environment.			
Ability to cohort patients within PARU			
Step 1: What are the Hazards?			
Significant clinical risk to isolating babies and children under two years of age with airway compromise, some of whom may have co-morbidities where isolation in single room carries additional clinical risk.			
If PARU has no cohort areas the hazards are:-			
<ul style="list-style-type: none"> • There is a risk that the 6 shelled beds would require to be opened and additional staffing resource would be required • Additional staffing would be required to safely care for these patients in single rooms due to the level of observation and intervention required. This has not been accounted for in the agreed workforce plan. • Reduction in the overall capacity within RHCYP as more single rooms would be required to be used to board patients potentially resulting on the cancellation of elective patients. • Reliance on remote patient monitoring for oxygen saturation and heart rate to ensure patient safety is increased 			
The Children's CMT have confirmed that all three of the 4 bedded rooms to have negative/balanced pressure			
Step 2: Who might be harmed and how?			
Patients: -			
<ul style="list-style-type: none"> • Boarding of patients into other specialities is a recognised clinical risk. • Patients from whom cohorting may be safest clinical option despite the availability of a single room e.g a child under two years of age with respiratory infection plus co-morbidity (cardiac or neurological) who because of their complex underlying condition need constant observation. 			
Step 3: What are you already doing? (Existing Precautions)			
PARU has 34 beds:-			
<ul style="list-style-type: none"> • 3 x 4 bedded rooms • 1 x isolation room • 21 x single rooms 			
Increased number of beds in single rooms and 4 bedded rooms as opposed to 6 bedded rooms (in existing hospital).			
Procuring a remote monitoring system for oxygen saturation and heart rate to alert staff to a potential deterioration in patient's condition			

Level of Risk with no cohort area

15

Level of Risk with cohort area

4

Step 4: Action Plan			
What further action is necessary?	Action By Whom	Action by when (dd/mm/yy)	Action completed. (dd/mm/yy)
Careful selection of patients for boarding	Nursing & Medical Teams	Ongoing	
Use of remote technology to assist with monitoring of patients in single rooms	Nurse in Charge & Consultant	Ongoing	
Clear guidance in the Building Users Guide regarding cohorting of patients with air-borne infections	Jane Campbell	September 2017	

Step 5: Review Table			
Date (dd/mm/yy)	Reviewer	Reasons for review	Approved/Not Approved by (dd/mm/yy)
A46304554			

Record of General Risk Assessment

Name of Assessor(s): Posts Held:	Janice Mackenzie Dorothy Hanley Peter Campbell	Date of Original Assessment:	05/07/17
Manager Responsible:	Peter Campbell, Deputy Associate Nurse Director		
Department:	RHSC & DCN Reprovision Project – RHCYP Medical Inpatients (C1.1)		
Subject of Assessment: Consider Task or Environment.			
Ability to cohort patients within Medical Inpatients			
Step 1: What are the Hazards?			
<p>Despite the fact it is planned that PARU will take all of the acute general admissions, reliance on a cohort area within this ward is only marginally reduced, particularly in times of peak activity when PARU would be unable to accommodate all of the RSV patients.</p> <p>The Board feel a compromise is not possible in the 4 bedded rooms.</p>			
Step 2: Who might be harmed and how?			
Patients from whom cohorting may be safest clinical option despite the availability of a single room e.g a child under two years of age with respiratory infection plus co-morbidity (cardiac or neurological).			
Step 3: What are you already doing? (Existing Precautions)			
<p>Increased number of single and isolation rooms within medical inpatients:-</p> <ul style="list-style-type: none"> • 2 x 4 bedded bays • 4 x Isolation Rooms • 11 x single rooms <p>Procuring a remote monitoring system for oxygen saturation and heart rate to alert staff to a potential deterioration in patient's condition</p>			

Level of Risk if no change made

10

Level of Risk with Cohort Areas

3

Step 4: Action Plan			
What further action is necessary?	Action By Whom	Action by when (dd/mm/yy)	Action completed. (dd/mm/yy)
Careful selection of patients for boarding	Nursing & Medical Teams	Ongoing	
Use of remote technology to assist with monitoring of patients in single rooms	Nurse in Charge & Consultant	Ongoing	
Clear guidance in the Building Users Guide regarding cohorting of patients with air-borne infections	Jane Campbell	September 2017	

Step 5: Review Table			
Date (dd/mm/yy)	Reviewer	Reasons for review	Approved/Not Approved by (dd/mm/yy)

Record of General Risk Assessment

Name of Assessor(s): Posts Held:	Janice Mackenzie Dorothy Hanley Fiona Halcrow	Date of Original Assessment:	05/07/17
Manager Responsible:	Peter Campbell, Deputy Associate Nurse Director – Children's Services		
Department:	RHSC & DCN Re provision Project – RHCYP Critical Care (B1)		
Subject of Assessment: Consider Task or Environment.			
Ability to cohort patients within Critical Care Unit			
Step 1: What are the Hazards?			
Clinical risk is still relatively high if no cohort area available and therefore operationally to retain the ability to cohort within B1-063 (low acuity HDU) would be clinically and operationally highly advantageous.			
Step 2: Who might be harmed and how?			
Patients through spread of infection. Potential cancellation of elective surgical cases as staff group will be required to deliver 1:1 care who potentially could be cared for within a cohort area			
Step 3: What are you already doing? (Existing Precautions)			
Critical Care (B1) – 24 beds <ul style="list-style-type: none"> • 3 x 4 bedded rooms (intensive care, high acuity & low acuity) • 1 x 3 bedded room (surgical neonates) • 4 x isolation rooms • 5 x single rooms <p>The increased number of single rooms and a higher nurse to patient ratio within the Critical Care Unit will help mitigate the risk of nursing patients in single rooms</p>			

Level of Risk if no cohort area

9

Level of Risk if cohort retained

3

Step 4: Action Plan			
What further action is necessary?	Action By Whom	Action by when (dd/mm/yy)	Action completed. (dd/mm/yy)
In the Building Users Guide need to state that two 4 bedded rooms (ITU & high acuity high dependency) and one three bedded room (surgical neonates) cannot be used to cohort patients with air-borne infections	Jane Campbell	September 2017	
Careful placement of patients within the designated areas	Senior Nurse in Charge & Consultant	Ongoing	

Step 5: Review Table			
Date (dd/mm/yy)	Reviewer	Reasons for review	Approved/Not Approved by (dd/mm/yy)

Name of Assessor(s): Posts Held:	Janice Mackenzie Dorothy Hanley Fiona Halcrow	Date of Original Assessment:	05/07/17
Manager Responsible:	Peter Campbell, Deputy Associate Nurse Director – Children's Services		
Department:	RHSC & DCN Reprovision Project – RHCYP – Surgical Wards (C1.2 & C1.8)		
Subject of Assessment: Consider Task or Environment.			
Ability to cohort patients with air-borne infections within the Surgical Wards			
Step 1: What are the Hazards?			
<ul style="list-style-type: none"> Clinical risk is low as increased number of single rooms within Medical wards reduces the need to board patients into the surgical wards from the medical wards Compromise possible in not altering ventilation in the 4 bedded rooms but reduces flexibility and future proofing 			
Step 2: Who might be harmed and how?			
N/A			
Step 3: What are you already doing? (Existing Precautions)			
There are two surgical wards:-			
Surgical Short Stay has 14 beds:-			
<ul style="list-style-type: none"> 2 x 4 bedded rooms 6 x single rooms 			
Surgical Long Stay has 15 beds:-			
<ul style="list-style-type: none"> 2 x 4 bedded rooms 7 x single rooms 			
Increased number of beds within PARU and medical inpatients to reduce the need to board patients			

Level of Risk

3

Step 4: Action Plan			
What further action is necessary?	Action By Whom	Action by when (dd/mm/yy)	Action completed. (dd/mm/yy)
In the Building Users Guide need to state that these 4 bedded rooms cannot be used to cohort patients with air-borne infections	Jane Campbell	September 2017	

Step 5: Review Table			
Date (dd/mm/yy)	Reviewer	Reasons for review	Approved/Not Approved by (dd/mm/yy)

Record of General Risk Assessment

Name of Assessor(s): Posts Held:	Janice Mackenzie Dorothy Hanley Peter Campbell	Date of Original Assessment:	05/07/17
Manager Responsible:	Peter Campbell, Deputy Associate Nurse Director – Children's Services		
Department:	RHSC & DCN Re provision Project – RHCYP – Neurosciences (C1.3)		
Subject of Assessment: Consider Task or Environment.			
Ability to cohort patients within Neurosciences Ward			
Step 1: What are the Hazards?			
<ul style="list-style-type: none"> Clinical risk is low as increased number of single rooms within Medical wards reduces the need to board patients into the neuroscience ward from the medical wards Compromise possible in not altering ventilation in the 4 bedded rooms but reduces flexibility and future proofing 			
Step 2: Who might be harmed and how?			
N/A			
Step 3: What are you already doing? (Existing Precautions)			
<p>The Neurosciences Ward has 12 beds</p> <ul style="list-style-type: none"> 2 x 4 bedded rooms 1 x isolation room 3 x single rooms <p>Increased number of single rooms including one isolation room within this ward to allow the ward to care for neurosciences patients with an infection within the ward and not board in other wards which is the case in the existing hospital.</p>			

Level of Risk

3

Step 4: Action Plan			
What further action is necessary?	Action By Whom	Action by when (dd/mm/yy)	Action completed. (dd/mm/yy)
In the Building Users Guide need to state that these 4 bedded rooms cannot be used to cohort patients with air-borne infections	Jane Campbell	September 2017	

Step 5: Review Table			
Date (dd/mm/yy)	Reviewer	Reasons for review	Approved/Not Approved by (dd/mm/yy)

Record of General Risk Assessment

Name of Assessor(s): Posts Held:	Janice Mackenzie Dorothy Hanley Peter Campbell	Date of Original Assessment:	05/07/17
Manager Responsible:	Peter Campbell, Deputy Associate Nurse Director – Children's Services		
Department:	RHSC & DCN Reprovision Project – RHCYP Haematology/Oncology Ward (C1.4)		
Subject of Assessment: Consider Task or Environment.			
Patient pathway for day care patients with a known infection			
Step 1: What are the Hazards?			
This is a combined inpatient and day care facility, however the design separates these two areas. Operationally the clinical team have already agreed a compromise where patients with infections coming to day care would be dealt with in the consulting room within day care or the inpatient facility. The Board have previously accepted that they can operationally manage these areas without a change in ventilation to the 2 day care rooms.			
Step 2: Who might be harmed and how?			
N/A			
Step 3: What are you already doing? (Existing Precautions)			
Haematology/Oncology Ward has 17 inpatient beds and 9 day care beds/trolleys:- <ul style="list-style-type: none"> • 5 x isolation rooms • 12 x single rooms • 1 x 6 bedded day care room • 1 x 3 bedded day care room <p>Operational policy has been agreed for the management of day care patients with an infection</p>			

Level of Risk

3

Step 4: Action Plan			
What further action is necessary?	Action By Whom	Action by when (dd/mm/yy)	Action completed. (dd/mm/yy)
In the Building Users Guide need to state the type of pressure in the Day Care areas	Jane Campbell	September 2017	
Written patient pathway and operational policy for the management of day care patients with an infection	Charge Nurse & Lead Consultant	October 2017	

Step 5: Review Table			
Date (dd/mm/yy)	Reviewer	Reasons for review	Approved/Not Approved by (dd/mm/yy)

Record of General Risk Assessment

Name of Assessor(s): Posts Held:	Janice Mackenzie Dorothy Hanley Fiona Halcrow	Date of Original Assessment:	05/07/17
Manager Responsible:	Hester Niven, Clinical Nurse Manager DCN		
Department:	RHSC & DCN Re provision Project – DCN Wards		
Subject of Assessment: Consider Task or Environment.			
Ability to cohort patients with air-borne infections within DCN wards			
Step 1: What are the Hazards?			
The Board have previously accepted that they can operationally manage these wards due to the number of single rooms and types of patients and the need for cohorting of infectious patients would be extremely rare			
Step 2: Who might be harmed and how?			
N/A			
Step 3: What are you already doing? (Existing Precautions)			
DCN has three wards:- DCN Acute Care (L1) – 24 beds <ul style="list-style-type: none"> • 2 x 4 bedded rooms • 1 x isolation room • 15 x single rooms DCN Inpatients Wards (L2) – 43 beds <ul style="list-style-type: none"> • 2 x isolation room • 41 x single rooms Significant increase in the number of single rooms as compared to existing facility			

Level of Risk

1

Step 4: Action Plan			
What further action is necessary?	Action By Whom	Action by when (dd/mm/yy)	Action completed. (dd/mm/yy)
In the Building Users Guide need to state that these 4 bedded rooms cannot be used to cohort patients with air-borne infections	Jane Campbell	September 2017	

Step 5: Review Table			
Date (dd/mm/yy)	Reviewer	Reasons for review	Approved/Not Approved by (dd/mm/yy)

Cabinet Secretary for Health and Sport**EDINBURGH CHILDREN'S HOSPITAL - UPDATE****Purpose**

1. To provide an update on the current situation regarding the new Edinburgh Children's Hospital.

Priority

2. Routine.

Background

3. This note provides a further update on the current actions being taken to resolve the various issues previously identified.

Operational Impact and Support

4. In the past week, the NHS Lothian Children's Hospital Helpline received 6 calls; this compares to 7 and 5 calls in the previous two weeks. The helpline will remain open until you are satisfied that it is no longer required. Services impacted by the postponed move to the new building are working as business as usual.

Critical Care Ventilation

5. NHS Lothian have held legal meetings with IHSL and Multiplex to develop the terms of a Letter of Intent to commission the design for critical care ventilation. There is a further meeting with IHSL and Multiplex today and if the terms of the Letter of Intent can be agreed, the design process will start. The Board estimates that the design process will take approximately 3 weeks.

6. The design will then have to be agreed with HFS/HPS before works to rectify the ventilation can be commissioned. This requires a Supplemental Agreement with IHSL, another legal process. However, the Board is working on this now so that as soon as the design process is finalised, they can move rapidly to commissioning, assuming IHSL and Multiplex agree the Supplemental Agreement.

7. The lead time for procurement of the air handling unit is estimated to be approximately 18 weeks. Delivery to site will be followed by a further 3 week period to install, commission and validate, with some time also allowed for slippage and holidays. During the lead time for procurement, the associated design and construction elements can be progressed to the point where they are completed prior to delivery of the air handling unit.

Other Issues

8. From the action plan developed following the draft IOM report, 7 items have been identified as works that may be disruptive if they were carried out while the hospital is fully operational. These are: (1) very limited extract in theatre corridors; (2) excessive flexible ductwork in theatre ceiling spaces; (3) scrub extract grilles; (4) isolation room back arrangements appear to be very complex; (5) cabling and electrical items in airstream within air handling units; (6) some motors running at 95%; (7) AHU pressure controls. These represent the most disruptive works and special emphasis has been placed on progressing these. The focus and expectation is that these will be rectified before the hospital is fully operational.

9. It is felt that none of the remaining items in the action plan are of a significant nature and could be carried out whilst the hospital is occupied with little or no disruption to activity. It is recognised that some of the remedial work may take a reasonable time to rectify; however, the vast majority of works could be done whilst the hospital is occupied.

10. A further matrix has been produced, containing water, drainage and electrical items as well as ventilation. This includes items from HFS appointed experts' initial reports which have not yet been shared with IHSL.

Cabinet Secretary for Health and Sport

11. Providing no other significant issues arise from the HFS and IOM reports, the duration of design and installation works required to provide the necessary ventilation to critical care areas is likely to be the last of the items mentioned above to be completed.

Phased Migration

12. The Oversight Board will provide advice on plans for phased migration of services as they are developed.

External Review – NHS National Services Scotland (NSS)

13. Progress continues on the second draft report for phase 1 of the review. This is on track to be submitted by the end of this week.

14. Work has commenced on phase 4 (fire, electrical and medical gases) following a proposal to accelerate this work. A fire review scoping and site visit has been completed and the electrical review has commenced. This will allow for any remedial work to be carried out while the building is unoccupied.

15. A review of the design instruction for the critical care unit has been completed with comments issued to NHS Lothian for review.

KPMG Audit of Governance

16. KPMG are conducting factual accuracy checks and will submit an initial draft of their findings to Scottish Government by close of play tomorrow, 15 August. Preliminary findings indicate that the information from all parties is providing a consistent and not conflicting picture, governance appears to have been appropriate (the right people appear to have been involved at the right times); there was lack of clarity on ventilation requirement from the outset across parties involved and the relevant guidance; escalation appears appropriate at the point NHS Lothian became aware of the critical care ventilation issue but there was a lack of contingency planning ahead of this. The finalised report is still expected next week, as planned. – update after weekly huddle

Oversight Board

17. The Oversight Board will hold its second meeting on 22 August where it will agree the content of its first fortnightly communication which will be issued to all NHS Lothian staff to demonstrate that NHS Lothian, NSS and SG are working together to track progress.

Media and Communications

18. Following an influx of Parliamentary Questions and FOI requests, including 32 PQs from Alex Cole-Hamilton (29 of which are assigned to Health & Sport), Health Finance have produced a summary response to these questions in order to minimise the work required by NHS Lothian, whose priorities are to resolve the issues in the new hospital.

Summary

19. You are invited to note the current position.

Barbara Crowe, Health Finance
21 August 2019

From: MCLAUGHLAN, Edward (NHS NATIONAL SERVICES SCOTLAND)
Sent: 21 August 2019 09:23
To: [REDACTED]
Cc: Currie Brian (NHS Lothian); [REDACTED]; Henderson Ronnie (NHS Lothian); STORRAR, Ian (NHS NATIONAL SERVICES SCOTLAND); JAMES, Gordon (NHS NATIONAL SERVICES SCOTLAND); Reducing-Risk-Hce (NHS NATIONAL SERVICES SCOTLAND)
Subject: RE: Proposed paper for RHCYP DCN Critical Care Ventilation
Attachments: Critical Care Ventilation spec OB 20190820 EMcL.docx

Thanks for this Iain, and apologies for the slow reply. I've added three comments to the paper attached.

Hopefully all clear but give me a call if you need to.

Thanks

[REDACTED]

Eddie McLaughlan
Assistant Director
Engineering, Environment and Decontamination
Health Facilities Scotland
Procurement, Commissioning and Facilities
NHS National Services Scotland

[REDACTED]

www.hfs.scot.nhs.uk

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From: Graham, Iain [REDACTED]
Sent: 20 August 2019 15:23
To: MCLAUGHLAN, Edward (NHS NATIONAL SERVICES SCOTLAND) [REDACTED]; JAMES, Gordon (NHS NATIONAL SERVICES SCOTLAND) [REDACTED]
Cc: Currie Brian (NHS Lothian) [REDACTED]; [REDACTED]; [REDACTED]; Henderson Ronnie (NHS Lothian)

[Redacted]
Subject: Proposed paper for RHCYP DCN Critical Care Ventilation

Eddie,

I have attached the draft paper proposed for Thursday's Oversight Board. Happy to discuss any matters arising but hopefully it sets out a sensible position. We really need to include an agreed specification in the Letter of Intent to commence the design development stage.

Regards

Iain

Iain F Graham
Director of Capital Planning and Projects
NHS Lothian

[Redacted]
[Redacted]
[Redacted]
[Redacted]
[Redacted]

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**RHCYP & DCN OVERSIGHT BOARD
NHS Lothian**

20 August 2019

Susan Goldsmith

CRITICAL CARE VENTILATION UPDATE

1. Purpose of the Report

This paper sets out the proposed Design Specification for the Critical Care Ventilation remedial works.

2. Recommendations

- 2.1. To confirm the proposed technical specification for the Board Change for critical care ventilation design element
- 2.2. To support the specification proposals to be included in the Design Letter of Intent proposed to go to IHSL as part of the commercial negotiations
- 2.3. To confirm that HFS / HPS will work through the Board to approve the developed design and the Independent Tester be appointed as Certifier.

3. Discussion of Key Issues

The Oversight Board at its last meeting on 8th August supported a recommendation that NHSL should procure works required to rectify the ventilation air change rate in critical care and any other works identified as being required pre-occupation

The outline specification was prepared by NHS Lothian's project team and technical advisers. NSS were asked by the Oversight Board to review as part of the assurance process. Further information was provided to HFS and questions answered albeit most are part of the design development stage, anticipated in the three weeks post the issue and agreement of the Letter of Intent.

The **proposed specification** for approval is:

The design works are in accordance with Schedule Part 16 (Change Protocol). the Board requires Project Co to:

Design, Supply and Install a ventilation system or systems capable of delivering **10 air changes/hour at +10pa** as per SHTM 03-01, Appendix 1, Table A1 to the following rooms:

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1-B1-065 – *Neo Natal 3 cot area including 1-B1-022 – Corridor, 1-B1-069 – Staff Base, 1-B1- 066 – Clean Utility and 1- B1-071 – Resus Bay* which are all open to 1-B1-065

1-B1-075 – *Single cot cubicle neo natal*

1-B1-063 – *Open plan bay 4 bed*

1-B1-037 – *Single bed cubicle*

1-B1-031 – *Open plan bay 4 bed*

1-B1-021 – *Single bed cubicle*

1-B1-020 – *Single bed cubicle*

1-B1-019 – *Single bed cubicle*

1-B1-009 – *Open plan bay 4 bed*

All environmental requirements for all spaces served by these systems shall be met – including but not limited to, temperature, lighting levels, noise, and humidity. These should be consistent to the agreed parameters throughout the facility **adjusted as appropriate** to meet the specific clinical and operational needs for the space.

The system installation, finishes and maintenance regime shall be in accordance with SHTM 03-01 requirements, together with clinical and operational constraints identified below:

All works to be carried out and monitored after and with reference to a collaborative full **Stage 3 HAI SCRIBE** assessment being approved by NHS Lothian.

The fire strategy and systems agreed for the facility will be maintained throughout the works and operational period. The works will integrate with these systems and all other building management systems.

The location of the installation within the rooms, external areas, route across such spaces and the take out of any windows, etc, will enable the current operational functionality and safety policies and procedures to be maintained.

The layouts etc will be agreed with the Project Director (and in turn the clinical service and related stakeholders) as part of the design development which will include input from the Board and all appropriate stakeholders.

On confirmation of support for the recommendations by the Oversight Board, NHS Lothian will continue negotiation of the Letter of Intent, and, with HFS and HPS, to develop the design for critical care ventilation.

The issue of the specification as part of the Letter of Intent will commence the formal design process. This will then include design development where engagement with IHSL and their supply chain will involve further dialogue. As part of the initial negotiations with IHSL and Multiplex, they have indicated that clarity

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on “sign off” to any design (and presumably any works thereafter) is required. It is suggested that HFS and HPS work through the Board and the Independent Tester be appointed to certify works. This process will require ongoing participation from the HFS and HPS with the Board’s project team but retains the level of assurance sought by the Oversight Board.

Iain F Graham

Director of Capital Planning and Projects, NHS Lothian

20 August 2019

OVERSIGHT BOARD

NHS Lothian Royal Hospital for Children and Young People, Department of Clinical Neurosciences and Child and Adolescent Mental Health Services

Minutes of the meeting of the Oversight Board held at 8:00am on Thursday 22 August 2019 in Meeting Room 5 Waverley Gate, 2-4 Waterloo Place, Edinburgh, EH1 3EG.

Present:

Ms C. McLaughlin, Chief Finance Officer, Scottish Government (chair);
 Ms T. Gillies, Medical Director, NHS Lothian;
 Ms S. Goldsmith, Director of Finance, NHS Lothian;
 Professor A. McMahon, Nurse Director, NHS Lothian;
 Mr P. Reekie, Chief Executive, Scottish Futures Trust;
 Mr C. Sinclair, Chief Executive, NHS National Services Scotland
 Dr C. Calderwood, Chief Medical Officer, Scottish Government
 Professor F. McQueen, Chief Nursing Officer, Scottish Government;
 Mr C. Sinclair, Chief Executive, NHS National Services Scotland

In Attendance:

Mr B. Currie, Project Director, NHS Lothian
 Mr G. James, Director of Facilities, Health Facilities Scotland
 Prof Jacqui Reilly, HAI executive lead for NHS National Services Scotland
 Ms J. Mackay, NHS Lothian Director of Communications
 Ms Mary Morgan, Director of Strategy, Performance and Service Transformation, NHS National Services Scotland
 Alan Morrison, Capital Accounting and Policy Manager, Scottish Government
 Eddie McLaughlan, Assistant Director, Engineering, Environment and Decontamination, Health Facilities Scotland
 Mr Gordon Archibald, Partnership Lead Outpatient Services (Joint Staff Side)
 Ms S. Cosens, Capital Programme Business Manager, NHS Lothian
 Mr C. Graham, Corporate Governance Team (minutes);

Apologies:

Mr A. Joyce, Employee Director, NHS Lothian (Joint Staff Side)

The Chair welcomed members to the meeting and members introduced themselves.

1. Minutes of Previous Meeting – 08 August 2019, for approval

- 1.1 The Minutes were approved subject to clarification at paragraph 7.2. The NHS Lothian Director of Communications would be in attendance at the oversight board and would not join the board as a member.

2. Matters Arising

- 2.1 Oversight Board Terms of Reference – The terms of reference were agreed with the incorporation of the change as outlined at 1.1 above.

3. Programme / Occupation Timelines

- 3.1 It was agreed to come back to this item last as the timelines may be impacted by other factors that would be discussed.
- 3.2 The Chair asked about the programme / occupation chart that Mr Iain Graham had brought to the previous oversight board and whether this was complete. Mrs Goldsmith stated this was not yet complete but would provide the Chair with a copy of the helpful milestones.

SG

4. Ventilation Systems Update

4.1 Confirmation of General Ward Ventilation Requirements

- 4.1.1 Mr James reported that the general ward ventilation design intent was awaited as was detail around the mixed mode ventilation to address the frequency of air changes.
- 4.1.2 Mrs Goldsmith and Mr Currie agreed to follow up on the outstanding information with IHSL. If the information was not received then HFS would need to take a view.
- 4.1.3 The oversight board confirmed the sequence of actions as follows:
1. Mrs Goldsmith and Mr Currie to approach IHSL Directors regarding outstanding information and timeframe
 2. Mr James to provide the write up from the HFS literature review on Tuesday or Wednesday of next week
 3. The Chair to take the write up to the Cabinet Secretary meeting next Thursday
 4. Mrs Goldsmith to progress with the draft letter of intent so it is ready to go once the literature review outcome is known
 5. Mrs Goldsmith to hold back final agreement of the letter of intent pending agreement of the critical care ventilation specification

4.2 Critical Care Ventilation Design and Approach

- 4.2.1 Mr Currie gave an update on the remedial critical care ventilation works. It was noted that this had now come as far as possible with the design concept. Multiplex would not move to the next design phase until the letter of intent and agreement was in place around the waiver on any future litigation around air change rates. The critical care works would remain on hold until the contractual position was agreed.
- 4.2.4 Professor McQueen asked where children receiving chemotherapy would be cared for and what the technical requirement specification could be expected in that area. Miss Gillies confirmed that this was a separate point of clarification which related to a neutropenic patient. Miss Gillies would provide further details around this out with the meeting.
- 4.2.5 The oversight board agreed that it was now content with the critical care specification and that it clearly outlined which areas within the building this agreement applied to.

TG

SG

- 4.2.6 There was discussion on the next steps around critical care and the three areas which needed to be tied together, namely: the fast tracking of the technical design; how a supplementary agreement would be obtained; and the risk of default from IHSL failings.
- 4.2.7 It was noted that from discussion last week it was very clear that it would not be possible to secure a fast tracked technical design unless NHSL agreed to waive the right of a legal challenge for the current design of the critical care system; this was coming from Multiplex, not IHSL. Mrs Goldsmith reported that this had led to the proposed draft letter of intent looking to secure the design with the waiver built in. There was a fine balance to be sought between progress and protection of NHSL's position. It was hoped to have the letter of intent finalised in the coming days.
- 4.2.8 IHSL's first response had included a past and future waiver for critical care ventilation which NHSL could not accept over a 23 year period. Mrs Goldsmith stated that NHSL would be looking to agree a waiver of NHSL's rights to legal challenge for the existing critical care ventilation system as pursuing of litigation was unlikely. Mrs Goldsmith added that the recommendation was based on what was known locally as NHSL had not had sight of the final KPMG report.
- 4.2.9 The Chair asked if this position had been reached or taken through any of NHSL Governance groups or did it need to. Miss Gillies replied that this had also been discussed at the recent NHSL Board meeting private session but had not been as clear as a recommendation. It was agreed that Mrs Goldsmith would undertake this with the Chair of the NHS Lothian Finance and Resources Committee.

SG

- 4.2.10 There was discussion on the other available options including Multiplex not designing or delivering unless the waiver was agreed; formal board change through IHSL which would take some time; or the Board step-in scenario as outlined through previous legal advice.
- 4.2.11 Mr James clarified that in relation to the new ventilation system it should be made very clear that the contractor is liable for this on an ongoing basis as well as being liable for the current ventilation system in all other areas out with critical care and the proposed new critical care ventilation.
- 4.2.12 Consideration was given to potential criticism for agreeing to the waiver but this was felt to be a reasonable step to allow the timeline to progress. Mrs Goldsmith stated that she was confident and comfortable that the decision to agree to the Multiplex waiver would be in the best interest of the public purse and patient safety. There was a good ongoing relationship with the funders and IHSL had briefed the funders about the works.
- 4.2.13 The Chair stated that the oversight board was constituted to give advice and recommendations to the Cabinet Secretary, it was not a decision making board. The Chair asked Mrs Goldsmith to provide a short briefing around the recommendation.

SG

4.2.14 The Chair noted that the KPMG report had only been shared with the Chair, Professor McQueen and Dr Calderwood, which was difficult for NHS Lothian. There were still changes to be made to finalise the report, but it did not place fault on any single party and would be referenced in advice back to ministers showing that no single event or action had led to the current position.

4.2.15 The Chair confirmed the agreed actions as:

1. Mrs Goldsmith to prepare a briefing note and to discuss the position with the F&RC Chair.
2. The Chair to put forward the position to the Cabinet Secretary tomorrow afternoon.
3. Mrs Goldsmith to share the briefing note with the oversight board members.

4.3 Other Ventilation Reviews

4.3.1 Mr Currie explained that there were two parts to this item:

1. **Supplemental IOM review** - it was noted that the general picture was showing that 30% of areas were requiring some minor ventilation adjustments, which Multiplex are addressing
2. **7 areas identified by IOM that would be disruptive to resolve with patients in situation** - it was noted that the bulk of the action remained with Multiplex to respond to and progress, but progress is being made.

4.3.2 The Chair asked if there were any potential “show stoppers”. Mr Currie stated that this was not the case and all work could be completed within the critical care timeline. Also, Multiplex were aware that if DCN occupation were to go ahead then priority would have to be given to the AHUs that would serve DCN.

4.3.3 Miss Gillies outlined the concern around the Air Handling Units remedial work meeting standards for HFS compliance. Until there was confirmation of compliance and the first demonstration of a fixed AHU then this action remained open.

4.3.4 The Chair asked about timeframes for the AHUs work. Mr Currie confirmed that this rests with Multiplex and a timeframe at the moment was unavailable. Mr Currie also confirmed that the AHUs were all bespoke units provided from the same supplier. It was unlikely that a timeframe would be available until Multiplex has had sight of the HPS/HFS ventilation report.

4.3.5 The Chair requested an update on each of the seven areas of ventilation works. Miss Gillies added that work was underway to pull together the issues around ventilation and this would be checked against the HPS/HFS report once received to make sure all detail is covered and it was clear what actions were being agreed.

4.3.6 Mrs Goldsmith made the point the Multiplex had been clear that if they do not agree with any of the recommendations in the HPS/HFS ventilation report then these would not be implemented. They would prioritise the IOM report over the HPS/HFS report.

- 4.3.7 There was discussion on resilience; risk and contractor interpretation around standards or guidance.
- 4.3.8 The Chair stated that there was still not enough clarity on the timeframe which was frustrating and asked if the group could do anything to assist this.
- 4.3.9 Mrs Goldsmith confirmed that the letter of intent should be ready early next week for Cabinet Secretary sign-off and the letter plus the HPS/HFS ventilation report and the overarching tracker should be enough to enable clarification of the timeframe.
- 4.3.10 Mrs Goldsmith made the point that IHSL and MPX would like to have engagement with the oversight board. The Chair commented that the Terms of Reference does make provision for such engagement as appropriate and there would need to be separate discussion on the purpose of such engagement.

5. Commercial Progress

- 5.1 Commercial Position and Contract Management Update – Mrs Goldsmith introduced the paper that set out the actions taken to progress the recommendations agreed by the oversight board on 8th August 2019 and a subsequent meeting with IHSL and Multiplex on 13th August 2019. It described the overall commercial approach to contract management in this pre-occupation period, and progress with the measures taken to achieve rectification of the ventilation air change rate in critical care.
- 5.1.1 The oversight board noted that the proposed NHSL letter of intent confirmed NHSL intent (but no obligation) to enter into the Supplemental Agreement No. 2 with IHSL for the design, construction, completion and commissioning, funding and maintenance, of the Ventilation Works. Seven board changes relating to water, had now been agreed as required to meet the necessary standards:
- The design will satisfy all of NHSL's requirements and comply with all laws and consents, quality plans, health and safety requirements, and be conducted on an open book basis, without conflict of interest, with appropriate indemnities and insurances in place;
 - That the timetable to be agreed will be adhered to, to commence as soon as the letter is agreed and until SA2 is entered into or an expiry date to be agreed. If the Letter expires before the design work is complete, work done to date will novate to NHSL;
 - Payment for the design work will be due once SA2 is entered into. The advantage of this approach is that it incentivizes IHSL to enter into the SA2 swiftly.
 - That there will be a maximum limit of expenditure also to be agreed, which NHSL will underwrite, but beyond which NHSL will have no liability. NHSL will be liable for the design costs incurred by IHSL (up to the agreed cap) in the event that SA2 is not entered into. Accordingly, NHSL are still underwriting the costs of design as agree in principle with IHSL;
 - Waiver wording has been included that broadly mirrors SA1. This waiver is subject to acceptable commercial terms being negotiated for SA2 which again incentivizes IHSL but importantly also ensures they remain committed to carrying out the construction works;

- That IHSL will in effect leave the facility as they find it once the Design Works are carried out;

5.1.2 The oversight board welcomed the helpful paper and continued to support the approach to commercial negotiations with IHSL as set out by the Oversight Board on 8th August 2019.

6. Water, Plumbing and Drainage System Update

6.1 NHS Lothian Water Quality Review Findings - Miss Gillies reported that NHS Lothian's actions to date evidenced the safety and quality of the water for RHCYP/DCN. Assurance can be provided that the water is safe and there is a quality management system in place through the water safety plan.

6.1.1 The oversight board agreed that this was a useful paper summarising the reviews undertaken by NHS Lothian and the assurance they provided.

6.1.2 Mr James added that there was a second draft HFS report on water that was yet to be shared. Miss Gillies stated that it was hoped that NHSL proposals would match closely with this report once available. Drainage would also be covered in this second draft report.

6.1.3 Mr Reekie asked about drainage progress. The Chair requested that a paper on this be prepared for a future meeting.

GJ

7. Validation

7.1 Fire Safety Report – Mr James reported that this would be completed in 4 to 6 weeks. Mr James added that the process on the electrical infrastructure had also started and there would shortly be a specialist contractor onsite. It was noted that the current HFS focus remained on drainage, water and ventilation.

7.1.1 Mr Reekie asked for confirmation that following completion of the HFS fire and electrical work this would be the earliest point that the 8 week move for DCN could start. The Chair confirmed this was the case.

8. RHSC UKAS Accreditation

8.1 Miss Gillies reported on the situation whereby NHSL Laboratory Medicine was unable to maintain UKAS accreditation status (UKAS assessment to ISO standard 15189:2012) of the Blood Sciences laboratory at the RHCYP+DCN site. It was noted that the recommendation was to voluntarily relinquish the accreditation.

8.2 The Chair stated that it was helpful to have any unintended consequences of the delay in the hospital move highlighted in advance so these could be included in briefings to the Cabinet Secretary.

9. Communications

9.1 Staff Communications – The final proposed communication would be submitted through the usual Scottish Government approval procedure. The Chair would hope to take the communication through the approval process as quickly as possible so it could then go out the NHSL staff. It was confirmed that any partnership forum communication should continue as normal.

10. Date of Next Meeting

10.1 The next meeting of this group would take place at **8.00 am** on **Thursday 29 August 2019**, *members to note change of venue to **Media 2, St Andrew's House***. It was agreed that future meetings would be from **8.00 - 9.30 am** and meeting invites updated.

From: JAMES, Gordon (NHS NATIONAL SERVICES SCOTLAND)
Sent: 27 August 2019 15:32
To: STORRAR, Ian (NHS NATIONAL SERVICES SCOTLAND); MCLAUGHLAN, Edward (NHS NATIONAL SERVICES SCOTLAND)
Subject: Fwd: Ventilation

Sent from my iPhone

Begin forwarded message:

From: "Currie, Brian" [REDACTED]
Date: 27 August 2019 at 15:09:19 BST
To: "JAMES, Gordon (NHS NATIONAL SERVICES SCOTLAND)" [REDACTED], "Goldsmith, Susan" [REDACTED]
Cc: "Henderson, Ronnie" [REDACTED]
Subject: RE: Ventilation

Gordon

We have been promised information from MPX this afternoon.

Wouldn't hold your breath though.

Regards

Brian

Brian Currie
Project Director - NHS Lothian
RHCYP + DCN

[REDACTED]

[REDACTED]



From: JAMES, Gordon (NHS NATIONAL SERVICES SCOTLAND) [REDACTED]
Sent: 27 August 2019 14:36
To: Goldsmith, Susan; Currie, Brian
Subject: Ventilation
Importance: High

Hello Susan / Brian,

I know that you escalated yesterday the requirement for the detailed design specification for the General room ventilation. This is now becoming critical as we need this to inform the SBAR for Thursday as well as the final report that is due for next week.

Can you please let me know if you have received any feedback from IHSL or the design contractor?

Thanks
Gordon.

Gordon James
Director of Health Facilities Scotland
Health Facilities Scotland
NHS National Services Scotland

From: JAMES, Gordon (NHS NATIONAL SERVICES SCOTLAND)
Sent: 26 August 2019 10:30
To: [REDACTED]
Subject: FW: Ventilation

Susan,

Attached is the report that was produced by TUV in Feb-2107

Thanks
Gordon.

From: JAMES, Gordon (NHS NATIONAL SERVICES SCOTLAND)
Sent: 23 August 2019 15:29
To: [REDACTED]
Subject: Ventilation

Hi Susan

Below is a email trail from Eddie to Ronnie. What we really need as a matter of urgency is the request in paragraph two below.

If you can help in anyway it would be appreciated, we can also pickup on Monday

Thanks
Gordon

Sent from my iPhone

Begin forwarded message:

From: "MCLAUGHLAN, Edward (NHS NATIONAL SERVICES SCOTLAND)"

Date: 22 August 2019 at 11:54:19 BST

To: "Henderson Ronnie (NHS Lothian)"

Cc: "STORRAR, Ian (NHS National Services Scotland)" [redacted],
"Currie Brian (NHS Lothian)" [redacted], "REDUCING-
RISK-HCE (NHS National Services Scotland)" [redacted],
"JAMES, Gordon (NHS National Services Scotland)" [redacted]

Subject: RE: Single Bed Vent

Thanks Ronnie

I'd seen all these documents before except the air movement report for single bedrooms (which I note is in draft form). I don't want to be critical of a design intent that was clearly looking to reduce the environmental impact of the system and natural ventilation is the preferred solution in the guidance. What I do need to do though is understand if and when we will actually have six air changes in the rooms. I'm assuming single and four bed rooms are the same in terms of the design intent but if that's wrong, please let me know.

From the information provided it is clear that the intention is that between the windows and the associated trickle vents a component of natural ventilation will be present. What I am looking for is an understanding of whether it is simply an assumption that that will amount to two air changes or if there is analysis and calculation to back it up. I do accept that the guidance allows for an element of variability in the delivery of natural ventilation but to be able to assure government that the building meets the requirements, I need to know how we can be sure that what is provided is sufficient. This is particularly an issue as the windows appear to be being relied on in addition to the trickle vents, as these will be shut for the majority of the time.

As a separate issue for your consideration, in the information provided there is an assertion that the pressure from room to corridor will be balanced when the windows are open. Whilst this may be true in still air or on the windward face of the building, it is unlikely to be true in the lee of the building in a breeze. Clinical leads need to understand this and its potential impact on the risks to certain patient groups.

Thanks

[redacted]

Eddie McLaughlan
Assistant Director
Engineering, Environment and Decontamination
Health Facilities Scotland
Procurement, Commissioning and Facilities
NHS National Services Scotland

[redacted]

www.hfs.scot.nhs.uk

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From: Henderson, Ronnie [REDACTED]
Sent: 22 August 2019 10:15
To: MCLAUGHLAN, Edward (NHS NATIONAL SERVICES SCOTLAND) [REDACTED]
Cc: STORRAR, Ian (NHS NATIONAL SERVICES SCOTLAND) [REDACTED];
Currie Brian (NHS Lothian) [REDACTED]
Subject: Single Bed Vent

Hi Eddie,

As discussed see attached documents showing TUV-Sud rationale for their design, hopefully it answers all your questions if not get back to me and I will action with IHSL.

Regards

Ronnie

Ronnie Henderson
Commissioning Manager Hard FM
RHSC & DCN - Little France
NHS Lothian

[REDACTED]

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strictly forbidden.

The information contained in this message may be confidential or legally privileged and is intended for the addressee only. If you have received this message in error or there are any problems please notify the originator immediately. The unauthorised use, disclosure, copying or alteration of this message is strictly forbidden.

Project title Royal Hospital of Sick Children

Subject Ventilation Meeting Minutes

Location NHSL Project Office, Clinical Mangement Suite, RHCYP, Edinburgh

Date and time of meeting 23/08/2019 10:00

Recorded by: KB

Circulation: Via Email

Attendees

Name	Initials	Company/organisation
Graeme Salmon	GS	Integrated Health Solution Lothain (IHSL) (By Phone)
Wallace Weir	WW	Integrated Health Solution Lothain (IHSL)
Billy Loudon	BL	Currie & Brown
Ronnie Henderson	RH	National Health Service Lothain (NHSL)
Brian Currie	BC	National Health Service Lothain (NHSL)
Kelly Bain	KB	Mott MacDonald
Ian Brodie	IB	Mott MacDonald
David Gordon	DG	Bouygues (BYES)
Donald Inverarity	DI	Consultant Microbiologist (NHSL)
Lindsay Guthrie	LG	Infection Control Lead (NHSL)
David Wilson	DW	Multiplex (MPX)
Stewart McKechnie	SM	TUV-SUD
Colin Grindlay	CG	Multiplex (MPX)

Apologies

Name	Initials	Company/organisation
Ian Storrar	IS	Health Facilities Scotland (HFS)
David Cunningham	DC	Currie & Brown
Colin Macrae	CM	Mott MacDonald
Ross Southwell	RS	Mott MacDonald
Pota Kalima	PK	Infection Control (NHSL)
George Curley	GC	National Health Service Lothain (NHSL)

Item	Text	Action
1.	<u>Introduction</u> BC noted the priority at the moment is timelines against actions try to get commitment to outline the timeline	
2.	<u>Remedial Works/Ventilation Board Change</u> RH stated NSHL are waiting on confirmation of ability to continue to full design. SM noted they have not been asked for any further information and have received no comments on the information in the report. HFS have not requested any further information. RH/BC noted that we have moved on quite a bit from the report and DW thinks it	IHSL

might have been a miscommunication.

RH asked if there has been any further design progressed, DW confirmed no progress noted legals are being progressed which will hopefully allow the design to proceed.

DW asking when this is likely to happen. BC hoping a week on Tue

RH wants to report on progress in this meeting.

3.

Ventilation Issues Log

Please refer to ventilation issues log for details on the issues and updates on the actions. RH noted only open items were going to be reviewed at the meeting.

Item 2

NHSL Turnkey still to complete and IOM to test.

NHSL

Item 3

DW noted this item has moved on with contractors on site undertaking core cutting survey.

MPX

DW noted the design should be ready shortly and FES will potentially undertake the works. BC asked when a timescale would be available and DW confirmed that a timescale should hopefully be available next week.

DG asked to be sighted on the design. SM noted design should be available next week. BC asked to be sighted on the design at the same time as BYES.

RH queried whether the previous date for 30th September for completing is still realistic, DW unable to confirm but thinks so, subject to receiving a fan delivery date.

Item 11.

MPX confirmed they have tested Theatre Suite Dirty Utility in setback mode and have -5Pa pressure to the corridor. Report sent by MPX and being reviewed by NHSL for IOM to verify.

Item 13.

Ongoing NHSL issues

NHSL

Item 18

Ductwork – RH to re-issue photos of the excessive flexible ductwork to MPX.

NHSL

BC asked if MPX are doing a sweep through. DW says they have and MPX have asked IOM to confirm where these additional issues are. CG noted Arcadis raised similar issues during construction that MPX have rectified already.

RH requested the MPX check there isn't excessive flexible ductwork.

DW noted once balanced its balanced – RH noted if something has physically changed it needs to be rebalanced.

Item 22

Scrub extract – RH noted HFS confirmed the response to the comment was fine but needs to be demonstrated by MPX that it complies with the HTM.

DW queried whether HFS had said why this was a non-compliance issue. RH confirmed HFS said non-compliant. DW asked for the Clause from SHTM to identified why non-compliant, as they are not sure.

Item 23.

Anaesthetic Rooms – RH noted 3 locations have been identified, can MPX provide evidence airflows are fine.

DW asked for locations, and has someone proved there is an issue – what is the evidence? or this opinion based? MPX opinion is that there is no issue.

RH noted it is on MPX to prove it won't short circuit.

DG asked if the system was smoke tested during commissioning? DW noted it was not smoke tested and that smoke testing is no longer used because of left over residue.

IB noted the ventilation ceiling supply grilles location is inconsistent across the Theatres Suites.

Clean air pass should be across the patients and that MPX need to demonstrate this. DW would like to review this on site with IOM.

It was queried whether something can be done to prove on paper?

LG noted that it is also important to protect staff from anaesthetic gasses and need to be able to demonstrate that the air flow is sufficient. DW wants to review with IOM to confirm why they think it is short circuiting.

SM doesn't think we can do any tests to prove air movements.

Items 25/26/27

RH reinforced there shouldn't be multiple isolation rooms off one AHU and that demonstration of the bypass arrangements is now critical.

DW confirmed they are not any further on with that.

DW moving forward with demonstrating the maintenance bypass for AHU 04/08 & 09 but they have not moved on with AHU 04/06 & 07. RH noted he was hoping for at least the methodology and timeline and this can't drift another two weeks while DW is on leave.

DG stated still pushing and getting other contractors and specialist sub-contractors.

Item 28

Crit care – no discussion

Item 29

RH noted question is cables and connectors, DW thinks this should be tackled all at the same time.

Item 30

Filter – New filters ordered, DG says delivery is expected next week. RH asked for confirmation when 3 were complete but DG noted he didn't think it was the intent to replace the filters in all AHU's.

RH noted the issue was wrongly orientated filters pockets should be vertical not horizontal as they close off under gravity – BYES going to confirm when done, RH bags as well

DW noticed trays are being removed. MPX reviewed yesterday and are unsure as to why trays have been removed.

Item 31

As above

Item 32

Gauges – MPX have marked the gauges. When new filters arrive Alan Herkes might remark. Complete but tbc by BYES.

Item 39

Motorised dampers – DG thinks this is a Schneider action via Mercury, not a Q-Nis item. MPX pushing for solution.

Item 40

MPX theatres labels, on order expected this week but not arrived. DW to chase up.

Item 41

Branch ducts – NHSL confirmed specifically in theatres where one branch comes down and splits. DW asked for RH to check the SHTM clause for non-compliance.

Item 42

RH noted this was demonstrated recently – it is fiddly but can be done. BYES waiting for SOP from MPX. DW going to trial with JT to follow the document to confirm instructions. Item considered closed.

Item 43

Demonstrated at the same time as above, NHSL want a report of actual percentage against full capacity. DW thinks this report will be completed by the end of next week but will hold onto it until he is back from leave and can review it.

Item 50

Pressure controls – NHSL not managed to review all the logs, quite difficult to do. RH continues to review.

DW noted the trend of pressure going back on track is key.

Item 51

Theatre alarm panels – closed

Item 52

Plant control – DW noted not closed because MPX haven't addressed heating coil valves. New valves ordered and will be on site 28/29th. Trend logs will follow. CG to add trend logs when available.

Item 53

Surgeons panel – NHSL viewed what has been fitted but RH isn't currently convinced that the units are totally suitable. CG noted a sign is needed above it.

Item 54

IOM reviewed and noted that figures are slightly low however, RH thinks this can be closed and will check with Paul.

Item 57

DW noted that Q-Nis have responded to MPX and state their products comply with SHTM 03-01. While MPX have not commented on whether they agree with Q-Nis they are still reviewing the response with Mercury and are still considering alternative solutions.

NHSL are to issue comments on the report.

BC noted again that agreeing timescales are crucial. DW noted MPX are driving for a solution not using Q-Nis.

DG queried if he had the report and DW confirmed the table is the report. DW noted their responses are very technical but could be an issue around workmanship.

RH noted the issue with the wiring penetrations through the AHU. DW noted issue is filter bypass.

BC noted the direction of travel is these works will need to be done, DW clarified that some works will need to be done but not necessarily all of the works noted.

DW confirmed they have a supply chain in place. BC again noted his concern about time.

Item 60

Drainage – TUV SUD looking at this at the moment.

Q-Nis response to Log

BC noted there are 30 AHU's and it would be useful to map out how these will be delivered? MPX pushing Q-Nis for report but only found out yesterday that Q-Nis don't plan to come to site.

DG notes timescale depends on resources. BC asked if NHSL have advised priority areas – DW notes it would be useful to do this exercise.

Q-Nis are quoting their opinion of SHTM compliance.

Inverter's issue key for BYES and resilience. Increased risk for BYES.

BC asked for idea of when we can move forward, and DG noted hopefully this time next week.

DG queried if the warranty on the units will be affected if MPX do work if Q.Nis confirm they won't. DW doesn't think warranty will be affected - BYES need statement to confirm this.

Units on level 3 – MPX know it works but need some control items, the other is being looked at the moment. in context for design solution of crit care

Item 62

DG noted BYES have cleaned every single unit and glass traps and within two the traps reviewed were filthy again.

It was noted it could be air bypass in filters. DW asked for a list for AHU and photographs to support.

DW noted the glass traps shouldn't be getting that filthy even without the filters.

DG weekly AHU inlet plenum cleaning was required at the moment and RH noted the issue with small flies in the inlet filter.

It was also noted that ponding is an issue within the courtyard that the vent inlet and that there are no active measures pest control can take.

DG noted concern that BYES don't want to be changing filters every week.

DW stated the issue needs to be dealt with at the source i.e. ponding. DI agreed and noted that if you can see the fly there will likely be microbiological issues present.

LG suggesting increasing the angle of the ground away from the AHU. It was agreed that the pebbles in the short term to see if that affects the ponding. DW/DG to remove the pebbles at 04/06.

4.

General Ventilation

NHSL have received the draft IOM report – RH wants clarification from IOM before he issues the draft report.

NHSL

CG to confirm when full review has been completed, DW thinks 3-4 weeks and is 25/30% complete at the moment. RH suggested bringing IOM back to site when MPX are 60% through. DW says undertaking a unit by unit would be more useful rather than by areas. RH going to ask IOM to come back in for short bursts for re-validation.

NHSL

Q-Nis – DW queried what should be done with the format of the Log, RH confirmed just to leave as is.

5.

AOCB

RH asked if the wording of the change was suitable for everyone's needs. MPX are going to comment and send back. Can BYES be sighted of final change before it is issued.

SM request if there are any other critical care facilities that have 10ac/h at +10Pa. and requested NHSL to confirm.

RH noted the design of other facilities it is irrelevant and stated that HFS will confirm the requirements. BC notes there will be a legal agreement that details NHSL requirements and that other facilities are immaterial.

The Technical Workshops will identify what HFS require.

SM asked if there is a timescale for MPX/TUV to receive a response on 11 items. RH didn't realise there was to be an NHSL response and suggested the items were discussed in the meeting.

1. *Will there be a need for dual supplies for the new AHU* - Yes there will be a need.
2. *Air pressure stabilisers are needed in all rooms?* APS will be needed where pressure cascade is from clean to dirty.
3. *Openable windows – Looking at these to be locked and shutoff* If it is determined that windows will need to be closed to achieve 10Pa then need to consider how this is achieved i.e. removing handles and locking windows. CG suggested may need secondary glazing if fabric leakage is too high.
4. *AHU – heating and cooling – Looking into a heat pump arrangement* NHSL can't specify a solution but is not averse to heat pumps providing there is enough resilience.
5. *AHU - Looking at acoustic outputs of the external condenser, potentially pushing them over to the energy centre.* - as item 4 above.
6. *Looking at different ceiling types (DW stated his preference would be plasterboard ceiling).* Ceiling types – design development will bring this out, need baseline for choosing ceiling type. All grid at the moment – MPX current position to use clean room tile rather than plasterboard. Proposal needs to be brought forward. BYES will need to identify access requirement. What needs maintained above the ceiling and how does this affect ceiling hatches. Visual display may be needed to confirm pressure cascade has been lost on any hatches in the ceiling or alarm at nurses' station.
7. *Neonatal – single room that opens to 3 bed cot – treat the whole area as 10 Pa? RH stated he had indicated this on walk around* – whole area to be treated as one and 10Pa between room and corridor.

DW – Critical Care room with 2 No. double doors, MPX propose door access to only open one door at a time – staff would need to control – CG suggested 30s increase to the door closers. This will need to be considered for crash routes.

RH noted that HFS have asked for the reasoning for adopting the 6 to 4 ac/h reduced single bedroom ventilation philosophy change – It was noted that MPX have provided documents in the past but HFS would like a demonstration of the calculations undertaken. SM stated HK provided a reasoning – it wasn't MPX/TUV that came up with the 6 to 4 and that they were directed to adopt it. RH asked for statement along that affect.

DI queried if there has there been work undertaken to review what happens in event of ventilation failure – SM noted this hasn't been undertaken. Natural ventilation was seen as a positive for patients and not an alternative to mechanical ventilation failure.

Date of Next Meeting

Friday 23th August 2019 @ 10:00 Warlow

KH going to attend for design meetings. Ian Clarke for BYES.

6.

TERMS OF REFERENCE: NHS Lothian Executive Steering Group: Royal Hospital for Children & Young People and Department of Clinical Neurosciences.**1. REMIT**

To provide a forum for NHS Lothian executive management to consider all business relating to responding to and addressing the delay to the Royal Hospital for Children & Young People and Department of Clinical Neurosciences.

The work of the executive steering group will inform what NHS Lothian executive management provides to and responds to:

- The Scottish Government Oversight Board: Royal Hospital for Children & Young People, Department of Clinical Neurosciences and Child & Adolescent Mental Health Services (Oversight Board);
- The NHS Lothian Finance & Resources Committee;
- The NHS Lothian Healthcare Governance Committee; and
- Lothian NHS Board.

The Royal Hospital for Children & Young People and Department of Clinical Neurosciences Programme Board will address issues relating to communicating with staff and managing contingency arrangements in the period until it has been confirmed when the transfer of services will occur.

Once the Scottish Government Oversight Board has confirmed that the transfer of services can occur, the Royal Hospital for Children & Young People, Department of Clinical Neurosciences Programme Board will resume responsibility for the planning and management of the transfer. At this point the executive steering group will cease to meet.

2. MEMBERSHIP

Susan Goldsmith, Director of Finance – Chair
Tim Davison, Chief Executive
Tracey Gillies, Medical Director
Alex McMahon, Nurse Director
Jacquie Campbell, Chief Operating Officer
Janis Butler, Director of HR and OD
Alex Joyce, Employee Director
Judith Mackay, Director of Communications
Iain Graham, Director of Capital Planning and Projects
Brian Currie, Project Director
George Curley, Director of Facilities
Donald Inverarity, Lead Infection Control Doctor
Lindsay Guthrie, Lead Infection Control Nurse
Sorrel Cosens, Programme Manager

3. QUORUM

The Executive Steering Group is a management meeting, and does not interfere with the established reporting lines and responsibilities and accountability of its members. Consequently there is no quorum, and members may send deputies to represent them.

4. FREQUENCY OF MEETINGS

The Executive Leadership Team will meet once a week (Monday), but may convene additional meetings if required. The Business Manager (Chair, Chief Executive's and Deputy Chief Executive's Office) is the secretary of this meeting.

5. REFERENCES

- [NHS Lothian Board Members Handbook](#)
- [NHS Lothian Scheme of Delegation](#)

6. DATE OF APPROVAL OF THESE TERMS OF REFERENCE:

23 August 2019

7. DATE BY WHICH THESE TERMS SHOULD BE REVIEWED:

From: Morrison A (Alan)
Sent: 23 August 2019 11:37
To: Cabinet Secretary for Health and Sport
Cc: McLaughlin C (Christine); Calderwood C (Catherine); Murray D (Diane); Aitken L (Louise); Smith G (Gregor); Rogers S (Shirley); Wright M (Malcolm); DG Health & Social Care; Chief Medical Officer; Hart S (Suzanne); Roche R (Rowena); Connaghan J (John) (Health); McCallum R (Richard); Crowe B (Barbara); Neill S (Sean); Burkinshaw B (Beata); Hutchison D (David); McQueen F (Fiona)
Subject: Briefing to Cab Sec - Sick Kids Hospital - 23 August 2019
Attachments: Briefing to Cab Sec - Sick Kids Hospital - 23 August 2019.docx; 10.1 Staff Communications to OB 190822.docx

Andy

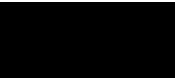
Weekly update on the situation with the Edinburgh Children's Hospital. Ventilation is clearly a critical issue and there is a meeting arranged on Thursday where the Cabinet Secretary will meet the specialists at NSS to discuss the issue more thoroughly; we would anticipate providing a paper in advance of that meeting next week.

Also attached is a proposed staff communication from NHS Lothian which was shared with the Oversight Board yesterday and which will need to be cleared by the Cabinet Secretary.

Regards

Alan

Alan Morrison
Health Finance and Infrastructure
Scottish Government Health and Social Care Directorates



Cabinet Secretary for Health and Sport**EDINBURGH CHILDREN'S HOSPITAL - UPDATE****Purpose**

1. To provide an update on the ongoing situation with the new Edinburgh Children's Hospital.

Priority

2. Routine.

Background

3. This note provides a further update on the current actions being taken to resolve the various issues previously identified.

Oversight Board

4. The Oversight Board held its second meeting on 22 August and we are in the process of agreeing the resulting communication from that meeting. As agreed at your meeting with staff side representatives, they now have representation on the Board. The issues discussed are summarised below.

Critical Care Ventilation

5. NHS Lothian have held legal meetings with IHSL and Multiplex to develop the terms of a Letter of Intent to commission the design for critical care ventilation. The Board estimates that the design process will take approximately 3 weeks, however Multiplex will not progress any part of this work without a waiver in place regarding future litigation regarding critical care air change rates. NHS Lothian's position is that they recommend agreement to such a waiver in the interests of making progress towards resolution of the issue; this would not extend to the wider hospital.

6. This issue was discussed extensively at the Oversight Board on 22 August and it was agreed that this decision needs to go through NHS Lothian's formal governance process before an agreed course of action can be presented to you for decision.

7. The design has been agreed with HFS/HPS, so it can be commissioned immediately once the commercial position is resolved and subject to your agreement.

8. The lead-time for procurement of the air-handling unit is estimated to be approximately 18 weeks. Delivery to site will be followed by a further 3 week period to install, commission and validate, with some time also allowed for slippage and holidays. During the lead-time for procurement, the associated design and construction elements can be progressed to the point where they are completed prior to delivery of the air-handling unit.

Other Ventilation Issues

9. From the action plan developed following the draft IOM report, seven items, which were detailed in the previous briefing, have been identified as works that may be disruptive. After further review, it is felt that none of the remaining items in the action plan are of a significant nature and they could be addressed while the hospital is occupied with little or no disruption to activity. It is recognised that some of the remedial work may take some time to rectify, however the vast majority of works could be done whilst the hospital is occupied.

10. The one outstanding significant ventilation issue is the air change rates on the general wards. As previously notified to you, in order to resolve the pressure in single rooms, the air change rate for general wards was adjusted from six to four with two air change rates to be provided through natural ventilation – open windows and trickle vents (a 'mixed mode' solution). The NSS paper on this issue will be discussed in detail at the Oversight Board on 29 August and you are meeting with the NSS team in the afternoon. We expect that paper to provide a risk based assessment of the decision to accept four air changes, including a review of the evidence which supports the six air changes.

Cabinet Secretary for Health and Sport**External Review – NHS National Services Scotland (NSS)**

11. Progress continues on the second draft report for phase 1 of the review which we have just received. The draft report concludes that

‘Overall remedial action is required to be undertaken within the Ventilation and Water systems prior to the occupation. Following acceptance of this report the review team are ready to assist the NHS Lothian team in developing a programme of activity and clarification of remedial descriptions to allow a timeline to be constructed which could inform the decision to migrate towards occupancy on a phased basis’.

12. The detailed conclusions are:

- It was recognised by NHSL that critical care ventilation was not designed to current guidance. As a result this report focuses on other systems, however, they have provided advice on the contractor design intent for a new CCU system.
- Key outstanding information includes the design intent for the natural ventilation component (see para 10 above).
- The theatre ventilation has not been installed in accordance with current guidance (when maintenance is being undertaken, two theatres, rather than one, will be out of action).
- Some of the water testing results, due to the time taken to process, are not yet available however it was found that there were certain fungi in the water, mainly at the taps as well as higher than anticipated total viable counts. Lessons learned across health systems strongly suggest that this should be eradicated before patients and staff move in. There would appear to be no systemic contamination of the hot and cold water systems.
- The drainage for the hospital utilises one gravity system and two pumped systems. The pumped systems are used to overcome gravity as they are installed below the local water table and level of the external drains. We await an explanation of what foul waste and other sources drain into the basement sump. If suitable mitigation measures are in place, the drainage should not be an obstacle to occupation of the building.

13. The detailed action plan remains in development, but HFS are on track to deliver a final report at the beginning of September.

KPMG Audit of Governance

14. KPMG have submitted their draft report and you have been briefed on the content. We are due to discuss the draft with KPMG on 27 August and we can provide any comments you have on the report direct to them.

15. Their findings indicate that the information from all parties is providing a consistent and not conflicting picture, governance appears to have been appropriate (the right people appear to have been involved at the right times); there was lack of clarity on ventilation requirement from the outset across parties involved and the relevant guidance; escalation appears appropriate at the point NHS Lothian became aware of the critical care ventilation issue but there was a lack of contingency planning ahead of this. We are suggesting that the report is not finalised until the NSS final report is also ready and that we publish them both just prior to your statement to Parliament on 11 September.

Operational Impact and Support

16. In the past week, the NHS Lothian Children’s Hospital Helpline received six calls; this compares to seven and five calls in the previous two weeks respectively. Services impacted by the postponed move to the new building are working as business as usual.

Phased Migration

17. The overall programme plan for the phased migration of services is still being developed and will be shared with the Oversight Board when it is complete.

Cabinet Secretary for Health and Sport**Media and Communications**

18. Following an influx of Parliamentary Questions and FOI requests, including 32 PQs from Alex Cole-Hamilton (29 of which are assigned to Health and Sport), Health Finance have produced a summary response which attempts to give a general update on the current position rather than go into detail on each individual question. A draft communication from NHS Lothian to staff was shared at the Oversight Board and is attached for your review and clearance.

Summary

19. You are invited to note the current position and that you are due to meet officials on 29 August for an update on the general position and a more focussed discussion on ventilation guidance.

Barbara Crowe
Health Finance
23 August 2019

Proposed Staff Update**Update on Royal Hospital for Children and Young People, Department of Clinical Neurosciences and Child and Adolescent Mental Health Services.**

Dear Colleagues,

A couple of weeks have passed since I last updated you on the new building at Little France so I'd like to bring you up to speed with what has been going on to ensure we can open the new building as quickly as possible.

There is, in fact, a huge amount of work underway to demonstrate that all aspects of the new building meet national standards so that we can begin to move patient services into their new home. We are working with Health Protection Scotland (HPS) and Health Facilities Scotland (HFS) to check ventilation, the water supply and fire prevention systems and design. Inspections of drainage systems and electrical works will follow. It is very detailed work and takes time.

We have also held a number of workshops with IHSL, who will maintain the hospital, their building contractor Multiplex and specialist ventilation experts alongside HFS and HPS. These workshops are developing a new design for the ventilation in Paediatric Critical Care; the issue flagged to us by our Independent Ventilation Assessor which triggered the delay in the first place. We are close to agreeing a solution and the way in which IHSL will deliver that solution. Once this is agreed it will then be possible to work out timescales for the procurement of the solution and how long it will take to complete the work to put it in place.

You may remember in my last note I explained that 2 reviews, commissioned by the Scottish Government are being conducted. KPMG are looking at how the project to build the new facility was organised and run. HPS and HFS's review is all about ensuring the building meets various national standards in order to safeguard the safety of our patients, staff and visitors. We are still expecting these reviews to be published quite soon - in September – and although we don't yet have the dates we'll let you know as soon as we do.

In the meantime the Project Team are continuing to support teams visiting the new site to continue local familiarisation to their new wards/departments. Please contact your commissioning manager if you want to arrange a visit.

Finally I'd like to advise you to try to remember that not everything you read in the papers is true. There have been some fairly sensational headlines here and there which I know are alarming for staff and patients alike. For the record: there are categorically no plans to 'pull the building down', costs have not 'soared by £90million' (the finances are on track) and speculation that the building will not open for another 2 years is not based on fact. The simple truth is that until the review is complete we cannot know the timescales for full opening of the building. Please be assured that as soon as things become clearer we will let you know.

As our Chairman, Brian Houston, remarked our recent Board Meeting, staff from across the services have shown remarkable patience and resilience. Your challenge to us is simply that we get it right for our patients, which is what we are working very hard to do. Thank you again, on behalf of the entire leadership team for your understanding patience and for your focus, as always, on doing the very best for our patients.

Best Wishes,

Susan Goldsmith

Director of Finance / Project Lead.

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26/08/2019

DRAFT**RHCYP/ DCN: Commission / Ventilation**

Note of a meeting of the Incident Management Team held at 3:30pm on Monday 26 August 2019 in the Bio Chemistry Meeting Room, Royal Hospital for Sick Children, Rillbank Terrace, Edinburgh.

Present: Tracey Gillies (Chair); Sorrel Cosens; George Curley; Brian Currie; Susan Goldsmith (by Teleconference); Iain Graham; Lindsay Guthrie; Donald Inverarity and Judith Mackay.

In Attendance: Douglas Weir.

Apologies for Absence were received from Janis Butler, Jacquie Campbell, Tim Davison, Alex Joyce and Alex McMahon.

1. Minutes of the Previous Meeting held on 19 August 2019

1.1 Approved.

2. Matters Arising

2.1 Water Quality – Tracey Gillies advised that she would prepare a short second paper which would include details of the outcomes of the third workshop session and the 7 areas that needed to be covered. It was noted that a meeting of minds had not yet been obtained between NHS Lothian and HFS/HPS. Tracey Gillies commented that it was important therefore that the NHS Lothian position was clearly detailed in writing with any red action areas identified along with details of the remedial action being proposed.

2.1.1 Susan Goldsmith advised that at a meeting with HFS earlier in the day this issue had been discussed and she felt there was a need to layout clearly the areas where actions needed to be agreed as well as being clear about how these would be addressed. Tracey Gillies commented that there remained outstanding actions in respect of water and ventilation and that she would prepare a non-technical cover paper for ventilation issues. Two technical appendices would need to be produced the first of these being action against the tracker and what was being done to monitor this with the second being in respect of the technical specification of the rooms. The cover paper would provide headlines of key issues. Brian Currie commented that there had been a suggestion that identifying every room and detailing its environmental status chronologically would be beneficial and that the project team had begun this exercise.. The point was made that different rooms addressed different clinical needs. Tracey Gillies commented on the need to maintain a focus on mandatory issues that required to be addressed.

3. Oversight Board Feedback

- 3.1 Susan Goldsmith commented that some of the key actions from the meeting had been around the need to be joined up with HFS and vice-versa. She commented that a positive meeting had been held with HFS earlier in the day where amongst other things the letter of intent had been discussed in respect of the way forward around procurement. It was noted that it was becoming increasingly clear that Multiplex were adopting a commercial approach. The Oversight Board had not been able to agree the issuing of the letter of intent given the current uncertainty of any HFS requirement to undertake remedial ventilation works in single and multi bedded rooms..
- 3.2 Judith Mackay advised that she was awaiting feedback from Christine McLaughlin in respect of the proposed staff communication. Susan Goldsmith would contact Christine McLaughlin the following day to ascertain the current position around the release of the communication.

4. Ventilation Reports

- 4.1 Brian Currie referred to the tracker matrix and advised that by the end of the week ventilation updates would be available from IHSL, Multiplex et al. He advised that work in respect of critical care ventilation was not progressing as it was awaiting and agreed letter of intent. It was noted that the MPX's designer had asked for details of other hospitals that were adopting 10 air changes with 10+ pascals pressure regime in critical care. It had been advised to them that the question was not relevant to the ongoing negotiations on undertaking these remedial works.
- 4.2 Brian Currie advised in respect of the tracker that some progress had been made around some of the more minor issues. In terms of the air handling units the response that had been received from Multiplex by the manufacturer was that these were compliant and that they proposed taking no further action. Multiplex was challenging that position. Brian Currie advised that he had requested that Multiplex look at the necessary programme of works as this remedial action would require to be undertaken irrespective of the funding mechanism.
- 4.3 Brian Currie provided an update in respect of ventilation to theatre and scrub rooms and the position of the grilles. MPX was stating that all issues were compliant. This had been discussed with HFS earlier in the day. Other issues in respect of areas like anaesthetic rooms and isolation rooms were discussed. George Curley commented that the key issue was that the specs were not compliant with Scottish Legislation. Tracey Gillies referred back to discussion the previous week where she had stressed the need to be clear about what was mandatory requirements and what had emerged from other areas with their being a particular need for clarity around what legislation meant. George Curley commented that the Health and Safety Executive would insist on SHTMs being followed albeit a different position might be adopted in respect of HFS guidance. Brian Currie advised that this issue had also been discussed with HFS earlier in the day and they had acknowledged the position in respect of SHTM guidance.

- 4.4 Lindsay Guthrie commented that there were legislative drivers in respect of COSHH regulations and Health and Safety issues. Brian Currie reiterated the hope that further information would be available from Multiplex et al later in the week. Tracey Gillies commented on the need to produce a summary which captured the 7 priority issues and to ensure that things were not lost during the forward journey. She commented that she had a feeling that the position was moving backwards rather than progress being made. Brian Currie commented that there was a need to flush out what MPX was committed to in respect of remedial work at a senior meeting with their directors. Concern was raised that this subtle change in direction by other partners had only emerged since the meeting held the previous week. Brian Currie commented that it was important to stress that at the meeting held the previous week the participants from Multiplex had not been mandated with the authority to take executive decisions. Susan Goldsmith commented that there was a need to obtain a formal response from Multiplex. She commented that despite the fact that the Steering Board was minuted that actions were not being landed and that progress was taking several weeks whilst at the same time outcomes were not being closed down. She commented that it would be important to consider carefully how to prepare for the forthcoming IHSL meeting. Susan Goldsmith and Brian Currie would take forward this action.
- 4.5 Brian Currie advised that a draft of the IOM report had been received with the details of this being checked with IOM. Data arising from this report had been submitted to Multiplex in order that actions could be progressed. Brian Currie advised that he was not aware of any significant issues that would emerge from the publication of the report. Tracey Gillies commented that the report was suggesting that of the total clinical areas looked at that 30% had minor snagging issues and that there was a need to obtain details of the remedial action in writing in order that actions could be monitored to ensure that completion was achieved. The point was made that once issues were regarded as being resolved that there would be a need to undertake some sample testing with it being important to engage with HFS/HPS to agree what that should look like.
- 4.6 Tracey Gillies commented that it was important that somebody maintained engagement with HFS. Brian Currie commented that NHS Lothian was working closely with them and the final IOM report would be shared with them once issues had been clarified.
- 4.7 Following discussion it was agreed that the IOM report should be considered at the IMT meeting the following Monday prior to being submitted to the Oversight Board with a covering paper to include proposals around retesting. It would be important to get the forward approach formally minuted. Brian Currie would ensure that a copy of the most up-to-date version of the report would be circulated by Wednesday of this week in order to give members of the IMT enough time to read and consider actions prior to the IMT meeting on 2 September 2019.
- 4.8 Brian Currie commented in respect of the 6-4 air change issue that all available information had been provided to HFS to describe the design rationale around the air changes. Information had also been sought from Multiplex through their designers in respect of aspects around natural ventilation as part of the mixed mode solution. If HFS had all of the information available they should be able to come to

BC

a view around the efficacy of the process. Susan Goldsmith commented that IHSL and Multiplex had been asked at the highest levels to provide this information although if it was not forthcoming HFS would come to a view in any event.

- 4.9 Tracey Gillies commented that following the Oversight Board meeting it had been clear that they did not see the proposed solution as representing a mixed mode ventilation model. Brian Currie reiterated the fact that HFS wanted to receive details of the Multiplex design rationale. He commented that consideration was being given to testing the building during different wind conditions and at different times of the day in order to obtain clarity around the natural ventilation position. It was noted that HFS were undertaking a literature review. Susan Goldsmith commented that there was a need to check the timelines in respect of this additional testing. She suggested that there would be merit in undertaking a third event around clinical risk assessments using both Eddie Doyle and Donald Inverarity who should identify appropriate people to engage with in order that NHS Lothian could present a unified forward position. Donald Inverarity advised that this would be difficult to undertake given that there was not knowledge about the content of the IOM report and that in any event this would need to be done on a specialty by specialty approach and on the basis of a risk assessed analysis of what patients would be using individual rooms. In some instances there were multiple specialties admitting into general wards which represented different permutations about the activity in each individual room. George Curley advised that he did not think that there was any test that would cover all bases and that this was a view shared by others. Tracey Gillies concurred advising that currently the experts were not providing any opinion that could be used to inform the process. Donald Inverarity advised that any clinical risk assessment that was undertaken would need to take cognisance of issues like those detailed in the Rainier Report.
- 4.10 Tracey Gillies commented that there would be a need to deal with the IOM report and that HFS would provide a view through the Cabinet Secretary's office about ventilation.
- 4.11 Brian Currie commented that the RAG report addressed issues like this as well as other snagging areas that needed to be undertaken and advised that there would likely be other schemes of remedial work that needed to be implemented. Tracey Gillies commented that it would be important to clarify the NHS Lothian position based on its own intelligence as well as there being a need for HFS to state what they thought. It was noted that there would be a point in the middle either real or imagined around which a solution would need to be agreed.
- 4.12 George Curley spoke about issues in respect of snagging theoretical risks. Tracey Gillies reminded colleagues that 7 priority areas had been identified and this should be the focus. It was noted in terms of HFS that some of the RAG issues that they had identified were being addressed. Brian Currie commented that HFS would require any red RAG areas to be resolved prior to agreeing that the building was suitable for occupation.
- 4.13 Brian Currie advised that the draft report had been shared with Donald Inverarity and Lindsay Guthrie for their views. It was noted that the overall RAG status had not changed. Tracey Gillies commented that although comments had been made about the trend being good that the fact remained that there were red indicators that

needed to be mitigated. An update was provided in respect of comments made about growing fungi with again the position being raised about the difference between issues relating to compliance and what people were learning from other areas. It was noted that this was a serious issue that needed to be addressed. She commented that there was a need for a meeting of NHS Lothian technical experts including Donald Inverarity and Lindsay Guthrie to get to the bottom of the position. Tracey Gillies commented that there was a need to address statements around fungi and other red rating issues. She suggested that following the water meeting on 4 September it would be important to get Donald Inverarity and Lindsay Guthrie into a room with HPS and HFS to seek a reconciliation of the position. A summary report required to be produced to rehearse the internal position to resolve water issues around the 3 red rating areas prior to reporting to the Oversight Board.

- 4.14 Brian Currie advised that he had asked for this work to be undertaken and commented that the report contained issues that NHS Lothian would not have previously been aware of. Donald Inverarity advised that the report referenced fungi in water but did not report on any clinical disease and this needed to be further clarified.
- 4.15 Susan Goldsmith commented that it would be important for IMT members to see the next draft of the report which was due to be finalised by the end of the week. Sorrel Cosens would arrange for contact to be made in order that papers could be made available for the Oversight Board. George Curley suggested that there might be merit in looking at the 3 red areas in order to provide context on how problems might manifest or not.
- 4.16 Tracey Gillies commented that at the next IMT meeting there would be a need to consider the water report as well as paying cognisance to the Glasgow issues in order to flush out any outstanding actions. She commented that it would also be important to ascertain the HPS/HFS position in respect of reporting to the Cabinet Secretary around the 3 red areas that were currently not described in clinical terms and were therefore not capable of being actioned because they were loosely written.

5. Updated Remedial Works Matrix

- 5.1 Tracey Gillies advised that most of these issues had been discussed earlier in the meeting and that the circulated report essentially set the scene. Brian Currie provided an update around issues like drainage, medical gases, fire, electrical and drainage. Tracey Gillies commented that the position in respect of drainage was reporting as more positive than had previously been the case.

6. Other Workstream Updates

- 6.1 It was agreed that issues around water, drainage, electrical, fire and medical gases had been discussed elsewhere on the agenda. Tracey Gillies commented that at the previous meeting there had been significant discussion about the need to

identify responsible people to take forward actions and to have this written down and properly recorded.

- 6.2 Discussion ensued in respect of operational management issues with the view being taken that this was about management and assurance. George Curley advised that the purpose for the development of the matrix had been to make sure that other service partners had understood and were discharging their responsibilities as well as reducing duplication of duties and responsibilities. Tracey Gillies commented that it would be important that the relevant people in the organisation were aware of positions around these issues and how this would be monitored. It was noted that the matrix had been shared with partners in the water and ventilation group. Susan Goldsmith commented that she did not think this provided sufficient assurance and therefore other work was needed in this respect including discussions with HFS.
- 6.3 Tracey Gillies commented that although discussion had been held in local specific groups she felt there was a need to bring it under a new formal management arrangement in order to ensure sufficient corporate ownership. Consideration would be given as to whether this should be undertaken through the Executive Leadership Team or the Corporate Management Team.

7. Migration Planning: SBAR – Clinical Risk Assessment of RHCYP Phased Migration

- 7.1 Tracey Gillies commented that following discussion colleagues at the RHSC did not want to split the move and wanted a single entity approach. She commented that she had expressed previous anxieties about the level of ownership around this process and whether any aspects of it had been subject to challenge. Assurance had been received around this from both Fiona Mitchell and Eddie Doyle. An update was provided on the DCN position which it was noted this was not dependent upon other RHSC moves. Tracey Gillies commented that she was uncomfortable that this exercise had resulted in the development of an additional option over and above the original 4 that had been identified. She commented that there would be a need to explain the logic behind this position as well as identifying how long any potential split would have been for.
- 7.2 George Curley commented in respect of any interim DCN move that infrastructure issues like security would need to be addressed in order to ensure that people were not able to access unoccupied parts of the hospital. Tracey Gillies suggested that if the building was occupied by DCN then operational arrangements would be put in place in order to secure any unoccupied parts of the building.
- 7.3 Tracey Gillies commented that the focus should be on moving DCN into the new building recognising the fact that children's services would follow later. It was agreed that further discussion around this issue needed to be held at the Oversight Board.

8. Terms of Reference Including Change of Name

- 8.1 The draft Terms of Reference were agreed subject to conclusion in the membership of a lead Infection Control Doctor and lead Infection Control Nurse.
- 8.2 It was agreed that if necessary the Terms of Reference could be reviewed at a later date.

9. Communications

- 9.1 Staff Communications – Judith Mackay commented that there was nothing of significance to report as she was awaiting feedback from Christine McLaughlin at the Scottish Government in respect of the proposed staff release. Susan Goldsmith advised that she would discuss this position with Christine McLaughlin the following day. Sorrel Cosens advised that she had received an email detailing progress although it had advised that a conversation with the Cabinet Secretary had not yet been held.
- 9.2 FOIs/ PQs – It was noted that there had only been 2 new requests since the previous meeting and lines of response were being prepared. George Curley updated on a media enquiry that he had taken the previous week in respect of repainting of areas of the existing facility to which he had provided a response.

10. Any Other Competent Business – Haematology / Oncology

- 10.1 Haematology / Oncology – Tracey Gillies commented that outstanding communications in respect of Haematology/ Oncology from the Chief Nursing Officer needed to be answered before the Oversight Board met on Thursday of this week. The position in respect of Lochranza and Borthwick Wards was noted. In Lochranza there were 5 isolation rooms which were operating at 10:10 air changes per hour. In the Borthwick Ward there was a single isolation room also operating at 10 air changes per hour. It was agreed that there was a need to be able to describe clearly what other rooms within both facilities were used for.
 - 10.1.1 Brian Currie advised that as part of a previous paediatric programme that the position had been risk-assessed at the time. Tracey Gillies commented however that the question under review related to the here and now. It was noted that there were between 5/10 neutropenic paediatric patients in the Sciennes facility on any given day. There were currently more patients than capacity. Reference was made to 2014 SHTM guidance with there being a need to understand whether requirements had been met and if not there would be a need to provide narrative around this. Donald Inverarity advised that based on the guidance that the single rooms in the Lochranza area were not suitable because windows could be opened therefore positive pressure could not be maintained. He commented in respect of HEPA filters that these had not been designed into the rooms.
 - 10.1.2 Brian Currie commented that there was a need to understand from the original project what was agreed at the time. Donald Inverarity commented that his view was that it should have been around the provision of positive pressure and filtered air. George Curley commented that an SHTM in 2019 went further. Sorrel Cosens would try to locate previous papers around this issue.

- 10.1.3 Donald Inverarity advised that the provision of the helipad next to the Lochranza facility was an issue that would concern HPS and HFS because of the ability for windows to be open. He commented that there was a theoretical risk of down draft creating aerosols that might then get blown into the cancer ward. It was noted that this position prevailed not just at the Royal Hospital for Children and Young People but also at the wider Royal Infirmary of Edinburgh.
- 10.1.4 Brian Currie commented that at the point of the helicopter test flight there would be a need to ensure the availability of scientific colleagues to measure contaminants etc.
- 10.1.5 Tracey Gillies commented that there was a need to pull together a coherent response for discussion at the Oversight Board meeting later in the week.
- 10.2 KPMG – Susan Goldsmith advised that she had no further intelligence other than confirmation that the report had been written. She commented that she was unsure whether NHS Lothian would see and be offered the opportunity to comment on the report event for factual accuracy.
- 10.3 Letter of Intent – it was noted that issues around the Letter of Intent would require to be resolved.

11. Oversight Agenda for 29 August 2019

- 11.1 Sorrel Cosens based on the discussion at the IMT would draft an agenda for the forthcoming meeting.

12. Date and Time of Next Meeting

- 12.1 The next meeting of the renamed NHS Lothian Executive Steering Group: Royal Hospital for Children and Young People and Department of Clinical Neurosciences will be held on Monday 2 September 2019 at 4:00pm in Meeting Room 5, Waverley Gate, Edinburgh.


From: MCLAUGHLAN, Edward (NHS NATIONAL SERVICES SCOTLAND)
Sent: 26 August 2019 19:49
To: JAMES, Gordon (NHS NATIONAL SERVICES SCOTLAND)
Cc: STORRAR, Ian (NHS NATIONAL SERVICES SCOTLAND)
Subject: RE: Paper for Thursday


Gordon

Initial thoughts

1. I'm working on the assumption this is a higher priority than the report. I have doubts about both being deliverable for COP Wednesday along with the prep for our meeting with Cab Sec. Between these demands and information still not available, you might want to consider whether the deadline for the report is achievable.
2. The evidence base will presumably come from the lit review. As you know, we have only very recently secured resource for our own research capacity thanks to your support.
3. Why the Lothian design was deemed acceptable is outwith the scope of our work. We have been told some things by board colleagues but, as the decision making was in KPMG's brief, rather than ours, we're not in a position at present to substantiate them.
4. I think this is the first mention I've seen of a clinical assessment other than what HPS is doing. Is that what's being referred to.
5. All new facilities should be built using SHTM 03-01 along with clinical requirements to inform the board's specification, the actual performance of other buildings' ventilation systems is not yet known as this forms part of phase 2, and we have never before been in a position to ask boards why the air change rates they have are deemed acceptable,
6. Happy to give a view on the performance of the ventilation system in terms of air changes and pressure differentials, as well as the basis for the current rates advised in SHTM03-01 to be taken together with clinical expertise to form a view on the acceptability of the current arrangements. This should really follow the report, rather than precede it though,
7. Retrofitting a ventilation system into the existing building footprint hasn't been assessed as a proposition but it is likely to be only partly deliverable at best, given the size of air handling units and ductwork likely to be required and the fact that ceiling voids are already congested with other services. The cost would likely be measured in £ millions and the timescale could be two years. As you know the Board agreed today to carry out live validation of the ventilation arrangements by using tracer gas dilution. As this will require differing wind conditions and contractor availability, it is likely to take several weeks, but it will give us the actual performance of the building in a range of conditions, and might demonstrate that the 6ac/h IHSL claims is actually achieved.

We can discuss tomorrow, although I'm acutely aware that all this time is time I'm not spending on what I'm told is my number one priority.


Eddie McLaughlan
Assistant Director
Engineering, Environment and Decontamination
Health Facilities Scotland
Procurement, Commissioning and Facilities
NHS National Services Scotland





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From: JAMES, Gordon (NHS NATIONAL SERVICES SCOTLAND)
Sent: 26 August 2019 18:18
To: MCLAUGHLAN, Edward (NHS NATIONAL SERVICES SCOTLAND); STORRAR, Ian (NHS NATIONAL SERVICES SCOTLAND); RANKIN, Annette (NHS NATIONAL SERVICES SCOTLAND); IMRIE, Laura (NHS NATIONAL SERVICES SCOTLAND); REILLY, Jacqui (NHS NATIONAL SERVICES SCOTLAND)
Subject: FW: Paper for Thursday

FYI – Gordon.

From: [Redacted]
Sent: 26 August 2019 18:15
To: JAMES, Gordon (NHS NATIONAL SERVICES SCOTLAND) [Redacted]
Subject: Paper for Thursday

Gordon

I thought it might be helpful to set out what I hope will be covered in your paper on the general ward air changes:

- Current national guidance and evidence base for 6 air changes
- Current Lothian design and why this was deemed to be acceptable, taking into account air pressure
- The Clinical assessment of that lothian position
- Existing air change spec in our newest facilities and why it is deemed satisfactory if not 6
- HFS/HPS view on RHCYP design and whether or not 4 changes is deemed acceptable
- The consequence of requiring Lothian to get to 6 air changes, ie what would it take?

I realise your advice may not be conclusive but that's the territory we need to cover I think

Regards

Christine

Sent with BlackBerry Work (www.blackberry.com)

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Tha am post-d seo (agus faidhle neo ceanglan còmhla ris) dhan neach neo luchd-ainmichte a-mhàin. Chan eil e ceadichte a chleachdadh ann an dòigh sam bith, a' toirt a-steach còraichean, foillseachadh neo sgaoileadh, gun chead. Ma 's e is gun d'fhuair sibh seo gun fhiosd', bu choir cur às dhan phost-d agus lethbhreac sam bith air an t-siostam agaibh agus fios a leigeil chun neach a sgaoil am post-d gun dàil.

Dh'fhaodadh gum bi teachdaireachd sam bith bho Riaghaltas na h-Alba air a chlàradh neo air a sgrùdadh airson dearbhadh gu bheil an siostam ag obair gu h-èifeachdach neo airson adhbhar laghail eile. Dh'fhaodadh nach eil beachdan anns a' phost-d seo co-ionann ri beachdan Riaghaltas na h-Alba.

From: Currie, Brian
Sent: 28 August 2019 16:54
To: Henderson, Ronnie; Mackenzie, Janice
Subject: FW: RHCYP & DCN Oversight Board papers: 29 August 2019
Attachments: Haematologyoncology RHCYP.DOCX

FYI

Brian Currie
Project Director - NHS Lothian
RHCYP + DCN

[REDACTED]

[REDACTED]



From: Trotter, Audrey
Sent: 28 August 2019 14:49
To: Cosens, Sorrel; Alan Morrison; Archibald, Gordon; Calderwood, Catherine; Christine McLaughlin; Colin Sinclair; Currie, Brian; Fiona McQueen; Gillies, Tracey; Goldsmith, Susan; Gordon James; Jacqui Reilly; Joyce, Alex; 'judith mackay'; McMahon, Alex; Peter Reekie; Graham, Iain
Cc: Graham, Chris; Barbara Crowe; Little, Kerryann; Rowena Roche; Walker, Anna; [REDACTED]
Subject: RE: RHCYP & DCN Oversight Board papers: 29 August 2019

Apologies folks, but please find attached another paper for tomorrow's meeting from Tracey.

Kind regards

Audrey

From: Cosens, Sorrel
Sent: 27 August 2019 16:53
To: Alan Morrison; Archibald, Gordon; Calderwood, Catherine; Christine McLaughlin; Colin Sinclair; Currie, Brian; Fiona McQueen; Gillies, Tracey; Goldsmith, Susan; Gordon James; Jacqui Reilly; Joyce, Alex; 'judith mackay'; McMahon, Alex; Peter Reekie; Graham, Iain
Cc: Graham, Chris; Barbara Crowe; Little, Kerryann; Rowena Roche; Trotter, Audrey; Walker, Anna; [REDACTED]
Subject: RHCYP & DCN Oversight Board papers: 29 August 2019

Dear Colleagues

Please find attached the agenda and papers for Thursday's Oversight Board meeting, from 8.00-9.30am.

To accommodate the change in time, the venue will be Media 2 at St Andrew's House this week.

Papers:

Agenda

2. Minutes of 22/08/19

5.1 Commercial Position and Contract Management update

6.1 RHCYP phased migration

8.1 RHCYP & DCN Executive Steering Group terms of reference

9.1 RHCYP DCN Tracker of Requests for Info to OB 190829

Please send apologies, or requests for dial-in details, to [REDACTED]

Regards,
Sorrel

Sorrel Cosens
Capital Programme Business Manager
NHS Lothian

[REDACTED]

Haematology /oncology provision for children in RHCYP/DCN

As discussed in the Oversight meeting on Thursday 22 August, the following information is provided for clarification.

- The paediatric haematology and oncology patients will be accommodated in Lochranza, which is all single room accommodation.
- A neuro-oncology patient may be accommodated in Borthwick.
- There are areas within the ward footprint for outpatient treatment and care.

Ward	Bed numbers	Room configuration	SHTM specified standard	Specified in design or supplementary agreement for this area	Validated delivery from IOM
Lochranza (3 rd floor) Haem/once	17	All single rooms: 12 standard single rooms 5 isolation rooms	Standard single rooms: 6a/c per hr, pressure no specification Isolation rooms: 10a/ch at 10 Pa, H12 filter	Standard single: 6a/c at positive pressure Isolation rooms: 10 a/c 10 Pa, H12 filter	
Borthwick (3 rd floor) Neurology and neuro-oncology	12	Mixed configuration: 4 single rooms- 3 standard single rooms 1 isolation room 8 in multibed rooms: 2 rooms of 4 beds each	Standard single: 6a/c per hr, pressure no specification Isolation room: 6a/c per hr, pressure at 10kPa 4 bedded rooms: 6 a/c/hr no pressure specification	Standard single: 6 a/c at positive pressure Isolation rooms: 10 a/c 10 kPa 4 bedded rooms:	

Current and intended clinical practice

The practice of the clinical team is to consider the risks around neutropaenic patients as follows:

- All H/O patients are likely to become neutropaenic between day 10-21 of a treatment cycle. Most patients can be at home or at school, but are seen urgently if they develop a fever. They are advised not to travel by bus.
- Any such patient if an inpatient would be managed in a single room.
- Those patients with severe neutropaenia or additional vulnerabilities are managed in an isolation room- these are those who have had a bone marrow transplant or those young children with AML vulnerable to fungal infections

Design and specification for accommodation

In March 2018, NHS Lothian through their technical advisors Mott MacDonald, advised Project Co and Multiplex that the haematology oncology rooms did not meet the required specifications:

- 9 single rooms were listed, pointing out these were 4a/c per hour and balanced and should be 10Pa positive pressure
- Three additional single rooms were listed as now belonged to the haem onc ward and should be at the same specification
- The 5 isolation rooms were listed with an appropriate pressure regime
- In August 2018 a disputed works schedule was issued by IHSL (IHSL 050) with the title Neutropaenic Patients Ventilation. This notes that the board regard the design of the single rooms (non isolation) as non compliant with the schedule but that Project Co did not propose to alter the design. It concludes with the expectation that the board (NHS Lothian) will be required to prepare specific SOPs for the management of infection for patients in this area who are not in an isolation room
- NHS Lothian had to accept this as part of the supplementary agreement to conclude the negotiations. The clinical view from the haematology/oncology team was that this would be managed through an SOP following the principles outlined above.
- The current advice from our Infection control team is that the ventilation of these single rooms should be rectified to meet the SHTM standard for areas for the care of neutropaenic patients at the same time as the critical care work. We need to reconcile these two views.

TG 28.08.19

Appendix 1: Recommended air-change rates

Application	Ventilation	ac/Hour	Pressure (Pascals)	Supply Filter	Noise (NR)	Temp (°C)	Comments For further information see Section 6
General ward	S / N	6	-	G4	30	18-28	
Communal ward toilet	E	10	-ve	-	40	-	
Single room	S / E / N	6	0 or -ve	G4	30	18-28	
Single room WC	E	3	-ve	-	40	-	
Clean utility	S	6	+ve	G4	40	18-28	
Dirty utility	E	6	-ve	-	40	-	
Ward Isolation room	-	-	-	-	-	-	See SHPN 4; Supplement 1
Infectious disease Iso room	E	10	-5	G4	30	18-28	Extract filtration may be required
Neutropenic patient ward	S	10	+10	H12	30	18-28	
Critical Care Areas	S	10	+10	F7	30	18-25	Isolation room may be -ve press
Birthing Room	S & E	15	-ve	G4	40	18-25	Provide clean air-flow path
SCBU	S	6	+ve	F7	30	18-25	Isolation room may be -ve press
Preparation room (Lay-up)	S	>25	35	F7*	40	18-25	*H12 if a lay-up for a UCV Theatre
Preparation room / bay sterile pack store	S	10	25	F7	40	18-25	*50NR if a bay in a UCV Theatre
Operating theatre	S	25	25	F7	40	18-25	
UCV Operating theatre	S	25*	25	H12	40	18-25	Fresh air rate; excludes re-circulation
Anaesthetic room	S & E	15	>10	F7	40	18-25	Provide clean air-flow path

From: JAMES, Gordon (NHS NATIONAL SERVICES SCOTLAND)
Sent: 27 August 2019 12:54
To: MCLAUGHLAN, Edward (NHS NATIONAL SERVICES SCOTLAND); STORRAR, Ian (NHS NATIONAL SERVICES SCOTLAND); RANKIN, Annette (NHS NATIONAL SERVICES SCOTLAND); IMRIE, Laura (NHS NATIONAL SERVICES SCOTLAND); HARLEY, Kate (NHS NATIONAL SERVICES SCOTLAND)
Cc: REILLY, Jacqui (NHS NATIONAL SERVICES SCOTLAND); MORGAN, Mary (NHS NATIONAL SERVICES SCOTLAND)
Subject: Draft SBAR - Review of General Ventilation within RYCYP&DCN
Attachments: SBAR_Single_Room_RHSCYPDCN.DOCX

Importance: High

Dear all,

Thanks for the input this morning. I have attached the draft SBAR for discussion at the Oversight Board on Thursday and I am sure will inform discussion with Cab Sec on Thursday PM.

As discussed I plan to share with Christine in the draft form and also with Susan Goldsmith as there are sections where we require input from NHSL.

Thanks
Gordon.
Gordon James
Director of Health Facilities Scotland
Health Facilities Scotland
NHS National Services Scotland

[REDACTED]

[REDACTED]

SBAR Ventilation – Single & Multi Bed Rooms

1 Situation

The review of RHCYP&DCN has identified a requirement to understand the current ventilation within Single and Multi Bed rooms. Specifically their adherence to SHTM 03-01 Part A Design and Validation which outlines guidance for room types.

2 Background

The SHTM guidance is adopted from the HTM (UK) guidance and was published in February 2014. The guidance is based on a working knowledge of ventilation within developed healthcare care systems and was created in conjunction with the UK four nations and expert groups. The specific requirements for these types of room configurations is as follows (SHTM-03-01 Part A):

Application	Ventilation	ac/Hour	Pressure (Pascals)	Supply Filter	Noise (NR)	Temp (°C)	Comments For further information see Section 6
General ward	S / N	6	-	G4	30	18-28	
Communal ward toilet	E	10	-ve	-	40	-	
Single room	S / E / N	6	0 or -ve	G4	30	18-28	
Single room WC	E	3	-ve	-	40	-	

The guidance allows for the ventilation to be in the form of Natural (I.e Vents), Supply & Extract (Mechanical) with the recommended guidance of 6 air changes per hour for Single Rooms and Multi Bed Wards. In addition it specifies air pressure, if applicable, and where mechanical ventilation is present a general purpose Grade 4 filter should be utilised. The guidance also details extract requirements for associated toilets with these being used to pull air from the room / ward via the WC room and extract from the building.

NSS has received a copy of a TUV Sud attached internal review of the design solutions for single and multi-occupancy wards. It is our understanding that this was published post internal workshops held with NHSL staff in January 2017, the report is dated 21st February 2017. **These workshops including XXXXX personnel, the review report is attached as Appendix 1. NHS Lothian risk assessment at this time??** In their conclusion TUV Sud assert that “As demonstrated above the current designs for the Single Rooms and General Ward Areas are fully in compliance with SHTM 03-01” but have not provided evidence relating to the natural component

3 Assessment

The report from TUV Sud states that the Single Rooms and Multi Bed Ward areas all comply with the guidance, both with respect of 6 air changes per hour and pressure differentials. The design relies on mixed mode of mechanical and natural ventilation as

recognised within the guidance. Their report states that the natural element of ventilation provided includes the opening of windows. They confirm that the mechanical ventilation provides a supply of 4 air changes per / hour, being at this level to reflect the benefit of a mixed mode provision. i.e 4 mechanical + 2 air changes being provided by natural means = 6 ac/hr overall.

When reviewed, no detail has been provided regarding the specific design parameters or assumptions regarding the 2 air changes provided by natural means. In addition, there is no automatic control of the natural ventilation element as detailed and consideration needs to be given to associated potential infection risks. Information has been requested via NHSL from IHSL and we are aware that this has also been requested specifically from TUV Sud. *At the time of writing, the specific design detail remains outstanding.* Taking the report as read then the ventilation would appear to comply with guidance, the 4 mechanical is confirmed and it is recognised that natural ventilation will provide an element of air changes, however, the level and detail of this has not been further evidenced.

To date we are not aware of any clinical risk assessment being completed by NHSL on the Single and Multi Bed Wards. However, it is our understanding that this will be undertaken. **We have been informed verbally that clinical staff and infection control were part of the workshop completed in early January 2017 with TUV Sud.**

A rapid review of literature “Review of Healthcare Associated Infection risks and outbreaks associated with healthcare ventilation system design” is currently being undertaken. Initial findings suggest that there is strong and conclusive evidence that poorly designed Healthcare ventilation systems pose a risk to patients and staff both in terms of infection control and occupational exposure. Six air changes per hour are accepted as the standard in the UK and USA with references in the literature to infection related issues when air changes fall below this accepted standard.

Retrofitting a ventilation system into the existing building footprint hasn't been assessed as a proposition but it is likely to be only partly deliverable at best, given the size of air handling units and ductwork likely to be required and the fact that ceiling voids are already congested with other services. The cost would likely be measured in several millions and the timescale could be up to two years.

Two other NHS Scotland hospitals have been completed within similar period as the construction of RHCYP&DCN. These are the new NHS D&G DGRI and NHS Orkney Balfour Hospitals. Based on unverified information the specification of general single and multi bed ward ventilation systems would suggest that following air changes:

Hospital	Air Changes / Per Hour
NHS D&G - DGRI	Claimed 6 ac/hr – Mechanical
NHS Orkney - Balfour	Claimed 6ac/hr – Natural / Natural & Mechanical

The report submitted by TUV SUD, the ventilation within Single and Multi Bed Rooms is suggested to comply with the SHTM 03-01 Part A Design and Validation. However, the evidence base for the 2 natural air changes per hour remains outstanding. Given the lack of specific detail the following is recommended:

- IHSL as a matter of urgency need to provide the complete design rationale/evidence for the single and multi bed rooms including the natural component
- NHSL as a matter of priority undertake a clinical risk assessment of the Single and Multi Bed Rooms
- NHSL carry out live validation of the ventilation arrangements by using tracer gas dilution. As this will require differing wind conditions and contractor availability, it is likely to take several weeks, but it will give us the actual performance of the building in a range of conditions
- NSS progress from a Rapid Review to and in-depth Critical Appraisal of ventilation to inform future updates to SHTM guidance

CONFIDENTIAL & DRAFT

Appendix 1 – TUV SUD Report



20170523

RAM-GC-000278 Bed

CONFIDENTIAL & DRAFT

From: MCLAUGHLAN, Edward (NHS NATIONAL SERVICES SCOTLAND)
Sent: 28 August 2019 10:37
To: JAMES, Gordon (NHS NATIONAL SERVICES SCOTLAND); RANKIN, Annette (NHS NATIONAL SERVICES SCOTLAND); IMRIE, Laura (NHS NATIONAL SERVICES SCOTLAND)
Cc: HARLEY, Kate (NHS NATIONAL SERVICES SCOTLAND); REILLY, Jacqui (NHS NATIONAL SERVICES SCOTLAND); REDUCING-RISK-HCE (NHS NATIONAL SERVICES SCOTLAND); STORRAR, Ian (NHS NATIONAL SERVICES SCOTLAND)
Subject: FW: Bedroom ventilation rates
Attachments: 181212 SA Item 13 Project Co Change 051_45019169_1.docx; RHSC DCN Reference Design Thermal Comfort Analysis.pdf; Reference Design Env Matrix.xlsx

Folks

I've not been right through this yet and there is clearly more info required but this appears to show that the 4 air changes was a design agreement, regardless of the use of terms like mixed mode and natural ventilation. What we will need to do is consider this in light of information that emerged after these decisions were made (rapid review). I will forward more information as and when it arrives.

[REDACTED]

Eddie McLaughlan
Assistant Director
Engineering, Environment and Decontamination
Health Facilities Scotland
Procurement, Commissioning and Facilities
NHS National Services Scotland

[REDACTED]

www.hfs.scot.nhs.uk

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From: Henderson, Ronnie [REDACTED]
Sent: 28 August 2019 09:09
To: MCLAUGHLAN, Edward (NHS NATIONAL SERVICES SCOTLAND) [REDACTED]; STORRAR, Ian (NHS NATIONAL SERVICES SCOTLAND) [REDACTED]

Cc: Currie Brian (NHS Lothian) [REDACTED]; [REDACTED]
Subject: FW: Bedroom ventilation rates

Hi Eddie, Ian,

See below and attached from MPX re 6 to 4 air change issue. The key additional document is the H & K thermal comfort analysis as that is the evidence Stewart McKechnie alluded to at last Friday's vent meeting in defence of their design. What the e-mail below states along with the other attachments, which you will have already seen, is that they only intended to provide 4 air changes. There is reference in their documents however to 'mixed mode' ventilation and that suggests to me a consideration of the effect of natural ventilation.

Let me know if this gives you enough information to go on.

Regards

Ronnie

Ronnie Henderson
Commissioning Manager Hard FM
RHSC & DCN - Little France
NHS Lothian

From: Darren Pike [REDACTED]
Sent: 27 August 2019 18:28
To: Goldsmith, Susan
Cc: Henderson, Ronnie; Currie, Brian; Callum Tuckett; Matthew Templeton; [REDACTED]
Subject: Bedroom ventilation rates

Susan

Callum has asked I forward you the words in response to the question from HFS being discussed in the ventilation work group;

"From the information provided it is clear that the intention is that between the windows and the associated trickle vents a component of natural ventilation will be present. What I am looking for is an understanding of whether it is simply an assumption that that will amount to two air changes or if there is analysis and calculation to back it up. I do accept that the guidance allows for an element of variability in the delivery of natural ventilation but to be able to assure government that the building meets the requirements, I need to know how we can be sure that what is provided is sufficient. This is particularly an issue as the windows appear to be being relied on in addition to the trickle vents, as these will be shut for the majority of the time.

As a separate issue for your consideration, In the information provided there is an assertion that the pressure from room to corridor will be balanced when the windows are open. Whilst this may be true in still air or on the windward face of the building, it is unlikely to be true in the lee of the building in a breeze. Clinical leads need to understand this and its potential impact on the risks to certain patient groups."

Confirmation of the key points from the meeting of last Friday 23.08.19 where single bedroom ventilation rates were discussed. Based on the energy efficiency vision of the hospital, the Guidance within SHTM 03-01 for 6ACH were derogated down to 4ACH, and this was captured within the SA, item 13, and appendix 13, as attached. To be clear the agreed position contained within the SA is for 4 ACH, note that openable windows provide beneficial use to the user only, and supplements the agreed design solution to provide 4ACH as this is provided via mechanical ventilation. The key driver for openable windows were treated as beneficial use only so far as air changes are concerned. We expressed our concerns surrounding the pressure regime implications when any window is opened, however this was a risk the Board were willing to accept. There would therefore be an element of operational management within each ward depending on specific patient needs.

The origins of 4ACH can be traced back to the reference design environmental matrix and the optioneering carried out by Hulley + Kirkwood (attached for ease of reference). During bid stage due diligence was carried out to assess the suitability of the energy efficiency vision within the reference design, and captured as part of the Project Co proposals. During detail design Wallace Whittle carried out an energy model analysis of 4ACH to ensure the thermal comfort parameters were met, and the energy model outputs were shared during detailed design workshops reviewed by the Board's Technical Advisors.

Regards

Darren

Darren Pike
Project Director

MULTIPLEX

Multiplex Construction Europe Ltd



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IHS LOTHIAN LTD

Disputed Works Schedule Appendix 1 Item 13 (Formally Project Co Change 051)

Date – 12/12/18

Reference IHSL – 051 Rev B

Title – Single Bedroom Ventilation

1.0 Detail of Change

Table A1 of Appendix 1 : Recommended air-change rates of SHTM 03-01: Part A - Design and Validation indicates that single room should be provided with 6 ac/h and 0 or -ve pressure. Single room WC should be provided with 3 ac/h and -ve pressure.

Project Co proposes to:

1. Decrease the mechanical air change ventilation rate within single bedrooms from 6 air changes per hour (6 ac/hr) to 4 air changes per hour (4 ac/hr); and
2. Increase the mechanical air change ventilation rate within single bedroom WCs from 3 air changes per hour (3 ac/hr) to minimum 10 air changes per hour (10 ac/hr).

2.0 Reasons

Project Co's design philosophy for bedroom ventilation is based on mixed mode operation where mechanical supply ventilation providing 4ACH is then supplemented by openable windows to provide a passive means of ventilation (where access to an openable window is available).

3.0 Implications

As there is no general extract proposed in single rooms, Board will not be able to extract heat generated within the space from the air extracted through the en-suites.

4.0 Attachments



**Royal Hospital for Sick Children/
Department of Clinical Neuro-Sciences
Ward Room
Thermal Comfort Analysis**

February 2012

Hulley & Kirkwood Consulting Engineers Ltd

[Redacted]
[Redacted]
[Redacted]
[Redacted]
[Redacted]
[Redacted]

[Redacted]
[Redacted]
[Redacted]
[Redacted]

.....Making Buildings Work

Prepared By: Jonathan McMillan

Authorised By: Michael O'Donnell

Rev.: -

Date: 21/02/12

Doc. location: K:\Edinburgh2\projects\Drawings\11276A\Documentation\Rpts&Sch\Comfort
Analysis\11276a_Thermal Comfort Analysis.doc

Royal Hospital for Sick Children/ Department of Clinical Neuro-Sciences

Ward Room Thermal Comfort Analysis

February 2012

REV	DESCRIPTION	PREPARED BY	DATE
Issue No. 1	First issue	Jonathan McMillan	17/02/12

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1.0 Introduction

This study has been prepared by Jonathan McMillan for Hulley Sim, a sustainable building design and simulation division within Hulley & Kirkwood Ltd. The purpose of this study is to:

- § Determine peak annual internal temperature profiles for typical single ward room accommodation, within the proposed Royal Hospital for Sick Children & Department of Clinical Neuro-Sciences Building, through dynamic thermal simulation for the Reference Design Stage envisaged solution of providing ward rooms with mechanical ventilation and comfort cooled fresh air.
- § To verify that mechanically ventilated and comfort cooled ward rooms have summertime peak temperatures which do not exceed the NHSL maximum internal temperature of 25°C.
- § To demonstrate that with natural ventilation only ward rooms could potentially experience significant hours of internal temperatures above 25°C and up to 28°C and in many cases more than 50 hours above 28°C referred to in SHTM 03-01 guidance.

Executive Summary

- § The profiles in Simulations 1 & 2 show that the internal temperatures in ward rooms can be maintained at comfortable levels with 4 ACH (air changes per hour) of cooled fresh air supply mechanical ventilation and could be controlled in summertime between 22°C and 25°C maximum.
- § The results for Simulation 3 demonstrate that during peak summertime conditions, the ward rooms internal temperatures are predicted to rise above 28°C with natural ventilation only in almost all rooms simulated. Further interrogation shows significant hours between 25°C and 28°C experienced, representing a period extending across summer months.

1.1 Dynamic Thermal Modelling

Dynamic thermal modeling (DTM) has been utilized to establish building thermal profiles. The RHSC / DCN Building, as per the final 1:200 Reference Design Stage architectural layouts was simulated with respect to varying time dependant internal and external conditions affecting heat gains, bulk air flow movement & solar gain. The accuracy of the model, and hence the validity of any proposals, are governed by the assumptions made, and the resolution of the model's geometry. The model's geometry was accurately drawn from 1:200 departmental layouts supplied by the Architect, Nightingale Associates. Assumptions on the occupancies and internal heat gains were based on typical values for specific operational area usage. The input data, including the local weather data, is processed by thermodynamic algorithms in order to predict the environmental conditions experienced in each of the operational areas. The latest version of IES Virtual Environment modelling software has been used (IES version 6.4). The details of which are given in Table 1.1.

Calculation Engine:	Apache
Calculation Engine (version):	V6.4
Interface to Calculation Engine:	IES Virtual Environment

Table 1.1. Calculation Tool Details

1.2 Simulation Progression

In order to understand the effect of multiple system variables and possible system control options the following simulations were performed;

- § **Simulation 1** – Ward rooms served by mechanical fresh air supply, rated to 4 ACH (Air Changes per Hour), cooled to control zone temperatures to 25°C or less. Windows in simulated spaces are closed continually.
- § **Simulation 2** - Ward rooms served by mechanical fresh air supply, rated to 4 ACH (Air Changes per Hour), cooled to control zone temperatures to 25°C or less.

In addition to mechanically supplied fresh air, each simulated zone is subject to natural ventilation through a 100mm restricted window opening of dimensions typically 1.3m by 1.6m wide providing 0.416m² of free ventilation opening area. Natural ventilation is simulated through the dynamic bulk airflow programme Macro Flow. Bulk airflow movement is driven by the following factors:

- Window opening area specific to each simulated space and opening configuration.
 - External dry bulb temperature, derived from local historic weather data
 - External barometric pressure, derived from local historic weather data
- § **Simulation 3** – No mechanical cooled fresh air supply ventilation. Natural ventilation is simulated as per Simulation 2.

It should be noted that Simulation 3 is provided as a means of comparison, to illustrate the conditions which would occur if mechanical ventilation with cooling were not provided, which NHSL would not find acceptable given experiences in the adjacent ERI for ward rooms reliant on natural ventilation alone, hence the briefed maximum internal temperature of 25°C

It should be noted that The Reference Design Envisaged Solution does not rely on natural ventilation alone in any way to maintain internal temperatures within comfort levels and provides a robust level of control of internal temperatures and therefore thermal comfort by employing cooled mechanical fresh air supply ventilation which could operate in conjunction with supplementary natural ventilation as well as without it.

2.0 Simulation Component Properties

2.1 Building Fabric and Window Design

The following building fabric U-Values have been incorporated into the dynamic thermal simulation model. Solar glass has been specified for regions of the façade predicted to be exposed to high levels of solar gain through direct sunlight exposure. Glazing in all other areas has been defined as a clear Low-E glass. The material properties for the simulation model have been defined as follows;

	U-Value W/m ² K
External Wall	0.21
Floor	0.20
Roof	0.20
Fire Doors	1.7
Windows	1.7

Glass Construction Typical	
Outer Layer	8mm Clear Float Glass
Cavity	16mm Air Cavity
Inner Layer	8mm Clear Float Glass
Low-E glass material Properties - Typical	
U-value	2.0
g-value	61%
Light Transmission	75%
Solar glass material Properties - Typical	
U-value	1.9
g-value	40%
Light Transmission	66%

It should be noted that for the purposes of this study, in the absence of both an evolved prescriptive glazing strategy and elevation details, glazing has been set to meet the minimum guidelines set out in HTM 55 regarding window size, location and opening restrictions. For the purposes of this simulation all opening windows have been set such that opening area is equivalent to that achieved if a 100mm restrictor were fitted to a top hung window measuring 1.3m by 1.6 m, providing a minimum natural ventilation free area of 0.416m².

Cold bridging details

IES Virtual Environment incorporates cold bridging details by using specific ψ values, measured W/(m.K), for the relevant building element junctions.

Type of Junction	Junctions involving metal cladding ψ (W/(m.K))	Junctions not involving metal cladding ψ (W/(m.K))
Roof-Wall	0.6	0.12
Wall-Ground Floor	1.15	0.16
Wall-Wall Corner	0.25	0.09
Wall – Floor (not ground)	0.07	0.07
Lintel above window	1.27	0.3
Sill below window	1.27	0.04
Jamb at window/door	1.27	0.05

2.2 Building Air Tightness

The infiltration rate was set to represent an air permeability of $7.5\text{m}^3/\text{h}/\text{m}^2$ at 50Pa. This is a minimum backstop within the Section 6 Compliance model.

2.3 Internal Conditions & Associated Heat Gains

The various operational zones were subject to internal gains determined from National Calculation Method (NCM) templates and operational schedules. NCM templates were used to describe the daily activities and associated gains for the following room types.

- Bedroom
- Patient Accommodation Day
- Multi-bed Wards

For the National Calculation Method (NCM) templates detailed above, the following gains are taken into account;

Occupancy sensible	99.6	w/m^2 with 12.5 m^2 per person
Occupancy latent	40.04	w/m^2 with 12.5 m^2 per person
Lighting	6.5	w/m^2
Activity specific equipment	5.0	w/m^2
Miscellaneous small power	5.0	w/m^2

Each of the above gains are controlled by daily schedules for various operational usage.

Occupancy gains have been controlled by daily schedules which increase the number of occupants to three during anticipated visiting hours.

In addition to the typical NCM gains detailed for each zone, the amount of passive solar gain is calculated using our solar analysis package VE Suncast. Suncast uses detailed solar axis and azimuth tables to determine the angle and intensity of incident solar radiation on each exposed surface. Refer to section 2.4 for details of the tables used.

2.4 External Conditions

Each scenario was simulated with respect to statistically predicted weather data and the local solar path, determined by the location and orientation of the site. Details of the solar path and annual ambient thermal profile can be seen in sections 2.4.1 & 2.4.2 respectively.

2.4.1 Solar Axis and Azimuth

The following data is embedded within IES and is used to determine the magnitude of solar gain experienced due to direct sunlight exposure.

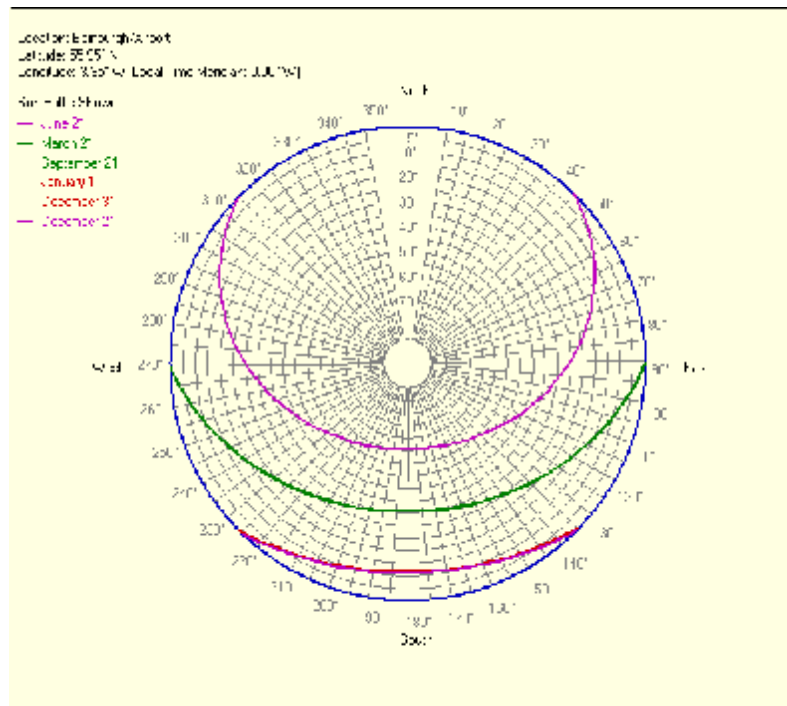
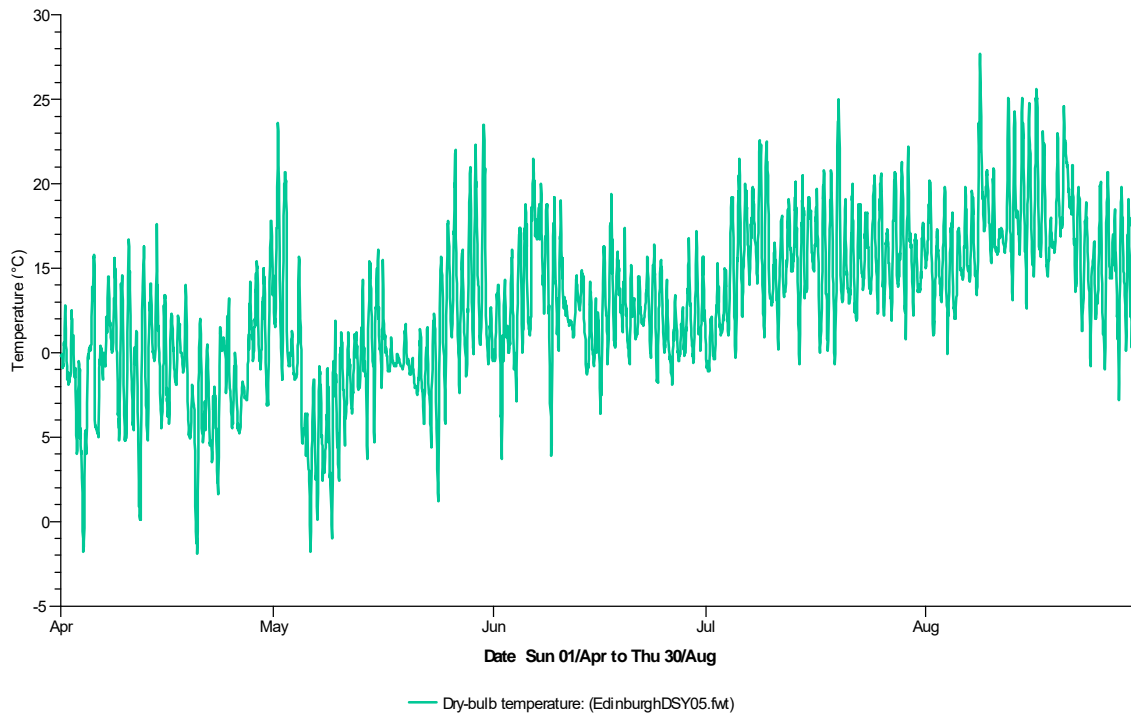


Figure 2.4.1 Solar Path Data

2.4.2 Ambient External Dry Bulb Temperature

The Design Summer Year (DSY) weather file for Edinburgh has been used. The Design Summer Year consists of an actual 1-year sequence of hourly data, selected from the 20-year data sets to represent a year with a hot summer



2.5 Space Conditioning Systems

Thermal templates have been created to reflect the space heating and ventilation systems present in the Royal Hospital for Sick Children & Department of Clinical Neuro-Sciences Reference Design Stage building envisaged solution.

Ward ventilation systems incorporated can be described as follows;

- LTHW radiant panels with local TRV temperature control with tempered and comfort cooled fresh air supply and dirty extract ventilation via adjacent en-suites through central mechanical AHU plant and central dirty extract plant.
- Summertime fresh air supply can be cooled to 16 degrees Celsius to maintain an ambient air temperature of 22 degrees Celsius, if necessary, in ward areas. Natural ventilation can be utilised as desired in addition to cooled fresh air supply. However in operational reality, management procedures would ensure an appropriate use of opening windows should ambient temperatures be greater than internal temperatures to conserve energy.

2.6 Building Geometry

A geometrically accurate representation of the proposed Royal Hospital for Sick Children & Department of Clinical Neuro-Sciences Reference Design Stage envisaged building was constructed from final 1:200 Reference Design Stage architectural layouts using the Model IT package within the IES Virtual Environment. This can be seen in figures 2.6.1 to 2.6.3 below.

As this study concerns the thermal comfort of ward rooms throughout the building, with the aim of verifying that mechanically ventilated and cooled ward rooms have summertime peak temperatures which provides for robust levels of thermal comfort whereby internal temperatures of 25°C or less can be provided throughout summertime months.

A selection of rooms has been chosen to represent the likely worst case combination of;

- § Exposure to solar gain
- § Density of occupation
- § Provision of mechanically supplied cooled air.

As such critical care and high dependency type ward rooms which receive air change rates in the region of 10ACH, have not been analysed in this study. Room types that have been analysed are illustrated in figure 2.6.5 below.

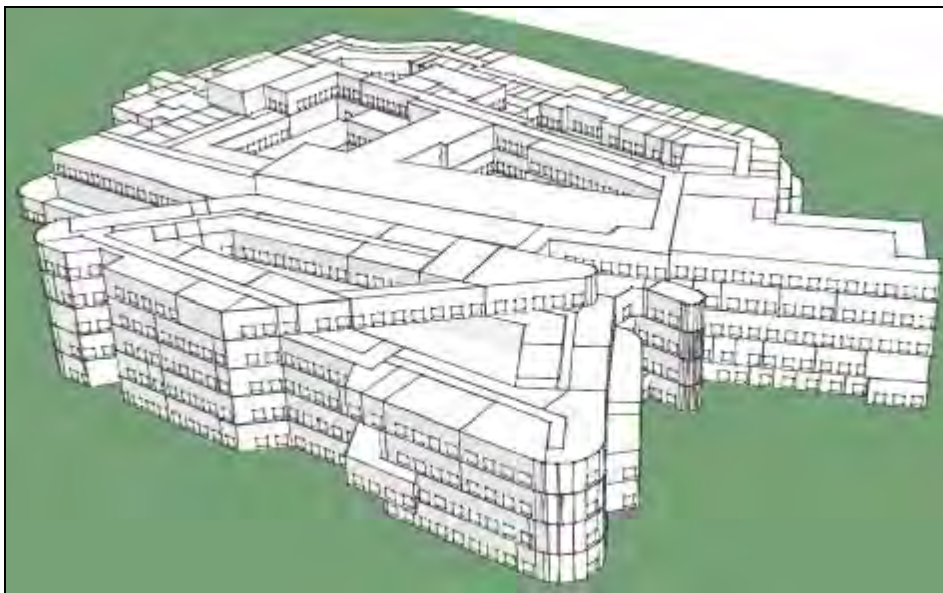


Figure 2.6.1 Model Geometry

2.6/...

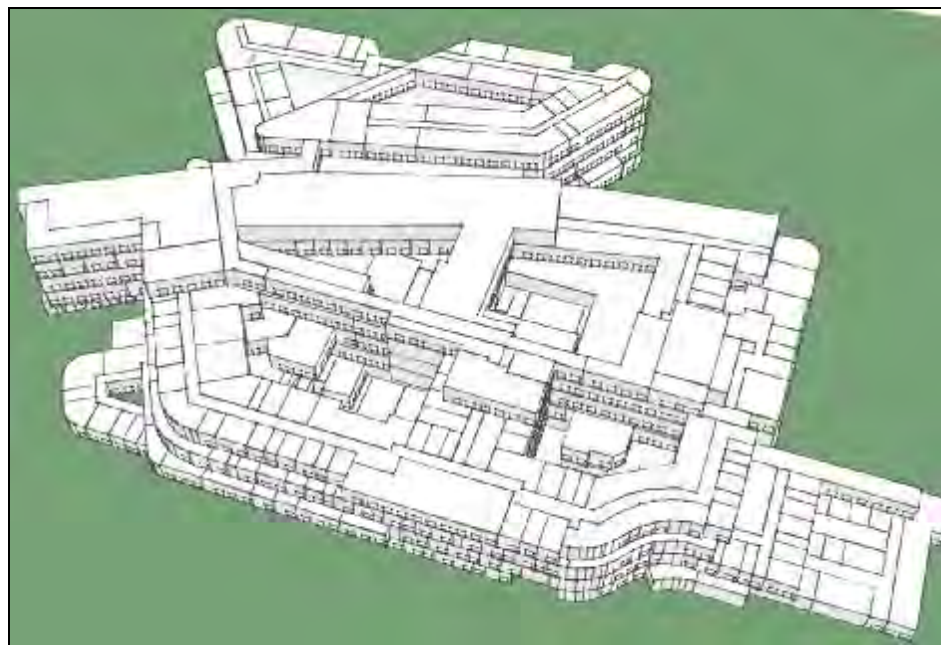


Figure 2.6.2 Model Geometry

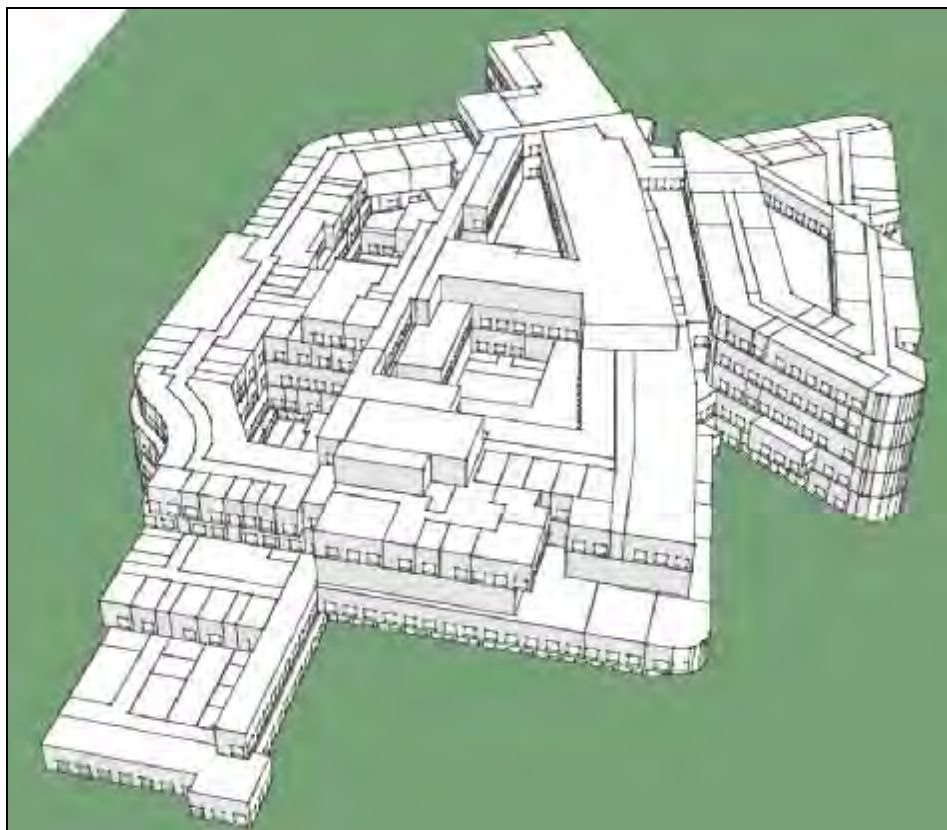


Figure 2.6.3 Model Geometry

2.6/....

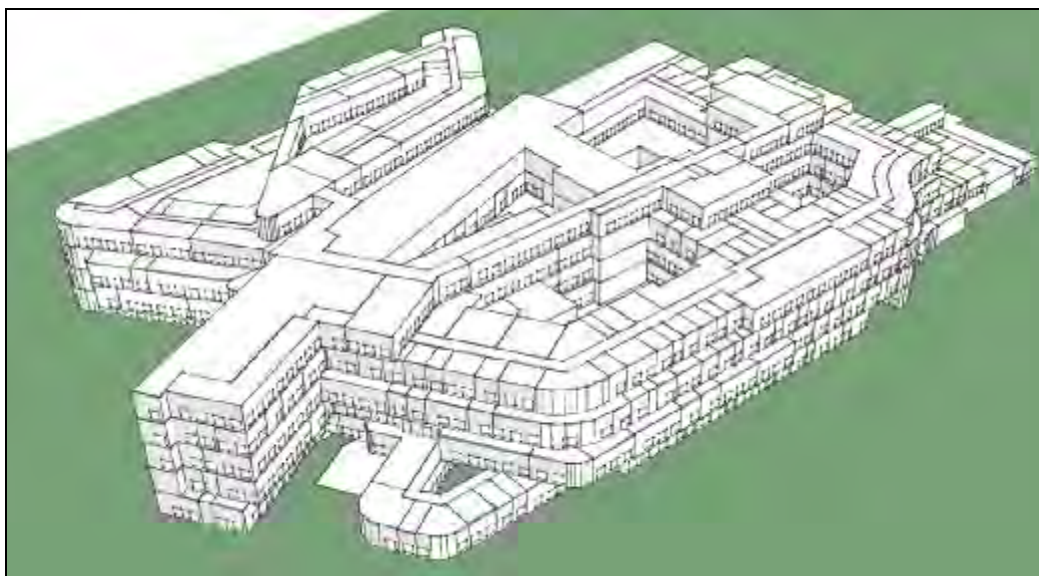


Figure 2.6.4 Model Geometry

2.6.1 Analysed Rooms

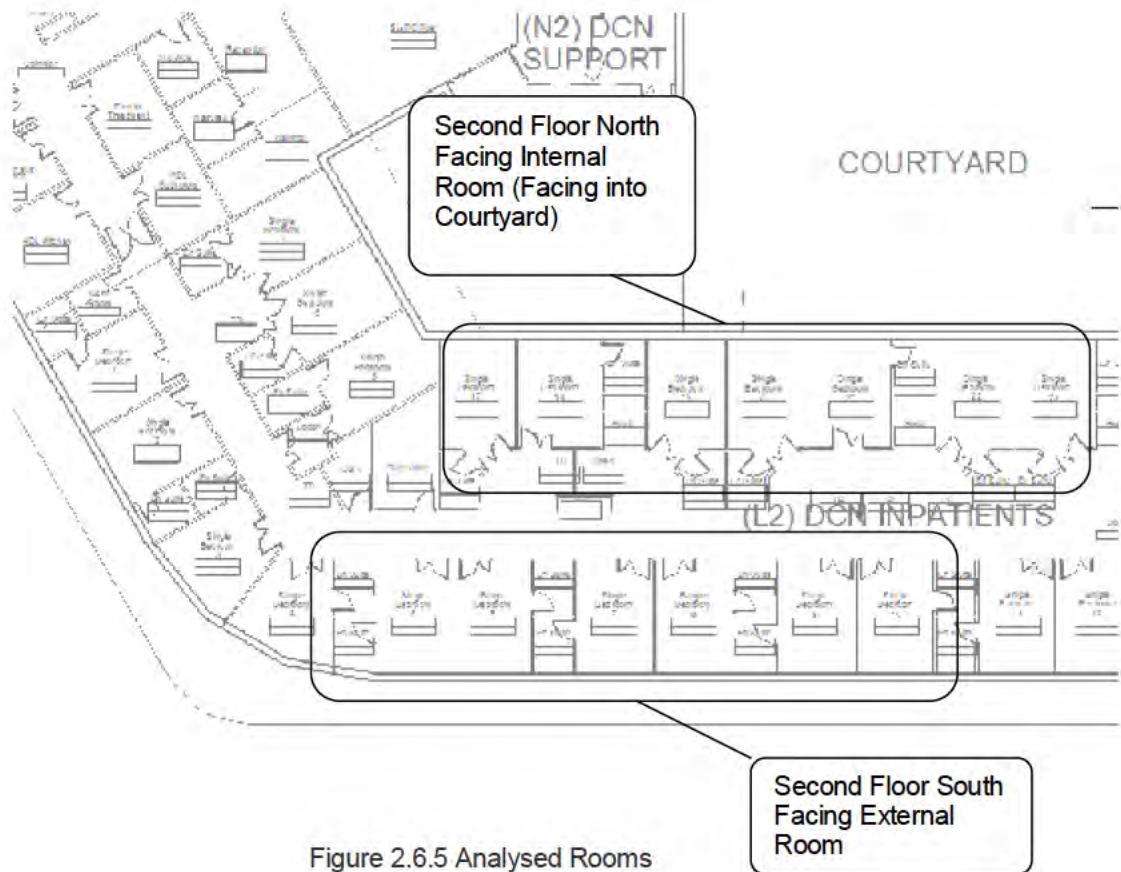


Figure 2.6.5 Analysed Rooms

3.0 Thermal Profile Results

Sections 3.1 – 3.2 present graphical results for room temperature (Dry Resultant Temperature) for both the whole summer period and for the day on which the peak temperature was recorded. For peak day graphs the following system variables are presented in order to place peak temperatures in context;

- § Room Temperature profile (Dry Resultant Temperature).
- § External Dry bulb temperature profile, derived from local historical weather data.
- § Solar gain profile, derived from “Suncast” solar shading calculations and from the intrinsic material properties of building glazing systems.
- § Internal room gains in kW, comprising occupancy, lighting, equipment and external conduction.

Note that due to the dynamic nature of the thermal simulation and the multiple variables which drive the simulation, peak temperatures for individual rooms will often occur on different days.

Simulation Summary Results

The following tables, Table 3.0.1 – 3.0.6, detailed overleaf provide an overview of “Hours Above” given temperature bands for each Simulation which are detailed below for ease of reference.

- § **Simulation 1** – Ward rooms served by mechanical fresh air supply, rated to 4 ACH (Air Changes per Hour), cooled to control zone temperatures to 25°C or less. Windows in simulated spaces are closed continually.
- **Simulation 2** - Ward rooms served by mechanical fresh air supply, rated to 4 ACH (Air Changes per Hour), cooled to control zone temperatures to 25°C or less.

In addition to mechanically supplied fresh air, each simulated zone is subject to natural ventilation through a 100mm restricted window opening of dimensions typically 1.3m by 1.6m wide providing 0.416m² of free ventilation opening area. Natural ventilation is simulated through the dynamic bulk airflow programme Macro Flow. Bulk airflow movement is driven by the following factors:

- Window opening area specific to each simulated space and opening configuration.
- External dry bulb temperature, derived from local historic weather data
- External barometric pressure, derived from local historic weather data
- **Simulation 3** – No mechanical cooled fresh air supply ventilation. Natural ventilation is simulated as per Simulation 2.

Room	Bedroom 1						
Room Type	Exposed External Facing Single Ward Bedroom (South Facing)						
Temperature Band	22 C	23 C	24 C	25 C	26 C	27 C	28 C
Simulation 1 - Hours Above	1559	555	79	0	0	0	0
Simulation 2 - Hours Above	1610	594	96	0	0	0	0
Simulation 3 - Hours Above	3005	2096	1329	958	554	239	82

Table 3.0.1 Bedroom One Results

Room	Bedroom 2						
Room Type	Exposed External Facing Single Ward Bedroom (South Facing)						
Temperature Band	22 C	23 C	24 C	25 C	26 C	27 C	28 C
Simulation 1 - Hours Above	1305	336	17	0	0	0	0
Simulation 2 - Hours Above	1352	363	19	0	0	0	0
Simulation 3 - Hours Above	3079	2140	1278	815	425	167	46

Table 3.0.2 Bedroom Two Results

Room	Bedroom 3						
Room Type	Exposed External Facing Single Ward Bedroom (South Facing)						
Temperature Band	22 C	23 C	24 C	25 C	26 C	27 C	28 C
Simulation 1 - Hours Above	1064	211	10	0	0	0	0
Simulation 2 - Hours Above	1104	235	13	0	0	0	0
Simulation 3 - Hours Above	2830	1867	1185	800	431	170	55

Table 3.0.3 Bedroom 3 Results

Room	Bedroom 4						
Room Type	Sheltered Court Yard Facing Single Ward Bedroom (North Facing)						
Temperature Band	22 C	23 C	24 C	25 C	26 C	27 C	28 C
Simulation 1 - Hours Above	1115	75	0	0	0	0	0
Simulation 2 - Hours Above	1075	26	0	0	0	0	0
Simulation 3 - Hours Above	2956	1973	1125	687	269	76	6

Table 3.0.4 Bedroom 4 Results

Room	Bedroom 5						
Room Type	Sheltered Court Yard Facing Single Ward Bedroom (North Facing)						
Temperature Band	22 C	23 C	24 C	25 C	26 C	27 C	28 C
Simulation 1 - Hours Above	897	26	0	0	0	0	0
Simulation 2 - Hours Above	935	30	0	0	0	0	0
Simulation 3 - Hours Above	3321	2044	1021	534	176	29	0

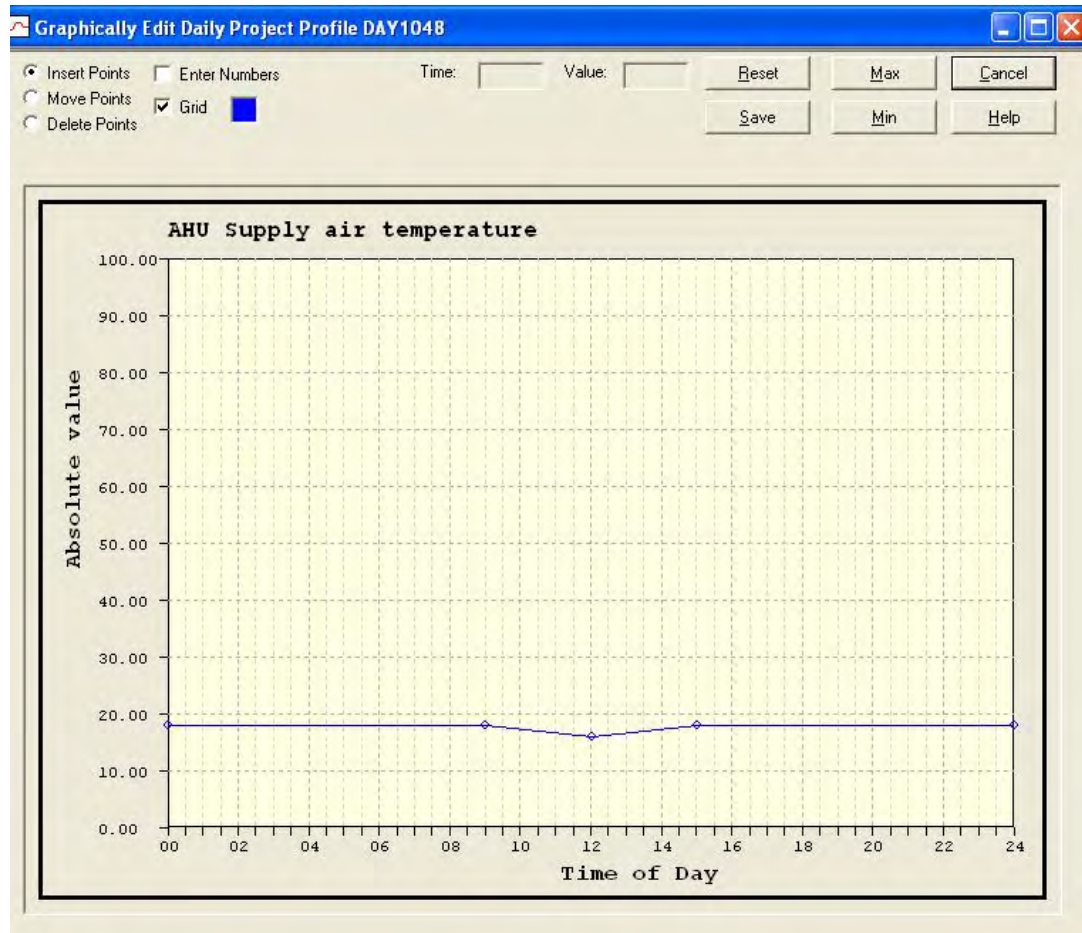
Table 3.0.5 Bedroom 5 Results

Room	Bedroom 6						
Room Type	Sheltered Court Yard Facing Single Ward Bedroom (North Facing)						
Temperature Band	22 C	23 C	24 C	25 C	26 C	27 C	28 C
Simulation 1 - Hours Above	1039	50	0	0	0	0	0
Simulation 2 - Hours Above	1070	55	0	0	0	0	0
Simulation 3 - Hours Above	2953	1972	1139	711	293	87	15

Table 3.0.6 Bedroom 6 Results

3.1 Simulation 1

- § Mechanical Ventilation with cooled fresh air supply. Supply air temperature profile as follows;



- § No Natural Ventilation – Macro flow window opening profile disabled. Windows closed.

3.1.1 External Facing Room

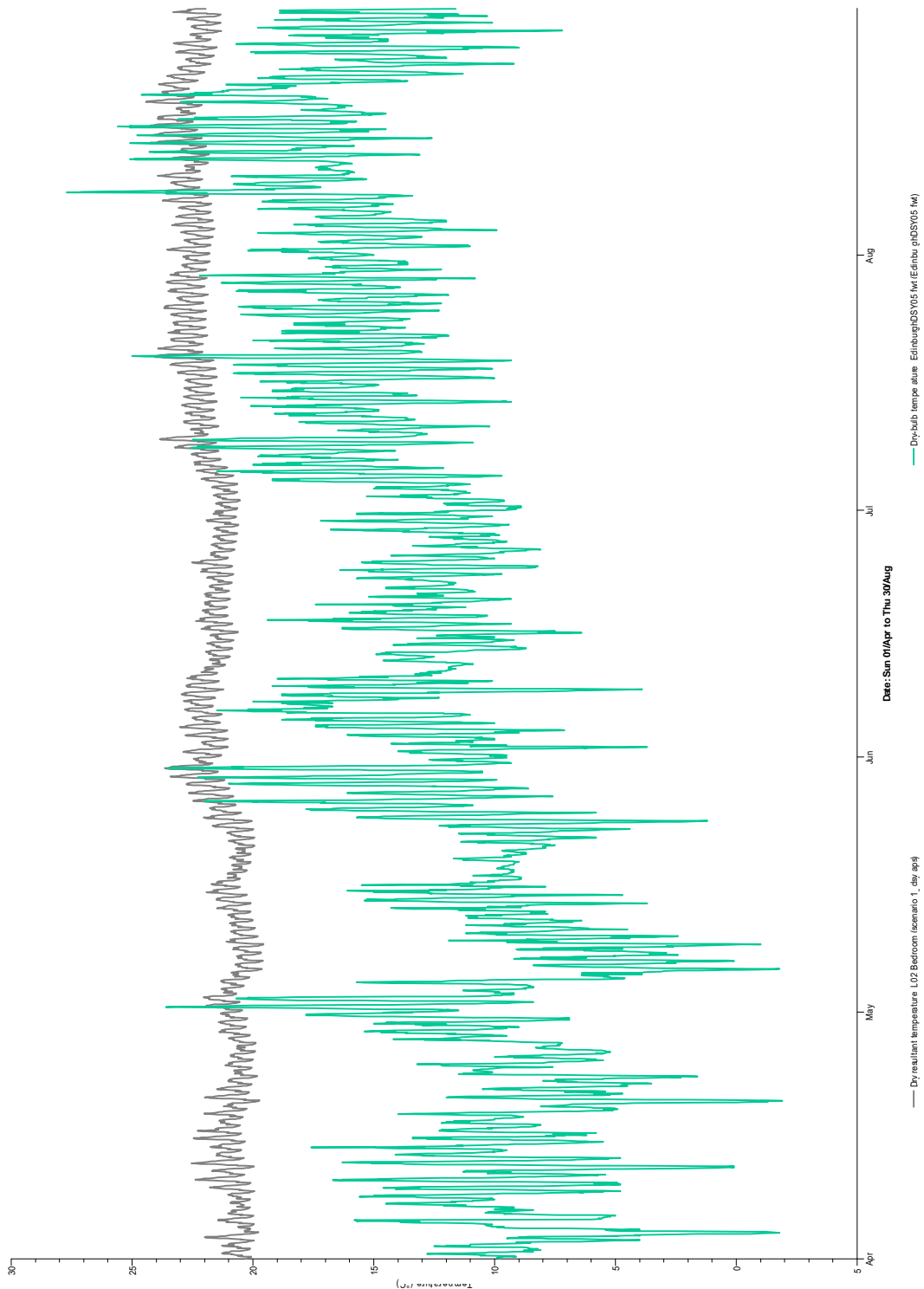


Figure 3.1.1 Simulation 1 - Mechanical Ventilation with Cooled Fresh Air Supply - External Facing Room - Summertime Temperature Profile

3.1.2 External Facing Room

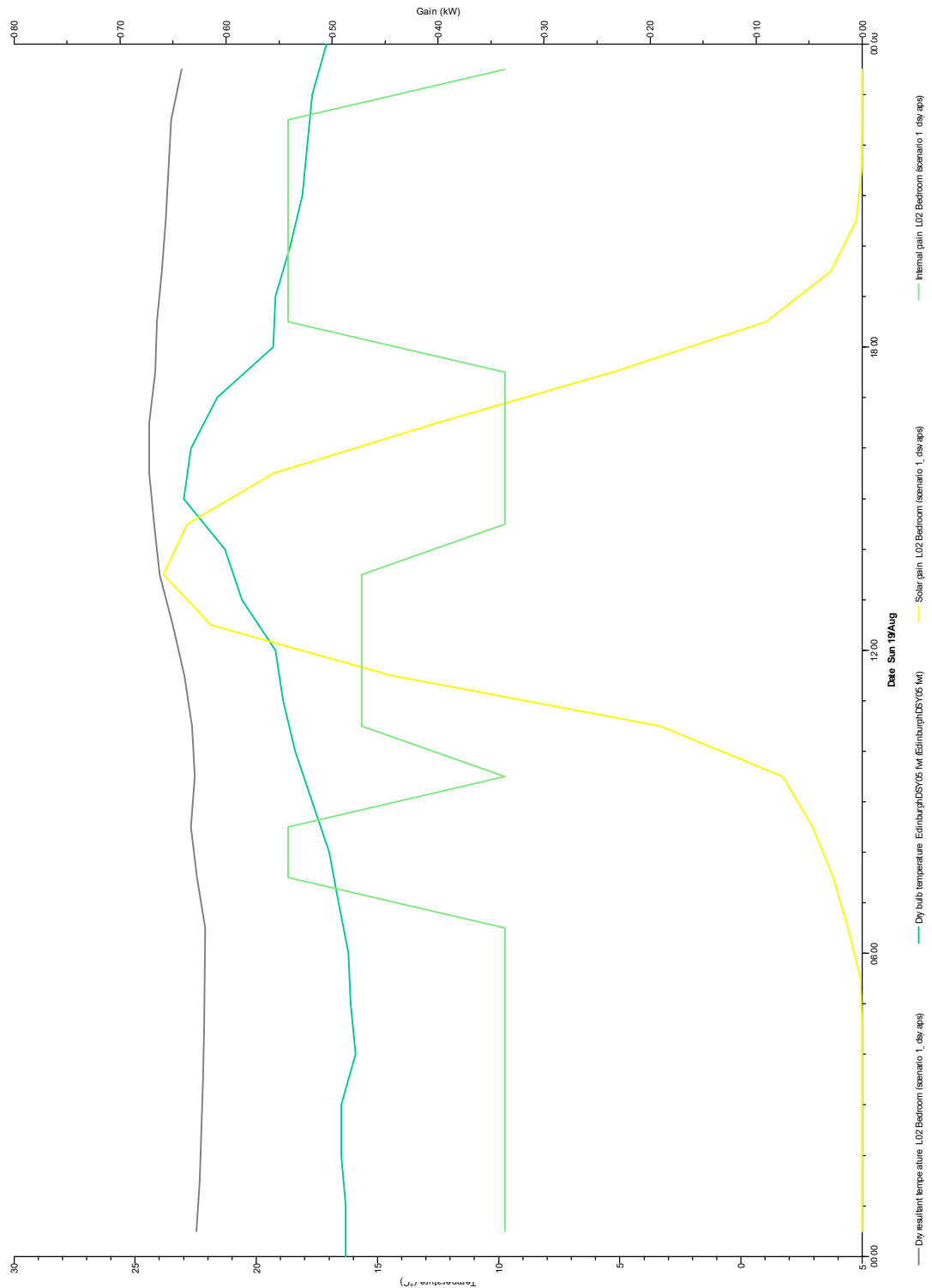


Figure 3.1.2 Simulation 1 - Mechanical Ventilation with Cooled Fresh Air Supply External Facing Room - Peak Day Temperature Profile with influencing gains

3.1.3 Courtyard Facing Room

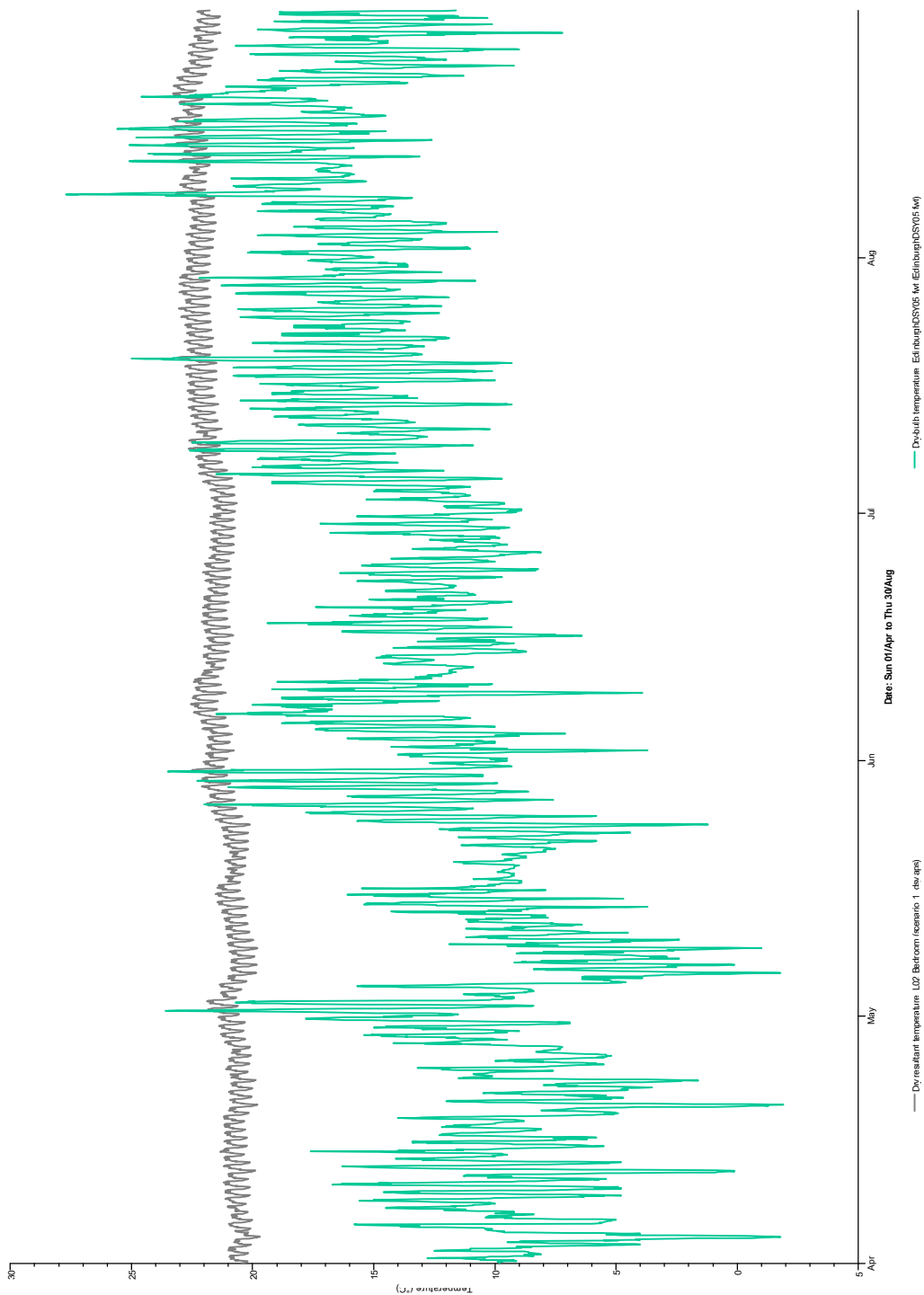


Figure 3.1.3 Simulation 1 - Mechanical Ventilation with Cooled Fresh Air Supply - Courtyard Facing Room - Summertime Temperature Profile

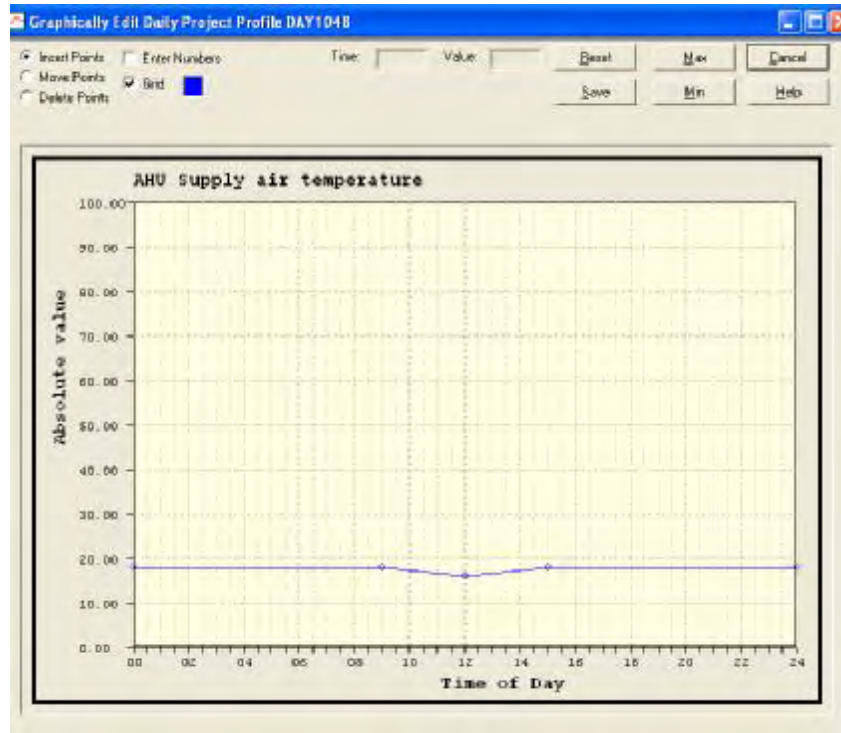
3.1.4 Courtyard Facing Room



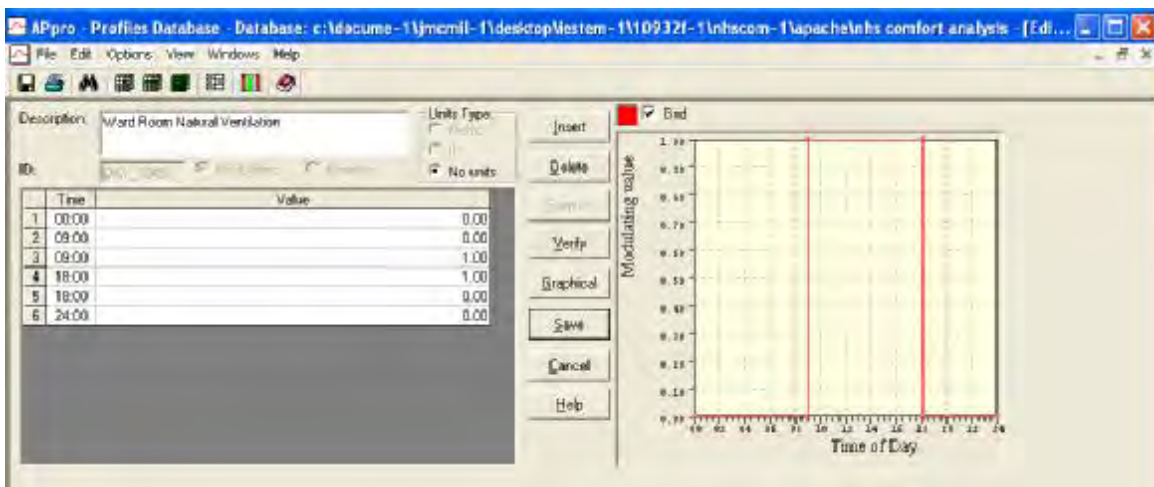
Figure 3.1.4 Simulation 1 - Mechanical Ventilation with Cooled Fresh Air Supply - Courtyard Facing Room - Peak Day Temperature Profile with influencing gains

3.2 Simulation 2

- § Mechanical Ventilation with cooled supply. Supply air temperature profile as follows;



- § Natural Ventilation – Macro flow window opening profile enabled. Windows open from 09:00 to 18:00. Modulating profile applied as follows;



3.2.1 External Facing Room

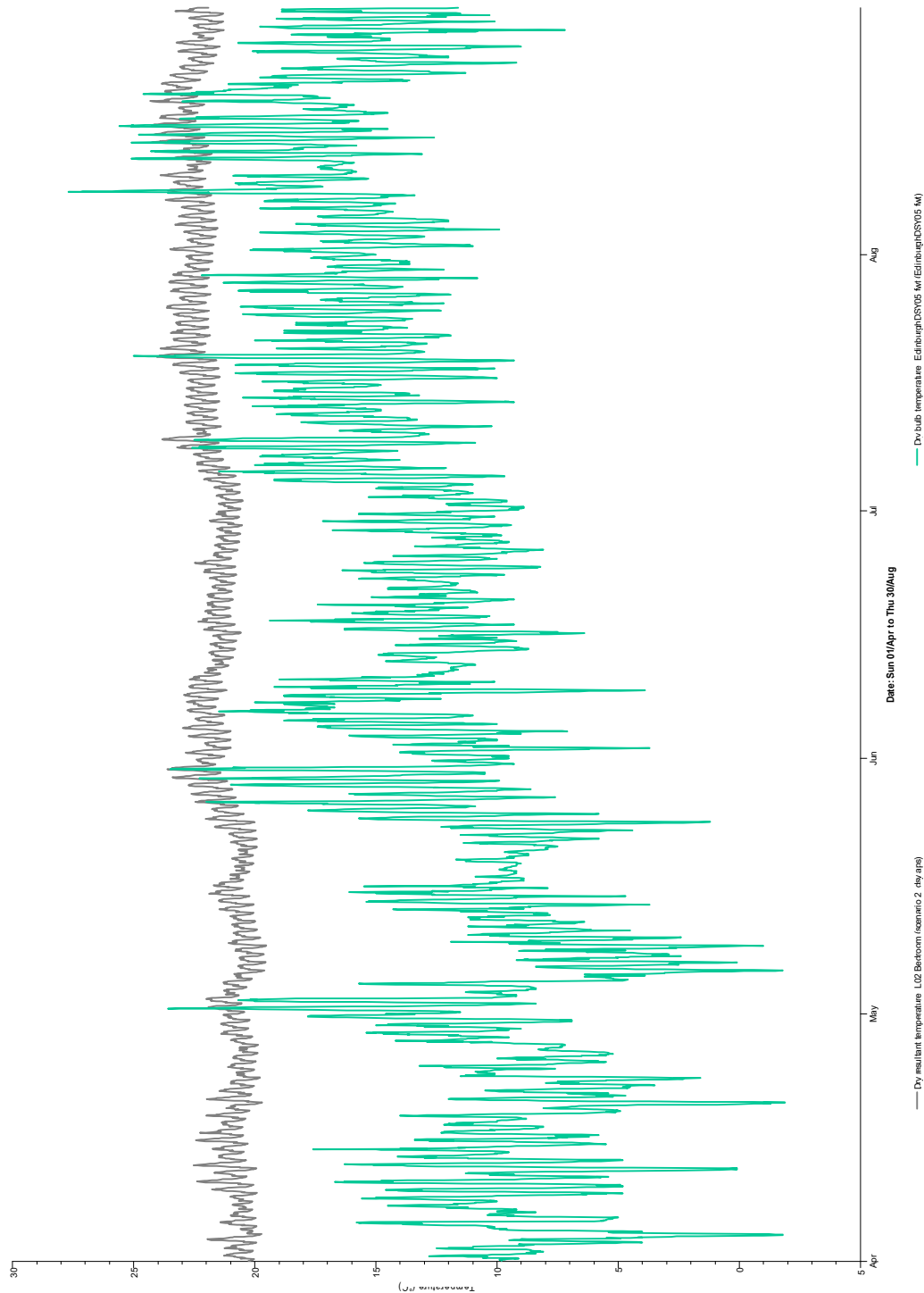


Figure 3.2.1 Simulation 2 - Mechanical Ventilation with Cooled Fresh Air Supply and Natural Ventilation - External Facing Room Summertime Temperature Profile

3.2.2 External Facing Room



Figure 3.2.2 Simulation 2 - Mechanical Ventilation with Cooled Fresh Air Supply and Natural Ventilation - External Facing Room - Peak Day Temperature Profile with influencing gains

3.2.3 Courtyard Facing Room

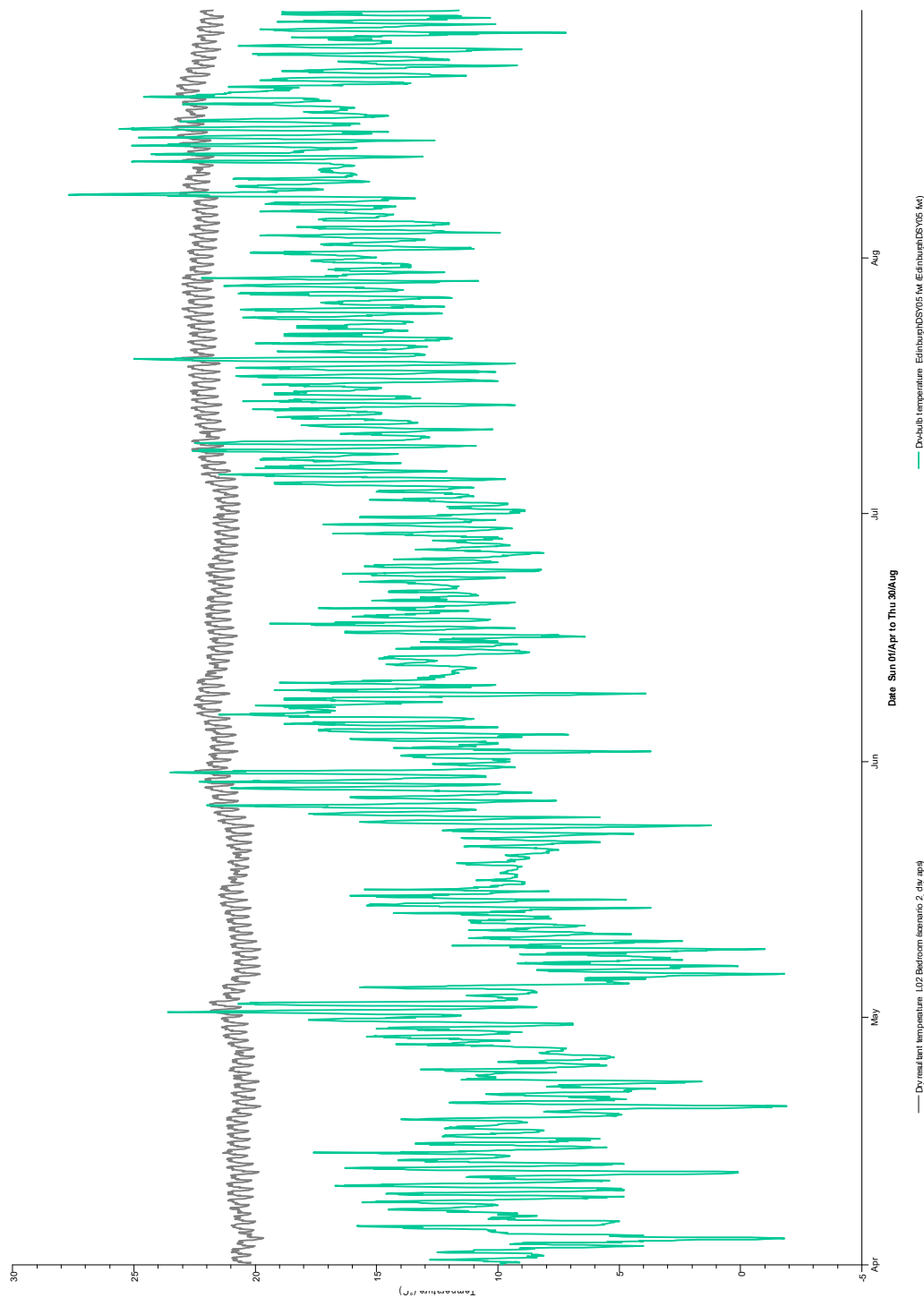


Figure 3.2.3 Simulation 2 - Mechanical Ventilation with Cooled Fresh Air Supply and Natural Ventilation - Courtyard Facing Room Summertime Temperature Profile

3.2.4 Courtyard Facing Room

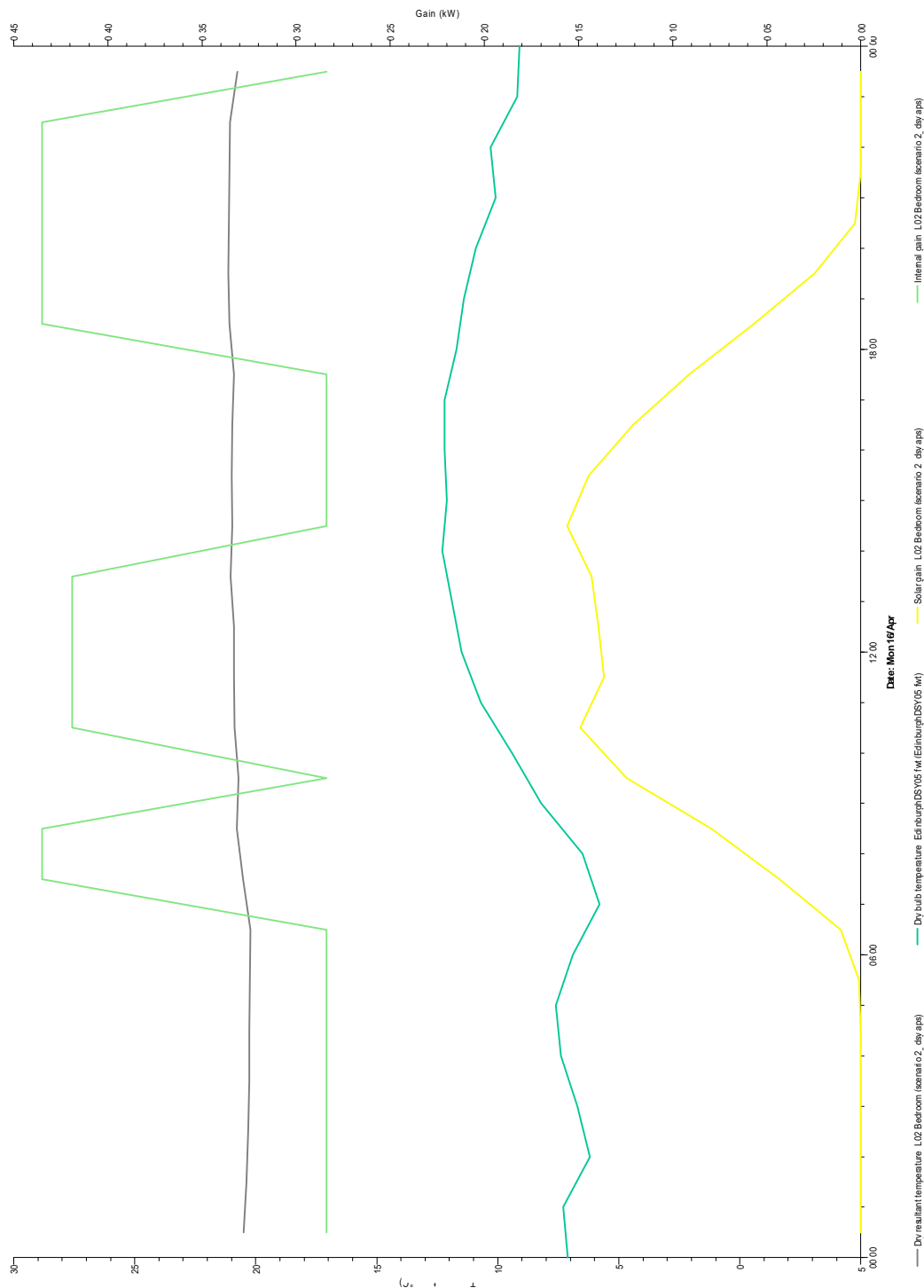
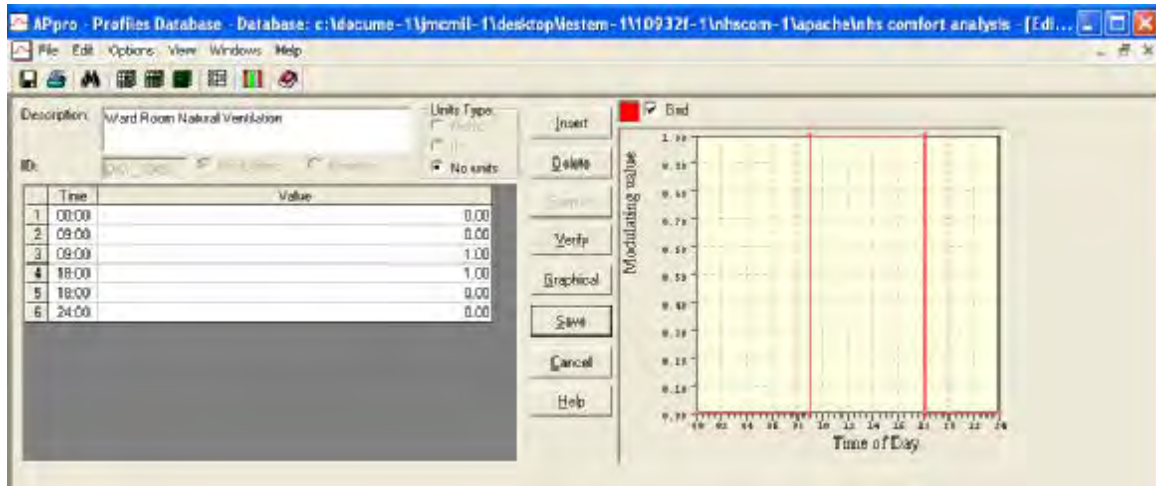


Figure 3.2.4 3 Simulation 2 - Mechanical Ventilation with Cooled Fresh Air Supply and Natural Ventilation - Courtyard Facing Room - Peak Day Temperature Profile with influencing gains

3.3 Simulation 3

- § No mechanical, comfort cooled fresh air supply.
- § Natural Ventilation – Macro flow window opening profile enabled. Windows open from 09:00 to 18:00. Modulating profile applied as follows;



3.3.1 External Facing Room

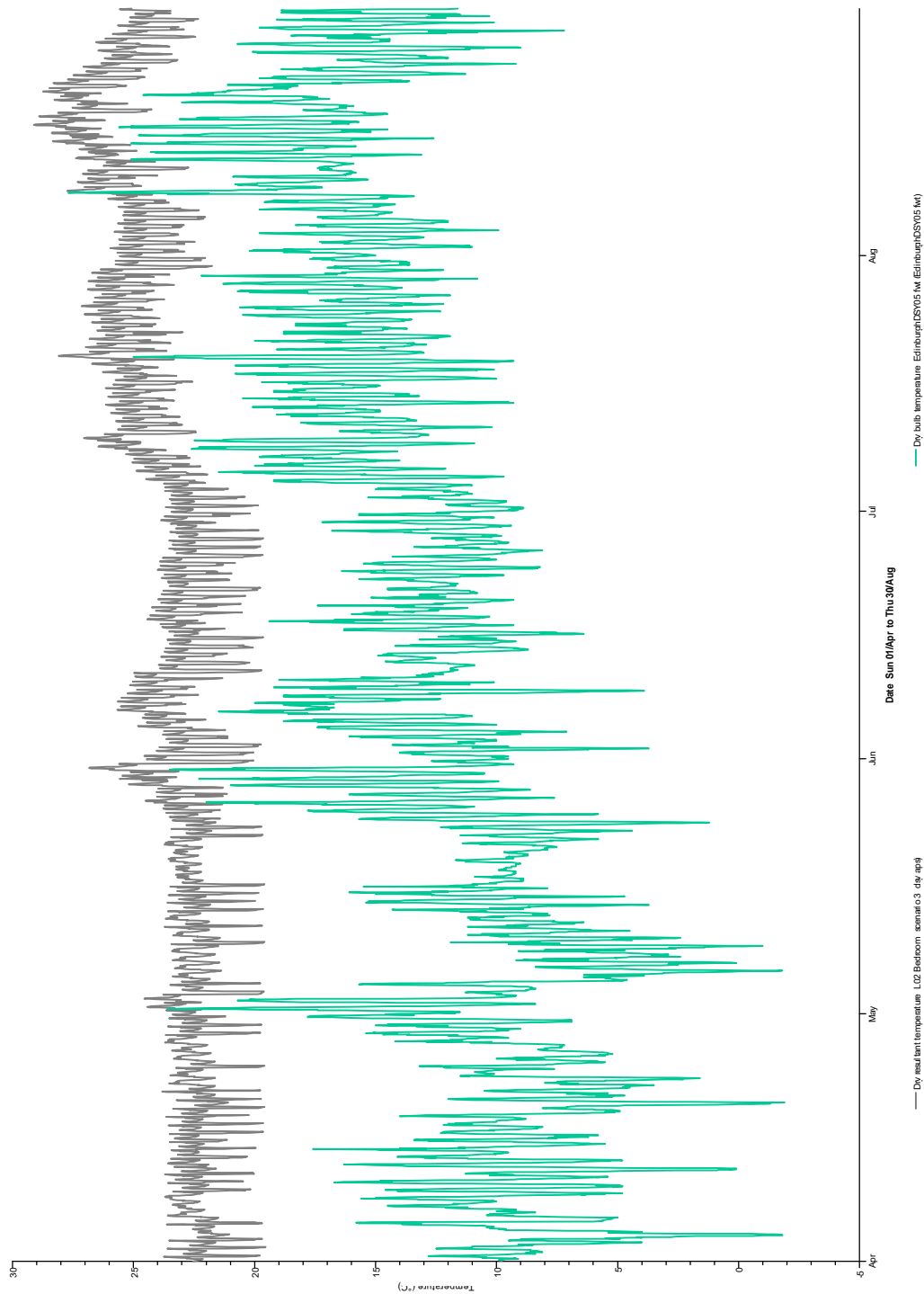


Figure 3.3.1 Simulation 3 – Natural Ventilation Only - External Facing Room - Summertime Temperature Profile

3.3.2 External Facing



Figure 3.3.2 Simulation 3 – Natural Ventilation Only - External Facing Room - Peak Day Temperature Profile with influencing gains

3.3.3 Courtyard Facing Room

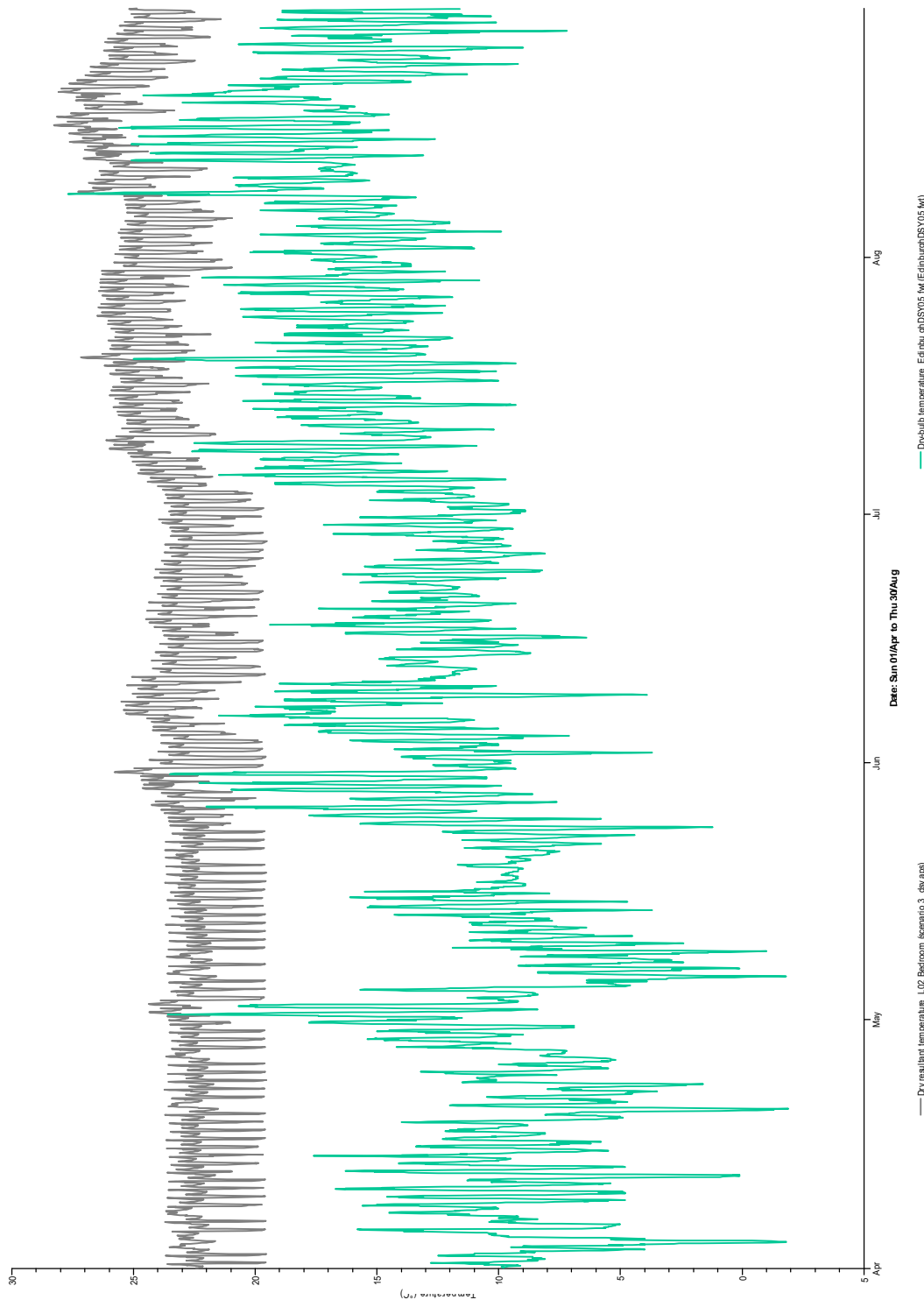


Figure 3.3.3 Simulation 3 – Natural Ventilation Only - Courtyard Facing Room - Summertime Temperature Profile

3.3.4 Courtyard Facing

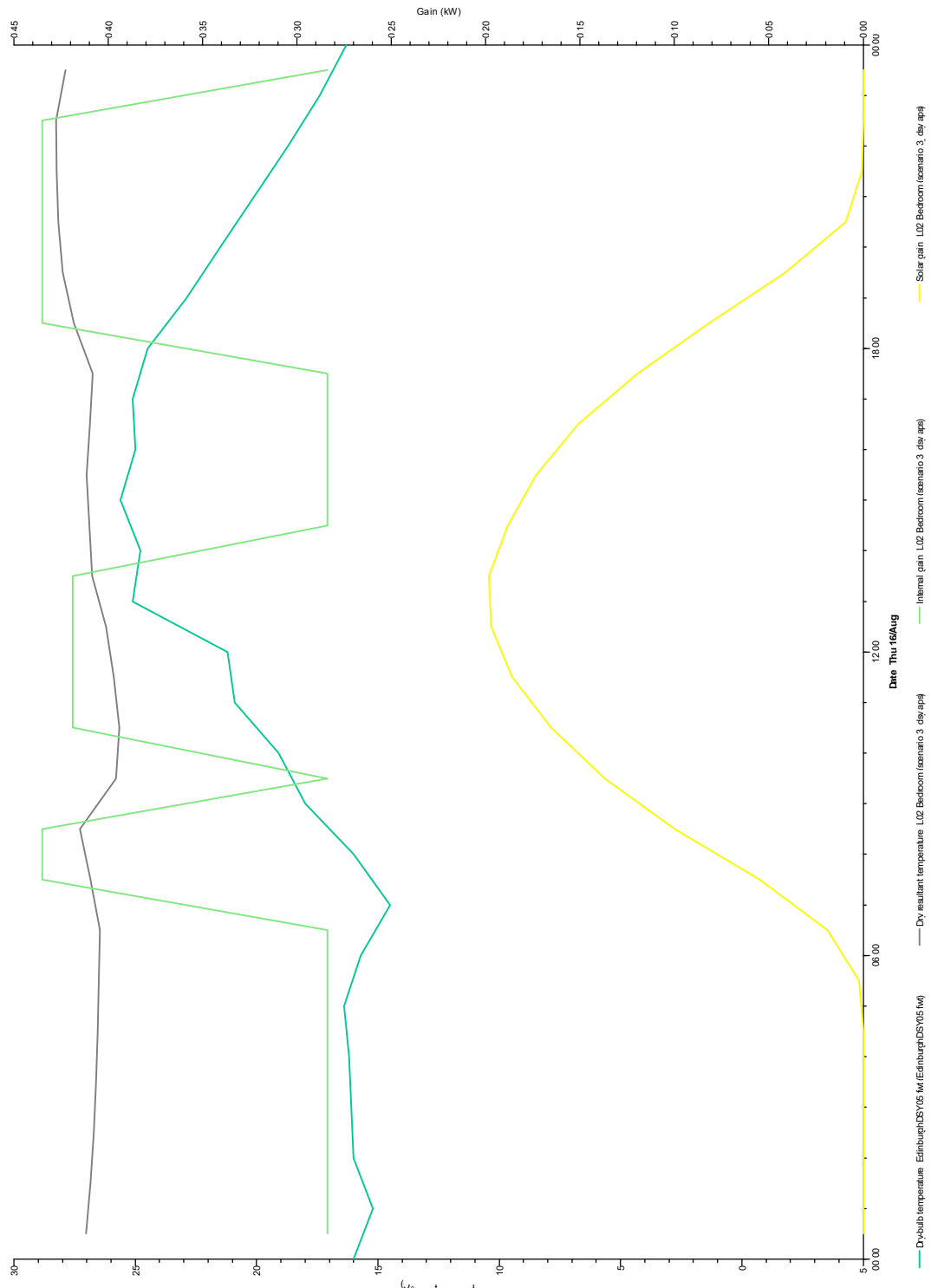


Figure 3.3. Simulation 3 – Natural Ventilation Only - Courtyard Facing Room - Peak Day Temperature Profile with influencing gains

4.0 Conclusions

- § The thermal profiles observed in Simulations 1 & 2 show that the internal temperatures in ward rooms can be maintained at comfortable levels with mechanical ventilation and cooling available, and could be controlled throughout summertime providing a robust level thermal comfort as illustrated in the Summary Results Table in Section 3.0.
- § The results for Simulation 3 demonstrate that during peak summertime conditions, the ward rooms internal temperatures experience significant hours between 22oC and 28oC representing compromised thermal comfort levels for much of the summer months. NHSL would not find this level of performance acceptable given experiences within the ERI for ward rooms reliant on Natural Ventilation alone.
- § It should be noted that the envisaged approach is not intended to be prescriptive and that alternative approaches where put forward beyond the Reference Design could also be valid provided the conditions of planning are not compromised and can be complied with and that level of thermal comfort achieved satisfies the clients brief and expectations.

5.0 Concluding Remarks

The simulation results given in this report are based on the output of a complex, dynamic Energy model, which takes account of the following design criteria:

- § Architect's drawings
- § Weather data
- § Simulation Software
- § Internal Conditions
- § Construction materials
- § Space Conditioning system efficiency

Any output from the model is only as accurate as the input of the variables associated with the above criteria.

It is essential that all parties understand and accept the various criteria, as these 'drive' the performance of the building.

Royal Hospital for Sick Children and Department for Clinical Neurosciences - Edinburgh

Reference Design Envisaged Solution - RHSC / DCN RDS Environmental Matrix



hulley & kirkwood

Page No.	Dept Code	Index	
1	~	Cover	
2	~	Guidance Notes	
3	~	Room Function Reference Sheet	
4	A1 - A4	Front Door - A&E / Assessment Ward	
5	B1	Critical Care / HDU / Neonatal Surgery	
6	C1- C5	RHSC In Patient Pathway / Ward Care	
8	D1 - D10	RHSC Ambulatory Care	
11	E1	Pod	
12	F1	Child and Adolescent Mental Health	
13	G2 - G3	Clinical Support	
14	H1 - H3	Academic	
15	I1 - I2	Facilities / Infrastructure Support Services	
16	J1 - J2	Patient / Family Support	
17	K1 - K2	Family Facilities	
18	L1 - L2	DCN In Patient Pathway / Ward Care	
19	M1- M4	DCN Support Space	
20	N1	DCN Out Patient Departments	
21	P1	Combined Theatres	
23	Q1	Combined Radiology	
25	R1 - R2	Office / Admin Support Services	
26	S1 - S7	Combined Facilities / Infrastructure Support Services	
27	T1	Plant	
28	U1	Shelled Space	
Rev	By	Description	Date
First Issue	JMcM	First Issue Based on Schedule of Area V8	03.02.12
Second Issue	JMcM	Second Issue Based on Schedule of Area V10	13.03.12
		Ward Room T Max Reduced from 28 to 25 Degrees Celsius Revised to suit NHSL Comments	
Third Issue	JMcM	Third Issue Based on Schedule of Area V13	19.09.12

Environmental Matrix - Guidance Notes

- 1 This workbook is prepared for the Reference Design Stage as an easier reference tool to replace ADB RDS M&E Sheets for the Environmental Criteria elements as described on these sheets.
- 2 The services matrices are produced from the NHS Lothian Schedule of Accommodation Sheets [Version 13 issued 19th September 2012](#).
- 3 The design of the HVAC systems to the theatres shall be in accordance with SHTM 03-01.
- 4 Where radiant panels are indicated in any room in these matrices, detailed design development may remove the need for these without detriment to environmental temperature. This design development is dependant on actual room layout - i.e. whether a room is located adjacent to an external wall, ground bearing floor, roof surface or is internal.
- 5 Ventilation air change rates and the use of natural ventilation in Patient Areas shall be reviewed throughout the detail design process to ensure a maximum internal temperature of 25 C (dry bulb) is not exceeded during normal occupancy. This criteria shall also apply to cellular and open plan office spaces.
- 6 Maximum internal temperatures listed relate to normal occupancy and Summer Design Conditions ; External Summer Conditions for Cooling Plant Selection as per SHTM2025, Enthalpy 54kJ/kgda, 26degC db, 19degC wb. External Winter Conditions as per CIBSE Guide A Table A 2.2 for locality = - 6C for Heat Losses, and as SHTM 2025 for locality = -10C for AHU Ventilation Plant design.
- 7 Examination lamp notes where listed are provisional. Detailed requirements (fixed, mobile, illumination) will be detailed on C sheets as agreed from signed off 1:50 RDS, which shall take precedence over this schedule.
- 8 All lighting levels are derived from CIBSE Lighting Guide LG2. Client briefing may take precedence over Environmental Matrix.
- 9 Colour rendering refers to CIBSE Lighting Design Guide and will be applied throughout
 "80" : Normal
 "90" - Enhanced to provide close as possible match to natural light for clinical purposes
- 10 Thermostatic Mixing Devices - SHTM 04-01 Guidance shall be employed for specific TRV Type versus listed Area/Activity.
- 11 Standby Lighting to be Grade A throughout .
- 12 The internal temperature in naturally or mechanically ventilated rooms shall not exceed the maximum temperature as listed on these Environmental Matrices provided external summer design criteria is not exceeded .
- 13 Local Radiant Panel TRV's shall be tamper proof head type with limiting/locking facility.
- 14 Local Control BMS Temperature Sensors for ducted reheat zones and chilled water cassettes for hotspots shall be provided with local range adjustment to +/- 2C of BMS Set Point. BMS set point shall be adjustable via operator/user dialogue through formal FM
- 15 **Typical bedroom** - Design Criteria - SHTM 03-01 Clause 2.11 - internal temperatures in patient areas should not exceed 28C db for more than 50 hrs per year. Appendix 1 SHTM 03-01 gives 18C to 28C float range. NHSL however require that the maximum internal design temperature is 25C
HDU bed areas - Design Criteria - HBN 57 gives specific guidance as well as SHTM 03-01 - esp Appendix 1 for air change rates - 10ac/hr Supply, 18C to 25C control range. (Capability shall be provided but not at the summer and winter external ambient design extremes against the internal maximum and minimum range conditions).
 The department should be air conditioned and controlled on a zonal basis.
 Central AHU plant requires humidification to achieve RH range during winter (HBN 57 Clause 4.60).
Post theatre recovery areas - Design Criteria - SHTM 03-01 - esp Appendix 1 for air change rates - 15ac/hr S&E , 18C to 25C control range.(Capability shall be provided but not at the summer and winter external ambient design extremes against the maximum and minimum range conditions).
 Central AHU plant requires humidification to achieve RH range during winter.

Critical Care areas - Design Criteria - SHTM 03-01 - esp Appendix 1 for air change rates - 10ac/hr Supply , 18C to 25C control range.(Capability shall be provided but not at the summer and winter external ambient design extremes against the maximum and minimum range conditions). NHSL may require specific rooms to have a control range up to 28C
 Central Air Handling Plant requires humidification to achieve RH range during winter (HBN 57 Clause 4.60).
Theatre areas - Design Criteria -SHTM 03-01 - esp Appendix 1 and 2 for air change rates Appendix 3 for design logic and pressure cascade criteria, 18C to 25C control range.(Capability shall be provided but not at the summer and winter external ambient design extremes against the internal maximum and minimum range conditions). SHTM 03-01 advises Humidification is no longer to be provided for theatres ventilation as a matter of course. Users to verify any specific requirements depending on clinical requirement. Space in plant rooms should be provided together with blank section within air handling units for future provision. NHSL may require specific rooms to have a control range up to 28C
- 16 **Corridor** ventilation may be either mechanical or where the opportunity exists natural. To be determined during detailed design with due regard to clinical functionality.
- 17 **Single Room WC** - SHTM 03-01 Appendix 1 suggests 3ac/hr extract air change rate only. HK have applied 10ac/hr extract rate to provide a more robust rate of extract.
- 18 **Diagnostic Rooms** - (X Ray, CT Scanner, MRI Scanners, Gamma Camera) - air change rates listed at 8ac/hr. Actual air change rate must be derived through room heat gain analysis and actual equipment guidance.
- 19 **Operating Theatre Laminar Flow/UCV Requirements** - Refer to Operational Policy Documents for specific theatres which require Laminar Flow/UCV canopy style ventilation solution. Note specific requirements for screenless canopies to avoid conflict with particular surgeon instruments/microscopes.
- 20 **Small workshop Areas** - Local Extract Ventilation (LEV) unit requirement to be determined from room equipment schedules
- 21 **Note that Isolation Suite ventilation solutions for this project shall follow HBN 4 Supplement 1 Section 4 Item 4.8 Guidance i.e**
 A common departmental AHU shall be employed to provide supply air ventilation (and shall therefore employ duty & standby motors)
 Isolation Rooms En Suite Extracts shall be provided with an independent Isolation Room toilet extract ventilation system.
 Isolation Rooms En Suite Extracts shall be provided with either externally located 3 mtr high discharge stack in a safe location or with extract filters (H14) within a safe change housing outside the building on the suction side of the fan.
 Heating & Cooling Isolation Suites shall be provided via the ventilation system.
- 22 **Retail Provision** - Service provisions listed are Infrastructure only for future fit-out by retailer
- 23 **Comfort Cooled Fresh Air** - Where noted as such on the matrices, this means as provided via departmental air handling plant via chilled water cooling coils.

Table with columns: Dept Code, Dept Name, Department Sub Group, Room Name, Qty, Area (m2), Room Function, Temperature (Design Maximum/Minimum deg C), Heating (Type, Control), Cooling (Present, Type), Ventilation (Type, Supply/Extract achr, Relative Pressure, Min Filtration, Surface/Water deg C), Safety Notes, Lighting (Normal lux, Night lux, Local lux, Standby Grade, Colour Rendering, Control, Plane), Notes, Medical Location Group.

Notes
a) Linen Bay recess to be treated as part of room.
b) Mobile Equipment Bay Recess to be treated as part of room
c) Resusc Trolley Area Recess to be treated as part of room
d) Consult Exam Room - note 10ach/hr not allowed for unless room title listed as Treatment Room.
e) Reception & Waiting Combined
f) Internal Temperatures should not exceed 28 deg C (db) for more than 50hrs per year
g) Offices assumed to have operable windows without 100mm restrictors for natural ventilation .
h) Staff Rest assumed to have operable windows without 100mm restrictors for natural ventilation and occupancy factor of 0.8.

Dept Code	Dept Name	Department Sub Group	Room Name	Qty	Area (m2)	Room Function	Temperature		Heating		Cooling Present	Cooling Type	Ventilation				Safety temperatures		Safety Notes	Lighting					Notes	Medical Location Group			
							Design Maximum deg C	Design Minimum deg C	Type	Control			Type	Supply ach/r	Extract ach/r	Relative Pressure	Min Filtration	Surface deg C		Water deg C	Normal lux	Night lux	Local lux	Standby Grade			Colour Rendering	Control	Plane
E1	Pod	RHSC OPD Entrance	RHSC OPD Reception	1	10.0	Reception	28	18	Radiant Panels	TRV Remote Head Adj.	Yes	Comfort Cooled Fresh Air	Central Supply Air	3	0	Positive	G4	43	Not Applicable	0	300	Not Applicable	None	A	80	Switch	Desk 0.75 to 0.85m	See Guidance Notes	Not Applicable
			RHSC OPD Main Waiting	1	15.0	Waiting Room	28	18	Radiant Panels	TRV Remote Head Adj.	Yes	Comfort Cooled Fresh Air	Central Supply and Extract	5	5	Balanced	G4	43	Not Applicable	0	300	Not Applicable	None	A	80	Switch	Floor 0m	See Guidance Notes	Not Applicable
		RHSC Consulting Suite A	RHSC OPD Suite A Sub Waiting	1	54.0	Waiting Room	28	18	Radiant Panels	TRV Remote Head Adj.	Yes	Comfort Cooled Fresh Air	Central Supply and Extract	5	5	Balanced	G4	43	Not Applicable	0	300	Not Applicable	None	A	80	Switch	Floor 0m	See Guidance Notes	Not Applicable
			Multi-Functional Activity Zone	1	297.0	Patient Accommodation Day	25	18	Radiant Panels	TRV Remote Head Adj.	Yes	Comfort Cooled Fresh Air	Central Supply Air	4	0	Positive	G4	43	41	0	100	Not Applicable	None	A	80	Switch	Bed / Trolley 1.45m	See Guidance Notes	1
		Support Facilities	WC Fully Accessible changing room	4	4.5	Toilet	28	18	Adjacent Space Transfer Air	None	No	None	Central Dirty Extract	0	10	Negative	None	43	41	0	200	Not Applicable	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable
			Wheelchair Accessible	1	3.0	Toilet	28	18	Adjacent Space Transfer Air	None	No	None	Central Dirty Extract	0	10	Negative	None	43	41	0	200	Not Applicable	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable
			WC - Ambulant	1	7.0	Toilet	28	18	Adjacent Space Transfer Air	None	No	None	Central Dirty Extract	0	10	Negative	None	43	41	0	200	Not Applicable	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable
			DSR	1	7.0	DSR	28	18	Adjacent Space Transfer Air	None	No	None	Central Dirty Extract	0	10	Negative	None	43	Not Applicable	0	100	Not Applicable	None	A	90	Switch	Bed / Trolley 1.45m	See Guidance Notes	Not Applicable

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Dept Code	Dept Name	Department Sub Group	Room Name	Qty	Area (m2)	Room Function	Temperature		Heating		Cooling Present	Cooling Type	Ventilation				Safety temperatures		Safety Notes	Lighting					Notes	Medical Location Group			
							Design Maximum deg C	Design Minimum deg C	Type	Control			Type	Supply ac/hr	Extract ac/hr	Relative Pressure	Min Filtration	Surface deg C		Water deg C	Normal lux	Night lux	Local lux	Standby Grade			Colour Rendering	Control	Plane
G2	Equipment Library	NA	Dirty Equipment	1	10.0	Storage Area Equipment	28	16	Radiant Panels	TRV Remote Head Adj.	No	None	Central General Extract	0	3	Negative	None	43	Not Applicable	0	200	Not Applicable	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable
			Clean Equipment	1	50.0	Storage Area Equipment	28	16	Radiant Panels	TRV Remote Head Adj.	No	None	Central General Extract	0	3	Negative	None	43	Not Applicable	0	200	Not Applicable	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable
			Disposal Hold	1	10.0	Disposal Hold	28	18	Adjacent Space Transfer Air	None	No	None	Central Dirty Extract	0	10	Negative	None	43	Not Applicable	0	100	Not Applicable	None	A	90	Switch	Bed / Trolley 1.45m	See Guidance Notes	Not Applicable
			DSR	1	7.0	DSR	28	18	Adjacent Space Transfer Air	None	No	None	Central Dirty Extract	0	10	Negative	None	43	Not Applicable	0	100	Not Applicable	None	A	90	Switch	Bed / Trolley 1.45m	See Guidance Notes	Not Applicable
G3	On-Call Suite	NA	On-Call Bedroom	3	10.0	Bedroom	25	20	Radiant Panels	TRV Remote Head Adj.	Yes	Comfort Cooled Fresh Air	Central Supply Air	4	0	Positive	G4	43	41	0	100	5	300	A	80	Switch / Dimmer	Bed / Trolley 1.45m	See Guidance Notes	1
			DSR	1	7.0	DSR	28	18	Adjacent Space Transfer Air	None	No	None	Central Dirty Extract	0	10	Negative	None	43	Not Applicable	0	100	Not Applicable	None	A	90	Switch	Bed / Trolley 1.45m	See Guidance Notes	Not Applicable
			Mini Kitchen	1	3.6	Eating/Drinking	28	18	Radiant Panels	TRV Remote Head Adj.	Yes	Comfort Cooled Fresh Air	Central Supply and Extract	4	4	Balanced	G4	43	41	0	200	Not Applicable	None	A	80	Switch	Floor 0m	See Guidance Notes	Not Applicable
			En-suite Shower / WC / WHB	3	4.5	Bathroom	28	18	Adjacent Space Transfer Air	None	No	None	Central Dirty Extract	0	10	Negative	None	43	41	0	200	200	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable

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Dept Code	Dept Name	Department Sub Group	Room Name	Qty	Area (m2)	Room Function	Temperature		Heating		Cooling Present	Cooling Type	Ventilation				Safety temperatures		Safety Notes	Lighting						Notes	Medical Location Group			
							Design Maximum deg C	Design Minimum deg C	Type	Control			Type	Supply ac/hr	Extract ac/hr	Relative Pressure	Min Filtration	Surface deg C		Water deg C	Normal lux	Night lux	Local lux	Standby Grade	Colour Rendering			Control	Plane	
11	Main Entrance - Public Spaces	NA	Draught Lobby	1	15.0	Circulation Areas - Entrance Lobby	28	Not Controlled	Warm Air Door Curtain	BMS Adjustable Sensor	No	None	None	0	0	Balanced	None	Not Applicable	Not Applicable	0	200	Not Applicable	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable	
			Reception / Information Desk	1	12.0	Reception	28	18	Radiant Panels	TRV Remote Head Adj.	Yes	Comfort Cooled Fresh Air	Central Supply Air	3	0	Positive	G4	43	Not Applicable	0	300	Not Applicable	None	A	80	Switch	Desk 0.75 to 0.85m	See Guidance Notes	Not Applicable	
			Waiting Area	1	16.5	Waiting Room	28	18	Radiant Panels	TRV Remote Head Adj.	Yes	Comfort Cooled Fresh Air	Central Supply and Extract	5	5	Balanced	G4	43	Not Applicable	0	300	Not Applicable	None	A	80	Switch	Floor 0m	See Guidance Notes	Not Applicable	
			Public Telephone Booth	1	2.0	Circulation Phone Booth	28	18	Radiant Panels	TRV Remote Head Adj.	No	None	Central Supply and Extract	0	0	Balanced	G4	43	41	0	200	Not Applicable	None	A	80	Switch / Dimmer	Desk 0.75 to 0.85m	See Guidance Notes	Not Applicable	
			Fire Control Room	1	12.0	Cellular / Ward Offices	25	18	Radiant Panels	TRV Remote Head Adj.	Yes	Comfort Cooled Fresh Air	Central Supply and Extract	4	3	Positive	G4	43	Not Applicable	0	300	Not Applicable	None	A	80	Switch	Desk 0.75 to 0.85m	See Guidance Notes	Not Applicable	
			Vending Machine	1	3.0	Waiting Room	28	18	Radiant Panels	TRV Remote Head Adj.	Yes	Comfort Cooled Fresh Air	Central Supply and Extract	5	5	Balanced	G4	43	Not Applicable	0	300	Not Applicable	None	A	80	Switch	Floor 0m	See Guidance Notes	Not Applicable	
			Retail Shop	1	30.0	Retail	Subject to Fit-out											Subject to Fit-out											See Guidance Notes	Not Applicable
			Catering Shop	1	30.0	Retail	Subject to Fit-out											Subject to Fit-out											See Guidance Notes	Not Applicable
			WC - Visitors	1	3.0	Toilet	28	18	Adjacent Space Transfer Air	None	No	None	Central Dirty Extract	0	10	Negative	None	43	41	0	200	Not Applicable	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable	
			WC - Wheelchair accessible	1	4.5	Toilet	28	18	Adjacent Space Transfer Air	None	No	None	Central Dirty Extract	0	10	Negative	None	43	41	0	200	Not Applicable	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable	
			Assisted Change/Nappy Change	1	7.0	Baby Feeding Room / Nappy Change	25	18	Adjacent Space Transfer Air	None	No	None	Central Dirty Extract	0	10	Negative	None	43	41	0	200	Not Applicable	None	A	80	Switch / Dimmer	Floor 0m	See Guidance Notes	Not Applicable	
			DSR	1	7.0	DSR	28	18	Adjacent Space Transfer Air	None	No	None	Central Dirty Extract	0	10	Negative	None	43	Not Applicable	0	100	Not Applicable	None	A	90	Switch	Bed / Trolley 1.45m	See Guidance Notes	Not Applicable	
			Security Office	1	12.0	Cellular / Ward Offices	25	18	Radiant Panels	TRV Remote Head Adj.	Yes	Comfort Cooled Fresh Air	Central Supply and Extract	4	3	Positive	G4	43	Not Applicable	0	300	Not Applicable	None	A	80	Switch	Desk 0.75 to 0.85m	See Guidance Notes	Not Applicable	
			Wheelchair Bay	1	6.0	Circulation Areas	28	18	Radiant Panels	TRV Remote Head Adj.	No	None	None	Refer to Guidance Notes	Refer to Guidance Notes	0	G4	43	41	0	300	Not Applicable	None	A	80	Switch / Dimmer	Desk 0.75 to 0.85m	See Guidance Notes	Not Applicable	
			12	Bed & Toy Stores	NA	DSR	1	7.0	DSR	28	18	Adjacent Space Transfer Air	None	No	None	Central Dirty Extract	0	10	Negative	None	43	Not Applicable	0	100	Not Applicable	None	A	90	Switch	Bed / Trolley 1.45m
Store - Beds	1	96.0				Storage Area Equipment	28	16	Radiant Panels	TRV Remote Head Adj.	No	None	Central General Extract	0	3	Negative	None	43	Not Applicable	0	200	Not Applicable	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable	
Roadshow Equip Store	1	10.0				Storage Area Equipment	28	16	Radiant Panels	TRV Remote Head Adj.	No	None	Central General Extract	0	3	Negative	None	43	Not Applicable	0	200	Not Applicable	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable	
Store - Toys	1	12.0				Storage Area Equipment	28	16	Radiant Panels	TRV Remote Head Adj.	No	None	Central General Extract	0	3	Negative	None	43	Not Applicable	0	200	Not Applicable	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable	

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Dept Code	Dept Name	Department Sub Group	Room Name	Qty	Area (m ²)	Room Function	Temperature		Heating		Cooling Present	Cooling Type	Ventilation				Safety temperatures		Safety Notes	Lighting						Notes	Medical Location Group		
							Design Maximum deg C	Design Minimum deg C	Type	Control			Type	Supply ac/hr	Extract ac/hr	Relative Pressure	Min Filtration	Surface deg C		Water deg C	Normal lux	Night lux	Local lux	Standby Grade	Colour Rendering			Control	Plane
J1	Bereavement Suite	NA	Body Viewing Room	1	18.0	Body View	25	18	Radiant Panels	TRV Remote Head Adj.	Yes	Ceiling Cassette - Chilled Water	Central Supply and Extract	4	6	Negative	G4	43	Not Applicable	0	100	Not Applicable	None	A	80	Switch	Floor 0m	See Guidance Notes	Not Applicable
			Lobby	1	3.0	Circulation Areas - Entrance Lobby	28	Not Controlled	Warm Air Door Curtain	BMS Adjustable Sensor	No	None	None	0	0	Balanced	None	Not Applicable	0	200	Not Applicable	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable	
			Sitting Room with Beverage Bay	1	20.0	Common room/staff room/lounge	28	18	Radiant Panels	TRV Remote Head Adj.	Yes	Comfort Cooled Fresh Air	Central Supply and Extract	6	8	Negative	G4	43	41	0	300	Not Applicable	None	A	80	Switch	Floor 0m	See Guidance Notes	Not Applicable
			WC - Wheelchair accessible	1	4.5	Toilet	28	18	Adjacent Space Transfer Air	None	No	None	Central Dirty Extract	0	10	Negative	None	43	41	0	200	Not Applicable	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable
J2	Spiritual & Pastoral Care	NA	Prayer / Meditation / Reflection Area	1	40.0	Common room/staff room/lounge	28	18	Radiant Panels	TRV Remote Head Adj.	Yes	Comfort Cooled Fresh Air	Central Supply and Extract	6	8	Negative	G4	43	41	0	300	Not Applicable	None	A	80	Switch	Floor 0m	See Guidance Notes	Not Applicable
			Store	1	6.0	Storage Area Equipment	28	16	Radiant Panels	TRV Remote Head Adj.	No	None	Central General Extract	0	3	Negative	None	43	Not Applicable	0	200	Not Applicable	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable
			WC wheelchair accessible / Ritual Washing Area	1	6.0	Toilet	28	18	Adjacent Space Transfer Air	None	No	None	Central Dirty Extract	0	10	Negative	None	43	41	0	200	Not Applicable	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable
			Office	1	12.0	Cellular / Ward Offices	25	18	Radiant Panels	TRV Remote Head Adj.	Yes	Comfort Cooled Fresh Air	Central Supply and Extract	4	3	Positive	G4	43	Not Applicable	0	300	Not Applicable	None	A	80	Switch	Desk 0.75 to 0.85m	See Guidance Notes	Not Applicable
			Interview Room	1	9.0	Meeting Room	25	18	Radiant Panels	TRV Remote Head Adj.	Yes	Ceiling Cassette - Chilled Water	Central Supply and Extract	4	4	Balanced	G4	43	Not Applicable	0	300	Not Applicable	None	A	80	Switch	Desk 0.75 to 0.85m	See Guidance Notes	Not Applicable

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							Design Maximum deg C	Design Minimum deg C	Type	Control			Type	Supply ac/hr	Extract ac/hr	Relative Pressure	Min Filtration	Surface deg C	Water deg C		Normal lux	Night lux	Local lux	Standby Grade	Colour Rendering			Control	Plane
N1	DCN Entrance	NA	Reception / Information Desk	1	6.0	Reception	28	18	Radiant Panels	TRV Remote Head Adj.	Yes	Comfort Cooled Fresh Air	Central Supply Air	3	0	Positive	G4	43	Not Applicable	0	300	Not Applicable	None	A	80	Switch	Desk 0.75 to 0.85m	See Guidance Notes	Not Applicable
			Draft Lobby	1	9.0	Circulation Areas - Entrance Lobby	28	Not Controlled	Warm Air Door Curtain	BMS Adjustable Sensor	No	None	None	0	0	Balanced	None	Not Applicable	0	200	Not Applicable	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable	
			Waiting Area	1	8.0	Waiting Room	28	18	Radiant Panels	TRV Remote Head Adj.	Yes	Comfort Cooled Fresh Air	Central Supply and Extract	5	5	Balanced	G4	43	Not Applicable	0	300	Not Applicable	None	A	80	Switch	Floor 0m	See Guidance Notes	Not Applicable
			Vending Machine	1	3.0	Circulation Areas	28	18	Radiant Panels	TRV Remote Head Adj.	No	None	None	Refer to Guidance Notes	Refer to Guidance Notes	0	G4	43	41	0	300	Not Applicable	None	A	80	Switch / Dimmer	Desk 0.75 to 0.85m	See Guidance Notes	Not Applicable
			WC - Visitors	1	3.0	Toilet	28	18	Adjacent Space Transfer Air	None	No	None	None	0	10	Negative	None	43	41	0	200	Not Applicable	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable
			Wheelchair Bay	1	6.0	Circulation Equipment Storage Bays	28	18	Adjacent Space Transfer Air	None	No	None	None	0	3	Negative	None	43	Not Applicable	0	200	Not Applicable	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable
			WC - Wheelchair accessible	1	4.5	Toilet	28	18	Adjacent Space Transfer Air	None	No	None	None	0	10	Negative	None	43	41	0	200	Not Applicable	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable
			Staff Room	1	34.0	Common room/staff room/lounge	28	18	Radiant Panels	TRV Remote Head Adj.	Yes	Comfort Cooled Fresh Air	Central Supply and Extract	6	8	Negative	G4	43	41	0	300	Not Applicable	None	A	80	Switch	Floor 0m	See Guidance Notes	Not Applicable
			Grab & Go	1	20.0	Common room/staff room/lounge	28	18	Radiant Panels	TRV Remote Head Adj.	Yes	Comfort Cooled Fresh Air	Central Supply and Extract	6	8	Negative	G4	43	41	0	300	Not Applicable	None	A	80	Switch	Floor 0m	See Guidance Notes	Not Applicable
			Disposal Hold (small)	1	4.0	Disposal Hold	28	18	Adjacent Space Transfer Air	None	No	None	None	0	10	Negative	None	43	Not Applicable	0	100	Not Applicable	None	A	90	Switch	Bed / Trolley 1.45m	See Guidance Notes	Not Applicable
N2	DCN Wards / Health Records Support - (N2)	NA	Staff Room	1	34.0	Common room/staff room/lounge	28	18	Radiant Panels	TRV Remote Head Adj.	Yes	Comfort Cooled Fresh Air	Central Supply and Extract	6	8	Negative	G4	43	41	0	300	Not Applicable	None	A	80	Switch	Floor 0m	See Guidance Notes	Not Applicable
			Grab & Go	1	20.0	Common room/staff room/lounge	28	18	Radiant Panels	TRV Remote Head Adj.	Yes	Comfort Cooled Fresh Air	Central Supply and Extract	6	8	Negative	G4	43	41	0	300	Not Applicable	None	A	80	Switch	Floor 0m	See Guidance Notes	Not Applicable
			Disposal Hold (small)	1	4.0	Disposal Hold	28	18	Adjacent Space Transfer Air	None	No	None	None	0	10	Negative	None	43	Not Applicable	0	100	Not Applicable	None	A	90	Switch	Bed / Trolley 1.45m	See Guidance Notes	Not Applicable

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							Design Maximum deg C	Design Minimum deg C	Type	Control			Type	Supply ach/r	Extract ach/r	Relative Pressure	Min Filtration	Surface deg C		Water deg C	Normal lux	Night lux	Local lux	Standby Grade			Colour Rendering	Control	Plane
		DCN University Research Scanner	MRI Room	1	45.0	Diagnostic room	25	18	Warm Air - Reheat Battery	BMS Adjustable Sensor	Yes	Comfort Cooled Fresh Air	Central Supply and Extract	8	8	Balanced	F7	43	41	0	300	Not Applicable	1000	A	80	Switch / Dimmer	General working plane 1m	See Guidance Notes	1
			Control Room - MRI	1	24.0	IT equipment (comms server)	25	18	None	None	Yes	Ceiling Cassette - Chilled Water	Central General Extract	0	2	Negative	None	Not Applicable	Not Applicable	0	300	Not Applicable	None	A	80	Switch	Floor 0m	See Guidance Notes	Not Applicable
			Equipment Room	1	16.0	Storage Area Equipment	28	16	Radiant Panels	TRV Remote Head Adj.	No	None	Central General Extract	0	3	Negative	None	43	Not Applicable	0	200	Not Applicable	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable
			Server Room	1	6.0	IT equipment (comms server)	25	18	None	None	Yes	Ceiling Cassette - Chilled Water	Central General Extract	0	2	Negative	None	Not Applicable	Not Applicable	0	300	Not Applicable	None	A	80	Switch	Floor 0m	See Guidance Notes	Not Applicable
		Controlled Area Shared Space	Data Store	1	6.0	Storage Area Equipment	28	16	Radiant Panels	TRV Remote Head Adj.	No	None	Central General Extract	0	3	Negative	None	43	Not Applicable	0	200	Not Applicable	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable
			Equipment Store	1	6.0	Storage Area Equipment	28	16	Radiant Panels	TRV Remote Head Adj.	No	None	Central General Extract	0	3	Negative	None	43	Not Applicable	0	200	Not Applicable	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable
			University Staff Office	1	10.0	Cellular / Ward Offices	25	18	Radiant Panels	TRV Remote Head Adj.	Yes	Comfort Cooled Fresh Air	Central Supply and Extract	4	3	Positive	G4	43	Not Applicable	0	300	Not Applicable	None	A	80	Switch	Desk 0.75 to 0.85m	See Guidance Notes	Not Applicable
			Store Room	1	20.0	Storage Area Equipment	28	16	Radiant Panels	TRV Remote Head Adj.	No	None	Central General Extract	0	3	Negative	None	43	Not Applicable	0	200	Not Applicable	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable
		Staff Accommodation	DSR	1	7.0	Dirty utility	28	18	Adjacent Space Transfer Air	None	No	None	Central Dirty Extract	0	6	Negative	None	43	60	0	200	Not Applicable	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable
			Dirty Utility	1	9.0	Dirty utility	28	18	Adjacent Space Transfer Air	None	No	None	Central Dirty Extract	0	6	Negative	None	43	60	0	200	Not Applicable	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable
			IPS Room	1	3.0	IPS Room	28	18	Adjacent Space Transfer Air	None	No	None	Central Dirty Extract	0	6	Negative	None	43	60	0	200	Not Applicable	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable
			Clean Utility	1	10.0	Clean Utility	28	18	Adjacent Space Transfer Air	None	No	None	Central Dirty Extract	0	6	Negative	None	43	60	0	200	Not Applicable	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable
		Office Space	Staff WC	1	3.0	Toilet	28	18	Radiant Panels	TRV Remote Head Adj.	Yes	Comfort Cooled Fresh Air	Central Supply Air	6	0	Positive	G4	43	41	0	150	Not Applicable	None	A	80	Presence detection	General working plane 1m	See Guidance Notes	Not Applicable
			Male Staff Changing and Lockers	1	27.0	Changing Facilities	28	18	Adjacent Space Transfer Air	None	No	None	Central Dirty Extract	0	10	Negative	None	43	41	0	200	Not Applicable	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable
			Female Staff Changing and Lockers	1	27.0	Changing Facilities	28	18	Radiant Panels	TRV Remote Head Adj.	Yes	Comfort Cooled Fresh Air	Central Supply and Extract	5	4	Positive	G4	43	41	0	100	Not Applicable	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable
			Staff WC	2	3.0	Toilet	28	18	Adjacent Space Transfer Air	None	No	None	Central Dirty Extract	0	4	Positive	G4	43	41	0	100	Not Applicable	None	A	80	Presence detection	Floor 0m	See Guidance Notes	Not Applicable
		Office Space	Resource Room/Library	1	39.0	Cellular / Ward Offices	25	18	Radiant Panels	TRV Remote Head Adj.	Yes	Comfort Cooled Fresh Air	Central Supply and Extract	4	3	Positive	G4	43	Not Applicable	0	300	Not Applicable	None	A	80	Switch	Desk 0.75 to 0.85m	See Guidance Notes	Not Applicable
			Consultant Office (5 person)	1	20.5	Cellular / Ward Offices	25	18	Radiant Panels	TRV Remote Head Adj.	Yes	Comfort Cooled Fresh Air	Central Supply and Extract	4	3	Positive	G4	43	Not Applicable	0	300	Not Applicable	None	A	80	Switch	Desk 0.75 to 0.85m	See Guidance Notes	Not Applicable
			Consultant Office (5 person)	2	20.5	Cellular / Ward Offices	25	18	Radiant Panels	TRV Remote Head Adj.	Yes	Comfort Cooled Fresh Air	Central Supply and Extract	4	3	Positive	G4	43	Not Applicable	0	300	Not Applicable	None	A	80	Switch	Desk 0.75 to 0.85m	See Guidance Notes	Not Applicable
			Registrars Office (5 desks)	1	20.5	Cellular / Ward Offices	25	18	Radiant Panels	TRV Remote Head Adj.	Yes	Comfort Cooled Fresh Air	Central Supply and Extract	4	3	Positive	G4	43	Not Applicable	0	300	Not Applicable	None	A	80	Switch	Desk 0.75 to 0.85m	See Guidance Notes	Not Applicable
			Superintendent/PACS Manager/Radiographers/Nursing Office	1	28.7	Cellular / Ward Offices	25	18	Radiant Panels	TRV Remote Head Adj.	Yes	Comfort Cooled Fresh Air	Central Supply and Extract	4	3	Positive	G4	43	Not Applicable	0	300	Not Applicable	None	A	80	Switch	Desk 0.75 to 0.85m	See Guidance Notes	Not Applicable
			Meeting Room - 6 person	1	9.0	Meeting Room	25	18	Radiant Panels	TRV Remote Head Adj.	Yes	Ceiling Cassette - Chilled Water	Central Supply and Extract	4	4	Balanced	G4	43	Not Applicable	0	300	Not Applicable	None	A	80	Switch	Desk 0.75 to 0.85m	See Guidance Notes	Not Applicable
			Meeting Room - 4 person	2	6.0	Meeting Room	25	18	Radiant Panels	TRV Remote Head Adj.	Yes	Ceiling Cassette - Chilled Water	Central Supply and Extract	4	4	Balanced	G4	43	Not Applicable	0	300	Not Applicable	None	A	80	Switch	Desk 0.75 to 0.85m	See Guidance Notes	Not Applicable

Notes
 a) Linen Bay recess to be treated as part of room
 b) Mobile Equipment Bay Recess to be treated as part of room
 c) Resusc Trolley Area Recess to be treated as part of room
 d) Consult Exam Room note 10ach/r not allowed for unless room title listed as Treatment Room.
 e) Reception & Waiting Combined
 f) Internal Temperatures should not exceed 28 deg C (db) for more than 50hrs per year
 g) Offices assumed to have operable windows without 100mm restrictors for natural ventilation
 h) Staff Rest assumed to have operable windows without 100mm restrictors for natural ventilation and occupancy factor of 0.1

Dept Code	Dept Name	Department Sub Group	Room Name	Qty	Area (m2)	Room Function	Temperature		Heating		Cooling Present	Cooling Type	Ventilation				Safety temperatures		Safety Notes	Lighting						Notes	Medical Location Group		
							Design Maximum deg C	Design Minimum deg C	Type	Control			Type	Supply ac/hr	Extract ac/hr	Relative Pressure	Min Filtration	Surface deg C		Water deg C	Normal lux	Night lux	Occupancy lux	Standby Grade	Colour rendering			Control	Plane
1	Plant	NA	IT Node Rooms	25	9.0	IT equipment (comms server)	25	18	None	None	Yes	Ceiling Cassette - Chilled Water	Central General Extract	0	2	Negative	None	Not Applicable	Not Applicable	0	300	Not Applicable	Non	A	80	Switch	Door 0m	See Guidance Notes	Not Applicable

Dept Code	Dept Name	Department Sub Group	Room Name	Qty	Area (m2)	Room Function	Temperature		Heating		Cooling Present	Cooling Type	Ventilation				Safety temperatures		Safety Notes	Lighting						Notes	Medical Location Group
							Design Maximum deg C	Design Minimum deg C	Type	Control			Type	Supply ac/hr	Extract ac/hr	Relative Pressure	Min Filtration	Surface deg C		Water deg C	Normal lux	Night lux	Local lux	Standby Grade	Colour Rendering		
U1	Shelled Space	NA	Shelled Space	1	320.0								To Be Confirmed														

From: JAMES, Gordon (NHS NATIONAL SERVICES SCOTLAND)
Sent: 28 August 2019 11:31
To: STORRAR, Ian (NHS NATIONAL SERVICES SCOTLAND); MCLAUGHLAN, Edward (NHS NATIONAL SERVICES SCOTLAND); RANKIN, Annette (NHS NATIONAL SERVICES SCOTLAND); HARLEY, Kate (NHS NATIONAL SERVICES SCOTLAND); REILLY, Jacqui (NHS NATIONAL SERVICES SCOTLAND); CHAPPLE, Paul (NHS NATIONAL SERVICES SCOTLAND); IMRIE, Laura (NHS NATIONAL SERVICES SCOTLAND)
Subject: Draft SBAR for Oversight Board - Feedback from NHSL
Importance: High

All,

As you will see below, the workshop referenced in the SBAR did not seem to include clinical / IC representation. In addition NHSL have not completed a Risk Assessment of the wards relating to the 6 air changes as they believed that 4 + 2 was giving them 6 overall.

Thanks
Gordon.

From: Currie, Brian [REDACTED]
Sent: 28 August 2019 11:25
To: JAMES, Gordon (NHS NATIONAL SERVICES SCOTLAND) [REDACTED]
Cc: [REDACTED]; [REDACTED]
Subject: FW: Draft SBAR for Oversight Board
Importance: High

Gordon

Response below to your query.

Regards

Brian

Brian Currie
Project Director - NHS Lothian
RHCYP + DCN
4th Floor Management Suite
[REDACTED]
[REDACTED]



From: Mackenzie, Janice
Sent: 28 August 2019 11:15
To: Currie, Brian
Cc: Henderson, Ronnie
Subject: RE: Draft SBAR for Oversight Board

Hi Brian

Have reviewed this with Dorothy and Fiona, there was a meeting on the 23rd January 2017 with MPX and their sub-contractors which Motts and Project Team attended (Ronnie & Dorothy). There were no service clinical representatives at the meeting and Infection Control were not on the invitation list so we suspect they were not in attendance.

There was no risk assessment done at the time because we believed that we were achieving 6 air changes 4 mechanical and 2 with natural ventilation and no concerns were raised about this.

Janice

Janice MacKenzie
Clinical Director
RHSC + DCN - Little France Project Team

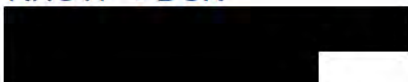
Royal Hospital for Children & Young People and Department of Clinical Neurosciences



www.nhslthian.scot.nhs.uk/proudhistorienewchapters

From: Currie, Brian
Sent: 28 August 2019 09:02
To: Mackenzie, Janice
Subject: FW: Draft SBAR for Oversight Board

Brian Currie
Project Director - NHS Lothian
RHCYP + DCN



[Redacted]

[Redacted]



From: JAMES, Gordon (NHS NATIONAL SERVICES SCOTLAND) [Redacted]
Sent: 27 August 2019 16:05
To: Goldsmith, Susan; Currie, Brian
Cc: MCLAUGHLAN, Edward (NHS NATIONAL SERVICES SCOTLAND); Graham, Iain
Subject: Draft SBAR for Oversight Board

Susan / Brian,

Following on from discussion yesterday I have attached a draft SBAR for submission to the Oversight Board on Thursday morning.

Can you please have a look at the sections provided in **Green** and provide any update with regards to staff groups (Infection Control / Clinical ??) who participated in the ventilation workshop completed in Feb-17 and clarification if a risk assessment was completed in the period Feb-17 until now?

Once we have the detail the report can be update and issued for consideration on Thursday morning.

Thanks
Gordon.

Gordon James
Director of Health Facilities Scotland
Health Facilities Scotland
NHS National Services Scotland

[Redacted]

[Redacted]

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From: MCLAUGHLAN, Edward (NHS NATIONAL SERVICES SCOTLAND)
Sent: 28 August 2019 22:26
To: STORRAR, Ian (NHS NATIONAL SERVICES SCOTLAND)
Subject: FW: Bedroom ventilation rates

Two things emerge from this. One is the need to know what is happening elsewhere but the other is when we started building buildings with six general ac/h. SHTM2025 and SHPN4 seem to have no requirement for particular air change rates, although I'm getting tired now so further checking will be required; in fact mechanical ventilation is discouraged in favour of natural, but again without specified rates. This seems to mean the majority of our building stock is not 6ac/h and even QEUH will be to 2025, so not necessarily 6. If you get a chance in the morning could you possibly make some phone calls and do some reading? I'll let you know if I find anything.

[REDACTED]

Eddie McLaughlan
Assistant Director
Engineering, Environment and Decontamination
Health Facilities Scotland
Procurement, Commissioning and Facilities
NHS National Services Scotland

[REDACTED]

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From: REILLY, Jacqui (NHS NATIONAL SERVICES SCOTLAND) [REDACTED]
Sent: 28 August 2019 10:59
To: MCLAUGHLAN, Edward (NHS NATIONAL SERVICES SCOTLAND) [REDACTED]
Subject: RE: Bedroom ventilation rates

Eddie

Can you find out from you contacts UK wide if DoH etc are having these issues with people not following extant guidance? Can we also find out if other hospitals built in England recently are complying with the 6 as set out?

J

From: MCLAUGHLAN, Edward (NHS NATIONAL SERVICES SCOTLAND)
Sent: 28 August 2019 10:37
To: JAMES, Gordon (NHS NATIONAL SERVICES SCOTLAND); RANKIN, Annette (NHS NATIONAL SERVICES SCOTLAND); IMRIE, Laura (NHS NATIONAL SERVICES SCOTLAND)
Cc: HARLEY, Kate (NHS NATIONAL SERVICES SCOTLAND); REILLY, Jacqui (NHS NATIONAL SERVICES SCOTLAND); REDUCING-RISK-HCE (NHS NATIONAL SERVICES SCOTLAND); STORRAR, Ian (NHS NATIONAL SERVICES SCOTLAND)
Subject: FW: Bedroom ventilation rates

Folks

I've not been right through this yet and there is clearly more info required but this appears to show that the 4 air changes was a design agreement, regardless of the use of terms like mixed mode and natural ventilation. What we will need to do is consider this in light of information that emerged after these decisions were made (rapid review). I will forward more information as and when it arrives.



Eddie McLaughlan
Assistant Director
Engineering, Environment and Decontamination
Health Facilities Scotland
Procurement, Commissioning and Facilities
NHS National Services Scotland



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From: Henderson, Ronnie [REDACTED]
Sent: 28 August 2019 09:09
To: MCLAUGHLAN, Edward (NHS NATIONAL SERVICES SCOTLAND) [REDACTED]; STORRAR, Ian (NHS NATIONAL SERVICES SCOTLAND) [REDACTED]
Cc: Currie Brian (NHS LOTHIAN) [REDACTED]; [REDACTED]
Subject: FW: Bedroom ventilation rates

Hi Eddie, Ian,

See below and attached from MPX re 6 to 4 air change issue. The key additional document is the H & K thermal comfort analysis as that is the evidence Stewart McKechnie alluded to at last Friday's vent meeting in defence of

their design. What the e-mail below states along with the other attachments, which you will have already seen, is that they only intended to provide 4 air changes. There is reference in their documents however to 'mixed mode' ventilation and that suggests to me a consideration of the effect of natural ventilation.

Let me know if this gives you enough information to go on.

Regards

Ronnie

Ronnie Henderson
Commissioning Manager Hard FM
RHSC & DCN - Little France
NHS Lothian

[REDACTED]

[REDACTED]

From: Darren Pike [REDACTED]
Sent: 27 August 2019 18:28
To: Goldsmith, Susan
Cc: Henderson, Ronnie; Currie, Brian; Callum Tuckett; Matthew Templeton; [REDACTED]
Subject: Bedroom ventilation rates

Susan

Callum has asked I forward you the words in response to the question from HFS being discussed in the ventilation work group;

"From the information provided it is clear that the intention is that between the windows and the associated trickle vents a component of natural ventilation will be present. What I am looking for is an understanding of whether it is simply an assumption that that will amount to two air changes or if there is analysis and calculation to back it up. I do accept that the guidance allows for an element of variability in the delivery of natural ventilation but to be able to assure government that the building meets the requirements, I need to know how we can be sure that what is provided is sufficient. This is particularly an issue as the windows appear to be being relied on in addition to the trickle vents, as these will be shut for the majority of the time.

As a separate issue for your consideration, In the information provided there is an assertion that the pressure from room to corridor will be balanced when the windows are open. Whilst this may be true in still air or on the windward face of the building, it is unlikely to be true in the lee of the building in a breeze. Clinical leads need to understand this and its potential impact on the risks to certain patient groups."

Confirmation of the key points from the meeting of last Friday 23.08.19 where single bedroom ventilation rates were discussed. Based on the energy efficiency vision of the hospital, the Guidance within SHTM 03-01 for 6ACH were derogated down to 4ACH, and this was captured within the SA, item 13, and appendix 13, as attached. To be clear the agreed position contained within the SA is for 4 ACH, note that openable windows provide beneficial use to the user only, and supplements the agreed design solution to provide 4ACH as this is provided via mechanical ventilation. The key driver for openable windows were treated as beneficial use only so far as air changes are concerned. We expressed our concerns surrounding the pressure regime implications when any window is opened,

however this was a risk the Board were willing to accept. There would therefore be an element of operational management within each ward depending on specific patient needs.

The origins of 4ACH can be traced back to the reference design environmental matrix and the optioneering carried out by Hulley + Kirkwood (attached for ease of reference). During bid stage due diligence was carried out to assess the suitability of the energy efficiency vision within the reference design, and captured as part of the Project Co proposals. During detail design Wallace Whittle carried out an energy model analysis of 4ACH to ensure the thermal comfort parameters were met, and the energy model outputs were shared during detailed design workshops reviewed by the Board's Technical Advisors.

Regards

Darren

Darren Pike
Project Director

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From: RANKIN, Annette (NHS NATIONAL SERVICES SCOTLAND)
Sent: 28 August 2019 08:49
To: STORRAR, Ian (NHS NATIONAL SERVICES SCOTLAND)
Cc: MCLAUGHLAN, Edward (NHS NATIONAL SERVICES SCOTLAND); IMRIE, Laura (NHS NATIONAL SERVICES SCOTLAND)
Subject: Re: my comments- irritatingly a pdf so popups

Yeah, tho they don't really apply in commissioning etc

The 2015 HAI standards specifies a minimum level of performance for healthcare associated infection control services.

They are aligned with the National infection prevention and control manuals and both documents are key for healthcare organisations to adhere to, to ensure robust HAI practice and policy.

The Healthcare Improvement Scotland standards for HAI cover the following areas:

- leadership
- education
- communication
- HAI surveillance
- antimicrobial stewardship
- infection prevention and control policies, procedures and guidance
- insertion and maintenance of invasive devices
- decontamination, and
- acquisition of equipment.

Sent from my iPhone

On 28 Aug 2019, at 08:33, STORRAR, Ian (NHS NATIONAL SERVICES SCOTLAND) [REDACTED] wrote:

Annette

Can we also have a paragraph on the role of HAI Standards for the report (addition to paragraph 4.1.3) please?

Regards

Ian

Ian Storrar BSc CEng FCIBSE FIHEEM MIET
Head of Engineering - Health Facilities Scotland
Procurement, Commissioning and Facilities

NHS National Services Scotland
[REDACTED]



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From: MCLAUGHLAN, Edward (NHS NATIONAL SERVICES SCOTLAND)
Sent: 28 August 2019 08:31
To: RANKIN, Annette (NHS NATIONAL SERVICES SCOTLAND)
Cc: IMRIE, Laura (NHS NATIONAL SERVICES SCOTLAND); STORRAR, Ian (NHS NATIONAL SERVICES SCOTLAND)
Subject: FW: my comments- irritatingly a pdf so popups

Annette

For Donald's point below about the risks associated with fungus and sink drains, is there something we can add to the report, or a response we can give direct to NHSL that will help them understand where we are on these issues?

Thanks


Eddie McLaughlan
Assistant Director
Engineering, Environment and Decontamination
Health Facilities Scotland
Procurement, Commissioning and Facilities
NHS National Services Scotland
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From: Currie, Brian [REDACTED]
Sent: 26 August 2019 12:41
To: [REDACTED]
Subject: FW: my comments- irritatingly a pdf so popups

Brian Currie
Project Director - NHS Lothian
RHCYP + DCN

[REDACTED]

[REDACTED]

<image001.jpg>

From: Goldsmith, Susan
Sent: 26 August 2019 08:47
To: Currie, Brian
Subject: FW: my comments- irritatingly a pdf so popups

From: Gillies, Tracey [REDACTED]
Sent: 23 August 2019 17:53
To: Goldsmith, Susan [REDACTED]
Subject: FW: my comments- irritatingly a pdf so popups

Might be helpful for Monday am

From: Guthrie, Lindsay
Sent: 23 August 2019 16:56
To: Inverarity, Donald; Gillies, Tracey
Subject: RE: my comments- irritatingly a pdf so popups

Nothing much to add to your or Donald's comments re the report.

- Point 2.3 "designed to current guidance" – was current guidance extant at the time of the building design? If not cannot retrospectively apply it
- Point 2.6 – make clear that the only augmented care area with evidence of *Pseudomonas aeruginosa* in [taps](#) is Dalhousie ward. There is some limited contamination in other outlets (e.g. ARJO baths). This currently reads as though this is a more widespread issue?
- Point 4.3.11- unclear if the company appointed by HFS determined "*there was no indication that the water system (as a whole) was cause for concern referenced to the existing guidance*" (and in addition to the points below) why Water has been flagged as RED on the RAG report?

RAG report:

- **P4 Water services (critical care)** – factual accuracy. Westfield Report tested 72 outlets in Critical care and 0 were positive for *Pseudomonas aeruginosa*. The full HPS does not state critical care has any *P. aeruginosa*. The remedial work stated (even assuming there were any positive results) is not in line with the HPS 2018 interim guidance – this stipulates remedial actions for positive outlets, not the whole ward. The action for removal/replacement of TMV is also only triggered if pre flush > 10cfu with low post flush result. The guidance is risk stratified, the remedial actions advocated in this report are not. In the absence of positive results, the other remedial actions in this section are null and void for critical care?
- **P4 Showers (all areas)** – second remedial action to disinfect hose and drain after rectification- not aware of any guidance or methodology to disinfect a newly fitted shower hose, or method for disinfection of shower drain? Can HPS provide a reference link?
- **P4 Water (general)**-as per Donald’s comment – lack of methodology for sampling, no meaningful interpretation, method or agent not specified.
- **P5 Water (general)** – Legionella risk assessment is focused on Legionella...as per previous comments from Donald. Risk assessment for susceptibility is less relevant for Legionella- the presence of Legionella in any hospital water supply is a risk for patients and staff
- **P6 Expansion vessels** –is there guidance or a specification which would assist in determining ‘susceptibility to bacterial growth’ in expansion vessels, this is essential if we are being directed to inspect these. Also need guidance on remedial action required if they are determined to be ‘susceptible’. Is any microbiological sampling being advocated as part of this?
- **P6 Filtration** –the issues identified elsewhere are out of scope of review for RHCYP? This is identified as a theoretical risk, and action advised is not specified in guidance, unclear if Chlorine dioxide is compatible with the tank (and all other parts of the water system). Would need further guidance on dose, duration and methodology.
- **P6 Zip & ARJO** – would be more helpful to separate these items as the risks and remedial actions are different. Would require methodology to replace hoses in baths? Do these require to be disinfected after replacement (as per shower hose above). Pipe work – ‘replace pipe work’ is very vague – would need further guidance on length of replacement etc?
- **P7 Sink Drains**- is there recognised sampling methodology for drains to assist the interpretation of this? What does ‘significantly contaminated’ mean – we would not expect drains to be sterile. Unaware of the Hsyan methodology or where this is included in guidance
- **P7 Trough sinks** –trough sinks are specified in building notes. What is there a ‘high risk’ of, and how this might be demonstrated by HPS/HFS? Same point above with regards a drain ‘treatment’ strategy
- **P8 –Resilience ventilation systems** – could HPS/HFS point us to another Board who may have a good example fo a resilience strategy for AHU failure? We could adapt rather than start from scratch?

Regards

Lindsay

From: Inverarity, Donald

Sent: 23 August 2019 09:24

To: Gillies, Tracey; Guthrie, Lindsay

Subject: RE: my comments- irritatingly a pdf so popups

I’ve attached a version with some questions of my own as well as responses to Tracey’s.

Can we raise though that although the stated remit is to assess compliance against

“standards and guidance” for several of the RAG ratings received these ratings (red), as far

as I can interpret are not generated from compliance with “standards and guidance” but from findings from QEUH, Glasgow which have not been shared with NHS Lothian in sufficient detail for us to have been able to address in the comprehensive manner now being requested. It feels like NHS Lothian is being penalised against having mould in water for which there is little (or nothing) supporting that it poses a clinical risk to patients (if building occupied) or environmental risk to the building (if building unoccupied). Regarding the issue of the degree of risk/hazard posed by bacteria being found in sink drains, I also need more convincing that this generates sufficient degree of hazard to merit the RAG rating as the methodology of sampling is unclear and if has not been a quantitative culture then the significance of the microbiological findings are likely to be being over-interpreted. It is unclear if a suitably trained microbiologist has been involved in the sampling methodology and interpretation of the results albeit one has in the generating of the results from receipt of specimen in a lab. There seems to be a high degree of speculation regarding perceived risk related to this issue rather than compliance with standards or guidance.

Just some of my thoughts

Donald

From: Gillies, Tracey

Sent: 22 August 2019 19:12

To: Guthrie, Lindsay; Inverarity, Donald

Subject: my comments- irritatingly a pdf so popups

OVERSIGHT BOARD

NHS Lothian Royal Hospital for Children and Young People, Department of Clinical Neurosciences and Child and Adolescent Mental Health Services

Minutes of the meeting of the Oversight Board held at 8:00am on Thursday 29 August 2019 in Media 2 at St Andrew's House, Edinburgh.

Present: Ms C. McLaughlin, Chief Finance Officer, Scottish Government (chair); Ms T. Gillies, Medical Director, NHS Lothian; Ms S. Goldsmith, Director of Finance, NHS Lothian; Mr P. Reekie, Chief Executive, Scottish Futures Trust; Dr C. Calderwood, Chief Medical Officer, Scottish Government and

Present by Telephone: Professor A. McMahon, Nurse Director, NHS Lothian; Professor F. McQueen, Chief Nursing Officer, Scottish Government; Dr Gregor Smith, Deputy Chief Medical Officer, Scottish Government

In Attendance: Mr B. Currie, Project Director, NHS Lothian; Mr G. James, Director of Facilities, Health Facilities Scotland; Eddie McLaughlan, Assistant Director, Engineering, Environment and Decontamination, Health Facilities Scotland; Ms R Roche, Health Finance Division Scottish Government; Ms S. Cosens, Capital Programme Business Manager, NHS Lothian and Mr C. Graham, Corporate Governance Team (minutes).

In Attendance by Telephone: Professor J. Reilly, Lead Consultant, Infection Prevention and Control, Health Protection Scotland; Ms Mary Morgan, Director of Strategy, Performance and Service Transformation, NHS National Services Scotland; Mr Gordon Archibald, Joint Staff Side Representative;

Apologies: Ms J. Mackay, NHS Lothian Director of Communications; Mr C. Sinclair, Chief Executive, NHS National Services Scotland; Mr A. Joyce, Employee Director, NHS Lothian (Joint Staff Side) and Alan Morrison, Capital Accounting and Policy Manager, Scottish Government.

The Chair welcomed members to the meeting and members introduced themselves.

The Chair stated that as there had been a number of reports produced over the previous week, showing a good pace of work, the focus of today's meeting would be on the NSS Health Facilities Scotland & Health Protection Scotland draft report; Critical Care Position; Haematology and Oncology position as well as the water and ventilation issues.

1. NSS Health Facilities Scotland & Health Protection Scotland 3rd Draft Report

Gordon James and Jacqui Reilly ran through draft report and key issues.

- 1.1 It was noted that this was the 3rd draft report with a view to issuing the final draft report on 4th September 2019. This draft had been shared with Scottish Government colleagues on 23 August 2019. There had also been a meeting with NHSL on 26 September 2019 to go through the report and consider suggested changes, terminology and any references to contractual positions.

1.2 There was discussion and consideration of the 4 Sections of the report and the status of key findings which relate to management and assurance; water systems; drainage, and ventilation.

1.3 Management and Assurance Specific Points

- 1 Some reporting mechanisms are not in place at this time and there needs to be work done to align to the Scottish Health Technical Memorandum (SHTM) suite of guidance. Mrs Goldsmith confirmed that NHSL were keen to work to best practice and would look for HFS support to achieve this and close any gaps. The Assurance work would be across all NHSL facilities not just the RHCYP+DCN.
- 2 Prioritisation – Noted that issues identified were not show stoppers and actions would be developed and implemented ahead of occupation.

NHSL/HFS

1.4 Water Systems Specific Points

- 1 Pseudomonas prioritised actions to be taken prior to occupation.
- 2 Some technical points around infection control to be phrased in a more precise way
- 3 How do the key issues noted align to the comment that there are no major issues to water supply.
- 4 More detail needed from Mr James on the changes to be made in relation to widespread fungal and mould contamination. Otherwise actions are underway to address the rest of the priority areas.
- 5 Next Water Workshop to be held on 4th September 2019.
- 6 There is a need to recognise that all of this information will be in the public domain – for public and other professionals reference back to infection control guidance or standards needs to be clear.
- 7 Mr James to review report wording and focus between water and ventilation issues.
- 8 It was recognised that most people would read the key issues report in isolation of the main report so would not appreciate the full context, in particular around there being no systematic water issues. For this reason, consideration to be given to how each issue is categorised and described in one place.
- 9 It would be helpful to see the process of how actions taken allowed the status of each of the key issues to get to the position where these would be at an acceptable level for the hospital to open. Report to include current key issues, mitigation actions and resulting residual issues and categorisation.

GJ

1.5 Drainage Specific Point

- 1 Written confirmation awaited of verbally provided information.

1.6 Ventilation Specific Points

- 1 Literature review now complete - demonstrated limited and sub optimal evidence around air changes and clinical outcomes. Most evidence had been expert opinion, modelling and outbreak reports
- 2 Need now for some risk assessment at RHCYP+DCN on a ward by ward level around air changes. Infection Control team has started assessment of all rooms and this should be complete by the end of next week.
- 3 Risk Assessments to be complete before any broader review or commissioning group work.
- 4 Air changes is not a specific hurdle to get over but is the level generally found to be suitable in the majority of developed countries.
- 5 Buildings over last few years are much more air tight than used to be, 4 or 6 air changes per hour is not a lot of ventilation versus an old style 'leaky' building
- 6 Air changes are covered by guidance not standards. Guidance states air changes can be a combination of mechanical and naturally ventilated but there has to be an element of control about it.
- 7 NHSL did not make a decision to move to 4 air changes per hour. 6 air changes by multi-modes was accepted at the point of the settlement agreement.
- 8 Plus 2 air changes would be acceptable but at moment there is no confidence that there is 2 being achieved through other mechanisms.
- 9 Extremely difficult to test natural ventilation given the presence of lots of variables
- 10 All single rooms have natural ventilation
- 11 Bypass Arrangements if any Air Handling Unit fails – piece work to demonstrate what happens with isolation rooms in such a situation. Waiting for Multiplex to demonstrate how this works in practice.
- 12 NHSL is struggling to achieve the necessary engagement from Multiplex around the needed changes signalled which NHSL would agree to. There had been supply change challenges and progress is at an impasse until Multiplex sort out their own liabilities.
- 13 NHSL position needs to be formalised
- 14 Critical Care Position - Commercial paper concluded NHSL would not provide any waiver to Multiplex given the experience of engagement over the last 2 or 3 weeks, NHSL would now progress the formal board change process for critical care.

1.7 Other areas: Fire - National Fire Adviser from Caledonian University on site 29th and 30th August 2019 – work progressing, timescale remains 4 to 6 weeks

1.8 Other areas: Electrical and Medical Gases - work on site complete report awaited.

2. **Haematology / Oncology Provision for Children in RHCYP/DCN**

2.1 Miss Gillies reported that the work around this area remained ongoing and therefore this paper was confidential and not for wider circulation. The information provided in the paper followed on from the question raised by Professor McQueen at the previous oversight board meeting.

- 2.2 The paper was noted. Miss Gillies added that she had discussed with one of the clinical lead providers about who goes into what setting, how this is assessed and what the intended clinical practice was to be. This information formed the way in which it was intended to occupy wards and isolation areas.
- 2.3 Mrs Goldsmith made the point that it had been suggested to issue a board change now for haematology. This would give IHSL 15 working days to come back. This would mean 2 separate board changes being submitted at the same time.
- 2.4 It was recognised that there could be more detail around critical care in the NSS Health Facilities Scotland & Health Protection Scotland report. The Chair suggested Mr James take account of this as to whether this would be within the scope set out for the report. There was discussion on the most appropriate approach to ensure clear categorisation of each issue within the report and if the report should reference things going on outside advice to NHSL. Mr James would reflect on this also.

GJ

3. Minutes of Previous Meeting – 22 August 2019, for approval

- 3.1 The minutes were approved subject to clarification at paragraph 5.1 that the 7 board changes related to water only.

4. Matters Arising

- 4.1 Cabinet Secretary Briefing
 4.2 HFS Literature Review on Ventilation
 4.3 Requirements for Neutropenic Patients

- All covered in previous discussion above.

- 4.4 Staff communications - See 9.1 below

5. Technical Reviews

- 5.1 Covered in previous discussion above.

6. Commercial Progress

- 6.1 Covered in previous discussion above.

7. Migration Planning

- 7.1 Clinical risk assessment of the potential move to Children's Outpatient services in the new hospital in advance of inpatient and associated services - Miss Gillies stated that there was too much risk to manage working across a split site and moving some services ahead of other services. It was noted that DCN could move in one block and all children services also in one block.

8. Programme / Occupation Timelines

- 8.1 Mr Currie to update the timelines document and circulate. It was noted that the timelines referred to duration and did not specify calendar dates for what would happen when.

BC

9. NHS Lothian Executive Steering Group (formerly Incident Management Team)

- 9.1 Terms of Reference - The circulate terms of reference for the group were noted.

10. Communications

- 10.1 Mrs Goldsmith confirmed that the staff letter cleared after the previous meeting was still to be issued and it was likely that this would now be held until any information around the proposed board changes could be added. A revised letter would be drafted for next week with a view to being cleared next Thursday (5th September 2019).
- 10.2 Tracker of requests for information – Ms Cosens stated that in relation to FOIs there were a couple of points that she would clarify with Mr Morrison. The Chair pointed out that it would be helpful if the themes around FOI requests could be shared.

SC/AM

11. Any Other Business

- 11.1 Terms of Reference and Membership – To add Mr Archibald as Staff Side deputy to the membership.

SC


12. Date of Next Meeting

- 12.1 The next meeting of this group would take place at **8.00 am** on **Thursday 5 September 2019**, *Meeting Room 5, Waverley Gate*. It was agreed that future meetings would be from **8.00 - 9.30 am** and meeting invites updated.

From: MCLAUGHLAN, Edward (NHS NATIONAL SERVICES SCOTLAND)
Sent: 29 August 2019 15:35
To: RANKIN, Annette (NHS NATIONAL SERVICES SCOTLAND)
Cc: STORRAR, Ian (NHS NATIONAL SERVICES SCOTLAND)
Subject: RE: Bedroom ventilation rates

Project Co sought a derogation from 6-4 and the board rejected it. I think the system may have been in construction at this time. It was finished as 4 and was a point of dispute between the board and Project Co and was finally agreed in the settlement agreement, however there seems to still be dispute about what was agreed in the SA. The board maintains it agreed 4 mechanical but still 6 overall, and Project Co seems to be adamant the agreement was 4 mechanical with no designed natural component. I've not read through that bit of the SA.

So where we are is we have 4 mechanical (commissioning issues excepted) and a component of natural ventilation that we don't know if it's 2, 0.2 or 22. There was a proposal by the board to test actual performance with tracer gas dilution but the advice from their specialist was that results would likely be very variable and difficult to interpret. This was discussed at the Oversight Board today and the action was for the Board supported by NSS to risk assess each part of the building in relation to the patient groups and activities. This was particularly focussed on a draft paper the board has on Haem/onc where clinicians are looking for 6 for general areas and are content with the PPVL rooms. Soil was not mentioned.



Eddie McLaughlan
Assistant Director
Engineering, Environment and Decontamination
Health Facilities Scotland
Procurement, Commissioning and Facilities
NHS National Services Scotland


www.hfs.scot.nhs.uk

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From: RANKIN, Annette (NHS NATIONAL SERVICES SCOTLAND) 
Sent: 28 August 2019 10:39

To: MCLAUGHLAN, Edward (NHS NATIONAL SERVICES SCOTLAND) [REDACTED]

Subject: Re: Bedroom ventilation rates

Does that mean that they are only achieving 4 (and not the 6 by mixed methods) or am I reading this wrongly
And ... it was signed off by the board as being okay for 4?
Annette

Sent from my iPhone

On 28 Aug 2019, at 10:36, MCLAUGHLAN, Edward (NHS NATIONAL SERVICES SCOTLAND)

[REDACTED] wrote:

Folks

I've not been right through this yet and there is clearly more info required but this appears to show that the 4 air changes was a design agreement, regardless of the use of terms like mixed mode and natural ventilation. What we will need to do is consider this in light of information that emerged after these decisions were made (rapid review). I will forward more information as and when it arrives.

[REDACTED]
Eddie McLaughlan
Assistant Director
Engineering, Environment and Decontamination
Health Facilities Scotland
Procurement, Commissioning and Facilities
NHS National Services Scotland

[REDACTED]
www.hfs.scot.nhs.uk

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From: Henderson, Ronnie [REDACTED]
Sent: 28 August 2019 09:09
To: MCLAUGHLAN, Edward (NHS NATIONAL SERVICES SCOTLAND) [REDACTED];
STORRAR, Ian (NHS NATIONAL SERVICES SCOTLAND) [REDACTED];
Cc: Currie Brian (NHS LOTHIAN) [REDACTED];

[REDACTED]
Subject: FW: Bedroom ventilation rates

Hi Eddie, Ian,

See below and attached from MPX re 6 to 4 air change issue. The key additional document is the H & K thermal comfort analysis as that is the evidence Stewart McKechnie alluded to at last Friday's vent meeting in defence of their design. What the e-mail below states along with the other attachments, which you will have already seen, is that they only intended to provide 4 air changes. There is reference in their documents however to 'mixed mode' ventilation and that suggests to me a consideration of the effect of natural ventilation.

Let me know if this gives you enough information to go on.

Regards

Ronnie

Ronnie Henderson
Commissioning Manager Hard FM
RHSC & DCN - Little France
NHS Lothian

From: Darren Pike [REDACTED]
Sent: 27 August 2019 18:28
To: Goldsmith, Susan
Cc: Henderson, Ronnie; Currie, Brian; Callum Tuckett; Matthew Templeton;
[REDACTED]
Subject: Bedroom ventilation rates

Susan

Callum has asked I forward you the words in response to the question from HFS being discussed in the ventilation work group;

"From the information provided it is clear that the intention is that between the windows and the associated trickle vents a component of natural ventilation will be present. What I am looking for is an understanding of whether it is simply an assumption that that will amount to two air changes or if there is analysis and calculation to back it up. I do accept that the guidance allows for an element of variability in the delivery of natural ventilation but to be able to assure government that the building meets the requirements, I need to know how we can be sure that what is provided is sufficient. This is particularly an issue as the windows appear to be being relied on in addition to the trickle vents, as these will be shut for the majority of the time.

As a separate issue for your consideration, In the information provided there is an assertion that the pressure from room to corridor will be balanced when the windows are open. Whilst this may be true in still air or on the windward face of the building, it is unlikely to be true in the lee of the

building in a breeze. Clinical leads need to understand this and its potential impact on the risks to certain patient groups."

Confirmation of the key points from the meeting of last Friday 23.08.19 where single bedroom ventilation rates were discussed. Based on the energy efficiency vision of the hospital, the Guidance within SHTM 03-01 for 6ACH were derogated down to 4ACH, and this was captured within the SA, item 13, and appendix 13, as attached. To be clear the agreed position contained within the SA is for 4 ACH, note that openable windows provide beneficial use to the user only, and supplements the agreed design solution to provide 4ACH as this is provided via mechanical ventilation. The key driver for openable windows were treated as beneficial use only so far as air changes are concerned. We expressed our concerns surrounding the pressure regime implications when any window is opened, however this was a risk the Board were willing to accept. There would therefore be an element of operational management within each ward depending on specific patient needs.

The origins of 4ACH can be traced back to the reference design environmental matrix and the optioneering carried out by Hulley + Kirkwood (attached for ease of reference). During bid stage due diligence was carried out to assess the suitability of the energy efficiency vision within the reference design, and captured as part of the Project Co proposals. During detail design Wallace Whittle carried out an energy model analysis of 4ACH to ensure the thermal comfort parameters were met, and the energy model outputs were shared during detailed design workshops reviewed by the Board's Technical Advisors.

Regards

Darren

Darren Pike
Project Director

<image001.jpg>

Multiplex Construction Europe Ltd



<image002.jpg>

<image003.png> <image004.png> <image005.png>

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<181212 SA Item 13 Project Co Change 051_45019169_1.docx>

<RHSC DCN Reference Design Thermal Comfort Analysis.pdf>

<Reference Design Env Matrix.xlsx>

SBAR

Clinical Risk Assessment of the potential to move Children's Outpatient services into the new Hospital in advance of inpatient and associated services.

Situation

The planned move of RHSC has been delayed due to concerns about ventilation in the paediatric Critical Care Unit. As a result, Health Facilities Scotland and Health Protection Scotland have been asked by Scottish Government to undertake a technical review of all aspects of the building design and build, to confirm that these meet the appropriate standards. This review is currently ongoing.

In the meantime, DCN and Children's services have been asked to do a clinical risk assessment of the potential for a phased migration of services, which for Children's services would be the Outpatient service, as inpatient services cannot be moved piecemeal. This work has now been completed.

Background

All Speciality teams at RHSC were asked to carry out a structured risk assessment for their own outpatient service, setting out:

- what supporting clinical and other services they required to have access to in order to run their outpatient service safely and effectively
- their assessment of the risks, potential mitigation of risks and benefits of a phased move of outpatient services.

These clinical risk assessment templates have now been received and assessed by the Children's Clinical Management team.

Assessment

Benefits of a phased move of outpatient services

1. The much improved environment and space in the new hospital would be the main benefit for patients and staff alike, for services which run outpatient clinics.

2. For some services, moving outpatient clinics would allow access to better equipment/imaging (ENT, Radiology)
3. For some services with currently very poor office accommodation, a move would allow them access to much better facilities in the new Clinical Management (office) suite.
4. In terms of emergency medical / winter pressures, there would also be a benefit of freeing up space in the old outpatient department, which is immediately adjacent to the Emergency Department (ED), as it would allow the ED to expand its assessment and observation space, reduce crowding in the ED and allow improved patient flow.
5. There would be some benefit for clinical support services like Labs and Pharmacy where staff resources are currently stretched to provide full inpatient and outpatient services on the current site.

Risks

1. For the majority of services, split site working between RHSC (to support/ provide inpatient care) and the new site (to run outpatient clinics) will result in a loss of capacity due to travel time between the sites.
2. This will impact on both outpatient waiting times and inpatient waiting times, as clinic templates would need to be slightly reduced and theatre lists adjusted.
3. If the delay in the full move of the inpatient service was only going to be a short one, this loss of capacity would have less impact, but any significant time lag between a partial move and the full hospital migration would have a detrimental impact on capacity and waiting times across all specialities which would be very difficult to recover, due to the constraints on capacity (mainly staffing) in Children's services and the lack of external provider capacity.
4. There would be an impact on ED and emergency care/4 hour access if clinical teams who can currently respond quickly to urgent requests for specialist review are off site running outpatient clinics.
5. Urgent care/ PICU/ inpatient care would be impacted if specialist clinical teams are not available flexibly as now on site (there are a number of single handed specialists/very small specialist teams)
6. For some services, the equipment they need to run both outpatient services and inpatients services would not be available on both sites (eg Ophthalmology, Dental, Respiratory Physiology) and it would be unrealistic/unaffordable/take too long/ to purchase additional equipment.
7. There are not currently enough OPD nursing staff to run clinics in RHSC for those services who could not move in advance, as well support services whose clinics who could move as a standalone to the new site, as well as running existing clinics at Lauriston Building (to be

retained as city centre provision) and some current SJH clinics. Funding could be provided for extra posts, but Paediatric nursing recruitment is very challenging and vacancies levels are already high, so this would not be a quick solution.

Recommendation

The Children's Clinical Management Team (CMT) has reviewed all of the information, risks and benefits for the different specialties and services.

There is a clear clinical consensus that inpatient and outpatient services should move as a whole and that a phased move of outpatients before the inpatient service should not be supported.

The CMT's view is that while a small number of services could in theory move in advance of the inpatient service, the only efficient way to run outpatients would be for the service to move in its entirety.

The CMT agrees that patient care, particularly urgent care, would be impacted by teams having to split their time between 2 sites, bearing in mind the small size of many specialist teams.

The CMT acknowledges that a phased move of outpatients would inevitably result in a loss of capacity and this would impact on patient care, resulting in longer waiting times. Unless the time between a partial and then full move of the RHSC services was quite short, this loss of capacity would be significant and difficult to recover.

For all of these reasons, the CMT would not recommend a phased move of outpatient services.

August 2019

From: Currie, Brian
Sent: 29 August 2019 16:23
To: 'Greer, Graeme'; Bain, Kelly J
Cc: Henderson, Ronnie; Mackenzie, Janice
Subject: RE: NHSL - RHSC/DCN - Ventilation Works draft LOI and contractor collateral warranty - lot/7/113 - 22.8.19 [IWOV-eastdb1.FID638981]
Attachments: 3 Critical Care Ventilation Paper 08-08-19_approved by Oversight Board 8 Aug 2019.docx

Copy attached as approved by Oversight Board

Brian

Brian Currie
Project Director - NHS Lothian

[Redacted]

[Redacted]

-----Original Message-----

From: Greer, Graeme [Redacted]
Sent: 29 August 2019 16:14
To: Bain, Kelly J; Currie, Brian
Cc: Henderson, Ronnie; Mackenzie, Janice
Subject: RE: NHSL - RHSC/DCN - Ventilation Works draft LOI and contractor collateral warranty - lot/7/113 - 22.8.19 [IWOV-eastdb1.FID638981]

Kelly,

Using the text from the email below, minor changes attached.

Can you add to the high value Board Change.

Brian,

Just another thought, should we be getting a HFS review before issue?

Thanks
Graeme

Graeme Greer
Associate

[Redacted]

-----Original Message-----

From: Greer, Graeme

Sent: 29 August 2019 16:03

To: Currie, Brian

Cc: Bain, Kelly J ; Henderson, Ronnie

Mackenzie, Janice

Subject: FW: NHSL - RHSC/DCN - Ventilation Works draft LOI and contractor collateral warranty - lot/7/113 - 22.8.19 [IWOV-eastdb1.FID638981]

Brian,

In terms of drafting the technical content of the change, the email below / attached with proposed Appendix 1 Part 2.

Do you know if this is the latest agreed drafting?

If it is, following a chat with Ronnie, we have some comments.

Thanks
Graeme

Graeme Greer
Associate

-----Original Message-----

From: Currie, Brian

Sent: 22 August 2019 14:45

To: Greer, Graeme ; Henderson, Ronnie

Subject: Fw: NHSL - RHSC/DCN - Ventilation Works draft LOI and contractor collateral warranty - lot/7/113 - 22.8.19 [IWOV-eastdb1.FID638981]

Sent from my BlackBerry 10 smartphone on the EE network.

From: Margaret Kinnes

Sent: Thursday, 22 August 2019 14:33

To: Currie, Brian; Graham, Iain

Cc: Jennifer McKay

Subject: FW: NHSL - RHSC/DCN - Ventilation Works draft LOI and contractor collateral warranty - lot/7/113 - 22.8.19 [IWOV-eastdb1.FID638981]

Iain and Brian

Conscious of the tone of the discussion with IHSL yesterday but in light of what has gone to Oversight Board , I attach wording for Appendix 1 Part 2 of the LOI.

I have proposed some changes in tracks which I think might make it more palatable for IHSL (and to conform to the PA terminology) but if you prefer we could just put the wording verbatim that went to the Oversight Committee?

Please let me know what you think before I circulate to IHSL/MPS lawyers. Thanks

Regards

Maggie

Margaret Kinnes
Senior Associate
MacRoberts LLP

[Redacted]


[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

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From: Cosens, [REDACTED]
Sent: 22 August 2019 12:54
To: Margaret Kinnes [REDACTED]; Jennifer McKay
[REDACTED]
Cc: Lynn Pentland [REDACTED]
Subject: [EXTERNAL] RE: NHSL - RHSC/DCN - Ventilation Works draft LOI and contractor collateral warranty - lot/7/113 - 22.8.19 [IWOV-eastdb1.FID638981]

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Hi

Please find attached the paper that went to this morning's Oversight Board. The specification in section 3.3 was approved for inclusion in the Letter of Intent.

Best wishes,
Sorrel

From: Margaret Kinnes [REDACTED]
Sent: 22 August 2019 10:32
To: Goldsmith, Susan; Currie, Brian; Graham, Iain; Pryor, Michael; Cosens, Sorrel
Cc: Jennifer McKay; Lynn Pentland
Subject: FW: NHSL - RHSC/DCN - Ventilation Works draft LOI and contractor collateral warranty - lot/7/113 - 22.8.19 [IWOV-eastdb1.FID638981]
Importance: High

Dear All

Revised draft LOI and a draft Contractor collateral warranty now issued to IHSL and MPX legal advisers, to reflect discussion yesterday. Please see attached.

Regards

Maggie

Margaret Kinnes

Senior Associate

MacRoberts LLP

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]


[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

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From: Margaret Kinnes
Sent: 22 August 2019 10:29
To: 'MILLER Victoria'

[REDACTED]; BLACK
Sophie [REDACTED];

Cc: Jennifer McKay

[REDACTED]; Lynn Pentland
[REDACTED]; FREW Gillian

Subject: NHSL - RHSC/DCN - Ventilation Works draft LOI and contractor collateral warranty - lot/7/113 - 22.8.19 [IWOV-eastdb1.FID638981]
Importance: High

Victoria

Please find attached mark-up of the draft LOI following the all parties meeting/conf. call yesterday. I also attach a draft Contractor collateral warranty. The draft LOI should reflect the discussion yesterday, but in the interests of speed the attached documents are being issued "client unseen" and subject to NHSL comments.

All parties are keen to progress the LOI swiftly and the intention is to put the LOI in place tomorrow.

Parties did however accept that it will be preferable for everyone concerned to get the SA in place as soon as possible and we would welcome comments on that too asap.

This email and attachments are without prejudice to our client's whole rights and pleas and may not be founded upon, are commercially sensitive and confidential and do not and are not intended to form any contract.

Regards

Maggie

Draft LOI – document 5463318 v8
Draft Contractor collateral warranty - document 5475391 v1

From: MILLER Victoria

Sent: 19 August 2019 17:28

To: Margaret Kinnes

[REDACTED]; BLACK Sophie

Cc: Jennifer McKay

[REDACTED]; Lynn Pentland

[REDACTED]; FREW Gillian

Subject: [EXTERNAL] RE: NHSL - RHSC/DCN - Ventilation Works - lot/7/113 - 16.8.19 [IWOV-eastdb1.FID638981]

This message originated from outside your organisation _____

Maggie

Many thanks for your email.

IHSL and MPX have prepared a mark-up along with comments in relation to the LOI which I attach for your review. It would be helpful if you could update us as to proposed timings for entering into the LOI and additionally how you see the vires/consenting position being addressed.

We are reviewing the Settlement Agreement separately as you will appreciate it is more substantive in nature and will require a detailed review amongst all parties including Hogan Lovells.

As with your email, you will appreciate that this email and our draft response to the Letter of Intent are without prejudice to both our client and MPX's whole rights and pleas and may not be founded upon. Equally our draft response is commercially sensitive and confidential and does not and is not intended to form any contract.

Perhaps you can let us know what is the easiest way to take this forward.

Kind regards

Victoria

Victoria Miller
Partner
for Pinsent Masons LLP

[REDACTED]

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Winner – 'Energy & Infrastructure Team of the Year' 2016, 2018, 2019 at The Legal Business Awards

From: Margaret Kinnes [REDACTED]

Sent: 16 August 2019 14:37

To: BLACK Sophie; [REDACTED]; MILLER
Victoria

Cc: Jennifer McKay; Lynn Pentland

Subject: [EXTERNAL] NHSL - RHSC/DCN - Ventilation Works - lot/7/113 - 16.8.19 [IWOV-
eastdb1.FID638981]

Dear All

Following the discussions earlier this week, please find attached draft (1) Letter of Intent and (2) draft Supplemental Agreement No 2.

These drafts are issued "client unseen" although have been discussed briefly with NHSL, and are therefore subject to NHSL review and comment.

This email and attachments are without prejudice to our client's whole rights and pleas and may not be founded upon, are commercially sensitive and confidential and do not and are not intended to form any contract.

Regards

Maggie

Draft LOI – document 5463318 v6

Draft SA2 – document 5397341 v5

[LS_Accredited Specialist_300dpi (5)]
Accredited Specialist in Construction Law

Margaret Kinnes

Senior Associate

MacRoberts LLP

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]


[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

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[cid:image007.png@01D556B2.9ECBC720]

[cid:image008.png@01D556B2.9ECBC720]



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[redacted] for full details of the changes.

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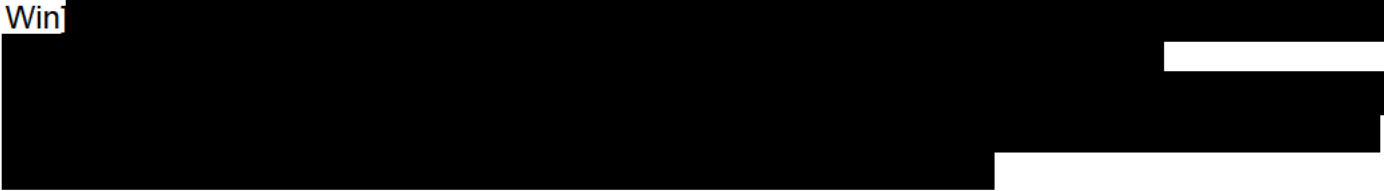
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[cid:image025.png@01D558E6.48FB2A80]

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NHS Lothian – RHCYP & DCN Oversight Board



Meeting date	8 August 2019
Title	Critical Care Ventilation – proposed technical specification
Responsible Director	Susan Goldsmith
Report Author	Iain Graham

Purpose of the Report

This report is presented to the Committee for:

Decision	x	Discussion	x	Awareness	
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This report aligns to the following strategic contexts:

Government Policy/Directive		IJB Strategy / Direction		Legal Requirement	
Board Strategy		Annual Operational Plan		Corporate Objective	
Local Policy		Operational Issue		Other	x

This report aligns to the following quality ambition(s):

Person Centred		Safe	x	Effective	
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SBAR Report

Situation

The key decision point for delaying the operational transfer of services in July 2019 was the assessment of ventilation serving Critical Care within the RHCYP component of the new facility by the Board's independent commissioning and validation engineer. Since that time, work has been underway to identify a potential solution to the issues identified. This work has been carried out with IHSL and their supply chain; with HPS and HFS supporting the Board's project team.

Background

The assessment identified that the air changes per hour (ACH) were below the standard for critical care accommodation set in national health guidance, Scottish Health Technical Memorandum 03-01 (SHTM 03). This guidance also covers other environmental conditions relevant to the ventilation system, etc.

Following preliminary dialogue with IHSL and Multiplex, around the time of the proposed transfer, an option to improve the ventilation system in critical care was outlined. However, no engineering designers from their supply chain has been involved directly to date.

This outline has been developed over the last few weeks but with limited designer input as they have only been represented at meetings recently.

Assessment

Clinical services – the engagement with clinical stakeholders has been through the project team and management lines. The outlined proposal has been accepted by the Critical Care lead clinician and management; this has been issued to HFS for guidance feedback.

Infection Control / Microbiology – NHS Lothian lead Microbiology Consultant, Infection Protection and Control leads and Health Protection Scotland have been involved.

Legal and commercial – implementation of an appropriate contract mechanism to ensure works are carried out in a cost effective and compliant manner. A draft "Board Change" has been prepared; but

without inclusion of any other works that may result from the technical and governance reviews. The reservation of legal positions has not been proposed as part of the draft Board change.

Recommendation

The proposed Board Change for agreement of the Oversight Board is:

In accordance with Schedule Part 16 (Change Protocol), the Board requires Project Co to:

Design, Supply and Install a ventilation system or systems capable of delivering **10 air changes/hour at +10pa** as per SHTM 03-01, Appendix 1, Table A1 to the following rooms:

1-B1-065 including 1-B1-022, 1-B1-069, 1-B1-066 and 1-B1-071 which are all open to 1-B1-065

1-B1-075

1-B1-063

1-B1-037

1-B1-031

1-B1-021

1-B1-020

1-B1-019

1-B1-009

All environmental requirements for all spaces served by these systems shall be met – including but not limited to, temperature, lighting levels, noise, and humidity. These should be consistent to the agreed parameters throughout the facility adjusted as appropriate to meet the specific clinical and operational needs for the space.

The system installation, finishes and maintenance regime shall be in accordance with SHTM 03-01 requirements, together with clinical and operational constraints identified below:

All works to be carried out and monitored after and with reference to a collaborative full Stage 3 HAI SCRIBE assessment being approved by NHS Lothian.

The fire strategy and systems agreed for the facility will be maintained throughout the works and operational period. The works will integrate with these systems and all other building management systems.

The location of the installation within the rooms, external areas, route across such spaces and the take out of any windows, etc, will enable the current operational functionality and safety policies and procedures to be maintained.

The layouts etc will be agreed with the Project Director (and in turn the clinical service and related stakeholders) as part of the design development which will include input from the Board and all appropriate stakeholders.

Impacts

Quality / Patient Care

Improvement on current installation.

Workforce

As reported separately regarding the delayed occupation of the facility and subject to the timeframe for the delivery and commissioning for the works.

Financial

Initial estimate £1.8m project cost allowance.

Risk Assessment and Management

To be developed

Equality and Diversity, including Health Inequalities

Not applicable for this report.

Has an equality and diversity impact assessment (EQIA) been completed?

No

Communication, Consultation, Involvement and Engagement

The following have been consulted before the Committee meeting:

Stakeholder / Group Name	Date(s)
Project team, Infection Prevention & Control and Microbiology and engagement with HPS / HFS as part of the review programme	

Route to the Committee

This business case 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.

Committee/Group/Meeting	Meeting date
None	

List of Appendices

The following appendices are included with this paper

Appendix No	Document title
None	

From: Currie, Brian
Sent: 30 August 2019 14:23
To: 'Wallace Weir'
Cc: Goldsmith, Susan; Graham, Iain
Subject: RHCYP + DCN - Little France - HVCN 095
Attachments: Letter to IHSL_ HVCN 095_30_08_19.pdf; HVC 095 - Paediatric Critical Care Ventilation.pdf
Importance: High

Wallace

Please find attached High Value Change Notice 095 (Paediatric Critical Care Ventilation) for your attention and action.

Hard copy has been posted to you today.

Regards

Brian

Brian Currie
Project Director - NHS Lothian
RHCYP + DCN

[Redacted signature block]

[Redacted signature block]



Wallace Weir
Project Co Representative
IHS Lothian Limited

[REDACTED]

Date: 30th August 2019
Our Ref : [REDACTED]
Enquiries to: B Currie
Extension: [REDACTED]
Direct Line: [REDACTED]
E-mail: [REDACTED]

Dear Sir,

**Re-Provision of RHSC and DCN at Little France
Board Change Notice – High Value Change 095 - Paediatric Critical Care Ventilation**

I refer to the above matter.

Please find enclosed Board Change Notice 095 for a High Value Change. I should be grateful if you would please acknowledge receipt.

As you know, parties must within 5 Business Days of receipt by Project Co of any High Value Change Notice discuss and review the nature of the High Value Change, including a discussion as to which of the items set out in paragraph 3.4 of Section 4 (High Value Changes) of Schedule Part 16 (Change Protocol) of the Project Agreement are appropriate to be included within the High Value Change Proposal. We are available on the undernoted date to discuss these matters. Please confirm your availability.

Yours sincerely

[REDACTED]

Brian Currie
Board's Representative
For and on behalf of NHS Lothian

Note referred to:-
2pm, Weds 4th September, 2019

[REDACTED]

High Value Change Notice

Project:	RHCYP & DGN
----------	-------------

1 – Issue of Change Notice to Project Co

Title:	Paediatric Critical Care Ventilation		
Reference No:	095	Date:	
Target Cost Capital:	£1.9m exc VAT	Target Cost Revenue:	TBA

High Value Change Requirements (Schedule Part 16, Section 4, Clause 2.1.3)

In accordance with Schedule Part 16 (Change Protocol), Project Co is required to design, manufacture, supply, construct, test, commission and complete, and thereafter throughout the Operational Term, provide Services to, maintain, repair, renew and replace, a ventilation system or systems which will deliver 10 air changes/hour at +10pa as per SHTM 03-01, Appendix 1, Table A1 to the following rooms at the Facilities:

1-B1-065 – Neo Natal 3 cot area including 1-B1-022 – Corridor, 1-B1-069 – Staff Base, 1-B1-066 – Clean Utility and 1-B1-071 – Resus Bay which are all open to 1-B1-065

1-B1-075 – Single cot cubicle neo natal including 1-B1-074 en-suite

1-B1-063 – Open plan bay 4 bed

1-B1-037 – Single bed cubicle

1-B1-031 – Open plan bay 4 bed

1-B1-021 – Single bed cubicle

1-B1-020 – Single bed cubicle

1-B1-019 – Single bed cubicle

1-B1-009 – Open plan bay 4 bed

(the "Ventilation Works and Services").

All environmental requirements for all spaces in the Facilities served by or affected by the Ventilation Works and Services systems shall be met and maintained – including but not limited to, temperature and control, lighting levels, noise, and humidity. These should be consistent to the agreed parameters throughout the Facilities to meet the specific clinical and operational needs for each space in the Facilities.

The Ventilation Works and Services shall fully comply with SHTM 03-01 requirements which includes, without limitation, implementation of the Ventilation Works and Services so that the system installation, finishes and maintenance regime shall be in accordance with SHTM 03-01 requirements, together with the clinical and operational constraints identified below:

1. All Ventilation Works and Services shall be carried out and monitored after and with reference to a collaborative full Stage 3 HAI SCRIBE assessment being approved by the Board.
2. The fire strategy and systems agreed for the Facilities will be maintained throughout the Ventilation Works and Services and the Operational Term and such that the ventilation systems will integrate with the fire strategy and systems and all other building management systems comprised in the Facilities.
3. The location of the installation within the rooms, external areas, route across such spaces and the take out of any windows, etc, will enable the current operational functionality and safety policies and procedures to be maintained.
4. The design, layouts, finishes and other details etc for the Ventilation Works and Services, at all stages (including during the design development stages), will require to be agreed with the Board's Representative (and in turn the clinical service and related stakeholders and Project Co recognises that in order to achieve agreement from the Board's Representative's the Board's Representative will

HVCN

seek input from the Board and all appropriate stakeholders.

Value for Money Assessment (Schedule Part 16, Section 4, Clause 2.1.4)

The Board will, in consultation with Project Co, continue to review costs as the design develops and at other stages. In order for the Board to assess whether the High Value Change Stage 2 Submission offers it value for money the submission shall include as a minimum the following information:

- A detailed and fully quantified pricing schedule for the construction works
- A detailed breakdown of all Preliminaries and general cost items
- Construction issue drawings and specification
- Proposed, construction and commissioning/testing programme
- Construction phase method statement

Date by which parties are required to meet to review the High Value Change Notice and agree the content for the High Value Change Proposal (Schedule Part 16, Section 4, Clause 2.3.1)

05/09/19

To: IHS Lothian

We require the Change described above.

Please advise when Project Co will submit a High Value Change Proposal for the above.

Signed on behalf of NHS Lothian:

Name of Signatory (type or print):

Date: 30/08/2019

From: Matthew Templeton [REDACTED]
Sent: 30 August 2019 10:30
To: Stephen Gordon; Richard Osborne (MacCap); Viv Cockburn; Roger Thompson RMT
Cc: Wallace Weir; MILLER Victoria; BLACK Sophie
Subject: RHSC: Call with Susan Goldsmith

Dear all,

I spoke with Susan last night, who provided an update of how they wish to proceed following the Oversight Board.

NHSL are withdrawing their offer to provide a waiver of claims with respect to the as-built critical care ventilation.

They will issue a Board Change today to IHSL on the understanding this work will not be delivered by MPX, and will likely be delivered by BYES (adding months to the completion programme). NHSL's view is that the delay in procuring the critical care ventilation will not have as significant an overall impact as they consider MPX will be a similar length of time rectifying IOM ventilation issues. MacRoberts have reviewed in detail the Board Change process and they will enforce the timescales for response. [**Sophie:** IHSL will require a summary of HV Board Change process?].

Susan provided the following rationale for the NHSL decision which has been ratified by the Oversight Board and Christine McLaughlin was due to be briefing the Cabinet Secretary:

1. NHSL consider there to be poor engagement from the designers TUV SUD. There is clearly a clash between TUV SUD and NHSL's project team and indeed Brian Currie has been requesting for weeks that MPX consider an alternative designer.
2. NHSL has anxiety in providing MPX with the waiver for critical care whilst there are potentially several other design/construction issues. They also believe that in providing the waiver, MPX will not rectify all of the IOM ventilation observations. I asked if NHSL were intending on raising a claim with respect to Critical Care ventilation and Susan replied no.
3. NHSL has a lack of confidence MPX will resolve the IOM ventilation issues. They have been disappointed in the level of engagement, lack of clarity on what will be done and when. NHSL are going through the IOM Report and will issue something out next week. [**Wallace:** We absolutely need to get on top of the IOM list and have a clear understand what MPX are accepting requires remedial work and the programme for completion, and where they do not consider there to be a compliance issue and will not undertake works.]

It is unlikely BYES will want to implement this Board Change and indeed may struggle to find designers prepared to work on this project given the focus.

NHSL state that once the IOM ventilation issues are resolved, plus any others from HFS reviews, they will commence a phased migration of DCN.

Susan has requested MPX do not attend next week's Steering Group.

I briefed Ben Keenan on the above and MPX are considering, although he stated it was highly unlikely MPX will participate in critical care given no waiver is being provided.

I have a call with PMs on other stuff at 11am, however perhaps we can catch up around 12:30pm (I am not around this afternoon).

Regards
Matt

Matt Templeton | Director



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From: McMahon, Alex
Sent: 30 August 2019 12:00
To: [REDACTED]; Goldsmith, Susan; [REDACTED];
Cc: [REDACTED]; [REDACTED]; [REDACTED];
[REDACTED]; Gillies, Tracey
Subject: Re: RHCYP Follow up questions

Quick update is we are pulling a workshop together for Wed afternoon re DCN, and it will include HPS and HFS and clinicians etc.

Alex

Sent from my BlackBerry 10 smartphone on the EE network.

From: [REDACTED]
Sent: Friday, 30 August 2019 11:54 AM
To: Goldsmith, Susan; [REDACTED]; [REDACTED];
Cc: [REDACTED]; [REDACTED]; [REDACTED];
[REDACTED]; Gillies, Tracey; McMahon, Alex
Subject: RHCYP Follow up questions

Susan

Following the Oversight Board meeting our internal SG discussions yesterday, I would be grateful if you could liaise with Gordon and Jacquie and provide a response to the following questions by close of play Monday:

1. Timeframe for completing the clinical risk assessment ward by ward for DCN and for Sick Kids, taking account of air pressure as well as air changes. Is it possible to complete these during the course of next week?
2. Remedial ventilation action in Sick Kids – will the two potential board changes on ventilation impact on migration of DCN?
3. Timescale for migration of DCN – what is the anticipated timeframe for migration based on 1 and 2 above.
4. What plans do you have for risk mitigation on both existing sites over winter, particularly A&E?
5. Assessment of risk relating to sale of existing sick kids site if timeframe is extended to next spring/summer
6. Understanding of whether the definition of mixed mode (4+2) is clear that opening windows requires to be controlled. If so what assessment was undertaken in accepting 2 air changes from manual window opening and trickle vents?

I'm aware that Fiona has taken the opportunity today whilst at SEND to speak to Alex and Jacqui on this list, so they are already aware.

Regards

Christine

Christine McLaughlin

Chief Finance Officer NHS Scotland and Director of Health Finance, Corporate Governance and Value

[Redacted]

[Redacted]

From: Goldsmith, Susan
Sent: 30 August 2019 12:31
To: [REDACTED]
Cc: [REDACTED]; Gillies, Tracey; McMahon, Alex; Currie, Brian; Executive, Chief
Subject: RE: RHCYP Follow up questions

Thanks Christine

Will come back to you more fully on Monday but from discussions this am I am concerned about our ability to answer 2 fully. We have a good understanding of critical care change and the associated works which allow us to conclude that the works will not impact on the migration of DCN. Speaking to Brian this am it is less clear if we require works for Haem/Onc whether this is also the case

And finally as we discussed yesterday the Board believed that we were getting 4 mechanical air changes and 2 mixed mode which is within the parameters of the guidance. I am assuming the full risk assessment underway will address the question

Regards

Susan

From: [REDACTED]
Sent: 30 August 2019 11:54
To: Goldsmith, Susan; [REDACTED]
Cc: [REDACTED]; [REDACTED]; [REDACTED]; Gillies, Tracey; [REDACTED]; McMahon, Alex
Subject: RHCYP Follow up questions

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Regards

Christine



Christine McLaughlin

Chief Finance Officer NHS Scotland and Director of Health Finance, Corporate Governance and Value

[Redacted]

[Redacted]

From: Gillies, Tracey
Sent: 01 September 2019 12:53
To: McMahon, Alex; Goldsmith, Susan; Currie, Brian; Cosens, Sorrel
Subject: FW: RHCYP Follow up questions
Attachments: ATT00001.txt

I think there are a few important points we need to make sure are understood :

1. I don't think I understand this question- I have seen what Donald Lindsay and Janice have done, I am not sure this helps. There is a fundamental question that is not for us to answer which are these type of clinical risk assessments going to be acceptable (in which case we have come full circle apart from critical care)
 2. Whether or not the board change on ventilation for paed critical care or for haem onc if required impacts on to DCN move is a question that can only be answered when we see the proposed design. We should be able to have a decent guess based on where works will be done but will need to be sure that HAI scribe is completed before a definite answer is given
 3. Timescale for migration is less dependent on Q2 above but on the compliance or otherwise of the Air Handling Units. My understanding of the current situation is that MPX say they are compliant and HFS say they are not. If there is work to be done on AHU, and I think that some parts of that work are agreed (grille/filter changes) and some are not (cabling and ducting within AHU and risk of potential bypass), the timescales and method need to be agreed- and in particular the method needs to be agreed by HFS that it will bring them up to compliance. I think this issue is not well conveyed on HFS HPS report and I have had the impression that this is a showstopper for them but the report doesn't convey that clearly.
 4. Paeds ED almost always as 100% its the ability to cohort medical inpatients that is an issue. And that starts with RSV which usually begins in 4 weeks. Winter less of a pressure for DCN. Ward 20 works are the DCN pressure
 5. Not for me
-
6. I think this means that the contribution of natural ventilation through trickle vents and windows as some element of control. Is this what we are doing on Wed pm??

Q3 the most important to resolve for me as DCN cannot progress without this clarity

Tracey

From: [REDACTED]
Sent: 30 August 2019 11:54
To: Goldsmith, Susan; [REDACTED]; [REDACTED]
Cc: [REDACTED]; [REDACTED]; [REDACTED]; [REDACTED]; Gillies, Tracey; McMahon, Alex
Subject: RHCYP Follow up questions

Susan

Following the Oversight Board meeting our internal SG discussions yesterday, I would be grateful if you could liaise with Gordon and Jacquie and provide a response to the following questions by close of play Monday:

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Regards

Christine



Christine McLaughlin

Chief Finance Officer NHS Scotland and Director of Health Finance, Corporate Governance and Value

[Redacted]

[Redacted]

From: JAMES, Gordon (NHS NATIONAL SERVICES SCOTLAND)
Sent: 02 September 2019 14:00
To: STORRAR, Ian (NHS NATIONAL SERVICES SCOTLAND); CONNOLLY, Bill (NHS NATIONAL SERVICES SCOTLAND); MCLAUGHLAN, Edward (NHS NATIONAL SERVICES SCOTLAND); MCGROGAN, Kelly (NHS NATIONAL SERVICES SCOTLAND); REDUCING-RISK-HCE (NHS NATIONAL SERVICES SCOTLAND)
Subject: FW: RHCYP Follow up questions

FYI – Gordon.

From: JAMES, Gordon (NHS NATIONAL SERVICES SCOTLAND)
Sent: 02 September 2019 14:00
To: [REDACTED]; REILLY, Jacqui (NHS NATIONAL SERVICES SCOTLAND)
Cc: MORGAN, Mary (NHS NATIONAL SERVICES SCOTLAND); Morrison Alan (SCOTTISH GOVERNMENT HEALTH & SOCIAL CARE DIRECTORATE) [REDACTED]; [REDACTED]; [REDACTED]
Subject: RHCYP Follow up questions

Christine,

We will be able to give a high level overview for both Fire and Electrical Systems by close of play on Friday. The final reports for these systems are not anticipated until the end of week commencing 23rd September.

With regards to Medical Gases, we have not started the review on-site of this MG system. We are in the process of mobilising staff and provision to have a Medical Gas Validation Consultant on-site this Friday 6th and Tuesday 10th September with the final report due week commencing 7th October. (There may be an option to get a high level overview in the intervening period post the site visits, this will depend on any supplementary information required.)

Best Regards

Gordon.

From: [REDACTED]
Sent: 30 August 2019 13:19
To: JAMES, Gordon (NHS NATIONAL SERVICES SCOTLAND) [REDACTED]; REILLY, Jacqui (NHS NATIONAL SERVICES SCOTLAND) [REDACTED]
Cc: MORGAN, Mary (NHS NATIONAL SERVICES SCOTLAND) [REDACTED]; Morrison Alan (SCOTTISH GOVERNMENT HEALTH & SOCIAL CARE DIRECTORATE) [REDACTED]; [REDACTED]; [REDACTED]
Subject: RE: RHCYP Follow up questions

Gordon

In addition to the note below, could you also give me an update by close of play Monday, on the ability to provide an assessment of any significant issues regarding the other three components – fire, electrical and medical gases – by mid to end of next week.

Regards

Christine

From: McLaughlin C (Christine)

Sent: 30 August 2019 11:54

To: Susan Goldsmith [REDACTED]; 'JAMES, Gordon (NHS NATIONAL SERVICES SCOTLAND)'; Jacqui Reilly [REDACTED];
Cc: CNO : Head of Chief Nursing Officer [REDACTED]; Chief Medical Officer [REDACTED];
 Smith G (Gregor) [REDACTED]; Morrison A (Alan) [REDACTED]; Roche R (Rowena) [REDACTED];
 [REDACTED]; Crowe B (Barbara) [REDACTED]; 'MORGAN, Mary (NHS NATIONAL SERVICES SCOTLAND)'; 'Gillies, Tracey' [REDACTED];
 [REDACTED]

Subject: RHCYP Follow up questions

Susan

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1. Timeframe for completing the clinical risk assessment ward by ward for DCN and for Sick Kids, taking account of air pressure as well as air changes. Is it possible to complete these during the course of next week?
2. Remedial ventilation action in Sick Kids – will the two potential board changes on ventilation impact on migration of DCN?
3. Timescale for migration of DCN – what is the anticipated timeframe for migration based on 1 and 2 above.
4. What plans do you have for risk mitigation on both existing sites over winter, particularly A&E?
5. Assessment of risk relating to sale of existing sick kids site if timeframe is extended to next spring/summer
6. Understanding of whether the definition of mixed mode (4+2) is clear that opening windows requires to be controlled. If so what assessment was undertaken in accepting 2 air changes from manual window opening and trickle vents?

I'm aware that Fiona has taken the opportunity today whilst at SEND to speak to Alex and Jacqui on this list, so they are already aware.

Regards

Christine



Christine McLaughlin

Chief Finance Officer NHS Scotland and Director of Health Finance, Corporate Governance and Value

[REDACTED]

[REDACTED]

DRAFT

RHCYP & DCN Executive Steering Group

Minutes of the RHCYP & DCN – Executive Steering Group meeting held at 4:00pm on Monday 2 September 2019 in Meeting Room 5, Waverley Gate, Edinburgh.

Present: Susan Goldsmith (Chair); Janis Butler; Sorrel Cosens; George Curley; Brian Currie; Tim Davison; Tracey Gillies; Iain Graham; Lindsay Guthrie; Donald Inverarity; Alex Joyce; Judith Mackay (from 5:05pm); Janice Mackenzie and Alex McMahon.

In Attendance: Douglas Weir.

1. Minutes of the Previous Meeting held on 26 August 2019

1.1 Approved.

2. Matters Arising

2.1 Corporate Ownership – Reference was made to Minute 6.3 of the previous meeting which detailed the need for corporate ownership of the process. It was noted that the Executive Steering Group was effectively the NHS Lothian Executive Leadership Team with others in attendance as support. The formal reporting line would be through the Finance and Resources Committee who would receive updates as the main governance vehicle and thereafter to the Board through that route. Links into the Healthcare Governance Committee were noted.

2.1.1 George Curley referred to Minute 6.2 of the previous meeting and the development of a matrix that had been created to make sure that other service partners had understood and were discharging their responsibilities as well as reducing duplication of duties and responsibilities. Susan Goldsmith advised that issues like this would be picked up through the HFS/HPS report and would thereafter feature as part of NHS Lothian's response to that report. George Curley advised that NSS had adopted the matrix and applied their logo to it. It was noted that the matrix identified the aspects that IHSL were taking responsibility for.

3. Oversight Board Feedback – 29 August 2019

3.1 Susan Goldsmith advised that following the Oversight Board meeting on 29 August that Christine McLaughlin had issued a request for briefing the details of which had been circulated with the agenda.

- 3.2 In terms of Item 6 in the circulated letter it was noted that Donald Inverarity and Lindsay Guthrie as well as Janice Mackenzie had met the previous week to consider an SBAR. It was noted that a further workshop was planned for later in the week. It was also noted that Cystic Fibrosis team and Donald Inverarity would meet.
- 3.3 Tim Davison questioned whether there would be any haematology / oncology interdependencies with DCN. It was noted that there was a plant room above and below the Lochranza ward and therefore any additional air handling requirements would not affect the geography or other parts of the building. Brian Currie advised that he did not think that there would be any impact on the DCN migration.
- 3.4 Tim Davison commented that a significant issue around the ability to answer the questions posed by Christine McLaughlin was around theatre ventilation compliance confirmation and there was a need for a definitive answer on this before any decisions could be taken about the DCN move.
- 3.5 Brian Currie advised that a ventilation workshop had been held the previous Friday. George Curley commented that the critical issue for DCN was to confirm the compliance of 2/3 theatres. In terms of the current position around ventilation Brian Currie referred to the summary tracker that had been circulated with the agenda. He advised that a meeting had been held where Multiplex had offered responses to issues raised albeit it was important to recognise that they might take a different position now that they had been advised that they would not be receiving a waiver in respect of critical care.
- 3.6 Brian Currie advised in respect of air handling that Multiplex had committed to undertake a sample remediated AHU available to view w/c 9th Sept. The intention was to benchmark the air handling unit against the issues raised by IOM and thereafter consider rolling out the process to the remaining units. It was anticipated that this process would take until the end of September and possibly into October to conclude and therefore no decisions could be taken in respect of DCN moves before then. George Curley raised issues in respect of ducting and cabling that he felt should be addressed whilst the building was vacant.
- 3.7 Tracey Gillies commented that she felt that HPS should be close to this process as they would require to agree that ventilation issues were compliant. She advised that she remained concerned that other issues continued to be brought to the table like those discussed earlier about cables running through the air handling unit and again it would be important to obtain an HFS view on this.
- 3.8 Susan Goldsmith commented that the context was important as there was no proposal to replace all of the air handling units. She commented that there was a need for clarity about what the ask was and that all partners needed to be on the same page with an agreed list of actions. Brian Currie commented that IOM had an issues log and had held meetings on site and were clear about the scope of remedial work. He felt that a number of these issues would be evidenced through the benchmark work on the air handling unit, the outcomes of which would form the basis of future work. Susan Goldsmith commented that a considerable caveat in the response to Christine McLaughlin needed to be around the possibility that Multiplex might back away from the process. Brian Currie advised that in the event of this happening he understood that the Hard FM Service Provider, Bouygues, would be

able to progress the remedial work via either a defect logged on the helpdesk or a board change.

3.9 Brian Currie provided an update on the following key issues that had emerged from the IOM report:-

- Motors – a report on the running speed was awaited. The Multiplex and IHSL view was that these were operating properly although there would be a need to receive the final report a copy of which was being pursued.
- Air Handling Unit Pressures – it was noted that this action sat with NHS Lothian. Proposals were with IOM for review with the response being anticipated by the end of the week.
- Ventilation to Theatres – External Grille – Brian Currie advised that this was listed as an impasse with Multiplex and IHSL stating that issues were compliant. It was noted that a resolution would be required either through a Board Change, defect logged on helpdesk or through NHS Lothian exercising it's "step in" rights. The technical fix was not anticipated to be difficult. Lindsay Guthrie advised that there were 2 issues at play. The first was that the grilles in the scrub area were too high with a larger concern being present in respect of the anaesthetic room around the dilution and extraction of anaesthetic gases. Susan Goldsmith felt that there was a need to write formally to IHSL setting out the issues that needed to be resolved and this communication needed to be supported by Infection Control, Facilities and the Project Team given that the process was not moving to a quick conclusion.

Tim Davison commented that where an impasse situation was prevalent that HFS should be asked for a ruling and if this was not forthcoming then further consideration would be required around the forward actions. Susan Goldsmith commented that the in-house team were also bringing forward issues that needed to be resolved. She commented that she was not clear at this point about the internal position or whether the system was awaiting advice from HPS who at the moment appeared to be collaborating. Tracey Gillies commented that at the Oversight Board meeting later in the week there would be a need to discuss clinical risk assessments and some of the air issues. She commented that there would be a need to address scavenging issues as well as being clear about what represented a showstopper and to obtain ISHL engagement on these issues.

Tracey Gillies commented that ventilation issues needed to be considered at a level above the tracker summary, and there was a need for clinical risk assessment to fully understand the implications. She advised that she would undertake to have background information on this available for the workshop session on Wednesday. Susan Goldsmith commented that ventilation issues needed to be set out and addressed in the same way as had been the case for water which had proved to be effective. Tracey Gillies agreed, advising that for Wednesday she would undertake to have a narrative around clinical risk assessment as well as an identification of the areas which could be categorised as showstoppers. Alex McMahan reminded colleagues that the Oversight Board

had agreed a joint assessment process. Susan Goldsmith commented that this would also include technical solutions.

Tracey Gillies commented in respect of the high level extraction scrub room that information was awaited from HFS and she stressed the need to collectively land a view on these types of issues. It was agreed in order to progress issues to a faster timescale that a separate ventilation meeting should be set up to which HFS should be invited. It was noted that currently HFS were flagging issues but not providing advice about what type of remedial work was required. Susan Goldsmith commented if technical experts were providing different views around solutions then she was not hearing that the Oversight Board had a plan in place to resolve these issues. Brian Currie commented that the Multiplex and IHSL positions were the clearest because they had stated that as far as they were concerned some issues were compliant and they intended taking no further action.

Tim Davison commented that equipment and systems were either compliant or not and that if Multiplex and IHSL were undertaking work then this would suggest an acceptance of non-compliance. It was noted that in some instances they were progressing work because they respected the views put forward by IOM.

- Theatre Corridor Extraction – it was noted that this remained work in progress with the anticipation that this would be completed by the end of the month.
- Flexible Duct Work – Brian Currie advised that this was another area of impasse where partners had stated that they intended taking no further action. Brian Currie commented that the options were either to undertake a full review or leave it as the system was working and was in balance. George Curley advised that issues like this would be picked up through routine maintenance. Susan Goldsmith commented that there was a need for a detailed technical workshop with HFS involvement with other partners in the room as necessary.

Tim Davison commented in respect of the response to Christine McLaughlin that this could not be drafted until clarity was received on the issues discussed at the meeting. He reminded colleagues that even after the green light had been received in respect of compliance that there would be an eight week lead time for DCN moving. It was further noted that the haematology / oncology position was not yet agreed and that there was a need for more information as well as clarity on whether this would impact on any proposed DCN moves. It was noted that on 12 September 2019 the Cabinet Secretary would be making a statement to Parliament. It was noted that previous issues raised around warranty and insurance in relation to IHSL employing someone other than MPX to undertake Critical Care Ventilation Remedials were no longer a concern to IHSL.

- Isolation Rooms Back Up – Brian Currie advised that this action sat with IHSL to demonstrate mechanisms were in place to deliver. Tracey Gillies commented that this was another area that should be considered via clinical risk assessment.

Tim Davison questioned whether interaction with IHSL was solely down to NHS Lothian. It was noted that Peter Reekie from Scottish Futures Trust would be meeting them later in the week. It was noted that ISHL were keen to obtain direct

access to the Oversight Board meetings. Tim Davison commented that this was a sensible proposal that had worked well in the response to water issues.

Susan Goldsmith commented that as previously agreed issues would be followed up formally through a letter to IHSL. The Steering Group with IHSL on Wednesday of the current week would set out the 6/7 issues that further clarity was required on.

Tracey Gillies volunteered to chair the Ventilation Workshop. It was agreed that this would be held at 11:30am on Wednesday 4 September and that HFS and IOM would be invited.

- IOM Report – Non Critical Ventilation Review – Brian Currie commented that engineering colleagues had agreed a measuring methodology and that this was now reflected in correction factors. He advised that the areas highlighted as red in the report were currently not compliant. Multiplex had received a copy of the report and were looking at issues. Brian Currie commented that he had been advised that there was nothing of major consequence that would stop DCN moving in on a migrated basis. George Curley commented that he felt that air changes had been measured using a general building standard that related to domestic services and not the hospital environment. Donald Inverarity advised that the IOM report was suggesting compliance against design standards and not SHTM standards. Brian Currie advised that there would be a need to track back this position. Susan Goldsmith commented that it would be important to obtain advice that flagged how material the issue was and how many areas were not meeting SHTM requirements. Lindsay Guthrie advised that she needed further time to digest the IOM report prior to giving further comment.

Donald Inverarity advised that the red column in the report reflected what the design had intended to deliver but that didn't necessarily meet what SHTM requirements were. Susan Goldsmith commented in order to assist lay person interpretation it would be useful if columns could be created covering SHTM, design and actual in order to show what standards were being measured against. Tim Davison suggested that documentation should be sourced describing the aspect that IOM had been asked to review and this would clarify whether this was against SHTM or other standards. He commented that if what was being represented was against general guidance then there would be a need to consider the materiality of this and what the risk was.

Tim Davison commented that issues around haematology / oncology were the third strand of the ventilation issue. He advised that the system knew what was in place and through engagement there was a need to agree whether or not to accept this or to do further work to bring all 17 rooms up to standard. Tracey Gillies advised that she would be meeting with parts of the clinical team the following day in order to better understand their risk appetite as there was a need to be clear about actions moving forward. She commented that of the 17 rooms 5 of these were isolation rooms with the remaining 12 being standard single rooms which had not been subject to the derogation process and therefore have 6 air changes per hour. It was noted that isolation rooms would require a hepa filter.

Donald Inverarity advised that there was a need for clarity from haematologists in respect of what patients were going to be accommodated in the rooms before any agreed design specification could be concluded. Tracey Gillies provided an update on the views of one senior clinician who had suggested that there was an increased risk of fungal infections in the isolation rooms. It was agreed that Donald Inverarity and Lindsay Guthrie would attend the meeting with clinicians along with Tracey Gillies. Donald Inverarity suggested that part of the view had been influenced by the refurbishment process of adult services at the Western General Hospital which had resulted in a redesign of the facility in order to try and reach SHTM requirements. It was noted that the isolation rooms at the Western General Hospital had hepa filters. Tracey Gillies commented that it would be important to create a narrative that would describe the changed risk appetite following issues emerging from the Glasgow position. The narrative would also reflect on any changes in clinical practice. Tim Davison commented that Multiplex had previously commented that they could not and would not deliver 10 air changes per hour and it had been felt at the time that this was a position that could be tolerated.

Susan Goldsmith advised that there was a window of opportunity to resolve ventilation issues before patients moved into the facility. It was noted that this work could be undertaken simultaneously with remedial actions around the Critical Care Unit. Susan Goldsmith commented therefore it would be important to prepare a Board Change that could be issued in short order should it be required. Tracey Gillies commented that she wanted to discuss the narrative with the clinical team on a face to face basis in the first instance. It was pointed out that all rooms needed to meet current standards. A verbal update would be provided to the Oversight Board meeting on 5 September with any Board Change being endorsed at the next meeting.

Brian Currie commented that HFS had also raised ventilation issues as a consequence of helipad downdraught and back pressure. This position would be tested during the first test flight that was due to be undertaken later in the autumn. Discussions would be held with HFS at the workshop meeting to be held later in the week in order to ascertain whether any other issues needed to be brought to the attention of NHS Lothian.

- Ventilation Risk Assessment – Brian Currie advised that at the workshop session to be held later in the week discussions would be held around the 6/4 air change issues with the intention being to reach a position where 4 mechanical air changes per hour were accepted. It was noted that work was already underway in this respect and meetings had been scheduled with clinicians to assess the position. Lindsay Guthrie felt that issues could be successfully mitigated with the exception of the haematology / oncology position which required further clarification.

Alex McMahon commented in respect of the Oversight Board meeting later in the week that there were other positive aspects of work that could be reported over and above the questions framed by Christine McLaughlin. Alex McMahon left the meeting.

- Water – Tracey Gillies commented that there was only one remaining issue outstanding. It was noted that the HFS report had commented on the wide spread of fungus and mould with no evidence having been received back from them against which standard they were testing against although issues around COSHH had been referenced.

It was considered that the water position was robust and that actions could be agreed at the Oversight Board meeting later in the week where the HFS report would be considered in light of Glasgow findings.

Susan Goldsmith commented that if there was a requirement for 7 Board Changes whether these should be sent around as a single pack. Tracey Gillies commented that further work was needed in respect of zip taps and Arjo baths. There was an issue if sampling demonstrated Pseudomonas about what to do with the taps and what any method statement would look like. It was agreed that this issue would be picked up at the water workshop. It was agreed that any Board Changes would come back to the Executive Steering Group prior to being issued.

- Drainage – Brian Currie advised that feedback was awaited from HFS and that they had been provided with all the information they had requested.
- Fire/ Electrical/ Medical Gases – Brian Currie advised that these issues represented the second phase of work. It was noted that Christine McLaughlin had a focus on these issues.

The point was made that at the previous meeting it had been agreed that Lindsay Guthrie and Donald Inverarity would meet with HFS to discuss issues emerging from Glasgow. Susan Goldsmith commented that it would be appropriate for such a meeting to be arranged in order that the impacts of any issues emerging from Glasgow could be fully understood.

- Operational Management – It was noted that there was no update and this would be provided at the meeting scheduled for 9 September 2019. Susan Goldsmith commented that the focus was now around management and assurance and there was a need to be able to describe the current position. She commented that there was a need to populate the matrix and to provide a copy to HFS

4. Commercial Progress

- 4.1 Brian Currie advised that a meeting would be held with IHSL later in the week to discuss their reaction to the proposed Board Changes.

5. Migration Planning

- 5.1 Susan Goldsmith advised that the report on children's services had been considered and accepted at the Oversight Board meeting. It had been concluded that the RHSC would move as part of a single process with DCN migrating as early as possible.

6. Communications

- 6.1 Staff Communications – It was reported that by the time the staff communication had been agreed that it had been too late to issue it. Tim Davison referred to a discussion session he and colleagues had attended with RHSC clinicians which had been positively received. He suggested therefore that there would be benefit in meeting staff groups and providing them with verbal updates backed up by narrative if felt to be necessary. It was agreed that a day of communication should be identified starting in early October where Directors supported by a standard script could meet with individual groups of staff. It was noted that these sessions did not need to wait until everything had been agreed as even regular updates would be appreciated by staff.
- 6.2 KPMG Report – Judith Mackay commented that it would be useful to issue something in respect of the KPMG report at the appropriate time. It was noted that the report was in almost final form. It had been reported at the Oversight Board meeting that the report had not identified any single point of failure and that this position had been supported by narrative. It was noted that Audit Scotland had requested sight of the KPMG and HFS/HPS reports before laying the NHS Lothian accounts before Parliament. It was likely that a section 22 notification would be applied to the accounts which meant that the auditors felt that there were issues that warranted discussion in public. It was noted that the external auditors would undertake the review.
- 6.2.1 Susan Goldsmith advised that the Parliamentary Audit Committee would meet by the end of October. The point was made that HFS had not finalised their report.
- 6.3 Oversight Board Agenda for 5 September 2019 – the agenda for the Oversight Board meeting was discussed and agreed. Sorrel Cosens would progress the issuing of the agenda which would consist in the main of verbal reports.

7. Any Other Competent Business – Sharing of 9 September 2019 Meeting

- 7.1 Tim Davison advised that he would be meeting with colleagues on 5 September 2019 to agree chairing and cover arrangements during periods of annual leave. The chairing of the Executive Steering Group meeting on 9 September 2019 would be agreed as part of that process.

8. Date and Time of Next Meeting

- 8.1 The next meeting of the RHCYP/DCN – Executive Steering Group would be held on Monday 9 September 2019 between 4:00pm-5:30pm in Meeting Room 5, Waverley Gate, Edinburgh.

From: Inverarity, Donald
Sent: 05 September 2019 16:17
To: Cosens, Sorrel; Goldsmith, Susan; Gillies, Tracey; McMahon, Alex; Graham, Iain; Currie, Brian; Henderson, Ronnie; Guthrie, Lindsay
Subject: RE: HPS/HFS Final draft report

Hi Sorrel,

A few points from me populated in the table below. Some highlight clear factual inaccuracy (Pseudomonas was not detected in critical care) but for others my concern relates to lack of evidence base to justify the statements, insufficient clarity to be able to action the request or lack of clarity why NHS Lothian is being asked to comply with interventions that other boards are not (when the risk is not a site specific one) and why the usual process for approving such guidance by peer review (the National Infection Prevention and Control Steering Group consultation process) has been bypassed.

Thanks
Donald

From: Cosens, Sorrel
Sent: 05 September 2019 12:07
To: Goldsmith, Susan; Gillies, Tracey; McMahon, Alex; Graham, Iain; Currie, Brian; Henderson, Ronnie; Inverarity, Donald; Guthrie, Lindsay
Subject: HPS/HFS Final draft report

All,

We were asked at the Oversight Board this morning to have any comments on this final report back to NSS by the end of today. It was stressed that this is a review for factual accuracy.

Can I request that these are sent to me in the first instance, to collate NHSL's response.

Para reference	Text	Comment / suggested amendment
3.1.4	"the ventilation system in CCU was not in accordance"	CCU usually refers to Coronary Care Unit and there is no Coronary Care Unit in RHCYP. It is not usually used to refer to Critical Care where either ITU or ICU would be conventional. As such it is very confusing and misleading to refer to intensive care as CCU.
3.1.7	Lessons learned recently across health systems suggest that <u>any potential pathogenic contamination found should be eradicated</u> before patients and staff move in"	Is this really a lesson learned or just speculation. Hospital water is expected to be of a potable (drinkable) standard but this statement infers that it should be sterile which is not deliverable. Neither has this approach/conclusion been accepted as appropriate by the national policy by the HPS National Infection Control Steering Group.
3.1.7	Water tests...indicate some fungi in the water	There is still no explanation regarding why this is raised as an issue. The report from QEUH indicates this did not translate into clinical infections and so there is a lack of evidence that it translates into clinical risk. Additionally it is not a test conventionally

<p>3.1.8</p> <p>4.2.4</p> <p>4.2.7</p> <p>4.3</p> <p>P17 3</p>	<p>Outlets with complex interstices and organic components The risk is that..requiring the kitchen to close</p> <p>Conditions required within CCU</p> <p>This means that up to 5 of 19 isolation rooms <u>may be out of action</u> in the event of an air handling unit failure</p> <p>Water Services Critical Care Pseudomonas found in taps in critical care areas</p> <p>Testing has found some fungal/mould contamination</p>	<p>performed on water. As such RHCYP may be no different from any other hospital in UK. Have HPS performed water testing for fungi from a representative sample of hospitals in Scotland to demonstrate this is a deviation from normal? Not entirely sure what is being referred to as an “organic” component.</p> <p>Closing the kitchen affects catering service delivery and may present a risk to kitchen staff but doesn’t necessarily present a risk to patients and would only be a patient HAI risk if contaminated food was eaten which would seem an unlikely event as if there was ingress of sewage, affected foods would be destroyed.</p> <p>As noted above using CCU to refer to critical care and not coronary care unit is confusing</p> <p>If the ventilation fails in an isolation room it creates a clinical risk but it doesn’t necessarily mean the room will be “out of action.” For many infections in current RHSC managed where there is little or no mechanical ventilation, patients are managed without transmission occurring so although the rooms “may” be taken out of action, they “may” also continue to be used if the situation is risk assessed and the lack of mechanical supply ventilation is not considered to substantially impact risk of infection transmission (necrotising fasciitis or meningitis for example) and no other suitable single bed accommodation is available. Remaining in the room with a lobby would be preferable to exposing other patients in a shared bay.</p> <p>This statement is factually incorrect. The Westfield Caledonia report states: Paediatric Intensive Care Unit (HDU) Number of outlets sampled 72 Outlets P aeruginosa positive 0</p> <p>The Tim Wafer report for HFS did not identify P aeruginosa either. “Water system should be disinfected and re-tested” The water system should be disinfected prior to occupation but this is not because of a risk from fungi in water. If the expectation is to re-test for fungi post disinfection HPS will need to provide details of a sampling methodology and accredited testing laboratory regarding where to send for testing and guidance regarding what further intervention to take</p>
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4.3.11	“based on experiences at other hospital sites”	if still present. This would also need to be communicated to all boards as a water related risk that needs to be addressed. The conventional route though is that such guidance would be discussed at the National Infection Control Steering Group and guidance approved there after peer review. This advice and approach has not had such peer review and the evidence base for it is not clear. Did this translate into cases of human infection at the other hospital sites or is it being found in other hospital sites because it is a normal finding without an associated significant clinical risk?
4.3.12	Component parts of the water system are replaced and the originals tested, particularly those which have proven to be problematic	This sentence doesn't make a lot of sense. It suggests there needs to be replumbing of the building but the extent and location is not specified and neither is it clear what the removed plumbing should be tested for or how to do it.
4.4	There should be a system of periodic testing and disinfection for hand wash basins with a particular focus on augmented care High microbiological activity	No where in Scottish guidance is “testing” of wash basins advocated. Presumably testing means microbiological culture but there is no standard method for this and it has implications for all health boards. The usual route of approval for such a massive change in approach is via the National Infection Control Steering Group where it would be peer reviewed before approved and the evidence base would be scrutinised. There is no evidence base supplied to support this. There is no clarity as to what to test for. Very unclear what the author means by this term. Its sounds scientific but actually is very nebulous. Unclear how to review and treat a trough sink. Again there is nothing provided to support why this is a significant deviation from “normal” in a sink drain or why this is considered “high risk potential.”
4.4.2	Lessons learned by NSS....various organisms were grownin some circumstances	Wash hand basins are not intended to be sterile so how is the finding of various organisms grown in some circumstances a deviation from normal? Why and how should this be addressed?
4.4.3	The waste connection ...as a risk for bacterial growth	This risk is because it ultimately connects to sewer and will be in contact with aerosols containing bacteria from the sewer.

If I can have this for 4pm then that would be very helpful, so that I can collate and clarify anything required.

If this has been shared more widely and others should be consulted too, please pass this on and copy me in.

Thank-you,
Sorrel

From: JAMES, Gordon (NHS NATIONAL SERVICES SCOTLAND) [REDACTED]
Sent: 04 September 2019 16:57
To: Marinitsi, Katerina; [REDACTED]; Archibald, Gordon; Barbara Crowe; Calderwood, Catherine; Christine McLaughlin; SINCLAIR, Colin (NHS NATIONAL SERVICES SCOTLAND); Cosens, Sorrel; Currie, Brian; Fiona McQueen; Gillies, Tracey; Goldsmith, Susan; Graham, Chris; REILLY, Jacqui (NHS NATIONAL SERVICES SCOTLAND); Joyce, Alex; MACKAY, Judith (NHS Lothian); Little, Kerryann; McMahon, Alex; Nicoll, Nadine; Peter Reekie; Rowena Roche; Trotter, Audrey; Walker, Anna
Cc: Graham, Chris
Subject: RHCYP, DCN and CAMHS Oversight Board - 5th September 2019 - Additional Paper Agenda Item 3.2

Dear all,

Please find attached the NSS final Draft report for RHCYP & DCN in relation to the technical review of water, ventilation, drainage and plumbing systems – agenda item 3.2.

Best Regards

Gordon
[REDACTED]

From: Wright M (Malcolm)
Sent: 06 September 2019 08:01
To: DG Health & Social Care
Subject: FW: RHCYP

Pls print

Sent with BlackBerry Work
(www.blackberry.com)

From: McLaughlin C (Christine) [REDACTED]
Date: Thursday, 05 Sep 2019, 10:40 pm
To: DG Health & Social Care [REDACTED], Wright M (Malcolm) [REDACTED]
Subject: RHCYP

Malcolm

A few things to consider in relation to accountability for the position we are in:

- It is clear that a number of errors have occurred in this project and that standards and guidance have not been complied with in areas where they should have been
- The project is likely to be fully occupied 3 years after it should have been and the costs to the public purse are in excess of £43 million (although this will be offset by unitary charge payments of £23m which will not be recouped over the life of the contract)
- There have been issues with sub contractors going out of business, with drainage, ventilation and water.

The KPMG report sets out a clear picture of human error and confusion over interpretation of standards and guidance - and missed opportunities to spot and rectify that error.

The settlement agreement added an additional level of complexity and again missed an opportunity to step back and assess compliance with standards and guidance.

The significant issues that we are now dealing with only came to light in the days before the move was due to happen.

The KPMG report also highlights a number of areas where they set out what happened but leave a question mark as to why. These are:

2.2.1 c) We have seen evidence of professional and technical advisors being involved throughout the project. This included specific involvement in relation to ventilation issues. However we have seen no evidence that professional or technical advice identified the issue prior to June 2019. Comment from me: There is a core question here as to how did the inconsistency make its way into the environmental matrices?

It is clear that the Board requested that Project Co comply with SHTM, despite the error in the detailed schedules in relation to air changes of 4 rather than 10 for critical care

2.3.12 We have not been instructed to opine on the accountability of individuals or organisations in respect of the failure to identify the issue and it is not within our area of expertise to consider the practical implications of that failure.

2.4.4 we have not been instructed, and it is not within our area of expertise, to consider the responsibility of external professional or technical advisors to identify this issue. However despite the extensive internal and external technical advice received in relation to the project, the issue was not spotted.

Comment from me: You could therefore argue that this confused landscape means that liability would appear to lie with the Board, its advisors and the contractors, rather than solely with the Board.

It is also worth noting the similarities in relation to ventilation issues, with the Glasgow hospitals, constructed by the same builder and ventilation engineers.

Also worth remembering that the Board offered an appraisal of 4 options in relation to migration, with a recommendation that option 4 was accepted – DCN move in as planned in July, with a delay to paediatrics which would move in over the summer. (email below)

Overall therefore, we have a picture of a system that has failed to deliver this hospital to the required standards, but no sense of a single point of failure or single organisation responsible. NHS Lothian believed that DCN could move in to the hospital whilst the issues with critical care were resolved. That option appraisal was not supported by SG. It could also be argued that the decision to wait until all issues are resolved before moving, rather than rectifying in an occupied building, was a decision made by SG rather than the Board.

In relation to accountability it could therefore be argued that at this stage we do not believe that accountability for the issues identified rests solely with NHS Lothian and that the delay of 1 year was a decision taken by SG in order mitigate a substantial risk. The report by NSS shows that the risk averse approach taken was proportionate and that it is beneficial to resolve all outstanding issues prior to occupation of the building.

Christine

From: Executive, Chief

Sent: 03 July 2019 16:36

To: [REDACTED]; [REDACTED]

Subject: RHCYP/DCN Commissioning/ventilation

Malcolm and John

Further to our previous briefings and our telephone conversations over the last couple of days, I have set out below a brief note of the issues we have considered and our conclusions and propositions for dealing with the ventilation problems in the new RHCYP/DCN building at RIE. We believe the problem is capable of being resolved fully over a period of around 4 months. There are a number of options for how the solution can be arrived at and each carries a degree of risk and uncertainty.

It is worth reiterating that our guiding principle in dealing with this problem and all previous problems and delays associated with this building project has been to prioritise patient safety and only to commission services in the new building when we believed that it was fully fit for purpose..

Following the hand over of the facility, NHS Lothian has continued to monitor the performance of IHS Lothian and their supply chain given NHS Lothian's priority of providing a safe and robust facility. As part of that process, NHS Lothian commissioned an independent advisor to carry out a review of certain critical areas of the facilities. During that review, it has come to light in the last few of days that there is an issue regarding

the ventilation in the bedrooms in the critical care unit of the new RHCYP part of the building. NHS Lothian is investigating how this issue has arisen and how best to address it in collaboration with IHS Lothian and their supply chain and is taking a range of professional advice (including legal and technical advice and advice from advisors in infection control, health and safety and facilities engineering)

Over the last 48 hours we have considered four main options for dealing with the ventilation problem and a range of key senior staff have been consulted including clinical staff and clinical leaders, executive and senior managers, project team staff, capital planning staff, the board chair and colleagues in Scottish Government, HFS and HPS.

These options are outlined below with some comments on how likely they are to deliver the most optimum solution.

1. Continue with the planned move of all services and attempt to deliver the permanent fix for the ventilation problem while the critical care unit remains occupied:

This option was not supported because of the impact of noise and disruption during remedial works on patients, parents and staff; being unable to deliver the complete optimum solution of increasing the size of the ducting in an occupied clinical area; and the loss of capacity in critical care during the remedial works.

2. Continue with the planned move of all services and then decant critical care into a modular build unit to allow the optimum solution to be delivered in an empty environment:

This option was not supported because of the lack of critical clinical adjacencies if critical care is remote from its ideal location; disruption and further works involved in securing a secure connection to the new building; the significant likely time delay to deliver a modular building – estimated to be around 6 months; the risk associated with moving in to a critical care unit that we know does not comply with the highest ventilation standards required.

3. Defer moving in to the new building altogether:

This option was not supported because the rephrasing of the move of the critical care unit only really affects those services dealing with the sickest of paediatric patients including inpatient beds, the emergency department and theatres. It does not materially impact on DCN services and ambulatory paediatric services and therefore there is no need to defer these elements of the move;

4. Re-phase the timing of the move in to the building to allow a phased occupation over the next few weeks and months:

This option was supported as the best option. It would allow the permanent optimum solution for the critical care ventilation issue to be implemented in an empty ward without clinical risk and with limited disruption to the other users of the building; it prevents the need for double moves including a decant; it would allow DCN services to move in as planned; and it would allow ambulatory paediatric services including out patients, therapies, programmed investigations and day surgery to move in over the summer.

Following my meeting with senior colleagues this afternoon (which John attended), we agreed the following immediate actions:

- Develop a communications plan between SG and NHSL for implementation tomorrow morning (Thursday);
- Commission the permanent solution for the ventilation issue in critical care;
- Clinically risk assess and plan the re-phased moves described in option 4;
- Begin an investigation into how the agreed derogations for ventilation in the settlement agreement between NHSL and IHS came to include critical care beds which was not consistent with the environmental matrix which included the requirement to comply with SHTM 03-01

As with all major estates developments, NHS Lothian will be undertaking a post-project evaluation. Given our high level review of aspects of the settlement agreement, the considerable time, resources and complexity involved in resolving the disputes with IHS Lothian and the late discovery of the ventilation issues, this evaluation will include an element specifically focused on the whole-project contracting, monitoring/timetabling and related "lessons-learned". It is proposed that the key outcomes would be shared within NHS Lothian and with other NHS bodies in Scotland (as appropriate) to help with cumulative understanding of the issues arising, and to help with both preventative and reactive measures to mitigate the likelihood and impact in future projects.

I hope this is helpful.

Best wishes

Tim

Tim Davison
Chief Executive
NHS Lothian

[Redacted signature block]

[Redacted signature block]

[REDACTED]

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Christine



Christine McLaughlin

Chief Finance Officer NHS Scotland and Director of Health Finance, Corporate Governance and Value

[REDACTED]

[REDACTED]

Migration dependencies and programming
RHCYP & DCN Oversight Board
5 September 2019

Introduction

A draft programme has been prepared to identify known migration dependencies and develop a possible critical path analysis. Assurance on the programme is currently not possible due to the considerable number of variables. It is intended to review these with the Oversight Board prior to developing a more robust programme. The Board are reviewing the option for DCN to move into the new facility ahead of RHCYP and CAMHS services, and the parameters and considerations included in the programme are outlined below.

Partnership and contract relationships

In order to progress to work, including design, outline specifications require to be issued by the Board to IHSL for implementation by their supply chain. There are mechanisms within the Project Agreement (PA) to undertake such “changes” and these include a series of steps to agree the scope, cost and programme prior to any work being undertaken.

Engaging with the commercial partners to abbreviate these procedures has to date been “commercial” as improved risk positions have been sought (e.g. waiver of liabilities for the works done in critical care, limited cost control, retained Intellectual Property rights, etc).

Nonetheless there has been positive engagement with IHSL and there is every indication that they plan to work with the Board to deliver the changes required. The programming does not take into account any potential delay due to commercial intransigence but has allowed for periods of negotiation, assurance and approvals based on experience to date.

Review by HFS and HPS

The key assumption and dependency for programming is that the Cabinet Secretary’s decisions post receipt of the technical review reports will be the trigger for the implementation of actions. The Board Change for Critical Care Ventilation has gone ahead of the reviews but only after agreement at the Oversight Board and briefings.

At this point it is still not fully clear what further works will be required to address the other ventilation issues, with a lack of clarity from IHSL/MPX on what they accept as non-compliance, and therefore will agree to undertake remedial works. Equally there will require to be ongoing input from HFS and HPS to ensure that any further specifications and works meet standards. A workshop on Ventilation chaired by the Board’s Medical Director is planned for the 4 September to consider what further specifications are required. This will include representation from HFS/HPS.

It is assumed that the Funders will be supportive and progress all approvals quickly.

Critical Care Ventilation

There has been ongoing engagement over a period of weeks with IHSL, their supply chain and the Board’s representatives working alongside HFS and HPS representatives. This culminated in the issue of the High Value Board Change for Critical Care Ventilation on 30 August 2019 by NHSL to IHSL. The initial meeting to consider the change, as required by the PA takes place on the 4 September.

It is recognised in the programme that the procurement of Air Handling Unit(s) for critical care and other remedial ventilation works cannot commence until the design is developed sufficiently to

ensure that it will be verifiable as fit for purpose and it will be based on an agreed specification from the Board supported by HFS / HPS. The procurement is understood to have a long lead time. Therefore in order to mitigate against any delay, an order (such as a Letter of Comfort or Letter of Intent) may be required in advance of full sign off of the whole scheme. This raises programme and commercial risks for all parties. For the programme a conservative starting point has been identified as the completion of the commercial position.

There is an opportunity to run the commercial and legal workstreams in parallel.

Remedial works

It has been assumed for the programme that there will be low value works or service amendments required against all the HFS / HPS review elements: detailed requirements have not been confirmed and therefore timeframes are unknown, however it is assumed that these can be undertaken and completed in line with other programmed works.

Based on information available the anticipated works, to be prioritised in line with the proposal to move DCN ahead of RHCYP, are:

- Drainage
 - Information awaited from HFS / HPS to define if any works required
- Water
 - Action plan to be signed off by all parties
 - Action plan to be implemented – timing and process dependant on the extent of works. Most anticipated to be Operational Service changes
- Ventilation
 - 7 priorities from 54 on the first IOM review schedule (including Theatre Ventilation and DCN AHU's)
 - IHSL are arranging for a sample benchmark before seeking HFS / HPS confirmations and thereafter to instructions by NHSL being issued.
 - Other HFS ventilation issues, e.g. outcome of Helipad review may affect programming for DCN
 - Change of ventilation requirements for rooms in Lochranza Ward (haematology /oncology) – a Board change is likely to be required. The impact on DCN is thought to be minimal.
 - Any works identified in IOM's review of non-critical care ventilation – nothing significant has been noted for DCN
 - Possible requirement for works to change air changes / hour in general rooms; this would become a critical path item for DCN occupation.
- Operational Board Changes (issued already)
 - Some of these remain to be completed by IHSL and their supply chain but are being actioned presently. Examples include automatic doors and stair access control
- Fire / Electrical / Medical gases –
 - Information awaited from HFS / HPS in order to define scope and timescales for works, if any.
- Helpdesk outstanding calls are being addressed through the current operational mechanisms and have therefore not being programmed separately. Issues include:
 - Volume of outstanding remedial works
 - Follow up through helpdesk

Disposal of Sciennes

Engagement with the developer about a potential timeframe for vacant possession will be required in advance of all assurances and decision points. The period for decommissioning is based on current knowledge and may be varied following further engagement with the developer and estates personnel.

DCN Relocation

In conclusion, the timeframe for DCN moves in advance of RHSC migrations can be brought forward if remedial works affecting the DCN areas of the facilities are prioritised; and no RHCYP works impact on those facilities and services for DCN. The specification of remedial works requires to be agreed to confirm detailed programming.

No additional time has been added for escalating staffing levels and procedures to cope with a partially occupied Facility (e.g. additional security measures).

Communications

The long lead time for consultant and staff rotas and patient scheduling will require to be programmed in dependant on works. A date to commence this element in advance of final assurance sign off will be required in order to avoid a fallow period where the DCN Facility is ready but unused.

Notices to the wider public and Scottish Ambulance Service, for example, will be to a different timeframe.

The programming to date has not taken into account winter pressures or holiday shut down periods. Prolongation of works due to holiday periods or migration timing will need to be considered further.

Iain F Graham
Director of Capital Planning and Projects
NHS Lothian
4 September 2019



190905 IHSL.NHSL Ventilation Remedials

Susan Goldsmith
Director of Finance
Lothian Health Board



5th September 2019

Dear Susan,

Re-Provision of RHSC and DCN at Little France – Ventilation Remedials

IHS Lothian Limited notes receipt of the Board letter dated 3 September 2019, on the topic listed above. It was good to have the opportunity to meet with you and your team to discuss its contents.

As requested at the meeting please find set out below an update upon those matters which we discussed, and also those items detailed in the Board letter.

Summary

In general terms it is recognised that progress continues to be made by all parties in resolving the issues which have been identified on the topic of ventilation systems at the RHCYP + DCN. Focus has been maintained by all parties on the remedy of the identified items. Actions have included physical works, demonstration of operational capability, and where necessary the adjustment of operational parameters where these have been found to be required. IHSL and its supply chain has remained in close dialogue with NHSL and HFS colleagues on these matters and continues to provide information and support.

IHSL, Bouygues (BYES), Multiplex (MPX) and NHSL continue to meet on a weekly basis to discuss and review ventilation matters, and meet as required where specific issues require.

It was discussed that progress with conclusion of ventilation issues identified the following number of items for resolution. These can be summarised as follows;

Owner	Qty
MPX	12
BYES	6
IHSL	0
NHSL	18
Dual (NHSL&MPX joint response required – deduct from totals above)	7
Total Closed Items	36

These totals were agreed by all parties.

In order to assist this reply IHSL has retained the numbering from the Board letter in replying to the individual items listed.

2. We welcome IOM returning to site as a number of the queries previously explained, and which have now been answered, await IOM input and confirmation. We look forward to receipt of confirmation of the closure of this item.
- 3* As was explained during our meeting (04.09.19), Multiplex has provided an outline design to NHSL for its review and comment. Pending any comments received from the Board, MPX will progress its detail design for the installation of additional extraction ductwork and equipment for the Theatre Corridor. A deadline of 4pm Friday 6 September 2019 was agreed.

NHSL explained that it would not normally comment upon design proposals, given the output nature of the Project Agreement. However it was explained that MPX had shared the design proposal to ensure transparency of the solution being developed and to allow incorporation of any NHSL or HFS comments. MPX has advised that development of the detailed design will allow a date for the works to be completed to be confirmed. It was explained that 30 September indicated in the ventilation tracking document was not the date which works would be completed.

11 IHSL looks forward to receipt of IOM confirmation of conclusion of this matter.

13 IHSL looks forward to confirmation of completion of this item.

18 It was explained to the meeting that MPX had completed remedial works to the location identified where an excessive length of flexible ducting had been used. Checks had also been made to ensure that previously identified items of a similar nature featured in the Independent Testers snagging lists had been completed.

It had been previously explained by NHSL that other locations existed where excessive lengths of flexible ductwork had been used. IHSL asked that these other locations be identified, or that this matter be considered completed.

22* Theatre Scrub Extract Grilles – **MPX DISCUSSION REQUIRED**

- 23 Theatres Anaesthetic Grilles – **MPX DISCUSSION REQUIRED**
- 25 NHSL looks forward to receipt of the outcomes of the HFS review in respect of this matter.
- 27* Isolation Rooms – Back up – **MPX DISCUSSION REQUIRED**
- 28* HDUs – IHSL notes receipt of the Board High Value Change Notice 095. This will be responded to separately to this communication.
- 29* AHUs Cabling – MPX has advised that is equipment manufacturer Q-NIS is arranging personnel and materials to undertake works to two “exemplar” AHUs in order to demonstrate how concerns raised by IOM might be dealt with. It had been hoped that works would be completed on these two exemplar units during week commencing 2 September 2019. Due to logistical and supply issues works are now scheduled for week commencing 9 September 2019. NHSL will be updated on progress with these works once available.
- MPX has explained and indicative programme of XXXXXXXXX **MPX DISCUSSION REQUIRED** to attend to the remaining AHU’s on site pending confirmation of acceptance of the activities undertaken by Q-NIS.
- 30* BYES has confirmed that filter pleat orientation issues have been dealt with.
- 31 Pre Filters Passing - Please see comment made against 29*
- 39 Motorised Dampers – MPX is presently preparing a programme for attention to this matter. **MPX DISCUSSION REQUIRED**
- 40 Plant Labelling – It is anticipated that this item will be completed on Friday 6 September 2019, post completion
- 41 Branch Ducts not marked – MPX advise that this matter is completed, which pending verification will allow closure of this issue.
- 63 Thermal Wheel Speed – Reports and information on this topic has been provided to NHSL of review. IHSL looks forward to confirmation of conclusion of this item.
- 64 Inlet Section No Self Drain – MPX has advised that works in respect of this item will be conducted with works commencing 9 September 2019.
- 50* This was discussed during our meeting and MPX has advised that works to the affected BMS AHU Pressure Controls have been affected, data has been presented to NHSL which is presently being reviewed. IHSL looks forward to confirmation of conclusion of this item.
- 52 BMS Plant Control Temp – MPX has advised that control actuators which had been causing problems have been rectified and that data gathering has now commenced. It is intended to provide NHSL with trend logs during week commencing 9 September 2019.
- 53 NHSL notes the Board comments in respect of the Angiography Procedure Room plant controls, and looks forward to receipt of further comments or confirmation in this regard.
- 54 NHSL notes the Board comments in respect of Recovery Room Air Change Rates, and looks forward to confirmation of conclusion of this item.

We trust that this update both reflects the discussions at our meeting, and additionally provides further reassurance of the progress being made by all parties in bringing concerns over ventilation system installation and performance to a close.

Yours sincerely,

Wallace Weir
For and on behalf of IHS Lothian Limited

Cc Richard Osborne
Matt Templeton
Roger Thompson
Viv Cockburn
Brian Currie
Iain Graham

From: Currie, Brian
Sent: 06 September 2019 14:40
To: 'Wallace Weir'
Cc: 'Craig Simpson'; Claire L McArthur; Matthew Templeton; Goldsmith, Susan; Graham, Iain
Subject: RHCYP +DCN - Little France - HVC 096 - Haematology/Oncology Ventilation
Attachments: HVC 096 - Haem_Onc Ventilation_Change Notice and Letter 06_09_19.pdf

Importance: High

Wallace

Please find attached High Value Change Notice 096 and accompanying letter for your immediate attention and action.

Hard copy has been posted to you today.

Regards

Brian

Brian Currie
Project Director - NHS Lothian

[Redacted signature block]

[Redacted signature block]



Wallace Weir
Project Co Representative
IHS Lothian Limited

Date: 6th Sept 2019
Our Ref : [REDACTED]
Enquiries to: B Currie
Extension:
Direct Line: [REDACTED]
E-mail: [REDACTED]

Dear Sir,

**Re-Provision of RHSC and DCN at Little France
Board Change Notice – High Value Change 096 - Lochranza ward (Haematology/
Oncology) Ventilation.**

I refer to the above matter.

Please find enclosed Board Change Notice 096 for a High Value Change. I should be grateful if you would please acknowledge receipt.

As you know, parties must within 5 Business Days of receipt by Project Co of any High Value Change Notice discuss and review the nature of the High Value Change, including a discussion as to which of the items set out in paragraph 3.4 of Section 4 (High Value Changes) of Schedule Part 16 (Change Protocol) of the Project Agreement are appropriate to be included within the High Value Change Proposal. We are available on the undernoted dates to discuss these matters. Please confirm your availability.

Yours sincerely

Brian Currie
Board's Representative
For and on behalf of NHS Lothian

Note referred to:-
10am, Tuesday 10th September, 2019
10am, Friday 13th September, 2019

RHSC + DCN Project Office
Little France Crescent
EDINBURGH
EH16 4TJ

High Value Change Notice

Project:	RHCYP & DCN
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1 – Issue of Change Notice to Project Co

Title: Lochranza ward (Haematology/ Oncology) Ventilation			
Reference No: 096		Date: 6 th September, 2019	
Target Cost Capital:	£1.9m exc VAT	Target Cost Revenue:	TBA

High Value Change Requirements (Schedule Part 16, Section 4, Clause 2.1.3)

In accordance with Schedule Part 16 (Change Protocol), Project Co is required to design, manufacture, supply, construct, test, commission and complete, and thereafter throughout the Operational Term, provide Services to, maintain, repair, renew and replace, a ventilation system or systems which will deliver **10 air changes/hour at +10pa** as per SHTM 03-01, Appendix 1, Table A1 and fit Hepa filters (H12 grade) to the air inlets to the following rooms at the Facilities:

Room Number	Room Type
3-C1.4-059	Single Bedroom
3-C1.4-057	Single Bedroom
3-C1.4-055	Single Bedroom
3-C1.4-046	Single Bedroom
3-C1.4-032	Single Bedroom
3-C1.4-018	Single Bedroom
3-C1.4-016	Single Bedroom
3-C1.4-013	Single Bedroom
3-C1.4-010	Single Bedroom
3-C1.4-074	Single Bedroom
3-C1.4-076	Single Bedroom
3-C1.4-078	Single Bedroom
3-C1.4-084	Multi-Bed (3) Day Care
3-C1.4-061	Multi-Bed (6) Day Care

(the "Ventilation Works and Services").

In addition the design must provide means by which the windows cannot be opened whilst maintaining ventilation requirements.

All environmental requirements for all spaces in the Facilities served by or affected by the Ventilation Works and Services systems shall be met and maintained – including but not limited to, temperature and control, lighting levels, noise, and humidity. These should be consistent to the agreed parameters throughout the Facilities to meet the specific clinical and operational needs for each space in the Facilities.

The Ventilation Works and Services shall fully comply with SHTM 03-01 requirements which includes, without limitation, implementation of the Ventilation Works and Services so that the system installation, finishes and maintenance regime shall be in accordance with SHTM 03-01 requirements, together with the clinical and operational constraints identified below:

1. All Ventilation Works and Services shall be carried out and monitored after and with reference to a collaborative full Stage 3 HAI SCRIBE assessment being approved by the Board.
2. The fire strategy and systems agreed for the Facilities will be maintained throughout the Ventilation Works and Services and the Operational Term and such that the ventilation systems will integrate with the fire strategy and systems and all other building management systems comprised in the

HVCN

<p>Facilities.</p> <ol style="list-style-type: none"> 3. The location of the installation within the rooms, external areas, route across such spaces and the take out of any windows, etc, will enable the current operational functionality and safety policies and procedures to be maintained. 4. The design, layouts, finishes and other details etc for the Ventilation Works and Services, at all stages (including during the design development stages), will require to be agreed with the Board's Representative (and in turn the clinical service and related stakeholders and Project Co recognises that in order to achieve agreement from the Board's Representative's the Board's Representative will seek input from the Board and all appropriate stakeholders. 5. Design must provide resilience in compliance with SHTM 03-01 to ensure performance of ventilation to rooms during maintenance downtime. 	
<p>Value for Money Assessment (Schedule Part 16, Section 4, Clause 2.1.4)</p>	
<p>The Board will, in consultation with Project Co, continue to review costs as the design develops and at other stages. In order for the Board to assess whether the High Value Change Stage 2 Submission offers it value for money the submission shall include as a minimum the following information:</p> <ul style="list-style-type: none"> • A detailed and fully quantified pricing schedule for the construction works • A detailed breakdown of all Preliminaries and general cost items • Construction issue drawings and specification • Proposed, construction and commissioning/testing programme • Construction phase method statement 	
<p>Date by which parties are required to meet to review the High Value Change Notice and agree the content for the High Value Change Proposal (Schedule Part 16, Section 4, Clause 2.3.1)</p>	<p>06/09/19</p>
<p>To: IHS Lothian</p> <p>We require the Change described above. Please advise when Project Co will submit a High Value Change Proposal for the above.</p> <p>Signed on behalf of NHS Lothian:</p> <p>Name of Signatory (type or print):</p> <p>Date: 06/09/2019</p>	

HVCN

A46304554

From: McLaughlin C (Christine)
Sent: 09 September 2019 07:57
To: Wright M (Malcolm)
Cc: DG Health & Social Care
Subject: RE: Edinburgh Children's Hospital
Attachments: Note re EM September 2019.DOCX

Malcolm

Here is a short document that Susan sent me on Friday, which MacRoberts have produced – not for wider sharing but it sets out quite clearly the role of the EM in the process. you can see from this that the position is not clear cut, but the reality is that both lothian and IHSL continued to use the EMs all the way through. At the same time the contract required IHSL to comply with standards.

The difficulty in answering your second question is that we have not shared the report with any of the parties. That said we should avoid any reference to anything that suggests that legal action may be taken. At this stage there is none proposed but lothian also declined to go down the route of a legal waiver, in order to reserve their position.

My reading of the situation is as I said in my note to you last week, that it was a confused landscape and that what began as human error was allowed to continue through the project and there were a number of opportunities where it could have been identified and rectified, but was not. With the benefit of hindsight, had there been a point in the settlement agreement negotiations where an assessment against standards was done, then we would not be in this position now.

On the third point, the managerial responsibility was delegated.

John Paterson in SGLD is reviewing the KPMG report, and I have also given him the MacRoberts briefing – we will have his thoughts this morning.

Im at the SCS event this morning but if I can be in the office to talk through if you want.

Christine

From: Wright M (Malcolm) [REDACTED]
Sent: 08 September 2019 22:35
To: McLaughlin C (Christine) [REDACTED]
Cc: DG Health & Social Care [REDACTED]
Subject: Edinburgh Children's Hospital

Christine,

In advance of my conversation with the cab sec on Monday, I've reread the 2 reports and the undernoted points struck me:

Firstly, who actually wrote the EM for Lothian and what professional and technical advice did they have? I also found it difficult to understand the implication that NHSL did not “own” the document and ? Did not see it as their responsibility to ensure that it was technically accurate. Am I misinterpreting?

Secondly, do we understand and have we advised cab sec of the potential legal scenarios which may play out amongst the parties following publication of the reports? Have Lothian taken any view about possible legal action against any of the parties?

Thirdly, the KPMG report focuses on governance. What do we know about the management systems reporting to the CEO in terms of accountability for the project, who made key decisions and at what level and what are the lines of managerial accountability?

Thanks in anticipation

Malcolm

Sent with BlackBerry Work
(www.blackberry.com)

RHCYP & DCN**Environmental Matrix****Summary**

The Environmental Matrix (“EM”) is a table which sets out the environmental design parameters for each space within the hospital. It is generated during the initial design stages and revised as necessary as the design and construction develops and provides an easily accessible reference tool for all parties involved in the project.

Although the EM was not in the standard form documentation, it was (and still is) a widely used procurement concept on NPD/PPP projects that ultimately informed the environmental parameters in the Room Data Sheets.

On this project the evolution of the EM can be summarized as follows:-

- An EM was produced by NHSL with the reference design.
- It should be noted that this was a reference design document only and NHSL contractually have no liability to IHSL in respect of any error, omission or defect in the EM.
- The EM produced with the reference design set a parameter of 4 air changes for the single bedrooms and 4 air changes for the multibedrooms in critical care.
- The EM produced with the reference design was prefaced with guidance note 15 that reinforced the BCR/SHTM requirements for Critical Care at 10 ac/hr.
- The reference design EM was superseded by an EM produced by IHSL at Financial Close.
- The IHSL EM was unapproved at Financial Close.
- NHSL did not approve the EM at Financial Close because it did not meet the Board’s Construction Requirements (i.e. NHSL’s specification).
- NHSL’s specification included, amongst other things, a requirement to comply with SHTM 03-01.
- NHSL made a number of general comments about IHSL’s EM at Financial Close.
- There was no explicit comment that critical care should have been 10 air changes.
- There were general comments about the inconsistency of the EM with NHSL’s specification.
- During the construction phase there was a process whereby IHSL’s EM became approved following a contractual review procedure.
- When the EM was approved the parameters detailed for critical care were stated as 4 air changes rather than 10 air changes.
- Notwithstanding that the EM was approved following the review procedure, responsibility for compliance with NHSL’s specification (including SHTM03-01) remained with IHSL.
- However, as part of the process of agreeing the Settlement Agreement, NHSL agreed to 4 air changes rather than 10 air changes being required in critical care rooms.

The detailed stages in the evolution of the EM are:-

1. The reference design;
2. Financial Close of the project;
3. The review procedure during which process the EM was approved; and
4. Derogations approved to the ventilation requirements as part of the Settlement Agreement (“SA1”)

We have set out below more detailed comments about the evolution of the EM at each stage of the process.

The Reference Design

The reference design included a draft EM. That EM stated 4 air changes for the single bedrooms and 4 air changes for the multibedrooms in relation to critical care rooms, as well as a prefaced guidance note 15 at 10 air changes for critical care rooms.

During the bidding stage, question C8.3 dealt with the EM. It stated:-

“Whilst Bidders are required to undertake their own design, the Board has provided a draft Environmental Matrix as part of the ITPD documentation. Bidders must confirm acceptance of the Board’s Environmental Matrix, highlighting any proposed changes on an exception basis.”

However, through the bidding process, the position regarding the status of the EM was clarified. It was stated that the EM was a document to assist in the procurement phase, and not intended as a detailed design.

The ITPD EM is Disclosed Data as defined within the Project Agreement. In accordance with clause 7 of the Project Agreement the Board is not liable to Project Co and Project Co shall not seek to recover from the Board from the adoption, use or application of the Disclosed Data by or on behalf of Project Co. Further, no warranty or undertaking of whatever nature is provided by the Board in relation to the Disclosed Data and specifically the Board is not liable to Project Co in respect of any error, omission or defect in the Disclosed Data.

In any event, Project Co are responsible for the design and the EM issued at reference design stage is superseded by the EM produced at Financial Close.

Financial Close (“FC”)

At FC the EM formed part of the contract documents produced by IHSL with their specification. IHSL’s specification was incomplete in many respects. In the circumstances, the Board required to submit detailed comments on all of the IHSL specifications, including the following specific comments about the EM:-

“Project Co shall update the Environmental Matrix to reflect the following Board comments

- *The Environmental Matrix shall be updated by Project Co to reflect all the rooms and room types in the proposed Facility, this should be based on an updated Schedule of Accommodation that has been commented on separately by the Board. This also needs to reflect the names and room numbers in the GSU table.*
- *Include the requirements contained in the Clinical Output Specification including but not limited to the requirement that theatre temperatures are to be able to be raised to 31°C for certain operations*

...

A specific derogation request was also produced by IHSL dated 5 September 2014 (IHSL MEP - 015) which stated:-

“Anomalies within the environmental matrix have been reviewed and proposal included within the room data sheets (refer to schedule for proposed variations). This shall be further developed in conjunction with the Board on the basis of the schedule of comments contained in Section 5 (RDD) of Part IV.”

The relevant section of Part 4 of Section 5 of Schedule Part 6 provides as follows:-

“Project Co shall submit and the Board shall review the following Board comments in respect of relevant Project Co's Proposals (which shall be deemed to be Reviewable Design Data) not approved at Financial Close given that such Reviewable Design Data only received a Level C or Level D at Financial Close, with such Project Co submission addressing the following Board comments in relation to such Reviewable Design Data.

These Board comments shall be incorporated into each relevant item of Design Data (which shall primarily relate to drawings accompanying the relevant Project Co's Proposals) by Project Co and the drawings shall be submitted by Project Co to the Board through Schedule Part 8 (Review Procedure).

If Project Co considers that the Board comments below on any of the items listed in this Part 4 amount to a Change, Project Co shall, before complying with the comments and resubmitting the Endorsed RDD, notify the Board of the same and, if it is agreed by the parties or determined pursuant to Schedule Part 20 (Dispute Resolution Procedure) that a Change would arise if the comments were complied with, the Board may, if it wishes, implement the Change and it shall be dealt with in accordance with Schedule Part 16 (Change Protocol).”

Accordingly, at FC the EM was deemed to be Reviewable Design Data and had received level C status, i.e. the EM was not approved by the Board. Project Co was obliged to address the Board comments in relation to the EM.

Review Procedure

There is a process in the Project Agreement whereby any IHSL specification which was not finalised at FC is reviewed by NHSL. It should be noted that the review procedure does not result in NHSL taking on full design responsibility for the reviewed documentation. Rather, the Project Agreement provides that once a design document has achieved Level A or Level B status IHSL is permitted to commence construction on the basis of that documentation but design responsibility (with the exception of Operational Functionality as defined below) remains with IHSL.

The process for review of the EM was somewhat protracted. The first version of the EM to receive Level B status was issued by IHSL on 18 March 2016. That version was signed off status B on 15 April 2016, subject to Board comments. This included a reminder to IHSL as follows:-

“IHSL are also reminded that the reference design has no relevance to the current contract, and IHSL are to comply with the Project Agreement and in particular the BCRs and PCPs. Any non compliance with the BCRs or PCPs should be highlighted to the Board.”

Level B endorsement means Project Co is entitled to proceed with construction subject to any amendment as noted on the design and that the Board is satisfied that the design and other information in the relevant room data sheet satisfies Operational Functionality.

It should be noted that on the first RRD issue post FC, Project Co altered the guidance note 15 relating to Critical Care without the knowledge or approval of the Board. This went against an agreement with Project Co to highlight in red any changes to the Board.

The definition of Operational Functionality is set out in Annex 1. It concerns the functionality of the physical space for the Board to carry out the clinical services only. It does not extend any design risk to the Board in relation to the design of the mechanical and electrical services provided at the Facilities, and therefore the Board were not required to undertake a line by line check of the EM.

On 19 September, Rev 7 of the EM was issued. Mott Macdonald responded, on behalf of the Board, on 17 October 2016. They stated:-

“The Board have reviewed the Environmental Matrix and still has significant concerns on items that do not appear to comply with the BCRs....some ventilation rates don’t appear to comply with BCRs. The Board would like to point that is still awaiting response from PCo to the issued raised as per MM-RFI-00172 & MM-GC-002006 relating to ventilation rates.”

The Board again endorsed the EM status B. However, in so doing, it was noted by Mott Macdonald on 7 November 2016:-

“The Board have serious concerns over the upgrading Environmental Matrix to Status B considering some of the issues raised (as per MM-GC-2084) being the same as the issues that had been raised since FC. There are also concerns over the potential inaccurate information being transferred to the Room Data Sheets being submitted through RDD.

However, as requested by Project Co, the Board has upgraded the Environmental Matrix to status B, noting the Board still does not believe the Environmental Matrix and resultant design complies with the Project Agreement. Project Co’s failure to comply with the BCRs / PCPs (as per MM-GC-002084) the Board believes would result in a non-compliant Facility.

The Board would suggest that Project Co resolved the non-compliant and other issues as a matter of urgency, and requests that Project Co issues a strategy for resolution of these issues.”

On 11 November 2016, Brian Currie wrote to Wallace Weir in the following terms:-

“This is not a new issue by any means having been discussed at length many times in recent weeks and in relation to point 1 below since well before FC.

However, I feel compelled to write expressing our concern and alarm that ventilation ductwork is appearing on site which quite clearly does not reflect a compliant design. It is nobody’s interest to allow this situation to continue...”

It should be noted that none of the comments on the EM specifically commented on the requirement for 10 ACH in critical care.

There then followed a series of ventilation workshops and certain ventilation matters between NHSL and IHSL became the subject of dispute. These disputes were ultimately resolved as part of the settlement agreement.

SA1

During the technical workshops on ventilation it became apparent that there were a significant number of other technical issues at the facilities. For example, NHSL became concerned about the drainage system, the effectiveness of the fire void detectors and the heater battery installation within isolation rooms. Accordingly, the technical discussions became protracted and difficult and there were disputes about the relevant contractual requirements between IHSL and NHSL. It should be recognised that by this point (summer of 2018) the Facility was already approximately one year late and NHSL still had no certainty around the programmed date for completion.

In late Summer 2018, frustrated by a lack of progress with IHSL, NHSL engaged with SFT's Chief Executive to try to break the deadlock and facilitate a resolution of the outstanding technical and commercial issues. Following SFT's engagement further technical workshops took place and ultimately technical and commercial resolutions were agreed all as documented in the Heads of Terms entered into between NHSL and Project Co in December 2018 and SA1 which was entered into between NHSL and IHSL on 22 February 2019.

NHSL and IHSL documented all of the technical resolutions in a technical schedule (comprising 81 items in total). One of the technical resolutions included in that technical schedule was a change to the air change requirements in the single bedrooms. In addition, a change to the pressure regime from positive to balanced / negative in 14 multi bedrooms which had been discussed at the ventilation workshops referred to above was recorded in the technical schedule.

In relation to ventilation the technical schedule attached to the Settlement Agreement recorded the following:-

Single Bedrooms

The derogation for single bedrooms was accepted from 6 ac/hr to 4 ac/hr with mixed mode. In so doing, it is arguable that NHSL inadvertently agreed by implication to 4ac/hr with mixed mode for single bedrooms in critical care as well as the single bedrooms in the rest of the Facility.

Multi bedrooms

As had been agreed in the ventilation workshops 14 bedrooms were accepted as having balanced or negative pressure with 4ac/hr (which by implication inadvertently included 4 multi bedrooms in critical care).

MacRoberts LLP

5 September 2019



NHS Lothian - Royal Hospital for Children and Young People & Department of Clinical Neurosciences

NHS National Services Scotland – Review of: Water, Ventilation, Drainage and Plumbing Systems

09 September 2019
Version 1.0

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1. Executive Summary

1.1 Overview

A decision was taken on 2 July 2019 to delay moving to the new Royal Hospital for Children and Young People & Department of Clinical Neurosciences (RHCYP & DCN) on 9 July 2019. This followed an inspection of the facility, which raised concerns regarding the ventilation arrangements for critical care beds (intensive care and high dependency) and other areas of the hospital. NHS National Services Scotland (NSS) received a commission from Scottish Government to undertake an external series of checks, led by Health Facilities Scotland (HFS) and Health Protection Scotland (HPS), to ensure that the relevant technical specifications and guidance applicable to the new hospital have been followed and are being implemented.

The objectives of the review in relation to RHCYP & DCN were:

- To provide a report by September 2019 to Scottish Government on whether the relevant technical specifications and guidance applicable to the RHCYP & DCN are being followed and implemented.
- Where relevant technical specifications and guidance have not been followed, identify necessary remedial actions.

Given the specific focus on the control of Healthcare Associated Infections (HAI), the review concentrated on a system wide approach for ventilation, water and drainage systems. The process involved site visits, sample inspections and a targeted review of available documentation.

NHS Lothian informed the reviewers at the start of the process that elements of the Critical Care ventilation system required redesign and modification to ensure compliance with guidance. Additionally, Haematology / Oncology is also being reviewed as a result of changing clinical needs, and specific risks were identified. NSS provided advice relating to the design instruction for elements of the Critical Care ventilation system and similar advice will be provided in relation to Haematology / Oncology.

The review commenced on the 9th July 2019 with this final report published in September 2019 for consideration by the established RHCYP & DCN Oversight Board.

1.2 Summary of findings

The findings have been collated based on information provided by NHS Lothian and on-site reviews of the RHCYP & DCN. Expert advice was sought within the key focus areas of ventilation, water and drainage and plumbing systems and their overarching management and assurance processes relating to these systems. The following table outlines the status of key findings:

Review	Summary Assessment	No. of Issues per priority				
		1 (H)	2	3	4	5 (L)
Management & Assurance	Omissions identified in key roles within the management structure, ease of access to information and prioritisation of building system alarms.	-	-	1	2	-
Ventilation Systems	Remedial action is required within both general and theatre ventilation systems. Critical Care redesign was already being considered separately by the Board. Haematology / Oncology is also being reviewed as a result of changing clinical need and specific risks were identified. Risk assessments are underway as part of the ward by ward risk assessments being done locally, requested as part of the review.	-	1	2	-	-
Water Systems	Independent testing identified no widespread contamination of the water systems, however, remedial action is required on a number of water system areas as well as system wide disinfection prior to occupation.	-	1	2	1	-
Drainage & Plumbing	The drainage system has multiple redundancies in place; active monitoring is required. Elements of plumbing require inspection and appropriate remedial action taken.	-	-	-	1	-

The following definitions were used to categorise the findings:

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

Overall remedial action is required to be undertaken within the ventilation and water systems prior to occupation. Following acceptance of this report, the review team are ready to assist the NHS Lothian team in developing a programme of activity and remedial actions.

2. Review methodology

2.1 Review process

2.1.1 The review process initially took place between 9th July and 30th August 2019. For this report no further information has been considered after 5th September 2019.

2.1.2 The approach taken was to gather information relating to the services detailed in section 1.2 in drawing, specification, report and oral form and to compare these to the specifications and guidance appropriate for the building type, drawing conclusions on whether what is provided matches the requirements. In addition to existing specifications and guidance, learning generated from recent experience and national and international guidance and expertise was also used to inform the review. This learning will also inform future guidance development in Scotland.

2.1.3 The review has included

- Establishing a brief.
- Establishing the baseline data to allow the brief to be met.
- Preparation of several question sets to get a greater understanding of the project.
- Preparation and management of detailed question sets and information requests.
- Commissioning UK topic experts to review certain aspects of the project.
- Several site visits.
- Several meetings.
- Analysis of data.
- Analysis of microbiology results related to the hot and cold water systems.
- A rapid review of the literature and international guidance on ventilation systems in relation to infection.

2.2 Specifications and Guidance

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

2.2.2 HPS currently provides advice and guidance on all aspects of health protection nationally in Scotland, inclusive of expert advice and guidance on the topic of Healthcare Associated Infections (HAI) and antimicrobial resistance. It maintains and continues to develop a practice guide (National Infection Prevention and Control Manual – NIPCM) as well as a HAI Compendium of all extant guidance and policy appropriate for use in NHS Scotland. Like HFS, these services are largely advisory in nature, identifying best practice and developing national guidance and standards. The NHS Scotland NIPCM was first published on 13 January 2012 as mandatory

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

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

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

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

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

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

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

- 2.2.3 Whilst guidance is deemed not compulsory by HSE (not legally enforceable), where compliance with guidance is specified in a contract, as is the case here, it becomes a contractual requirement. Therefore, any permitted deviation from it would be expected to follow a formal process with input from all relevant parties, with clarity around how the outcome was reached, including risk assessments where appropriate and sign off by all those authorised to approve it.
- 2.2.4 The terms specifications and guidance are used in the report to refer to the publications setting out the expectations about the level of service to be provided, including legislation, approved codes of practice and guidance. Compliance with guidance is reported on, regardless of whether this implies a contractual requirement or not, as contract compliance is outwith the scope of this report. For the avoidance of doubt we have not considered the project agreement and contractual compliance in accordance with its terms, as this is subject to a separate review commissioned by Scottish Government.

2.3 Reporting methodology

2.3.1 For clarity this report organises issues with each of the systems considered into a priority rating, identifying the importance of deviations from what would be expected based on the specifications and guidance. The distinction between the categories is based on NSS judgement of the degree of non-compliance and the implications of that non-compliance. The criteria used are described below.

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

3. Analysis of information provided

3.1 Information provided

- 3.1.1 The support of the NHS Lothian project team in responding to questions and accessing data is gratefully acknowledged.
- 3.1.2 At the time of writing the majority of the information required had been received and whilst the timescale for the review means a selective targeted review of documentation was necessary, the main themes appear clear. However, some information remains outstanding, and NHS Lothian colleagues continue to pursue a response.
- 3.1.3 The Special Purpose Vehicle (SPV), Contractor, sub-contractors, Facilities Management Contractor and Independent Tester were not directly involved in the production of this report, nor were they requested to verify its contents and they may have additional information not considered here. It is acknowledged that some of the information provided by NHS Lothian came directly from these sources.

Ventilation systems

- 3.1.4 Prior to this review NHS Lothian commissioned a specialist contractor to validate the performance of ventilation systems within the facility and their report identified that elements of the ventilation system in Critical Care Units was not in accordance with current guidance (SHTM 03-01). Whilst this report notes that finding and NSS has been asked to support NHS Lothian in achieving a solution in compliance with guidance, this report focuses primarily on other ventilation issues. Additionally, Haematology / Oncology is also being reviewed as a result of changing clinical needs and NHS NSS will support NHSL in this.
- 3.1.5 An explanation and validation of the ventilation design whereby areas with air handling units out of service, for whatever reason, are served by an adjacent air handling unit, which also continues to serve its own area has not yet been provided.
- 3.1.6 The theatre ventilation appears not to have been installed in accordance with current guidance in respect to required pressure cascades in corridors and removal of contaminants from scrub areas. The Board has sought demonstration of compliance from Integrated Health Solutions Lothian (IHSL) in relation to issues identified.

Water systems

- 3.1.7 Whilst elements of the water testing carried out as part of this review are not detailed in current guidance, and NHS Lothian could not have been expected to be aware, lessons learned recently across health systems suggest that any potential pathogenic contamination found should be investigated and treated appropriately before patients and staff move in. Water test results in RHCYP & DCN indicate some fungi in the water, mainly at taps, as well as higher than anticipated total viable counts (TVC). The latter may be related to the fact that the building is unoccupied with only maintenance processes in place to ensure water turnover. In augmented care areas testing carried out for NHS Lothian identified *Pseudomonas aeruginosa* found in approximately 10% of taps tested. There would appear to be no systemic

contamination of the hot and cold water systems, rather, contamination has been found at outlets, and particularly thermostatic mixing taps with complex interstices and polymeric components, which can make them more susceptible to persistent contamination.

Drainage and plumbing systems

- 3.1.8 The drainage for the hospital utilises one gravity system and two pumped systems. The pumped systems are used to overcome gravity as they are installed below the local water table and level of the external drains. The main concern is the pumped system in the basement, in the vicinity of the kitchen, may fail. The risk is that if these fail the kitchen drains will back up requiring the kitchen to close, which would have an impact on food services to the hospital. Extensive use of standby equipment and power supplies is in place, such that multiple failures would need to occur to cause sewage to back up into the basement. Procedures for maintenance and repair have been extensively considered but will need to be tested in operation.

4. Findings

4.1 Management and assurance

Summary

Review	Summary Assessment	No. of Issues per priority				
		1 (H)	2	3	4	5 (L)
Management & Assurance	Omissions identified in key roles within the management structure, ease of access to information and prioritisation of building system alarms.	-	-	1	2	-

Main Findings

Priority	Review	Action Assessment
4	Structures and processes are not fully in place to assure the Board that the facility is being operated in compliance with contract requirements. These should be in place from the point where the building services referred to in this report are put into use.	NHS Lothian and IHSL should adopt the management and reporting processes as described in SHTM 00 - Best Practice Guidance for Healthcare Engineering and the SHTMs for each critical engineering service.
3	Some of the records and documents necessary for the effective and safe operation of the hospital could not be found. The document management system appears to lack a logical structure which will impact on the ability to readily find necessary information. Some of the sections contain none, or only part, of the documentation they should have as required by the Construction (Design and Management) Regulations 2015.	The Board should require IHSL to rectify the filing structure of the documentation and verify that the information contained is both complete and accurate as required by the Construction (Design and Management) Regulations 2015.
4	The alarms for the building are reportedly un-prioritised, resulting in a very large number of alarms potentially masking critical alarms.	Prioritise alarms to make most critical failures visible and manageable. Until alarms are prioritised, have procedures and staff in place to ensure critical alarms are not missed as per SHTM 08-05 - Specialist services building management systems.

Detailed Narrative

- 4.1.1 Healthcare organisations have a duty of care to patients, their workforce and the general public to ensure a safe and appropriate environment. This requirement is identified in a wide range of legislation. At the most senior level within an organisation, the appointed responsible person should have access to a robust structure which delivers governance, assurance and compliance through a formal reporting mechanism.
- 4.1.2 The review identified that for both IHSL and NHS Lothian, there appeared to be omissions in the identification, appointment and definition of key roles in an effective management structure. Additionally, some records which are necessary to demonstrate compliance with appropriate specifications and guidance remain outstanding.
- 4.1.3 The Board cannot pass its responsibilities under health and safety law to a third party. It can pass duties, but the responsibility for ensuring the safety of those accessing its premises remains with the Board. To discharge its duties, the Board should ensure appropriate structures, processes and personnel are in place to ensure that those responsible for operating the facility are doing so in compliance. The structures and processes set out in the Scottish Health Technical Memorandum (SHTM) suite of guidance, Statutory Compliance Audit and Risk Tool (SCART)¹ and Healthcare Associated Infection-System for Controlling Risk in the Built Environment (HAI_SCRIBE)² produced by Health Facilities Scotland, should form the core of this. These arrangements should be in place as soon as practicable and prior to occupation of the RHCYP & DCN.

4.2 Ventilation

Summary

Review	Summary Assessment	No. of Issues per priority				
		1 (H)	2	3	4	5 (L)
Ventilation Systems	Remedial action is required within both general and theatre ventilation systems. Critical Care ventilation redesign was already being considered separately by the Board. Haematology / Oncology is also being reviewed as a result of changing clinical need and specific risks were identified. Risk assessments are underway as part of the ward by ward risk assessments being done locally, requested as part of the review.	-	1	2	-	-

¹ SCART is a risk based tool used by Boards in NHS Scotland to measure their compliance against statutory and non-statutory position.

² HAI_SCRIBE provides Built Environment Infection Prevention and Control information for Design Teams, Construction Teams, Infection Prevention and Control Teams and Estates & Facilities Teams, as well as an assessment process allowing the identification and management of infection control risks in the built environment.

Main Findings

Priority	Review	Action Assessment
2	<p>General Ventilation Systems - Provision for maintenance or plant failure in the ventilation systems has not been validated in accordance with SHTM 03-01 Ventilation for Healthcare Premises. The bypass arrangements and functioning of ventilation in the event of plant failure remains to be demonstrated.</p>	<p>Demonstrate efficacy of approach of utilising adjacent air handling unit to supply areas not served by failed plant.</p> <p>Commission and validate isolation rooms, singles and multi-bed spaces in the event of supply by adjacent air handling unit.</p> <p>Clinical leads and Infection Prevention and Control colleagues to consider the effect of air handling plant failure in developing service provision strategies.</p> <p>Confirm damper operation and compliance with fire requirements in bypass mode.</p>
	<p>Air handling units and ductwork contain numerous deviations from contract requirements (SHTM 03-01) and were found not to be clean despite having been presented for validation. Deviations include: loose internal cabling in the airflow, cable routes allowing air to bypass filters, air leakage at penetrations and possible fan replacement difficulties which need to be corrected.</p>	<p>The ventilation systems throughout the hospital should be subject to a full snagging exercise and all defects rectified following which air handling units and ventilation systems are cleaned. All deficiencies identified in validation and specialist Consultant Engineer reports should be addressed as part of this.</p>
	<p>The single and multi-bed ventilation design is based on four air changes per hour mechanical ventilation and there is a component of natural ventilation which is not part of the design. With a few exceptions, the mechanical component has been validated. However the natural component has not been proven.</p>	<p>Confirm that all areas served by this arrangement are suitable for categorisation as listed in SHTM 03-01 Part A, Appendix 1.</p> <p>Undertake an IPCT risk assessment ward by ward/ speciality specific in relation to the guidance.</p>
	<p>The pressure regimen detailed in the design, and reflecting the environmental matrix, will be affected by opening windows and the pressure between the room and the corridor, and therefore direction of air flow, cannot be</p>	<p>A full assessment of the services and patient population should be carried out and mechanisms for monitoring established.</p>

<p>relied upon when windows are open.</p>	
<p>External doors to plant rooms</p>	<p>Ensure that excessive gaps are removed and appropriate anti vermin measures are applied to all the doors and screens as per SHTM 03-01 and HFS Interim Guidance - Managing the Risk of Contamination of Ventilation Systems by Fungi from Bird Droppings – February 2019.</p>
<p>Fire dampers in some locations cannot be adequately tested as duct access has not been provided. Also, locations of fire dampers and fire rated ductwork has been questioned in relation to the requirements of SHTM 03-01 and confirmation of compliant provision is awaited.</p>	<p>Provide access so all fire dampers can be readily visually inspected to verify operation. Review fire damper provision and fire rated ductwork and confirm appropriate provision</p>
<p>Air intakes and opening windows are sited in the courtyard below the helipad and at the adjacent RIE. Information has not been provided on the impact of downdraft on air flows and pressures or entrainment of contaminants as per SHTM 03-01.</p>	<p>Demonstrate the effect of helicopter landing on air flows in ventilation systems with intakes below through measurement when test flights take place or through modelling. This should include the air intakes of the RIE adjacent.</p>
<p>3</p>	<p>Theatre Ventilation Systems - Scrub areas which are narrow and deep are unlikely to be scavenged effectively by theatre air changes and require alternative means of achieving removal of contaminants as per SHTM 03-01. The efficacy of the high level extract to achieve sufficient dilution of contaminants or entrainment of heavier than air water droplets is not in accordance with the requirements of SHTM 03-01 and has not been demonstrated as equivalent.</p> <p>Anaesthetic rooms 31 and 34 do not demonstrate a clean air flow path to reduce exposure of staff to gasses as per SHTM 03-01. Room 30 supply is too close to the door</p>
<p>The ability of the single high level extract provided in deep plan scrub areas to effectively prevent contaminants being dispersed into theatres should be demonstrated and/or additional low level ventilation provided.</p>	<p>Move ceiling supply to opposite side of room from extract.</p> <p>In room 30, move supply away from door.</p>

	<p>Theatre utility rooms extract ventilation means theatres have to be used in pairs and taking a theatre out of service may reduce the extract in utility room below the levels as per SHTM 03-01.</p>	<p>Add supplementary extract ventilation to allow for one theatre being out of service or plan for service impact following the loss of a pair of theatres. <i>NHS Lothian has advised that the appropriate pressure differentials are maintained when only one theatre is operation. Validation evidence is to be provided.</i></p>
3	<p>Isolation Room Ventilation Systems are not served by a single ventilation system for each room as recommended in SHPN4 Supplement 1. The arrangement provided, where ventilation systems serve an area of the building including contained isolation rooms, has not yet been proven in the event of failure of an air handling unit and the implications for service impact are not yet understood.</p>	<p>Prove that bypass connections to adjacent ventilation systems will allow safe operation of both areas and / or explain service provision strategy for loss of each area including isolation rooms. Also include assurance on operational effectiveness e.g. the pressure differentials and air flows being maintained. Develop clinical service provision plan to reflect the potential loss of design conditions in up to 5 of the 19 isolation rooms on the failure of an air handling unit and confirm impact on service continuity.</p>

Detailed Narrative

- 4.2.1 The ventilation systems at RHCYP & DCN were considered in relation to legislation, guidance and the lessons learned from other recent similar projects which may have an impact on the patient group.
- 4.2.2 The principal legislation which is relevant to the ventilation systems is The Control of Substances Hazardous to Health Regulations 2002 (COSHH).
- 4.2.3 The principal guidance which is relevant to the ventilation systems is: Scottish Health Technical Memorandum (SHTM) 03-01: Ventilation for healthcare premises; and Scottish Health Planning Note 04 Inpatient Accommodation, Supplement 1 Isolation Facilities in Acute Settings.
- 4.2.4 Elements of the ventilation within Critical Care were identified by NHS Lothian's validation contractor, and verified in this review, to be not in accordance with the requirements of SHTM 03-01. NHS Lothian is working with IHSL to design a suitable solution to provide the conditions required within Critical Care. NSS has been asked by Scottish Government to support NHS Lothian to ensure that the system delivered is compliant with requirements.
- 4.2.5 The general ventilation for non-specialist applications, such as single / multi-bed rooms, was identified by the Board's validation contractor as having lower air change rates than specified in SHTM 03-01, i.e. 4 air changes per hour as opposed to 6.

During the review, NHS Lothian supplied information about a natural ventilation component, with some documents referring to a mixed mode ventilation system. However, IHSL later advised that natural ventilation is not part of their design. NSS visited the site with specialist ventilation consultants who produced a report on the general ventilation systems and noted non-compliances with air handling unit provision and installation and pressure regimens, including several identified by the Board's validation contractor.

- 4.2.6 From an infection prevention and control perspective, there is low-quality to no evidence from outbreak reports and current guidance, respectively, to support minimum ventilation requirements. Therefore, it is not possible to make conclusive statements regarding the individual minimum ventilation parameters for inpatient care areas. A rapid review of the literature found limited clinical evidence to directly implicate air change rates alone in having a direct impact on the development of an outbreak or incidence of infection. Therefore, it is reasonable that, in the absence of evidence, healthcare design teams should continue to adhere to current national guidance. In the event of a deviation from the current recommended ventilation parameters, design teams should ensure that air changes per hour are maintained as close as possible to the recommended air changes per hour without compromising other aspects of the ventilation system requirements. In addition a full assessment of the services and patient population should be carried out and mechanisms for monitoring established. Caution is advised in relying on air change rates alone to provide adequate protection from infection; this is only one part of a multifactorial process involved in creating the appropriate airflow patterns with appropriate mixing and dilution of contaminants. Nationally, further research is required to look beyond air change rates to examine the effects that other factors such as supply and exhaust location, door position and motion, spatial orientation, surface composition, temperature, humidity, and air distribution patterns have on particle migration in clinical areas.
- 4.2.7 Theatre ventilation was identified by NHS Lothian's validation contractor as having some deficiencies. NSS visited the site with a specialist Consultant Engineer, who was lead author on the last three iterations of the ventilation HTM guidance. This identified and confirmed several deficiencies, including lack of evidence about the efficacy of the ventilation in the scrub rooms; deviating from the standard models recommended in SHTM 03-01. The current design of the theatre ventilation system is such that maintenance might entail loss of two theatres rather than one. Additionally, there is an overuse of flexible ductwork, potentially causing problems with balancing theatre ventilation.
- 4.2.8 The building contains a number of Positive Pressure Ventilated Lobby (PPVL) isolation rooms for which the guidance, SHPN4 supplement 1, recommends that each isolation room should ideally have its own air handling unit, such that if an air handling unit fails, or is offline for maintenance, only one isolation room is out of commission.
- The building, as built, has an air handling unit serving each area of the building, including any contained isolation rooms. This means that up to five out of 19 isolation rooms may be not performing as intended in the event of an air handling unit failure. NHS Lothian have advised that the strategy for maintenance is that a bypass duct will be used to feed an area from an adjacent air handling unit. This mode has

not yet been proven and the successful operation of isolation rooms and other spaces in the event of use of this bypass has not been demonstrated. NHS Lothian needs to consider in its clinical service model how each isolation room and ward will function in the event of loss of an air handling unit. This will require full design and validation of air change rates, pressure differentials and direction of air flow for each area in this mode, as well as predicted times to rectify any plant failure.

- 4.2.9 IHSL has advised NHS Lothian that the design of the isolation rooms is as per Scottish Health Planning Note (SHPN) 04-01 Supplement 1: In-patient Accommodation: Options for Choice Supplement 1: Isolation Facilities in Acute Settings. This guidance notes that isolation rooms ideally should have its own air handling unit (AHU) and the ventilation systems should be as robust as possible so that standby fans are not required. The guidance acknowledges that in high rise buildings a common supply and extract may be the only feasible solution with duct branches fitted with spring close gas tight dampers in the event of failure. The height of this building is less than that defined in the Scottish Building Standards Technical Handbook - Non-Domestic, for high rise (18m). At the time of writing the provision of gas tight dampers at ward level as required by the validated design parameters detailed in SHPN 04-01 Supplement 1 had not been evidenced.
- 4.2.10 Additional observations during a site visit by NSS have highlighted potential concerns linked to the location of some high risk wards, including Haematology / Oncology in relation to the helipad. A demonstration of the effect of helicopter landing/take-off on airflows needs to be completed by NHS Lothian.

4.3 Water

Summary

Review	Summary Assessment	No. of Issues per priority				
		1	2	3	4	5
Water Systems	Independent testing identified no widespread contamination of the water systems, however, remedial action is required on a number of water system areas as well as system wide disinfection prior to occupation.	-	1	2	1	-

Main Findings

Priority	Review	Action Assessment
4	Water Services Augmented Care - Pseudomonas found in taps, in Paediatric Medical Inpatients and DCN Inpatients. (SHTM 04-01 Part A published in July 2014)	All taps (not just TMT/TMV ³) to be disinfected and retested. Inspect and replace, as appropriate, taps, tap components and pipework. Replace tap strainers and cartridges in affected TMT taps.

³ TMT – Thermostatic Mixing Taps, TMV – Thermostatic Mixing Valves
09 September 2019

3	<p>Water Services Non Augmented Care - Swarf and biofilm found in tap strainers, contrary to SHTM 04-01 Water safety for healthcare premises.</p>	Replace tap strainers in all areas.
2	<p>Showers - Shower hose lengths do not comply with Scottish Water byelaws and guidance in SHTM 04-01 Water safety for healthcare premises.</p>	Shorten hose length, or add retaining ring, to ensure that shower head cannot reach WC or drain Disinfect showers, hose and drain after rectification.
3	<p>Water General - Testing has found some fungal / mould contamination and high total viable counts. <i>Legionella</i> risk assessment actions not recorded as required by HSE Approved Code of Practice and Guidance L8 - Legionnaires' disease. The control of <i>Legionella</i> bacteria in water systems. <i>Legionella</i> risk assessment insufficient to reflect system contamination in general. Those responsible for the system have a responsibility under the Control of Substances Hazardous to Health Regulations 2002 (COSHH) to prevent exposure to microorganisms.</p> <p>Designated roles and responsibility as per SHTM 00 Best practice guidance for healthcare engineering.</p> <p>Water tanks as per SHTM 04-01 Water safety for healthcare premises.</p> <p>Hot and cold water temperatures / flushing. SHTM 04-01 Water safety for healthcare premises</p>	<p>Given a number of indicators the water system should be disinfected and re-tested.</p> <p>The <i>Legionella</i> Risk assessment Feb 2019 identified a range of actions. The Action Tracker does not demonstrate that the issues raised have been resolved, or a timeline provided for resolution. Record rectification of actions. The risk assessment is heavily focussed on <i>Legionella</i> and not taking into account other organisms in line with patient type that will occupy the building. Broaden to reflect system contamination in general. Develop analysis categorisation of patient type, and consideration to susceptibility, for each area.</p> <p>The current Responsible Person (RP) has not been appointed in writing and uncertain as to whether received RP training. Additionally, has no previous experience of healthcare.</p> <p>To be inspected. The Raw Water and Filtrate water tanks are interconnected at the drain. These must be separated.</p> <p>There was an issue with raised cold water temperatures during the boiler outage – this requires investigation.</p>

Filtration Plants	From lessons learned by NSS in recent work, microbiological growth potential was identified as part of the Backwash cycle. Consideration should be given to Chlorine dioxide addition to backwash water tank to counter microbiological and biofilm development on filters.
Instant Boil Taps and Rise and Fall Baths	These were found to be contaminated and need to be disinfected and tested to demonstrate safe water delivery as per SHTM 04-01 Water safety for healthcare premises.

Detailed Narrative

- 4.3.1 The domestic hot and cold water services (DHCWS) at RHCYP & DCN were considered in relation to legislation, guidance and the lessons learned from other recent similar projects which may have an impact on the patient group.
- 4.3.2 The legislation which is relevant to the water system are Public Water Supplies (Scotland) Regulations SSI 2014/364 and The Control of Substances Hazardous to Health Regulations 2002 (COSHH). In relation to COSHH, the Health and Safety Executive (HSE) note that *“Micro-organisms are covered in COSHH by the term biological agents. These are defined as any micro-organism, cell culture, prion or human endoparasite whether or not genetically modified which may cause infection, allergy, toxicity or otherwise create a hazard to human health.”*
- 4.3.3 The guidance which is relevant to the water system are HSE Approved Code of Practice L8: Legionnaires' disease. The control of *Legionella* bacteria in water systems; HSE 274: Legionnaires' disease: Technical guidance; Scottish Healthcare Technical Memorandum (SHTM) 04-01: Water safety for healthcare premises and HPS document: *Pseudomonas aeruginosa* routine water sampling in augmented care areas for NHS Scotland (*published in draft September 2018*).
- 4.3.4 From initial inspection of the Independent Tester's reports, there is evidence that areas of the pipe work systems were installed without end protection. This may have allowed dust and organic material to enter the pipe system and this may not have been eradicated by the disinfection process.
- 4.3.5 The Facilities Management (FM) contractor Bouygues FM (BFM) commissioned a *Legionella* risk assessment when they took possession of the site from the construction contractor. This report has yet to be provided and will be reviewed and assessed when presented.
- 4.3.6 NHS Lothian commissioned a specialist safety consultant in May 2019 to conduct an overall safety audit of the RHCYP & DCN. Contained within their report is a section on the water system. They assessed the risk condition of the system as “high” mainly as a result of BFM's *Legionella* risk assessment, the lack of evidence of flushing across the system, the lack of maintenance on shower heads and outstanding information on the water management responsibilities by BFM.

- 4.3.7 NHS Lothian separately commissioned water testing from a specialist water safety consultant, on 12th July 2019, which indicated that certain tap outlets within the augmented care areas were positive for *Pseudomonas aeruginosa*. This report also noted high Total Viable Counts (TVC). In addition, *Pseudomonas aeruginosa* was recorded in the Instant Boil Taps and the rise and fall baths. The consultant concluded that there was no evidence of wide spread contamination of the water system.
- 4.3.8 As part of the NSS review, a specialist water consultant carried out water tests around the facility on 18th July 2019 to determine if there were any significant issues.
- 4.3.9 In summary the NSS specialist contractor concluded from their investigations and as a result of the microbiological samples taken by them and others that: -
- There was no indication that the water system (as a whole) was cause for concern referenced to existing guidance.
 - There was no atypical mycobacteria found in the 60 samples taken (mainly from neonatal and intensive care areas); however, there was some Gram-negative activity and mould present.
 - Concern was expressed regarding the management of the water system given the lack of occupancy and turnover of the water system.
 - The management aspects of the water system by IHSL's FM contractor were not satisfactorily demonstrated.
 - The system showed signs of biofilm and swarf contamination, particularly at the taps.
 - Shower heads and hoses do not meet the required standards with respect to length.
 - During the site investigation it was noted that the cold water temperatures were rising and the hot water temperatures decreasing. In discussions with BFM it was discovered that a boiler had tripped, together with the circulating pumps, and the other boilers did not come on as they should have. The result of this was that the temperature of the water for both hot and cold domestic water systems fell into the *Legionella* growth band for approximately a 12 hour period.
 - The NSS commissioned consultant engaged noted that at commissioning only 5% sampling of the number of taps across the whole hospital was completed.
 - The management strategy for the Kemper system (water temperature regulation system) requires close control to ensure that water is not "dumped" unnecessarily in an effort to control cold water temperatures.
- 4.3.10 The tests for atypical mycobacteria proved negative. However fungi were identified in 22% of the samples taken in the water system based on a sample size of 60 taps from a population of c2000. These are not required to be tested as part of the current guidance. However, based on NSS experiences at other hospital sites it was considered prudent to have these tests done.
- 4.3.11 Based on NSS experiences at other hospital sites that became apparent after the construction of RHCYP & DCN, it is recommended that specific components parts of

the water system such as pressurisation unit, meter etc are replaced and the originals tested, particularly those which have proven to be problematic.

4.4 Drainage and Plumbing

Summary

Review	Summary Assessment	No. of Issues per priority				
		1 (H)	2	3	4	5 (L)
Drainage & Plumbing	The drainage system has multiple redundancies in place, however, active monitoring is required. Elements of plumbing require inspection and appropriate remedial action taken.	-	-	-	1	-

Main Findings

Priority	Review	Action Assessment
4	Sinks drains	Initial testing indicates that these are not significantly contaminated, however the horizontal drain and protruding seal means they retain stagnant water and they need to be disinfected periodically prior to and post occupancy to maintain their condition. From lessons learned, there should be a system of inspection and appropriate remedial action taken.
	Bottle traps	There would appear to be an inconsistency of installation and potential of back-feed from trap to drain. This requires review and rectification.
	Pumped Drainage	The internal pumped sewage drainage system presents the potential for sewage to back up through basement drains on pump failure and will require active monitoring.

Detailed Narrative

- 4.4.1 The range of clinical and non-clinical wash hand basins chosen by the IHSL are from a recognised manufacturer of healthcare drainage products. There is no facility to connect the tap on the sink as the taps are panel mounted. The drain connection is at the rear of the sink bowl and there is no overflow, all as per guidance.
- 4.4.2 The connection on to the wash hand basin from the drain has proven to be an area where water does not drain freely as the connection reduces the diameter of the

drainage outlet and creates a dam effect. Lessons learned by NSS from other projects, after commencement of the construction of RHCYP & DCN, have shown that various organisms were grown from this area in some circumstances.

- 4.4.3 The plumbing system is connected to the main sewage system via three drainage systems. The first is a gravity fed system. The second is a sump pump arrangement in the external courtyard. The third is a sump in the basement area of the hospital. The rationale behind the use of the sumps is that the basement areas are below the water table and any waste material has to be pumped up and out to the sewer.
- 4.4.4 The Independent Tester has noted in their report of 30th June 2017 that an issue had been raised regarding the capacity of the basement sump. In further investigation this appears to be related to the fact that more areas/floors were connected to this system than NHS Lothian had originally been made aware of.
- 4.4.5 The main drainage risk lies with the basement sump. It has a resilience system of back-up power supplies, multiple pumps and alarm systems to three different locations. There are two discharge pipes to sewer, reducing the risk of blockage and the consequent risk of sewage backing up into the basement in the proximity of the kitchen. In addition, if a failure occurred or a maintenance activity was to take place, the location of this sump chamber would mean that all traffic flow through the affected area would have to be halted to permit a safe operating procedure to be implemented.
- 4.4.6 The external courtyard sump has a duty/standby pump as well as a spare submersible pump and also has similar alarm arrangements to the basement pumps. In the event of a catastrophic blockage and spillage the court yard would be impacted.

End of Report



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NHS Lothian - Royal Hospital for Children and Young People & Department of Clinical Neurosciences

NHS National Services Scotland – Review of: Water,
Ventilation, Drainage and Plumbing Systems

CONFIDENTIAL & DRAFT

September 2019
Version D0.22

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1. Executive Summary

1.1 Overview

A decision was taken on 2 July 2019 to delay moving to the new Royal Hospital for Children and Young People & Department of Clinical Neurosciences (RHCYP & DCN) on 9 July. This followed an inspection of the facility, which raised concerns regarding the ventilation arrangements for critical care beds (intensive care and high dependency) and other areas of the hospital. NHS National Services Scotland (NSS) received a commission from Scottish Government to undertake an external series of checks, led by Health Facilities Scotland (HFS) and Health Protection Scotland (HPS), to ensure that the relevant technical specifications and guidance applicable to the new hospital have been followed and are being implemented.

The objectives of the review in relation to RHCYP & DCN were:

- To provide a report by September 2019 to Scottish Government on whether the relevant technical specifications and guidance applicable to the RHCYP & DCN are being followed and implemented.
- Where relevant technical specifications and guidance have not been followed, identify necessary remedial actions.

Given the specific focus on the control of Healthcare Associated Infections (HAI), the review concentrated on a system wide approach for ventilation, water and drainage systems. The process involved site visits, sample inspections and a targeted review of available documentation.

NHS Lothian informed the reviewers at the start of the process that elements of the Critical Care ventilation system required redesign and modification to ensure compliance with guidance. Additionally, Haematology / Oncology is also being reviewed as a result of changing clinical needs, and specific risks were identified. NSS provided advice relating to the design instruction for elements of the Critical Care ventilation system and similar advice will be provided in relation to Haematology / Oncology.

The review commenced on the 9th July 2019 with this final report published in September 2019 for consideration by the established RHCYP & DCN Oversight Board.

1.2 Summary of findings

The findings have been collated based on information provided by NHS Lothian and on-site reviews of the RHCYP & DCN. Expert advice was sought within the key focus areas of ventilation, water and drainage and plumbing systems and their overarching management and assurance processes relating to these systems. The following table outlines the status of key findings:

Review	Summary Assessment	No. of Issues per priority				
		1 (H)	2	3	4	5 (L)
Management & Assurance	Omissions identified in key roles within the management structure, ease of access to information and prioritisation of building system alarms.	-	-	1	2	-
Ventilation Systems	Remedial action is required within both general and theatre ventilation systems. Critical Care redesign was already being considered separately by the Board. Haematology / Oncology is also being reviewed as a result of changing clinical need and specific risks were identified. Risk assessments are underway as part of the ward by ward risk assessments being done locally, requested as part of the review.	-	1	2	1	-
Water Systems	Independent testing identified no widespread contamination of the water systems, however, remedial action is required on a number of water system areas as well as system wide disinfection prior to occupation.	-	1	2	-	-
Drainage & Plumbing	The drainage system has multiple redundancies in place; active monitoring is required. Elements of plumbing require monitoring and routine disinfection.	-	-	-	1	-

The following definitions were used to categorise the findings:

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

Overall remedial action is required to be undertaken within the ventilation and water systems prior to occupation. Following acceptance of this report, the review team are ready to assist the NHS Lothian team in developing a programme of activity and remedial actions.

2. Review methodology

2.1 Review process

- 2.1.1 The review process initially took place between 9th July and 30th August 2019. For this report no further information has been considered after 5th September 2019.
- 2.1.2 The approach taken was to gather information relating to the services detailed in section 1.2 in drawing, specification, report and oral form and to compare these to the specifications and guidance appropriate for the building type, drawing conclusions on whether what is provided matches the requirements. In addition to existing specifications and guidance, learning generated from recent experience and national and international guidance and expertise was also used to inform the review. This learning will also inform future guidance development in Scotland.
- 2.1.3 The review has included
- Establishing a brief.
 - Establishing the baseline data to allow the brief to be met.
 - Preparation of several question sets to get a greater understanding of the project.
 - Preparation and management of detailed question sets and information requests.
 - Commissioning UK topic experts to review certain aspects of the project.
 - Several site visits.
 - Several meetings.
 - Analysis of data.
 - Analysis of microbiology results related to the hot and cold water systems.
 - A rapid review of the literature and international guidance on ventilation systems in relation to infection.

2.2 Specifications and Guidance

- 2.2.1 HFS currently provides a range of advisory and delivery services across a wide variety of topics from a portfolio which covers the built estate, engineering and environment and facilities management. With some exceptions these services are largely advisory in nature, identifying best practice and developing national guidance and standards.
- 2.2.2 HPS currently provides advice and guidance on all aspects of health protection nationally in Scotland, inclusive of expert advice and guidance on the topic of Healthcare Associated Infections (HAI) and antimicrobial resistance. It maintains and continues to develop a practice guide (National Infection Prevention and Control Manual – NIPCM) as well as a HAI Compendium of all extant guidance and policy appropriate for use in NHS Scotland. Like HFS, these services are largely advisory in nature, identifying best practice and developing national guidance and standards. The NHS Scotland NIPCM was first published on 13 January 2012 as mandatory

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

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

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

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

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

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

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

- 2.2.3 Whilst guidance is deemed not compulsory by HSE (not legally enforceable), where compliance with guidance is specified in a contract, as is the case here, it becomes a contractual requirement. Therefore, any permitted deviation from it would be expected to follow a formal process with input from all relevant parties, with clarity around how the outcome was reached, including risk assessments where appropriate and sign off by all those authorised to approve it.
- 2.2.4 The terms specifications and guidance are used in the report to refer to the publications setting out the expectations about the level of service to be provided, including legislation, approved codes of practice and guidance. Compliance with guidance is reported on, regardless of whether this implies a contractual requirement or not, as contract compliance is outwith the scope of this report. For the avoidance of doubt we have not considered the project agreement and contractual compliance in accordance with its terms, as this is subject to a separate review commissioned by Scottish Government.

2.3 Reporting methodology

2.3.1 For clarity this report organises issues with each of the systems considered into a priority rating, identifying the importance of deviations from what would be expected based on the specifications and guidance. The distinction between the categories is based on NSS judgement of the degree of non-compliance and the implications of that non-compliance. The criteria used are described below.

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

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3. Analysis of information provided

3.1 Information provided

- 3.1.1 The support of the NHS Lothian project team in responding to questions and accessing data is gratefully acknowledged.
- 3.1.2 At the time of writing the majority of the information required had been received and whilst the timescale for the review means a selective targeted review of documentation was necessary, the main themes appear clear. However, some information remains outstanding, and NHS Lothian colleagues continue to pursue a response.
- 3.1.3 The Special Purpose Vehicle (SPV), Contractor, sub-contractors, Facilities Management Contractor and Independent Tester were not directly involved in the production of this report, nor were they requested to verify its contents and they may have additional information not considered here. It is acknowledged that some of the information provided by NHS Lothian came directly from these sources.

Ventilation systems

- 3.1.4 Prior to this review NHS Lothian commissioned a specialist contractor to validate the performance of ventilation systems within the facility and their report identified that elements of the ventilation system in Critical Care Units was not in accordance with current guidance (SHTM 03-01). Whilst this report notes that finding and NSS has been asked to support NHS Lothian in achieving a solution in compliance with guidance, this report focuses primarily on other ventilation issues. Additionally, Haematology / Oncology is also being reviewed as a result of changing clinical needs and NHS NSS will support NHSL in this.
- 3.1.5 An explanation and validation of the ventilation design whereby areas with air handling units out of service, for whatever reason, are served by an adjacent air handling unit, which also continues to serve its own area has not yet been provided.
- 3.1.6 The theatre ventilation appears not to have been installed in accordance with current guidance in respect to required pressure cascades in corridors and removal of contaminants from scrub areas. The Board has sought demonstration of compliance from Integrated Health Solutions Lothian (IHSL) in relation to issues identified.

Water systems

- 3.1.7 Whilst elements of the water testing carried out as part of this review are not detailed in current guidance, and NHS Lothian could not have been expected to be aware, lessons learned recently across health systems suggest that any potential pathogenic contamination found should be investigated and treated appropriately before patients and staff move in. Water test results in RHCYP & DCN indicate some fungi in the water, mainly at taps, as well as higher than anticipated total viable counts (TVC). The latter may be related to the fact that the building is unoccupied with only maintenance processes in place to ensure water turnover. In augmented care areas testing carried out for NHS Lothian identified *Pseudomonas aeruginosa* found in approximately 10% of taps tested. There would appear to be no systemic

contamination of the hot and cold water systems, rather, contamination has been found at outlets, and particularly thermostatic mixing taps with complex interstices and polymeric components, which can make them more susceptible to persistent contamination.

Drainage and plumbing systems

- 3.1.8 The drainage for the hospital utilises one gravity system and two pumped systems. The pumped systems are used to overcome gravity as they are installed below the local water table and level of the external drains. The main concern is the pumped system in the basement, in the vicinity of the kitchen, may fail. The risk is that if these fail the kitchen drains will back up requiring the kitchen to close, which would have an impact on food services to the hospital. Extensive use of standby equipment and power supplies is in place, such that multiple failures would need to occur to cause sewage to back up into the basement. Procedures for maintenance and repair have been extensively considered but will need to be tested in operation.

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4. Findings

4.1 Management and assurance

Summary

Review	Summary Assessment	No. of Issues per priority				
		1 (H)	2	3	4	5 (L)
Management & Assurance	Omissions identified in key roles within the management structure, ease of access to information and prioritisation of building system alarms.	-	-	1	2	-

Main Findings

Priority	Review	Action Assessment
4	Structures and processes are not fully in place to assure the Board that the facility is being operated in compliance with contract requirements. These should be in place from the point where the building services referred to in this report are put into use.	NHS Lothian and IHSL should adopt the management and reporting processes as described in SHTM 00 - Best Practice Guidance for Healthcare Engineering and the SHTMs for each critical engineering service.
3	Some of the records and documents necessary for the effective and safe operation of the hospital could not be found. The document management system appears to lack a logical structure which will impact on the ability to readily find necessary information. Some of the sections contain none, or only part, of the documentation they should have as required by the Construction (Design and Management) Regulations 2015.	The Board should require IHSL to rectify the filing structure of the documentation and verify that the information contained is both complete and accurate as required by the Construction (Design and Management) Regulations 2015.
4	The alarms for the building are reportedly un-prioritised, resulting in a very large number of alarms potentially masking critical alarms.	Prioritise alarms to make most critical failures visible and manageable. Until alarms are prioritised, have procedures and staff in place to ensure critical alarms are not missed as per SHTM 08-05 - Specialist services building management systems.

Detailed Narrative

- 4.1.1 Healthcare organisations have a duty of care to patients, their workforce and the general public to ensure a safe and appropriate environment. This requirement is identified in a wide range of legislation. At the most senior level within an organisation, the appointed responsible person should have access to a robust structure which delivers governance, assurance and compliance through a formal reporting mechanism.
- 4.1.2 The review identified that for both IHSL and NHS Lothian, there appeared to be omissions in the identification, appointment and definition of key roles in an effective management structure. Additionally, some records which are necessary to demonstrate compliance with appropriate specifications and guidance remain outstanding.
- 4.1.3 The Board cannot pass its responsibilities under health and safety law to a third party. It can pass duties, but the responsibility for ensuring the safety of those accessing its premises remains with the Board. To discharge its duties, the Board should ensure appropriate structures, processes and personnel are in place to ensure that those responsible for operating the facility are doing so in compliance. The structures and processes set out in the Scottish Health Technical Memorandum (SHTM) suite of guidance, Statutory Compliance Audit and Risk Tool (SCART)¹ and Healthcare Associated Infection-System for Controlling Risk in the Built Environment (HAI_SCRIBE)² produced by Health Facilities Scotland, should form the core of this. These arrangements should be in place as soon as practicable and prior to occupation of the RHYCP & DCN.

4.2 Ventilation

Summary

Review	Summary Assessment	No. of Issues per priority				
		1 (H)	2	3	4	5 (L)
Ventilation Systems	Remedial action is required within both general and theatre ventilation systems. Critical Care ventilation redesign was already being considered separately by the Board. Haematology / Oncology is also being reviewed as a result of changing clinical need and specific risks were identified. Risk assessments are underway as part of the ward by ward risk assessments being done locally, requested as part of the review.	-	1	2	-	-

¹ SCART is a risk based tool used by Boards in NHS Scotland to measure their compliance against statutory and non-statutory position.

² HAI_SCRIBE provides Built Environment Infection Prevention and Control information for Design Teams, Construction Teams, Infection Prevention and Control Teams and Estates & Facilities Teams, as well as an assessment process allowing the identification and management of infection control risks in the built environment.

Main Findings

Priority	Review	Action Assessment
2	<p>General Ventilation Systems - Provision for maintenance or plant failure in the ventilation systems has not been validated in accordance with SHTM 03-01 Ventilation for Healthcare Premises. The bypass arrangements and functioning of ventilation in the event of plant failure remains to be demonstrated.</p>	<p>Demonstrate efficacy of approach of utilising adjacent air handling unit to supply areas not served by failed plant.</p> <p>Commission and validate isolation rooms, singles and multi-bed spaces in the event of supply by adjacent air handling unit.</p> <p>Clinical leads and Infection Prevention and Control colleagues to consider the effect of air handling plant failure in developing service provision strategies.</p> <p>Confirm damper operation and compliance with fire requirements in bypass mode.</p>
	<p>Air handling units and ductwork contain numerous deviations from contract requirements (SHTM 03-01) and were found not to be clean despite having been presented for validation. Deviations include: loose internal cabling in the airflow, cable routes allowing air to bypass filters, air leakage at penetrations and possible fan replacement difficulties which need to be corrected.</p>	<p>The ventilation systems throughout the hospital should be subject to a full snagging exercise and all defects rectified following which air handling units and ventilation systems are cleaned. All deficiencies identified in validation and specialist Consultant Engineer reports should be addressed as part of this.</p>
	<p>The single and multi-bed ventilation design is based on four air changes per hour mechanical ventilation and there is a component of natural ventilation which is not part of the design. With a few exceptions, the mechanical component has been validated. However the natural component has not been proven.</p>	<p>Confirm that all areas served by this arrangement are suitable for categorisation as general ward areas or single rooms as listed in SHTM 03-01 Part a, Appendix 1.</p> <p>Undertake an IPCT risk assessment ward by ward/ speciality specific in relation to the guidance.</p>
	<p>The pressure regimen detailed in the design, and reflecting the environmental matrix, will be affected by opening windows and the pressure between the room and the corridor, and therefore direction of air flow, cannot be</p>	<p>A full assessment of the services and patient population should be carried out and mechanisms for monitoring established.</p>

	relied upon when windows are open.	
	External doors to plant rooms	Ensure that excessive gaps are removed and appropriate anti vermin measures are applied to all the doors and screens as per SHTM 03-01 and HFS Interim Guidance - Managing the Risk of Contamination of Ventilation Systems by Fungi from Bird Droppings – February 2019.
	Fire dampers in some locations cannot be adequately tested as duct access has not been provided. Also, locations of fire dampers and fire rated ductwork has been questioned in relation to the requirements of SHTM 03-01 and confirmation of compliant provision is awaited.	Provide access so all fire dampers can be readily visually inspected to verify operation. Review fire damper provision and fire rated ductwork and confirm appropriate provision
	Air intakes and opening windows are sited in the courtyard below the helipad and at the adjacent RIE. Information has not been provided on the impact of downdraft on air flows and pressures or entrainment of contaminants as per SHTM 03-01.	Demonstrate the effect of helicopter landing on air flows in ventilation systems with intakes below through measurement when test flights take place or through modelling. This should include the air intakes of the RIE adjacent.
3	Theatre Ventilation Systems - Scrub areas which are narrow and deep are unlikely to be scavenged effectively by theatre air changes and require alternative means of achieving removal of contaminants as per SHTM 03-01. The efficacy of the high level extract to achieve sufficient dilution of contaminants or entrainment of heavier than air water droplets is not in accordance with the requirements of SHTM 03-01 and has not demonstrated as equivalent.	The ability of the single high level extract provided in deep plan scrub areas to effectively prevent contaminants being dispersed into theatres should be demonstrated and/or additional low level ventilation provided.
	Anaesthetic rooms 31 and 34 do not demonstrate a clean air flow path to reduce exposure of staff to gasses as per SHTM 03-01. Room 30 supply is too close to the door	Move ceiling supply to opposite side of room from extract. In room 30, move supply away from door.

	Theatre utility rooms extract ventilation means theatres have to be used in pairs and taking a theatre out of service may reduce the extract in utility room below the levels as per SHTM 03-01.	Add supplementary extract ventilation to allow for one theatre being out of service or plan for service impact following the loss of a pair of theatres. <i>NHS Lothian has advised that the appropriate pressure differentials are maintained when only one theatre is operation. Validation evidence is to be provided.</i>
3	Isolation Room Ventilation Systems are not served by a single ventilation system for each room as recommended in SHPN4 Supplement 1. The arrangement provided, where ventilation systems serve an area of the building including contained isolation rooms, has not yet been proven in the event of failure of an air handling unit and the implications for service impact are not yet understood.	Prove that bypass connections to adjacent ventilation systems will allow safe operation of both areas and / or explain service provision strategy for loss of each area including isolation rooms. Also include assurance on operational effectiveness e.g. the pressure differentials and air flows being maintained. Develop clinical service provision plan to reflect the potential loss of design conditions in up to 5 of the 19 isolation rooms on the failure of an air handling unit and confirm impact on service continuity.

Detailed Narrative

- 4.2.1 The ventilation systems at RHCYP & DCN were considered in relation to legislation, guidance and the lessons learned from other recent similar projects which may have an impact on the patient group.
- 4.2.2 The principal legislation which is relevant to the ventilation systems is The Control of Substances Hazardous to Health Regulations 2002 (COSHH).
- 4.2.3 The principal guidance which is relevant to the ventilation systems is: Scottish Health Technical Memorandum (SHTM) 03-01: Ventilation for healthcare premises; and Scottish Health Planning Note 04 Inpatient Accommodation, Supplement 1 Isolation Facilities in Acute Settings.
- 4.2.4 Elements of the ventilation within Critical Care were identified by NHS Lothian's validation contractor, and verified in this review, to be not in accordance with the requirements of SHTM 03-01. NHS Lothian is working with IHSL to design a suitable solution to provide the conditions required within Critical Care. NSS has been asked by Scottish Government to support NHS Lothian to ensure that the system delivered is compliant with requirements.
- 4.2.5 The general ventilation for non-specialist applications, such as single / multi-bed rooms, was identified by the Board's validation contractor as having lower air change rates than specified in SHTM 03-01, i.e. 4 air changes per hour as opposed to 6.

During the review, NHS Lothian supplied information about a natural ventilation component, with some documents referring to a mixed mode ventilation system. However, IHSL later advised that natural ventilation is not part of their design. NSS visited the site with specialist ventilation consultants who produced a report on the general ventilation systems and noted non-compliances with air handling unit provision and installation and pressure regimens, including several identified by the Board's validation contractor.

- 4.2.6 From an infection prevention and control perspective, there is low-quality to no evidence from outbreak reports and current guidance, respectively, to support minimum ventilation requirements. Therefore, it is not possible to make conclusive statements regarding the individual minimum ventilation parameters for inpatient care areas. A rapid review of the literature found limited clinical evidence to directly implicate air change rates alone in having a direct impact on the development of an outbreak or incidence of infection. Therefore, it is reasonable that, in the absence of evidence, healthcare design teams should continue to adhere to current national guidance. In the event of a deviation from the current recommended ventilation parameters, design teams should ensure that air changes per hour are maintained as close as possible to the recommended air changes per hour without compromising other aspects of the ventilation system requirements. In addition a full assessment of the services and patient population should be carried out and mechanisms for monitoring established. Caution is advised in relying on air change rates alone to provide adequate protection from infection; this is only one part of a multifactorial process involved in creating the appropriate airflow patterns with appropriate mixing and dilution of contaminants. Nationally, further research is required to look beyond air change rates to examine the effects that other factors such as supply and exhaust location, door position and motion, spatial orientation, surface composition, temperature, humidity, and air distribution patterns have on particle migration in clinical areas.
- 4.2.7 Theatre ventilation was identified by NHS Lothian's validation contractor as having some deficiencies. NSS visited the site with a specialist Consultant Engineer, who was lead author on the last three iterations of the ventilation HTM guidance. This identified and confirmed several deficiencies, including lack of evidence about the efficacy of the ventilation in the scrub rooms; deviating from the standard models recommended in SHTM 03-01. The current design of the theatre ventilation system is such that maintenance might entail loss of two theatres rather than one. Additionally, there is an overuse of flexible ductwork, potentially causing problems with balancing theatre ventilation.
- 4.2.8 The building contains a number of Positive Pressure Ventilated Lobby (PPVL) isolation rooms for which the guidance, SHPN4 supplement 1, recommends that each isolation room should ideally have its own air handling unit, such that if an air handling unit fails, or is offline for maintenance, only one isolation room is out of commission.

The building, as built, has an air handling unit serving each area of the building, including any contained isolation rooms. This means that up to five out of 19 isolation rooms may be not performing as intended in the event of an air handling unit failure. NHS Lothian have advised that the strategy for maintenance is that a bypass

duct will be used to feed an area from an adjacent air handling unit. This mode has not yet been proven and the successful operation of isolation rooms and other spaces in the event of use of this bypass has not been demonstrated. NHS Lothian needs to consider in its clinical service model how each isolation room and ward will function in the event of loss of an air handling unit. This will require full design and validation of air change rates, pressure differentials and direction of air flow for each area in this mode, as well as predicted times to rectify any plant failure.

- 4.2.9 IHSL has advised NHS Lothian that the design of the isolation rooms is as per Scottish Health Planning Note (SHPN) 04-01 Supplement 1: In-patient Accommodation: Options for Choice Supplement 1: Isolation Facilities in Acute Settings. This guidance notes that isolation rooms ideally should have its own air handling unit (AHU) and the ventilation systems should be as robust as possible so that standby fans are not required. The guidance acknowledges that in high rise buildings a common supply and extract may be the only feasible solution with duct branches fitted with spring close gas tight dampers in the event of failure. The height of this building is less than that defined in the Scottish Building Standards Technical Handbook - Non-Domestic, for high rise (18m). At the time of writing the provision of gas tight dampers at ward level as required by the validated design parameters detailed in SHPN 04-01 Supplement 1 had not been evidenced.
- 4.2.10 Additional observations during a site visit by NSS have highlighted potential concerns linked to the location of some high risk wards, including Haematology / Oncology in relation to the helipad. A demonstration of the effect of helicopter landing/take-off on airflows needs to be completed by NHS Lothian.

4.3 Water

Summary

Review	Summary Assessment	No. of Issues per priority				
		1	2	3	4	5
Water Systems	Independent testing identified no widespread contamination of the water systems, however, remedial action is required on a number of water system areas as well as system wide disinfection prior to occupation.	-	1	2	1	-

Main Findings

Priority	Review	Action Assessment
4	Water Services Augmented Care - Pseudomonas found in taps, in Paediatric Medical Inpatients and DCN Inpatients . (SHTM 04-01 Part A published in July 2014)	All taps (not just TMT/TMV ³) to be disinfected and retested. Inspect and replace, as appropriate, taps, tap components and pipework. Replace tap strainers and cartridges in affected TMT taps.

³ TMT – Thermostatic Mixing Taps, TMV – Thermostatic Mixing Valves
September 2019

3	<p>Water Services Non Augmented Care - Swarf and biofilm found in tap strainers, contrary to SHTM 04-01 Water safety for healthcare premises.</p>	Replace tap strainers in all areas.
2	<p>Showers - Shower hose lengths do not comply with Scottish Water byelaws and guidance in SHTM 04-01 Water safety for healthcare premises.</p>	Shorten hose length, or add retaining ring, to ensure that shower head cannot reach WC or drain Disinfect showers, hose and drain after rectification.
3	<p>Water General - Testing has found some fungal / mould contamination and high total viable counts. <i>Legionella</i> risk assessment actions not recorded as required by HSE Approved Code of Practice and Guidance L8 - Legionnaires' disease. The control of <i>Legionella</i> bacteria in water systems. <i>Legionella</i> risk assessment insufficient to reflect system contamination in general. Those responsible for the system have a responsibility under the Control of Substances Hazardous to Health Regulations 2002 (COSHH) to prevent exposure to microorganisms.</p> <p>Designated roles and responsibility as per SHTM 00 Best practice guidance for healthcare engineering.</p> <p>Water tanks as per SHTM 04-01 Water safety for healthcare premises.</p> <p>Hot and cold water temperatures / flushing. SHTM 04-01 Water safety for healthcare premises</p>	<p>Given a number of indicators the water system should be disinfected and re-tested.</p> <p>The <i>Legionella</i> Risk assessment Feb 2019 identified a range of actions. The Action Tracker does not demonstrate that the issues raised have been resolved, or a timeline provided for resolution. Record rectification of actions. The risk assessment is heavily focussed on <i>Legionella</i> and not taking into account other organisms in line with patient type that will occupy the building. Broaden to reflect system contamination in general. Develop analysis categorisation of patient type, and consideration to susceptibility, for each area.</p> <p>The current Responsible Person (RP) has not been appointed in writing and uncertain as to whether received RP training. Additionally, has no previous experience of healthcare.</p> <p>To be inspected. The Raw Water and Filtrate water tanks are interconnected at the drain. These must be separated.</p> <p>There was an issue with raised cold water temperatures during the boiler outage – this requires investigation.</p>

Filtration Plants	From lessons learned by NSS in recent work, microbiological growth potential was identified as part of the Backwash cycle. Consideration should be given to Chlorine dioxide addition to backwash water tank to counter microbiological and biofilm development on filters.
Instant Boil Taps and Rise and Fall Baths	These were found to be contaminated and need to be disinfected and tested to demonstrate safe water delivery as per SHTM 04-01 Water safety for healthcare premises.

Detailed Narrative

- 4.3.1 The domestic hot and cold water services (DHCWS) at RHCYP & DCN were considered in relation to legislation, guidance and the lessons learned from other recent similar projects which may have an impact on the patient group.
- 4.3.2 The legislation which is relevant to the water system are Public Water Supplies (Scotland) Regulations SSI 2014/364 and The Control of Substances Hazardous to Health Regulations 2002 (COSHH). In relation to COSHH, the Health and Safety Executive (HSE) note that “*Micro-organisms are covered in COSHH by the term biological agents. These are defined as any micro-organism, cell culture, prion or human endoparasite whether or not genetically modified which may cause infection, allergy, toxicity or otherwise create a hazard to human health.*”
- 4.3.3 The guidance which is relevant to the water system are HSE Approved Code of Practice L8: Legionnaires' disease. The control of *Legionella* bacteria in water systems; HSE 274: Legionnaires' disease: Technical guidance; Scottish Healthcare Technical Memorandum (SHTM) 04-01: Water safety for healthcare premises and HPS document: *Pseudomonas aeruginosa* routine water sampling in augmented care areas for NHS Scotland (*published in draft September 2018*).
- 4.3.4 From initial inspection of the Independent Tester's reports, there is evidence that areas of the pipe work systems were installed without end protection. This may have allowed dust and organic material to enter the pipe system and this may not have been eradicated by the disinfection process.
- 4.3.5 The Facilities Management (FM) contractor Bouygues FM (BFM) commissioned a *Legionella* risk assessment when they took possession of the site from the construction contractor. This report has yet to be provided and will be reviewed and assessed when presented.
- 4.3.6 NHS Lothian commissioned a specialist safety consultant in May 2019 to conduct an overall safety audit of the RHCYP & DCN. Contained within their report is a section on the water system. They assessed the risk condition of the system as “high” mainly as a result of BFM's *Legionella* risk assessment, the lack of evidence of flushing across the system, the lack of maintenance on shower heads and outstanding information on the water management responsibilities by BFM.

- 4.3.7 NHS Lothian separately commissioned water testing from a specialist water safety consultant, on 12th July 2019, which indicated that certain tap outlets within the augmented care areas were positive for *Pseudomonas aeruginosa*. This report also noted high Total Viable Counts (TVC). In addition, *Pseudomonas aeruginosa* was recorded in the Instant Boil Taps and the rise and fall baths. The consultant concluded that there was no evidence of wide spread contamination of the water system.
- 4.3.8 As part of the NSS review, a specialist water consultant carried out water tests around the facility on 18th July 2019 to determine if there were any significant issues.
- 4.3.9 In summary the NSS specialist contractor concluded from their investigations and as a result of the microbiological samples taken by them and others that: -
- There was no indication that the water system (as a whole) was cause for concern referenced to existing guidance.
 - There was no atypical mycobacteria found in the 60 samples taken (mainly from neonatal and intensive care areas); however, there was some Gram-negative activity and mould present.
 - Concern was expressed regarding the management of the water system given the lack of occupancy and turnover of the water system.
 - The management aspects of the water system by IHSL's FM contractor were not satisfactorily demonstrated.
 - The system showed signs of biofilm and swarf contamination, particularly at the taps.
 - Shower heads and hoses do not meet the required standards with respect to length.
 - During the site investigation it was noted that the cold water temperatures were rising and the hot water temperatures decreasing. In discussions with BFM it was discovered that a boiler had tripped, together with the circulating pumps, and the other boilers did not come on as they should have. The result of this was that the temperature of the water for both hot and cold domestic water systems fell into the *Legionella* growth band for approximately a 12 hour period.
 - The NSS commissioned consultant engaged noted that at commissioning only 5% sampling of the number of taps across the whole hospital was completed.
 - The management strategy for the Kemper system (water temperature regulation system) requires close control to ensure that water is not "dumped" unnecessarily in an effort to control cold water temperatures.
- 4.3.10 The tests for atypical mycobacteria proved negative. However fungi were identified in 22% of the samples taken in the water system based on a sample size of 60 taps from a population of c2000. These are not required to be tested as part of the current guidance. However, based on NSS experiences at other hospital sites it was considered prudent to have these tests done.
- 4.3.11 Based on NSS experiences at other hospital sites that became apparent after the construction of RHCYP & DCN, it is recommended that specific components parts of

the water system such as pressurisation unit, meter etc are replaced and the originals tested, particularly those which have proven to be problematic.

4.4 Drainage and Plumbing

Summary

Review	Summary Assessment	No. of Issues per priority				
		1 (H)	2	3	4	5 (L)
Drainage & Plumbing	The drainage system has multiple redundancies in place, however, active monitoring is required. Elements of plumbing require disinfection.	-	-	-	1	-

Main Findings

Priority	Review	Action Assessment
4	Sinks drains	Initial testing indicates that these are not significantly contaminated, however the horizontal drain and protruding seal means they retain stagnant water and they need to be disinfected periodically prior to and post occupancy to maintain their condition. From lessons learned, there should be a system of inspection and appropriate remedial action taken.
	Bottle traps	There would appear to be an inconsistency of installation and potential of back-feed from trap to drain. This requires review and rectification.
	Pumped Drainage	The internal pumped sewage drainage system presents the potential for sewage to back up through basement drains on pump failure and will require active monitoring.

Detailed Narrative

- 4.4.1 The range of clinical and non-clinical wash hand basins chosen by the SPV are from a recognised manufacturer of healthcare drainage products. There is no facility to connect the tap on the sink as the taps are panel mounted. The drain connection is at the rear of the sink bowl and there is no overflow, all as per guidance.

- 4.4.2 The connection on to the wash hand basin from the drain has proven to be an area where water does not drain freely as the connection reduces the diameter of the drainage outlet and creates a dam effect. Lessons learned by NSS from other projects, after commencement of the construction of RHCYP & DCN, have shown that various organisms were grown from this area in some circumstances.
- 4.4.3 The plumbing system is connected to the main sewage system via three drainage systems. The first is a gravity fed system. The second is a sump pump arrangement in the external courtyard. The third is a sump in the basement area of the hospital. The rationale behind the use of the sumps is that the basement areas are below the water table and any waste material has to be pumped up and out to the sewer.
- 4.4.4 The Independent Tester has noted in their report of 30th June 2017 that an issue had been raised regarding the capacity of the basement sump. In further investigation this appears to be related to the fact that more areas/floors were connected to this system than NHS Lothian had originally been made aware of.
- 4.4.5 The main drainage risk lies with the basement sump. It has a resilience system of back-up power supplies, multiple pumps and alarm systems to three different locations. There are two discharge pipes to sewer, reducing the risk of blockage and the consequent risk of sewage backing up into the basement in the proximity of the kitchen. In addition, if a failure occurred or a maintenance activity was to take place, the location of this sump chamber would mean that all traffic flow through the affected area would have to be halted to permit a safe operating procedure to be implemented.
- 4.4.6 The external courtyard sump has a duty/standby pump as well as a spare submersible pump and also has similar alarm arrangements to the basement pumps. In the event of a catastrophic blockage and spillage the court yard would be impacted.

End of Report

RHCYP & DCN Executive Steering Group

9 September 2019

Summary of Ventilation issues and progress to date

The purpose of this paper is to provide an update on the issues identified with ventilation systems in RHCYP/DCN and the expected solutions explored to date, with discussion of key milestones and challenges. More detailed actions in response to the issues identified about ventilation in the HFS/HPS report are set out in the ventilation section of NHS Lothian's response and further technical detail against each issue is held by the project team.

Key issues

Ventilation within a hospital is an important component in reducing the risk of Hospital Acquired infection due to airborne pathogens and consequent harm to patients, staff and others as well as room temperature and odour regulation to provide a pleasant environment. There are particular classes of patients and clinical areas where the HAI risk may be increased if ventilation systems are inadequate.

Current standards are set out in SHTM 03-01 Part A and describe the number of recommended air changes per hour, the pressure regime and any filtration of the air for particular clinical areas. These are summarised in the table at Appendix 1. There are detailed technical standards for the design and configuration of ventilation systems in hospitals. In line with guidance and best practice, independent validation testing of critical ventilation systems was undertaken at completion of commissioning of the building RHCYP/DCN on behalf of NHS Lothian by IOM, an independent engineering company accredited to validate hospital ventilation systems. This identified a number of priority issues in addition to the inadequate ventilation in paediatric critical care areas which were communicated verbally at the end of June 2019 and in a written report in July 2019.

Health Facilities Scotland has commissioned its own independent reports in to the ventilation systems and these have been compared with the list of issues identified by IOM in a series of detailed workshops and in meetings with IHSL and Multiplex.

Paediatric critical care

The specification for these rooms should be 10 air changes/ hour and 10Pa positive pressure, and a board change has been issued (HVC 095 dated 30 August, 2019) to request a change to these requirements. This will require to be designed and then installed with an additional Air Handling Unit, and the system validated. This will take several months.

General ward areas

The building is designed to supply 4 air changes per hour by mechanical means with additional non mechanical ventilation thorough trickle vents and by opening windows. Although the provision of 6 air changes an hour to meet the standard would be acceptable if there was control around the 2

additional air changes from natural ventilation, these cannot be controlled in the building to demonstrate this. Therefore, particular concern will be given to patient placement for protective or source isolation, patient prioritisation for isolation and consideration of circumstances in which natural ventilation may fall short of what is required and introduce the need for additional infection control interventions by ward clinical and domestic staff (such as room cleaning frequency). Detailed workshops are taking place with clinical teams to ensure clinical risk assessments are up to date.

Haematology/ Oncology ward in RHCYP- Lochranza

From 2016, it was known to the clinical team and the project team that all the rooms of the entire ward did not meet the ventilation standard for neutropaenic patients. This was communicated formally, but could not be changed at that stage, so it was accepted by NHS Lothian this would have to be managed by clinical consideration about the best use of the isolation rooms which did meet the ventilation standard to reduce risk. However, the increased understanding about the impact of the built environment, the changing risk appetite in NHS Scotland, the changes in clinical practice recently that mean some children are rendered neutropaenic by palliative treatment and the hiatus prior to occupation has led to the specification of additional ventilation requirements for this ward area to bring all bedrooms to the required standard for managing neutropenic patients. A Board Change has been issued instructing these additional ventilation requirements (HVC 096 dated 6th September, 2019).

Other areas for technical work

1. All Air Handling Units (AHU).

There are a number of points that require correction and two major areas of non compliance with standards which require rectification before the units are judged to be at the standards expected for healthcare premises and so ready for use. The two major areas of non compliance are the presence of cabling within the AHU which allows air to theoretically bypass filters, and the presence of inverters within some units. The acceptance of this view of non-compliance, which is unanimous between HFS, IOM and NHS Lothian's Estates and facilities Director, is not yet confirmed from IHSL, Multiplex or their subcontractors. A specimen Air Handling unit is being altered and prepared for consideration by 13 September. If this incorporates all the necessary changes and brings the unit to a level that complies with standards and guidance, the same rectifications will need to be made across all 36 AHUs. Those that service areas for DCN will be prioritised but will need to be complete and the AHUs validated by IOM before the areas for DCN can come into clinical use.

These areas were all identified at the validation of critical ventilation systems conducted in June 2019 for NHS Lothian by IOM.

2. Configuration and bypass arrangements

Demonstration of the bypass arrangements (whereby adequate ventilation to an area will continue to be supplied by a different AHU) in the event of the failure or planned maintenance of its dedicated AHU, is required to provide assurance that these arrangements are fit for purpose without compromising ventilation primarily to isolation rooms and theatres. The building has an arrangement of AHUs for isolation rooms that does not fit with HFS's guidance about best practice.

Most important of these are the supply of five Isolation Rooms (in Lochranza ward) by one AHU. The design for the building has used the specifications for a high rise building and does not have room for the 1:1 ratio preferred by HFS. Addressing this will not be by a physical change but by an understanding from clinical teams that patient placement and the additional contribution of an isolation room's pressure regime to reducing risks from infection may on occasions be reduced and a bespoke assessment of the optimal placement of affected patients would be undertaken in such circumstances.

3. Theatres

There are some specific requirements still to be demonstrated and where this is not completed satisfactorily; minor changes will be instructed to bring these areas to the standard expected.

Tracey Gillies

Appendix 1: Recommended air-change rates

Application	Ventilation	ac/Hour	Pressure (Pascals)	Supply Filter	Noise (NR)	Temp (°C)	Comments For further information see Section 6
General ward	S / N	6	-	G4	30	18-28	
Communal ward toilet	E	10	-ve	-	40	-	
Single room	S / E / N	6	0 or -ve	G4	30	18-28	
Single room WC	E	3	-ve	-	40	-	
Clean utility	S	6	+ve	G4	40	18-28	
Dirty utility	E	6	-ve	-	40	-	
Ward Isolation room	-	-	-	-	-	-	See SHPN 4; Supplement 1
Infectious disease Iso room	E	10	-5	G4	30	18-28	Extract filtration may be required
Neutropenic patient ward	S	10	+10	H12	30	18-28	
Critical Care Areas	S	10	+10	F7	30	18-25	Isolation room may be -ve press
Birthing Room	S & E	15	-ve	G4	40	18-25	Provide clean air-flow path
SCBU	S	6	+ve	F7	30	18-25	Isolation room may be -ve press
Preparation room (Lay-up)	S	>25	35	F7*	40	18-25	*H12 if a lay-up for a UCV Theatre
Preparation room / bay sterile pack store	S	10	25	F7	40	18-25	*50NR if a bay in a UCV Theatre
Operating theatre	S	25	25	F7	40	18-25	
UCV Operating theatre	S	25*	25	H12	40	18-25	Fresh air rate; excludes re-circulation
Anaesthetic room	S & E	15	>10	F7	40	18-25	Provide clean air-flow path
Theatre Sluice/dirty utility	E	>20	-5	-	40	-	
Recovery room	S & E	15	0	F7	35	18-25	Provide clean air-flow path

Table A1

DRAFT

RHCYP/ DCN Executive Steering Group

Minutes of the RHCYP / DCN – Executive Steering Group meeting held at 4:00pm on Monday 9 September 2019 in Meeting Room 5, Waverley Gate, Edinburgh.

Present: Alex McMahon (Chair); Janis Butler; Jacquie Campbell; Sorrel Cosens; George Curley; Brian Currie; Tracey Gillies; Iain Graham; Lindsay Guthrie and Donald Inverarity.

In Attendance: Douglas Weir.

Apologies for Absence were received from Tim Davison and Susan Goldsmith.

1. Minutes of the Previous Meeting held on 2 September 2019

1.1 Approved.

2. Matters Arising

2.1 3 or 7 Changes for Water – it was noted that the 2 key issues that required to be addressed were in respect of disinfection of the water system prior to the building being occupied and changes to the water management regime in terms of disinfection and other issues. The location of taps positive for *Pseudomonas aeruginosa* was known from the Westfield Caledonian report. It was noted that any details of Board Changes needed to come to the Executive Steering Group and this work should be concluded prior to the publication of the final Action Plan. The water workshop would consider whether there would be any unintended consequences in respect of disinfection on issues like future warranties etc. It was anticipated that this position would require to be discussed with the manufacturers. The methodology and time frame for future works required to be clarified. The Executive Steering Group supported the proposed 3 changes proposed by Tracey Gillies.

3. Oversight Board Feedback

3.1 It was reported that the main focus of discussion had been around the HFS/HPS and KPMG reports and the NHS Lothian response to these.

4. Reports for Publication on 11 September

4.1 KPMG Report – Tim Davison and Tracey Gillies had discussed this with Christine McLaughlin at the Scottish Government where it had been noted that the report had

not identified any single point or person of failure. The report had highlighted that there had been missed opportunities to pick up a number of air changes both internally and by external advisers. It had been accepted that the culmination of a sequence of events had happened at the last minute.

- 4.1.1 The Scottish Government would liaise with Judith Mackay in respect of a media statement. It was noted that MSPs would receive a copy of the report 1 hour before the Cabinet Secretary made her statement to Parliament on 11 September 2019 with the report going on-line thereafter.
- 4.2 NSS Report – Brian Currie advised that he had received what he had thought was the final version of the report the previous Friday although a further version had issued earlier in the day. Sorrel Cosens advised that the further issued report did not make any difference to the proposed NHS Lothian response. It was noted that for the NHS Lothian response to the NSS report it would be important to identify individual actions that had been closed down and agree those that were underway and this would act as a means of establishing and identifying outstanding actions. It was agreed that this process would also bring clarity to the logic around the request for Board Changes.
 - 4.2.1 Christine McLaughlin had highlighted from the HPS/HFS reports comments around management and assurances which it was felt did not line up with aspects of the KPMG report. Tracey Gillies advised that she would give thought about how to augment the NHS Lothian response to take account of this position.
 - 4.2.2 Tracey Gillies advised that the responsibility matrix had been signed off at the Corporate Management Team earlier in the day with the caveat that it needed amending to identify actions to sit against the Executive Lead rather than the Chief Executive as Accountable Officer. Craig Marriott, Iain Graham and George Curley would liaise to finalise the matrix and identify Lead responsibilities.
 - 4.2.3 Alex McMahon commented that it was the intention to publish all 3 reports simultaneously. Tracey Gillies commented that the key issues to be considered were around the position in respect of management and assurance, ventilation in terms of general theatre and isolation rooms and the water position in respect of both augmented care and non-augmented care areas within the new hospital. It was noted in terms of water that the only priority issue that had been identified was the need to add retaining rings to the showers and these had been ordered and fitted.
 - 4.2.4 Lindsay Guthrie commented that the wording in the response was important as the issue was around augmented care and not critical care in respect of water issues. Sorrel Cosens would make the appropriate amendment.
 - 4.2.5 The point was made that attempts had been made to evidence every point where an action assessment had been made. It was noted that any further comments on the NHS Lothian response should be submitted to Sorrel Cosens first thing the following day. The amended report would thereafter be circulated to members of the Executive Steering Group prior to being considered by the Oversight Board meeting later in the week.

- 4.2.6 Tracey Gillies commented in respect of water that comments on the HFS report had been suggested not all of which had been incorporated. It was noted that largely as a consequence of issues around Glasgow that points had emerged that were not part of previous discussions. Tracey Gillies commented that it would be important therefore to evidence closure and actions against each red issue.
- 4.2.7 Tracey Gillies and Sorrel Cosens would review the final version of the response which would require to go to the Scottish Government after it had been agreed internally. All 3 reports would thereafter be released on Wednesday by the Scottish Government. Brian Currie advised that the Project Group were already working on actions.
- 4.2.8 It was agreed that for the Executive Steering Group meeting on 23 September that a summary of the action log issues identified by Eddie McLaughlin would be provided to identify issues that had been closed off in order to distil and prioritise what needed to be progressed moving forward. It would be important to obtain a sense of materiality and to obtain a position of absolute internal agreement before any final response was submitted to NSS. The importance of taking stock at the Executive Steering Group was agreed. Alex McMahon commented that in terms of audit coverage and governance it was important that all material issues came through the Executive Steering Group in the first instance.
- 4.2.9 In conclusion it was agreed that the second version of the NSS report had not proposed any significant changes. Responses to reports should be submitted to Sorrel Cosens as early as possible the following day with the final version being circulated to Executive Steering Group members prior to submission to the Scottish Government. The list of issues identified by Eddie McLaughlin would be discussed at the Executive Steering Group meeting on 23 September.

5. Migration Dependencies and Programme

- 5.1 Iain Graham tabled a paper that had been discussed at the Oversight Board meeting. He commented that the paper contained a number of caveats as it had been prepared in advance of clarification being received about what needed to be undertaken post the HFS/HPS and KPMG reports. Discussion was held in respect of the Board Change process for critical care ventilation, haematology/oncology. Iain Graham spoke in detail to the programme on a line by line basis. It was noted that the assumption was that DCN would migrate to the new facility in advance of the RHSC and that the RHSC and CAMHS would relocate once all work had been concluded. It was noted that this would involve a notice period in respect of clinical scheduling etc with a period of 3/4 months having been built in for this.
- 5.2 Tracey Gillies commented that the specification of the air handling unit and IOM validation would be critical before any date for the DCN migration could be considered. If a view was reached that the units were not compliant then work would require to be instructed to address this. Brian Currie advised that this was part of the critical path. Tracey Gillies made the point that if a clear view did not emerge in respect of theatres there would be a requirement to instruct work. Brian Currie commented in respect of the bypass arrangements for isolation rooms that HFS had requested a demonstration.

- 5.3 Tracey Gillies commented that at the ventilation workshop it would be important to be clear about items that had been closed down in order to obtain more clarity about what needed to be undertaken moving forward. She commented that there was no point in discussing the move of DCN until this clarity was available particularly in respect of air handling units. George Curley commented on the position from his viewpoint in respect of the testing of bypass arrangements. Tracey Gillies asked George Curley to put any concerns in writing in order that they could be discussed at the workshop meeting to be held later in the week.

6. Contacts Management Update

- 6.1 Brian Currie advised in terms of governance that it was important that a workstream report on Operational Matters came through the Executive Steering Group. He commented that the report tabled contained more narrative than he had expected and that future iterations would address issues on an exception basis only. Brian Currie advised that amongst the key issues were that the number of defects reported through the Helpdesk had been 826 in July with 503 of these having been closed out. 619 performance measures had been identified. He commented that the report for August is anticipated to show a decline in defect issues that required to be closed out. It was noted that the trigger point in respect of performance deductions would be breached and that this technically allowed NHS Lothian to take further more punitive steps as detailed in the contract (Third Warning Notice). It was anticipated that further deductions would be applied in relation to performance deficits. Brian Currie commented that Board Operational Changes essential to allow DCN migration were prioritised for action by IHSL examples being; access control on staircases as well as automated doors. An update was being provided on the timescale for the critical care air handling work.
- 6.2 Brian Currie commented that the circulated report also made a plea for support to the Contracts Manager with it being noted that HFS/HPS were supporting aon a temporary basis. It was noted that Lothian had not yet agreed a structure to support the contract manager positions. George Curley advised that he had produced a paper for discussion at the PFI Steering Group which contained proposals for support around the RHCYP. It was anticipated that Michael Pryor would be picking up this issue. Craig Marriott advised that he would take this issue forward once he received a copy of the paper referred to by George Curley.
- 6.3 Tracey Gillies commented in terms of the implementation of changes and the running of the Group that there would be a need for clarity in respect of reporting lines and how this played out in respect of water issues.
- 6.4 Brian Currie advised that Bouygues were down on resources and were in the process of recruiting although they were having difficulty in obtaining the correct level of qualified staff although the position was improving.
- 6.5 The point was made that building users needed to understand the contract and that work was underway with Fiona Mitchell in respect of educating staff who were expected to occupy the new facility. Any Board Changes once migration had been

achieved would be promoted and agreed by Fiona Mitchell and her team. It was noted that the further review report by Callidus was being pursued. It was agreed that the provision of an organogram by IHSL would be escalated to the next Steering Group meeting.

- 6.6 Brian Currie advised that the back page of the circulated report set out the list of key risks. A specific point was made in respect of the IHSL ability to manage and execute changes/ variations in the stipulated timeframes with it being noted that this process had got off to a slow start. Brian Currie advised that a meeting had been held with IHSL where issues around Bouygues reluctance to undertake works given the profile the project enjoyed in the media had been raised by IHSL. It was noted that through IHSL a request for a meeting with Bouygues had been made in order to agree a proposed way forward and to provide a degree of comfort that the contact with them would not be terminated as they were key to the provision of solutions. It was noted that holiday commitments over the next 2 weeks were an issue.
- 6.7 Brian Currie advised that work around the finalising of supplemental agreements was underway with McRoberts. He commented that he did not think that there would be much progress in respect of the technical side over the next 2 weeks. Tracey Gillies commented that in the interim it would be important to undertake internal work with infection control and clinicians in order to be clear about what actions were needed and those that were not in order that choices could be framed for discussion at the technical workshop. She commented on the need to chase up and resolve smaller issues like the provision of the organogram and the need for this to be progressed and closed down.
- 6.8 Tracey Gillies questioned when the next IHSL Steering Group would be held and who would be chairing it advising that there was a need for preparatory work in advance of this event. Alex McMahon concurred advising that there was a need to be clear about what needed to be done moving forward and that future iterations of the contract management report needed to be more action and timeline focussed. It was agreed that updates would be provided to the Executive Steering Group on a monthly basis. It was confirmed that the next meeting of the IHSL Steering Group would be held on 19 September 2019 which was the day after Susan Goldsmith return from annual leave.

7. Technical Workstream Updates

- 7.1 Ventilation – Tracey Gillies advised that she had prepared a non-technical paper providing background to ventilation issues. It was noted that Donald Inverarity had made a comment advising that the IOM testing was independent testing. Theatre ventilation validation testing arranged by Multiplex had only been issued to the Project Team in May 2019 and only stated it “complied” and said nothing about air changes, pressures etc hence a request for independent validation and production of a validation report that fulfilled the criteria outline in SHTM-O3-O1 of a theatre validation report for theatre commissioning. It was noted that this had all began because theatre validation reports were not being provided in enough detail for IPCT to determine if the theatres were safe or not. It was because the theatre validation by IOM indicated no theatres were compliant that other areas of the hospital had received more scrutiny. Brian Currie advised that this work would have been

undertaken in any event as part of the wider project management process. He commented that a proper testing regime had always been intended although there had been issues around co-working on the site with IHSL and Multiplex in terms of access to undertake the physical testing. Tracey Gillies suggested that in the final version of the non-technical paper it would not be necessary to rehearse who had asked for the testing to be done and that this would be covered in a single sentence. She reminded colleagues that the purpose of the paper was to provide the Oversight Board with a non-technical descriptor. The final version of the paper would act as the distillation of key issues and NHS Lothian's point against these.

- 7.1.1 It was agreed that colleagues would send track changes to the paper to Tracey Gillies who would arrange for it to be updated in time for the meeting of the Oversight Board the following Thursday.
- 7.2 Water – it was noted that a final water workshop would be held on the 25 September and it would be helpful if compliance could be confirmed at this meeting.
- 7.3 Drainage – it was reported that HFS had not raised any concerns in respect of drainage. It was noted that the HFS report had removed reference to impacts on kitchens. It was noted that issues around aluminium steel spigots had been discussed at the water workshop.
- 7.4 Fire – Brian Currie advised that the fire investigations had been undertaken and that an NHS Lothian Fire Officer had been in attendance. It was anticipated that the final report would be with NHS Lothian within the next 2-3 weeks with nothing of significance being anticipated.
- 7.5 Electrical – NHS Lothian was awaiting the HFS report.
- 7.6 Medical Gases – it was not anticipated that there would be anything of concern in the report.
- 7.6.1 Alex McMahon commented that it would be important that as many of the outstanding reports were brought back to the Executive Steering Group as quickly as possible. It would be important to maintain pressure on the authors of the reports to have these concluded as soon as possible.

8. Oversight Board Agenda for 12 September 2019

- 8.1 Sorrel Cosens advised that she had emailed Christine McLaughlin seeking items for inclusion on the agenda. It was agreed that from an NHS Lothian perspective the NSS report and NHS Lothian's Action Plan in response to this as well as the KPMG report should be included on the agenda. In addition the haematology/oncology Board Change would be included.

9. Any Other Competent Business

- 9.1 Disposal of Sciennes – Iain Graham advised that a conference call had been held with the purchasers and they remained on board in respect of the revised timeframe.

It was noted that a follow-up discussion would be held following the Cabinet Secretary's announcement. The purchasers had agreed that they would not respond to any press interest and had been provided with Judith Mackay's contact details.

- 9.2 Previous Minutes of 12 August Updated – Douglas Weir advised that following the formal adoption of these Minutes at a previous meeting that Dr Ian Laurenson had suggested further changes. He commented that he had agreed with Susan Goldsmith for audit and governance purposes that these changes should be homologated at the current meeting. The previous amended Minutes of 12 August were homologated and approved.
- 9.3 FOI Tracker for Information – Sorrel Cosens updated on work in respect of preparing responses to 6-8 FOI requests in advance of the Cabinet Secretary's announcement later in the week.
- 9.4 Parliamentary Action – the possibility of the external auditors applying a Section 22 note to NHS Lothian's accounts were discussed. It was noted that a final decision on this would be made once the detail of the KPMG report had been made public. In the event that the process progressed then a Parliamentary Audit Committee hearing would be held in October/ November. The Health & Sport Committee had also indicated that this would form a significant part of their business. It was anticipated that even if a Section 22 notice was not applied to the accounts that the Health & Sport Committee would still require this issue to be discussed and that NHS Lothian would have to be represented at this.
- 9.5 Financial Briefing – Craig Marriott advised that a financial briefing had been provided the previous week where the off-set position was discussed. It was noted that further advice was awaited from the Scottish Government and that the NHS Lothian figures had been used as part of the briefing to the Cabinet Secretary.
- 9.6 Communications Planning – Judith Mackay advised that a staff message had been issued earlier in the day and this had gone directly to the affected services in the first instance. The message had also been discussed with Staff Partnership colleagues.
- 9.6.1 Judith Mackay commented in respect of announcements following the Cabinet Secretary's announcement to Parliament that a proactive release and response was being prepared. Holding lines were also being prepared in respect of technicalities as well as a frequently asked questions statement for staff.
- 9.6.2 Judith Mackay commented that the difficult issue would be about the timing of any release given that the afternoon was generally not a good time to brief staff. Judith Mackay advised that she would be discussing with Fiona Mitchell, Tracey McKinlay, Michael Pearson and Chris Myers how best to get information to staff. It would be important to ensure that Facilities and other colleagues were involved in this communication process. The position would be revisited the following day.

10. Date and Time of Next Meeting

- 10.1 The next meeting of the Executive Steering Group would be held at 4:00pm on Monday 23 September 2019 in Meeting Room 5, Waverley Gate, Edinburgh.

From: Finnigan C (Carole) on behalf of DG Health & Social Care
Sent: 16 October 2019 14:35
To: Rogers S (Shirley)
Cc: DG Health & Social Care
Subject: FW: Urgent Submission - Governance and Accountability issues relating to RHCYP
Attachments: CSHS - Submission - 10 September 2019 - RHCYP Governance and Accountability Issues (002) - SGLD 10.09.19.doc

Hi Shirley

Malcolm would appreciate a chat early tomorrow morning in connection with the attached.

I'll pop a slot in your diary for 8am.

Regards

[Redacted]

[Redacted]

From: Lea-Ross S (Stephen) [Redacted]
Sent: 10 September 2019 18:18
To: Cabinet Secretary for Health and Sport [Redacted]
Cc: DG Health & Social Care [Redacted]; Wright M (Malcolm) [Redacted]; Paterson J (John) [Redacted]; Irvine J (Johanna) [Redacted]; Kirkwood R (Robert) [Redacted]; Neill S (Sean) [Redacted]; McLaughlin C (Christine) [Redacted]; Morrison A (Alan) [Redacted]; Hutchison D (David) [Redacted]
Subject: Urgent Submission - Governance and Accountability issues relating to RHCYP

Andy,

Please find an urgent submission attached, as per the subject line.

Regards
Steve

Dr Stephen Lea-Ross
Head of Workforce Practice
Directorate for Health Workforce, Leadership and Service Reform

[Redacted]

"he/him" pronouns

Stephen Lea-Ross
Health Workforce, Leadership and Service Reform
Health Workforce Division
09 September 2019

Cabinet Secretary for Health and Sport

**NHS Lothian Royal Hospital for Children and Young People (RHCYP):
Publication of KPMG and HFS Reports: Consideration of Governance &
Accountability Issues**

Purpose

1. To provide you with an assessment of the governance and accountability considerations relevant to the forthcoming publication of the KPMG and Health Facilities Scotland (HFS) Reports relating to the delayed opening of the RHCYP.

Timing

2. **Urgent**

Background & Summary of Findings

3. You will be aware of the findings of the KPMG and HFS reports, both of which were independently commissioned in July 2019 to establish the facts surrounding your decision of 04 July 2019 to delay the opening of the newly built NHS Lothian RHCYP. Whilst the KPMG report looks more broadly at circumstances present throughout the build and the governance structure supporting the project, the HFS report focuses on compliance with technical guidance applicable at the time.
4. For the purposes of considering the governance and accountability issues raised by these reports, particularly in respect of NHS Lothian and its officers, the following summarised findings of the KPMG Report are pertinent:
 - KPMG had not been instructed to determine exactly what led to the issue or to opine on the accountability of individuals or organisations.
 - KPMG expressly qualifies the extent to which the report can be relied upon.
 - The KPMG report focuses on inconsistencies, throughout the life of the project in relation to documentary references to air change rates. This is principally to do with the fact the Environmental Matrix (EM) used contained detail that was at odds with the Scottish Health Technical Memoranda (SHTM 03-01). Importantly, it is understood that the EM was never a contractual document, though it was relied upon extensively throughout the build.
 - The issue of non-compliance with SHTM 03-01 in respect of critical care, was only brought to the attention of the board on 01 July 2019, following testing by an independent third party.
 - A settlement agreement was concluded in February 2019 concerning a number of areas of dispute between NHS Lothian and its contractor Integrated Health Services Lothian (IHSL). One issue under dispute related to air change rates in 4 bedded rooms, including some rooms located within critical care.

- The settlement agreement provided for a resolution to the air change rates that is inconsistent with SHTM 03-01 – this raises questions about the quality of advice received in relation to the conclusion of the settlement, but the report provides no substantive detail on those circumstances.
 - KPMG indicate there is evidence that throughout the project NHSL took relevant specialist advice and that issues were formally escalated via the programme board and the Finance and Resources committee, who had delegated authority from the board to oversee the project.
 - There is evidence that the board challenged its contractor throughout the build where components thereof did not meet the board's construction requirements.
5. On the basis of its narrower technical assessment and compliance remit, the HFS report concludes as follows:
- The review identified that for both IHSL and NHS L, there were omissions in the identification, appointment and definition of key roles in an effective management structure. Additionally some records which are necessary to demonstrate compliance with appropriate guidance and standards remain outstanding.

Assessment of Board Governance and Accountability issues

6. The Cabinet Secretary holds the board of NHS Lothian and its senior officers, including the chair and chief executive accountable for the safe and effective delivery of services within their board area. Service provision responsibilities are set out in the National Health Service (Scotland) Act 1978 and associated legislation.
7. The foregoing summary of findings raise questions about a number of apparent shortcomings or failings of the governance architecture throughout the life of the project, it is fundamentally important to recognise that neither of the reports identifies with whom individual accountability ultimately rests for the issues identified.
8. It is apparent that there were shortcomings in the advice and guidance received by the board in anticipation of concluding the settlement agreement in relation to the ventilation issue, but no assessment can be made of responsibility at this stage without having examined the advice provided to the board at the time.
9. The project documentation inconsistencies identified in the report are not of themselves necessarily significant to any liability question – since it is understood the Environmental Matrix referred to was never formally a contractual document and the contractor was bound by the board to deliver a build that complied with relevant elements of SHTM. The inconsistencies do however indicate weaknesses in the controls and scrutiny put into place in relation to the board's governance architecture. Once again however, it is not possible at this stage to set out clearly with whom accountability might sit for any such weaknesses, or to provide advice as to what appropriate remedial action might be.

10. It is clear that further questions should be asked of the board and that scrutiny of the advice received at various stages of the project should now take place. Additionally further questions should be asked directly of the board in relation to how and when specialist advice was sought, particularly in relation to the settlement issue.

Assessment of Accountability of Chief Executive and Chair of the Board Chief Executive Officer

11. The Chief Executive Officer is an employee of Lothian Health Board and an executive member of the board. The Chief Executive and executive members are accountable to the Board. The Chief Executive is also required to hold Accountable Officer Status and is accountable to the Designated Portfolio Accountable Officer for the exercise of their Accountable Officer functions, they are also accountable to parliament. The standard terms and conditions for executive and senior managers (HDL_2006 23) This states that where designation as accountable officer is withdrawn by the Chief Executive of NHS Scotland then appointment will “*ordinarily be terminated as stated in the Accountable Officer Memorandum.*”
11. Removal of accountable officer status is an administrative decision that is potentially judicially reviewable. It is not a decision that is within the gift of Scottish Ministers, but which is taken by the Principal Accountable Officer (Permanent Secretary) on the advice of the Designated Portfolio Accountable Officer (Director General Health and Social Care).
12. Any process to remove accountable officer status must comply with the terms of Annex 4 of the Scottish Public Finance Manual; it must be fair in public law terms, i.e. the decision to remove the status must be rational in the circumstances; the process followed must comply with the principles of natural justice. This effectively requires that the accountable officer must know of the ‘case’ against them and the reasons for giving consideration to removing accountable officer status. They must also be given an opportunity to make representations on their own behalf. The decision ought to be taken only after due consideration of all the information submitted as part of that process.
13. Whilst the standard terms and conditions of appointment signal that a chief executive’s appointment will ordinarily be terminated upon removal of accountable officer status, it is for the employer (i.e. NHSL) to satisfy themselves in employment law terms that the process taken to remove AO status was fair, if it is being used as the basis for dismissal. This will require the board to undertake its own disciplinary process in line with extant workforce policies and the principles of UK employment law. . In any subsequent Employment Tribunal proceedings the Scottish Government may cited. The ET may question Officials and Ministers as necessary in the course of its proceedings.

14. Even in circumstances where a case has been established and due process has been followed, it is not possible to eliminate the risk legal of challenge. As set out at paragraphs 6 et seq. it is not apparent that there is any evidential basis at this stage on which to proceed with removing AO status. Even where the outstanding governance questions have been answered, there is still an overarching question about the extent to which it is reasonable to assume that the chief executive in the ordinary course of their functions would have been able to prevent, mitigate or otherwise avoid the delays that have materialised, especially given the fact that the available expertise has failed to identify or adequately prioritise the relevant risks. Our understanding is that it is highly likely that the Chief Executive would look to formally challenge any decision in relation to his employment or AO status.

Chair of the Board

15. The Chair of the board is accountable to the Scottish Government for oversight and governance of board operations at a strategic level. They line manage the Chief Executive. The Chair is appointed to their role by Scottish Ministers, in accordance with The Health Boards (Membership and Procedure) (Scotland) Regulations 2001.

16. Scottish Ministers may consider the removal of a board member in accordance with the provisions set out at Regulation 5(2), i.e. that *“it is not in the interests of the health service that a member of the Board should continue to hold that office, they may forthwith terminate that persons appointment”*. This confers upon Ministers a fairly broad discretion to consider the removal of board members. However, it must be recalled that a decision to remove a board member is potentially reviewable. As such, it must comply with public law principles, as set out in the discussion on AO status immediately above.

17. It is not apparent from the KPMG of HFS reports that they identify serious failings in governance and oversight on the part of the chair. Consideration should be given specifically to the way the governance structure operated and whether it would be reasonable for the Chair, in the ordinary course of their functions to have identified or otherwise taken action to mitigate the risks that materialised.

18. It should be noted that we are currently aware of live employment proceedings through which a former non-executive director of a health board is testing whether or not they might be regarded as a ‘worker’ for employment law purposes. This would result in non-executive directors attracting additional protections as set out in the Employment Rights Act 1996 and associated legislation, which has implications in relation to how we appoint and dismiss non-executives. Whilst these proceedings have no direct bearing on this matter, it is a course of action that would potentially be open to the chair if he is summarily removed from his post.

Recommendations

19. You are invited to note the assessment provided herein, in particular:

- Publication of the KPMG and HFS reports present some important questions about governance and accountability that it is not possible to answer at this stage without further investigation.
- There is not a safe evidential basis on which to proceed with remedial action against the chair and chief executive, as set out above.
- You are aware that consideration is being given to further escalation of the board in the current context, noting the impact of the additional costs and delay and the questions that remain in respect of governance.

Stephen Lea-Ross
Workforce Practice Unit

Copy List:	For Action	For Comments	For Information		
			Portfolio Interest	Constit. Interest	General Awareness
DG Health and Social Care Christine McLaughlin, Director Health Finance Sean Neill, Deputy Director Health Workforce Division John Paterson, Deputy Director Scottish Government Legal Directorate Johanna Irvine, Scottish Government Legal Directorate Robert Kirkwood, Office of the Chief Executive Of NHS Scotland David Hutchison, Special Adviser					

From: Morrison A (Alan)
Sent: 09 September 2019 17:54
To: Cabinet Secretary for Health and Sport; Crowe B (Barbara)
Cc: Aitken L (Louise); McLaughlin C (Christine); Calderwood C (Catherine); Murray D (Diane); Smith G (Gregor); Rogers S (Shirley); Wright M (Malcolm); DG Health & Social Care; Chief Medical Officer; Hart S (Suzanne); Roche R (Rowena); Connaghan J (John) (Health); McCallum R (Richard); Neill S (Sean); Burkinshaw B (Beata); McQueen F (Fiona); Ives J (Josephine); Shepherd L (Lesley); Mair S (Suzi); Hutchison D (David)
Subject: RE: CABINET: 10 SEPTEMBER 2019 - Any written SCANCE items? - Cleared Contributions requested by 1pm on Monday, 9 September 2019
Attachments: Sick Kids timeline.docx

Andy

High level timeline now attached. I would stress that the timeline of when services migrate over is still very much a high level estimate which I have asked NSS to review, so it could be subject to change.

Regards

Alan

Alan Morrison
Health Finance and Infrastructure
Scottish Government Health and Social Care Directorates



From: Corr A (Andrew) [redacted] **On Behalf Of** Cabinet Secretary for Health and Sport
Sent: 09 September 2019 14:30
To: Crowe B (Barbara) [redacted]; Cabinet Secretary for Health and Sport [redacted]; Morrison A (Alan) [redacted]
Cc: Aitken L (Louise) [redacted]; McLaughlin C (Christine) [redacted]; Calderwood C (Catherine) [redacted]; Murray D (Diane) [redacted]; Smith G (Gregor) [redacted]; Rogers S (Shirley) [redacted]; Wright M (Malcolm) [redacted]; DG Health & Social Care [redacted]; Chief Medical Officer [redacted]; Hart S (Suzanne) [redacted]; Roche R (Rowena) [redacted]; Connaghan J (John) (Health) [redacted]; McCallum R (Richard) [redacted]; Neill S (Sean) [redacted]; Burkinshaw B (Beata) [redacted]; McQueen F (Fiona) [redacted]; Ives J (Josephine) [redacted]; Shepherd L (Lesley) [redacted]; Mair S (Suzi) [redacted]; Hutchison D (David) [redacted]
Subject: RE: CABINET: 10 SEPTEMBER 2019 - Any written SCANCE items? - Cleared Contributions requested by 1pm on Monday, 9 September 2019

Barbara,

The Cabinet Secretary has considered the attached SCANCE and has asked that it be amended as follows:

- 1) the line about the KPMG report – should be re-worded to give more detail about what else KPMG identified as being wrong.
- 2) the line about the NSS report – should be re-worded to give more detail about the identification of a number of significant issues that directly impact patient care safety.
- 3) the SCANCE needs to set out clearly that there can be no early migration of any service.
- 4) the SCANCE needs to set out the action being taken to keep existing sites safe.
- 5) the SCANCE needs to mention the escalation to Level 4 and what that means.
- 6) the SCANCE needs to mention the Cabinet Secretary is making a statement this Wednesday on this issue.
- 7) the SCANCE needs to mention something about the cost of the delay in the hospital opening.

Grateful if these points could be considered and an amended SCANCE with us by 1545. The Cabinet Secretary would also like a timeline that she can have to hand when speaking to the SCANCE (this should run from when the problems first came to light and cover what we will do going forward). If this could be with us by 1745 it would be most helpful.

Many thanks,
Andy

<< File: Sick Kids - SCANCE - 10 September 2019.doc >>

From: Crowe B (Barbara) [REDACTED]
Sent: 09 September 2019 09:26
To: Cabinet Secretary for Health and Sport [REDACTED]; Morrison A (Alan) [REDACTED]
Cc: Aitken L (Louise) [REDACTED]; McLaughlin C (Christine) [REDACTED];
 Calderwood C (Catherine) [REDACTED]; Murray D (Diane) [REDACTED]; Smith
 G (Gregor) [REDACTED]; Rogers S (Shirley) [REDACTED]; Wright M (Malcolm)
 [REDACTED]; DG Health & Social Care [REDACTED]; Chief Medical Officer [REDACTED];
 Hart S (Suzanne) [REDACTED]; Roche R (Rowena) [REDACTED]; Connaghan J (John)
 (Health) [REDACTED]; McCallum R (Richard) [REDACTED]; Neill S (Sean)
 [REDACTED]; Burkinshaw B (Beata) [REDACTED]; McQueen F (Fiona)
 [REDACTED]; Ives J (Josephine) [REDACTED]; Shepherd L (Lesley)
 [REDACTED]; Mair S (Suzi) [REDACTED]; Hutchison D (David)
Subject: RE: CABINET: 10 SEPTEMBER 2019 - Any written SCANCE items? - Cleared Contributions requested by 1pm
 on Monday, 9 September 2019

Andy,

Please find attached the SCANCE note on the Sick Kids hospital as requested.

Regards, << File: Sick Kids - SCANCE - 10 September 2019.doc >>

Barbara

Barbara Crowe
Financial Accounting and Planning
 [REDACTED]

From: Corr A (Andrew) [REDACTED] **On Behalf Of** Cabinet Secretary for Health and Sport
Sent: 06 September 2019 12:29

To: Morrison A (Alan) [REDACTED]; Cabinet Secretary for Health and Sport [REDACTED]
Cc: Aitken L (Louise) [REDACTED]; McLaughlin C (Christine) [REDACTED];
 Calderwood C (Catherine) [REDACTED]; Murray D (Diane) [REDACTED]; Smith
 G (Gregor) [REDACTED]; Rogers S (Shirley) [REDACTED]; Wright M (Malcolm)
 [REDACTED]; DG Health & Social Care [REDACTED]; Chief Medical Officer [REDACTED];
 Hart S (Suzanne) [REDACTED]; Roche R (Rowena) [REDACTED]; Connaghan J (John)
 (Health) [REDACTED]; McCallum R (Richard) [REDACTED]; Neill S (Sean)
 [REDACTED]; Burkinshaw B (Beata) [REDACTED]; McQueen F (Fiona)
 [REDACTED]; Crowe B (Barbara) [REDACTED]; Ives J (Josephine)
 [REDACTED]; Shepherd L (Lesley) [REDACTED]; Mair S (Suzi) [REDACTED];
 Hutchison D (David) [REDACTED]
Subject: FW: CABINET: 10 SEPTEMBER 2019 - Any written SCANCE items? - Cleared Contributions requested by 1pm
 on Monday, 9 September 2019
Importance: High

Alan,

As mentioned at the meeting yesterday, the Cabinet Secretary has asked that a SCANCE note on the Sick Kids hospital be prepared for Cabinet on Tuesday. I have attached the commissioning email from Cabinet Secretariat and I would be grateful if you could have a draft to us by 1130 on Monday morning. I appreciate that this is a continually moving situation and if circumstances change throughout Monday morning the SCANCE can be amended accordingly.

Thanks,
 Andy

From: Scott S (Suzanne) [REDACTED] **On Behalf Of** Cabinet Secretariat inbox
Sent: 04 September 2019 09:44
To: DL Cabinet Secretaries [REDACTED]; Minister for Parliamentary Business and Veterans
 [REDACTED]
Cc: Cabinet Secretariat inbox [REDACTED]; DL SPADS Admin [REDACTED]
Subject: CABINET: 10 SEPTEMBER 2019 - Any written SCANCE items? - Cleared Contributions requested by 1pm on
 Monday, 9 September 2019
Importance: High

Dear All

I'd be grateful if your cleared SCANCE contributions could be returned to the **Cabinet Secretariat inbox by 1pm on Monday, 9 September.**

If, as the deadline for submission approaches, you have an item in preparation, please let Cabinet Secretariat know, as we are generally happy to allow extra time for individual items **provided we know that they are coming** (please note, though, that **we will only be able to include late notes that arrive before 4.00 pm**, as that is when the SCANCE paper will issue).

As a general rule, we prefer to have as many items as possible as **written** (rather than oral) SCANCE items, as this allows other Cabinet members to take cognisance of any issues which will be raised **before** the Cabinet meeting. (Cabinet members are of course always free to raise any additional **oral** SCANCE items when urgent matters have arisen or when an item is sufficiently sensitive.)

For minute taking purposes, it is helpful for Cabinet Secretariat to receive any speaking notes (including for oral items) in advance of Cabinet, wherever these are available.

I attach the template for completion:

<< File: SCANCE Guidance - Top 10 Tips - April 2019.docx >> **[please forward this template and guidance note below to officials for completion]**

Please could everyone use the above template which has been slightly updated to add Official's name and extension number at the bottom.

<< File: Shell - Cabinet - SCANCE Template (5th Administration - 2018).doc >> **[Updated Guidance Note – 10 Top Tips]**

If you receive any written SCANCE items after this deadline, they are **unlikely** to be included in the SCANCE paper but please still forward to the Cabinet Secretariat Inbox to help with the drafting of the minutes.

Many thanks, Suzanne

Suzanne Scott | Scottish Government | Cabinet, Parliament and Governance Division | [REDACTED]
[REDACTED]

Edinburgh Children's Hospital Timeline

- 2 July, NHS Lothian alerted SG to an issue with the ventilation system at the Royal Hospital for Children and Young People in Edinburgh.
- 3 July, NHS Lothian in conjunction with Health Facilities Scotland met to consider the various options available.
- They concluded that due to the risks associated with undertaking invasive rectification works within a live patient environment, that critical care beds do not move until the problem has been fixed.
- While a technical solution had been identified it required further testing and challenge before they could be confident the solution works and can be delivered
- As a result of these recommendations, the Cabinet Secretary halted the planned move in the interests of patient safety. This was communicated to staff and the wider public on 4 July.
- 8 July the Cabinet Secretary announced that NSS would undertake a review on site compliance with technical specifications and standards.
- On 12 July KPMG were engaged to conduct an independent audit of the governance arrangements for RHCYP, to provide an external and impartial assessment of the factors leading to the delay.
- 13 August – Cabinet Secretary met with staff side to discuss relevant issues.
- 11 September – Both KPMG and NSS reports published.

Critical care at the Children's Hospital, estimated timeline

- Design work on the new ventilation system will be complete before the end of the year;
- We expect the solution to require bespoke air handling unit which typically take 12-16 weeks to procure. These units usually come from Europe, so Brexit could impact on availability and delivery.
- Installation and fitting is also estimated to take 12-16 weeks to complete.
- During that period, the other issues identified in the NSS report, such as maintenance of the water system and addressing the other ventilation issues will be addressed.
- Autumn 2020 – migration of services begin.

DCN estimated timeline

- We do not expect the critical care ventilation at the Children's Hospital to impact on the move of DCN,
- That has still to be confirmed as it is subject to the design solution.
- Between now and Spring next year, the other issues identified in the NSS report (water and other ventilation) will be addressed.
- Spring 2020 – Migration of services begin.

From: Farquharson K (Kevin) on behalf of OCENHS Mailbox
Sent: 10 September 2019 17:15
To: DG Health & Social Care; Wright M (Malcolm); McLaughlin C (Christine); Director of Population Health; Foggo R (Richard); Chief Medical Officer; McQueen F (Fiona); Leitch J (Jason); McCallum R (Richard); Aitken A (Anne); Kirkwood R (Robert); Lea-Ross S (Stephen)
Cc: OCENHS Mailbox; Rogers S (Shirley); Connaghan J (John) (Health); Bell D (Donna); Mitchell E (Elinor); Hartley D (Dot)
Subject: OFFICIAL SENSITIVE - NOT FOR WIDER CIRCULATION - HSCMB - 11 September 2019 - final papers
Attachments: HSCMB_NHS Lothian_escalation_11 Sept 2019.docx; 389016_SCT0919991562-002_Royal_p1.pdf; Final Project Kids Report_090919a.pdf

Dear All

OFFICIAL SENSITIVE - NOT FOR WIDER CIRCULATION

Please find attached the final papers for HSCMB tomorrow, Wed 11 September. Not for wider circulation and please note the reports are embargoed until after the Cabinet Secretary's statement in Parliament tomorrow.

Thanks and regards
Kevin

KEVIN FARQUHARSON
Executive Support Manager,
Corporate Business Management Division,
Office of the Chief Executive NHSScotland
2E(N)



OFFICIAL:SENSITIVE

Paper no: HSCMB/121/2019 Meeting date: 11/09/2019 Agenda item: 3

Standing items and Updates

Title:	NHS Lothian – Consideration of Escalation
---------------	--

Background and Key Issues:	<p>NHS Lothian was escalated to Stage 3 on 12 July 2019. Whilst there had been improvements in performance in several areas, challenges remained against a difficult financial background.</p> <p>Concern was also expressed over the cumulative impact of these issues and the significant work required to complete the move to the new Royal Hospital for Children and Young People.</p> <p>Since Escalation to Stage 3, an Oversight Group has been established, chaired by John Connaghan, SG Chief Performance Officer, NHS Scotland and NHS Lothian are currently developing a recovery plan which is due in the first week of November 2019.</p> <p>We have also received the two independent reports into the Royal Hospital for Children and Young People (RHCYP). Taken together, and based on advice from the Oversight Board for the RHCYP, our assessment is that there are a broader range of issues that require to be addressed before the building can be fit for occupation.</p> <p>The additional leadership capacity that will be required to deliver this programme may have an impact on the broader capacity of the Board in managing the Stage 3 escalation on a number of performance areas. There are also concerns about the management control of the project in the light of the points raised in the two reports.</p> <p>The issue has been identified in the Scottish Government accounts as a serious control failure.</p>
-----------------------------------	---

Action(s) Required:	<p>HSCMB is asked to consider:</p> <p>a) The level of escalation of NHS Lothian, in light of the further information provided in the KPMG and NSS reports and the further delay and related cost. Consideration on escalation should also be consistent with escalation of other NHS Boards;</p> <p>b) What that escalation would be and what specific support would be provided and action taken in response.</p>
Author: Date:	Director: Christine McLaughlin Date: 10 September 2019

NHS Lothian – consideration of level of escalation

Purpose

1. To consider whether the current stage of escalation and associated support provided to NHS Lothian remains appropriate, in light of the two reports from KPMG and NSS which mean that there are more issues to be addressed before the building can be occupied, leading to further delay to the RHCYP project and associated costs.

Priority

2. Routine. Although a decision in advance of the release of the two reports and parliamentary statement would allow greater transparency and clarification of the level of support provided to NHS Lothian.

Background

Escalation to Stage 3: 12 July 2019

3. NHS Lothian was escalated to Stage 3 on 12 July 2019. The reason for escalation as stated in the letter to the Chief Executive was as follows:

“Whilst there have been improvements in performance in several areas of NHS Lothian’s performance, at our meeting yesterday we discussed a number of challenging areas where further improvement is required and in the context of a challenging financial environment:

- i. mental health, specifically at the Royal Edinburgh Hospital, but also the design and delivery of services across Lothian;
- ii. cancer waiting times;
- iii. scheduled care;
- iv. unscheduled care;
- v. delayed discharges; and
- vi. paediatric services at St John’s Hospital

I recognise that there are programmes of work already underway in all of these areas and recovery plans in place for scheduled and unscheduled care. A number of improvements are already being demonstrated. I am concerned, however that the cumulative impact of these issues, together with the significant work required to complete the move to the new Royal Hospital for Children and Young People, will place significant pressure on the leadership capacity of the Board and that in order to fully deliver on this challenging agenda for the people of Lothian and beyond, a tailored package of support is required. I have therefore concluded, on the advice of the Health and Social Care Management Board, that NHS Lothian should now be placed at Level 3 of the NHS Board Performance Escalation Framework

Stage 3 is defined as ‘Significant variation from plan; risks materialising; tailored support required’. Escalating a Board to Stage 3 allows Scottish Government to

request a formal Recovery Plan with clear milestones and to provide expert input to support the implementation of that plan as required.”

Update since Escalation to Stage 3

4. On the 6 areas of escalation, an Oversight Group has been established, chaired by John Connaghan, SG Chief Performance Officer, NHS Scotland and NHS Lothian are currently developing a recovery plan which is due in the first week of November 2019.
5. Since escalation in July, we have received the two independent reports into the Royal Hospital for Children and Young People (RHCYP). Taken together, and based on advice from the Oversight Board for the RHCYP, our assessment is that there are a broader range of issues that require to be addressed before the building can be assessed as fit for occupation. As such we estimate that the timeframe for full occupation is likely to be autumn 2020 (with DCN potentially moving in spring 2020), although every effort will be made to bring this date forward. The original date at which the unitary charge was due to begin was July 2017. Overall therefore the hospital will be fully occupied 3 years later than originally planned and 1 year later than the most recent date of migration date of July 2019.
6. The KPMG report presents a picture of a confused landscape which led to a lack of compliance with building standards and guidance and missed opportunities to identify and rectify those issues. It does not identify a single responsibility with one individual or organisation, but rather across NHS Lothian, external advisors and contractors.
7. The range of issues identified in the NSS report are broader than the original risk that was identified in relation to critical care and will require actions to be taken in haematology and oncology, to general ward ventilation across the building and to drainage.
8. The estimated cost to the public purse from this delay, including the cost of the earlier settlement agreement reached in February 2019, is in the region of £36.8 million. There are however costs of £24.7 million that will not be incurred due to the original delay to the project which meant that the unitary charge was not incurred as planned in 2017 and 2018. The net impact is therefore £12.1 million. On a project of £230 million this equates to a 16% additional cost or 5% net cost increase. The additional cost of rectification will have a knock on effect on the wider capital programme across the portfolio.
9. The additional leadership capacity that will be required to deliver this programme may have an impact on the broader capacity of the Board in managing the Stage 3 escalation on 6 performance areas. There are also concerns about the management control of the project in the light of the points raised in the two reports.

10. The issue has been identified in the Scottish Government accounts as a serious control failure.

Consideration of further escalation

11. Legal advice received in relation to accountable officer status is that there is insufficient evidence to support removal of AO status at this time, primarily due to the dispersed nature of responsibility across the parties involved in the project. The points noted above lead to a consideration of escalation to Stage 4.
12. A summary of levels of escalation is provided below, with details of stage 3-5 provided in Appendix 1.

Stage	Description	Response
Stage 1	Steady state "on-plan" and normal reporting	Surveillance through published statistics and scheduled engagement of ARs/MYRs
Stage 2	Some variation from plan; possible delivery risk if no action	Local Recovery Plan – advice and support tailored if necessary. Increased surveillance and monitoring Scottish Government. SG Directors aware.
Stage 3	Significant variation from plan; risks materialising; tailored support required	Formal Recovery Plan agreed with Scottish Government. Milestones and responsibilities clear. External expert support. Relevant SG Directors engaged with CEO and top team. DG aware.
Stage 4	Significant risks to delivery, quality, financial performance or safety; senior level external support required	Transformation team reporting to Director General and CEO NHS Scotland.
Stage 5	Organisational structure / configuration unable to deliver effective care.	Ministerial powers of Intervention.

13. Stage 4 is described as - Exceptionally where Scottish Government believes that a Board's capacity or capability requires enhancement to address local issues then additional direct management or transformation support can be provided. This will normally take the form of a transformation team led by a Scottish Government Director, Board Chief Executive or other responsible person appointed by the Director General and CEO NHS Scotland to initiate change and support the delivery of a sustainable transformation plan.
14. In the case of NHS Lothian we have formal Oversight arrangements in place for the full programme of recovery and are working towards a recovery plan in early November.
15. Further escalation at this point would be based on the RHCYP programme and our assessment of confidence, given the points noted above, in the ability of the NHS Lothian Board to deliver the programme of work, with its partners, to rectify the issues identified and secure occupation of the building at the earliest possible timeframe in order to mitigate risks in the current sites.

16. Consideration will be given to the appointment of a Senior Programme Director to lead the RHCYP programme, rather than to provide oversight, reporting directly to SG. Such a move could possibly be made on the current stage of escalation, given this relates to one part of the programme. However we have not previously separated out stages of escalation within a board and to do so would require clear agreement of the reason for doing so. Given the level of technical rectification required, we would also want to consider providing additional independent technical advice to the Senior Programme Director.
17. Appendix 2 summarises the level of escalation of other NHS Boards, to ensure a consistent approach is taken to escalation.

Recommendation

18. HSCMB is asked to consider:

- a) Level of escalation of NHS Lothian to Stage 4, in light of the further information provided in the KPMG and NSS reports and the further delay and related cost. Consideration on escalation should also be consistent with escalation of other NHS Boards;
- b) If yes, what specific support would be provided and action taken in response.

Christine McLaughlin
Director of Health Finance, Corporate Governance and Value and Chief Finance
Officer, NHS Scotland
10 September 2019

Appendix 1 Description of Escalation at Stage 3-5

Stage 3 – Significant variation from plan; risks materialising; tailored support required

If the performance issues are deemed to be serious or if the recovery actions are not delivering the expected improvements in performance then there is scope to escalate to Stage 3 which includes external tailored support for the board concerned. This is normally instigated by the Director of Health Workforce & Performance in consultation with the Director General and the HSCMB. Stage 3 is a formal engagement with the Board and particularly its Executive Team. Recovery Plans are submitted to Scottish Government with clear milestones, responsibilities and with clarity on resources required to deliver. While the responsibility for delivering remains with the Board, Scottish Government will at its discretion provide external tailored support. This can include HIS as part of the engagement strategy to deliver turnaround.

Tailored support typically involves assembling an expert team to carry out a diagnostic visit or visits. The expert team will have access to in-depth data and information on the system compiled before the visit. The team walks the relevant patient pathways or business processes, listening to a range of staff and patients. The team's feedback findings to the NHS Board senior management team at the end of the visit and produce written reports and recommendations. The NHS Board is then required to develop a recovery plan. The NHS Board is supported through access to expert advice and resource to help deliver the recovery plan. The recovery plan is closely monitored while the relevant SG Directors are engaged with the CEO and top team.

There is considerable flexibility within this basic approach which can draw upon a wide range of resources in order to provide the support required. This can be positioned according to requirements, be it as an additional supportive resource to help address complex and difficult issues.

Stage 4 – significant risks to delivery, quality, financial performance or safety; senior level external transformational support required

Exceptionally where Scottish Government believes that a Board's capacity or capability requires enhancement to address local issues then additional direct management or transformation support can be provided.

This will normally take the form of a transformation team led by a Scottish Government Director, Board Chief Executive or other responsible person appointed by the Director General and CEO NHS Scotland to initiate change and support the delivery of a sustainable transformation plan.

The Board Chief Executive as Accountable Officer continues to be responsible for matters of resource allocation to deliver any transformation plan. The Board Chief Executive and his/her executive team are expected to work in conjunction with the transformation Director to construct the required plan, and to take full responsibility

for delivery. The transformation Director will be provided with an appropriate level of local support and external as required.

Stage 5 - Organisational Structure / Configuration Unable to Deliver Effective Care.

If the Cabinet Secretary is of the opinion that any functions of a health board are not being exercised adequately Ministers have the power of intervention under the National Health Service (Scotland) Act 1978 and the Community Care and Health Act 2002.

Appendix 2

Board	Current Stage	Date Escalated/De-Escalated	Cumulative Deficit to 2019-20	Primary Factors
NHS Tayside	4	Stage 5 April 2018 Stage 4 February 2019	£74.7m	Financial position and financial management; governance and leadership
NHS Highland	4	Stage 3 July 2018 Stage 4 November 2018	£44.4m	Financial position and financial management; governance, leadership and culture
NHS Borders	4	Stage 3 July 2018 Stage 4 November 2018	£19.4m	Financial position and management; leadership
NHS A&A	3	Stage 3 July	£57.7m	Financial position and management



Independent Assessment of Governance Arrangements

**NHS Lothian Royal Hospital for Children and
Young People**

NHS National Services Scotland

KPMG LLP

9 September 2019

This Report contains 81 pages

Private and confidential – Use of this Report is limited – see Notice on page 7.

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Document Classification - KPMG Confidential



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Independent Assessment of Governance Arrangements

NHS Lothian Royal Hospital for Children and Young People

KPMG LLP

Strictly private & confidential

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Glossary

73 Issues	73 issues which formed part of the Settlement Agreement
Ac/hr	Air-changes per hour
Approved RDD	RDD which is classified as Level A or Level B by NHSL Board Representatives
BCR	Board's Construction Requirements
Bouygues	Bouygues Energies and Services
Critical Care Clinical Output Based Specifications	Specific clinical requirements for Critical Care, contained within Sub-Section D of the BCR
CFO	Chief Financial Officer
DCN	Department of Clinical Neurosciences
DCPP	Director of Capital Planning and Projects
Delay	The opening of the Hospital, due to be on 9 July 2019, was postponed due to issues identified with the air ventilation system
DRP	Dispute Resolution Process
EM	Environmental Matrix
F&R Committee	Finance and Resources Committee
Financial Close	The date when the conditions of the financial agreement are fulfilled, prior to the funds being made available



Independent Assessment of Governance Arrangements
NHS Lothian Royal Hospital for Children and Young People
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HCP	HCP Management Services Limited
HDU	High Dependency Unit
HFS	Health Facilities Scotland
Hospital	NHS Lothian Royal Hospital for Children and Young People
HPS	Health Protection Scotland
IHSL	Integrated Health Services Lothian Limited
IMT	Incident Management Team
IOM	Institute of Occupational Medicine
IPC	Infection Prevention & Control
Issue	The non-compliance with the SHTM standards for air change rates in the Critical Care areas of the Hospital
IT	Independent Tester
ITPD	Invitation to Participate in Dialogue
ITPD EM	The Environmental Matrix provided as part of Room Information within the ITPD
KPMG	KPMG LLP
MacRoberts	MacRoberts LLP
Mott MacDonald	Mott MacDonald Group Limited
MRI	Magnetic Resonance Imaging
Multiplex	Brookfield Multiplex
NHSL	NHS Lothian



NHS-NSS	NHS National Services Scotland
NPD	Non-Profit Distributing
OJEU	Office Journal of the European Union
PAMIP	Project Asset Management Investment Programme
PCC	Project Co Change
PCNOC	Project Co Notice of Change
Preferred Bidder Letter	A letter issued by NHSL to IHSL on 5 March 2014, advising that their Final Tender, submitted on 13 January 2014, had been accepted
Programme Board	Had day-to-day responsibility for managing the Project
Project	The design and construction of the Hospital
Project Agreement	An agreement between the NSHL Board and IHSL for the design, build, finance and maintenance of the Project, dated 13 and 14 February 2015
Project Agreement EM	The Environmental Matrix included with the Project Agreement documentation
Project Co	IHSL and Macquarie Capital, along with the following contractors: Brookfield Multiplex, Bouygues Energies and Services and HCP Management Services Limited
Project Team	The Financial & Resources Committee established the Programme Board and a smaller team (the "Project Team")
RDD	Reviewable Design Data
RDS	Room Data Sheets
Room Information	The specific room requirements for the Hospital contained within the Project documentation
Settlement Agreement	An agreement signed between the NHSL Board and IHSL on 22 February 2019

**Independent Assessment of Governance Arrangements***NHS Lothian Royal Hospital for Children and Young People**KPMG LLP**Strictly private & confidential**9 September 2019*

SG	Scottish Government
SHTM	Scottish Health Technical Memoranda
SHTM 03-01	Scottish Health Technical Memoranda 03-01 (Ventilation for healthcare premises)
Standards	Scottish Health Technical Memoranda 03-01 (Ventilation for healthcare premises)
The Client	NHS-NSS
TOR	Terms of Reference
TS	Technical Schedule



1 Introduction

1.1 Background

- 1.1.1 On 4 July 2019 it was announced by the Scottish Health Secretary that the opening of the newly built NHS Lothian Royal Hospital for Children and Young People (the “**Hospital**”), due to open on 9 July 2019, was to be postponed due to issues identified with the air ventilation system at the Hospital (the “**Delay**”).
- 1.1.2 The Health Secretary took the decision to delay the opening of the Hospital following final safety checks which revealed that the ventilation system within the Critical Care department required further work to meet national standards, the relevant standards being the Scottish Health Technical Memoranda (“**SHTM**”).

1.2 Our instructions and approach

- 1.2.1 KPMG LLP (“**KPMG**” or “**we**”) has been instructed by NHS National Services Scotland (“**NHS-NSS**”), to independently establish the facts surrounding the decision to delay the move to the Hospital. As part of this assessment KPMG has specifically been instructed to consider the following areas:
- a) To establish what decisions were made by NHS Lothian (“**NHSL**”), when these were made, by whom and on what basis these decisions were taken in relation to the air ventilation issues and any other material issues that led to the Delay;
 - b) To determine the extent to which the design specifications with regard to air ventilation complied with the SHTM standards at each stage of the Hospital



project¹, the ‘project’ being the design and construction of the Hospital (the “**Project**”)²;

- c) To understand what professional and technical advice was given to the NHSL Board, in particular when derogations were proposed, who agreed them and the risk assessments that were undertaken to reach a final decision; and
- d) To establish the governance arrangements that were in place in relation to the Project and the line of sight of NHSL and the Scottish Government (“**SG**”), along with the escalation arrangements to NHSL and SG.

1.2.2 The focus of our review has been on the activities and decisions taken within NHSL.

1.2.3 We have held discussions with individuals from NHSL, along with individuals from the following entities:

- a) Mott MacDonald Group Limited (“**Mott MacDonald**”) – NHSL’s technical advisors and project managers for the Project;
- b) MacRoberts LLP (“**MacRoberts**”) – NHSL’s legal advisors;
- c) Integrated Health Services Lothian Limited (“**IHSL**”) - the party that the NHSL Board entered into a project agreement with for the design, build, finance and maintenance of the Project;
- d) Institute of Occupational Medicine (“**IOM**”) – a third party firm of specialist validation experts whom NHSL instructed to undertake testing on the Hospital’s ventilation;
- e) Health Facilities Scotland (“**HFS**”) - a division of National Services Scotland which provides operational guidance to NHS Scotland bodies on a range of healthcare facilities topics; and

¹ To design, build, finance and maintain a new facility to re-provide services from the Royal Hospital for Sick Children, Child and Adult Mental Health Service and the Department of Clinical Neurosciences in a single building adjoining the Royal Infirmary of Edinburgh at Little France (Source: Project Agreement, dated 13 February 2015, page 5)

² It was agreed that KPMG would not undertake a technical review in this respect but confirm whether the SHTM standards were included within the design specifications.



f) Arcadis NV - the Project's Independent Tester ("IT").

1.2.4 In addition, we reviewed key documentation provided by NHSL and the above entities.

1.3 Structure of this Report

1.3.1 In Section 2, we set out the Executive Summary.

1.3.2 In Section 3, we set out the background to our work, including details of the Project relating to the build of the Hospital and the timeline of events leading up to the Delay.

1.3.3 In Section 4, we set out our observations in relation to whether the design specifications with regard to air ventilation made reference to the SHTM standards.

1.3.4 In Section 5, we set out details of the professional and technical advisors that advised the NHSL Board and the extent to which they were involved in providing advice in respect of derogations.

1.3.5 In Section 6, we set out our observations in relation to the governance arrangements that were in place for the Project.

1.4 Limitations of scope

1.4.1 The content of this Report is based on information provided to KPMG by representatives of NHSL, Mott MacDonald, MacRoberts, IOM and the IT. Except where explicitly stated, we have not independently verified this information and have relied on statements made and documents and data provided.

1.4.2 Whilst we make reference to SHTM in this Report, we are not technical experts on ventilation standards and give no comment on the technical accuracy of the content of documents we have been provided. We understand that the Health Secretary has commissioned a separate independent review in relation to the technical aspects of the Delay. Comments made in this Report by KPMG are



made in the context of our review and our understanding of the documents made available to us.

- 1.4.3 In undertaking our work we have had regard to elements of the contractual documentation relating to the Project, and have set out extracts of these in this Report. However, nothing in this Report should be regarded as constituting legal interpretation of such documents or the provision of legal advice.
- 1.4.4 We have not been instructed to determine exactly what led to the Issue³ or to opine on the accountability of individuals or organisations in respect of the Issue.
- 1.4.5 Whilst we have considered the governance arrangements in place from the date of the project agreement, being an agreement with IHSL for the design, build, finance and maintenance of the Project on 13 February 2015 (the “**Project Agreement**”), we have not considered the governance arrangements prior to this time.
- 1.4.6 Should any additional information or documentation subsequently become available which is relevant to our scope of work, we reserve the right to amend our findings in light of that information.
- 1.4.7 The scope of our work is different from that of an audit and does not provide the same level of assurance as an audit.

1.5 Notice: About this Report

- 1.5.1 This Report has been prepared on the basis set out in our Engagement Letter addressed to NHS-NSS (“**the Client**”).
- 1.5.2 Nothing in this report constitutes legal advice.
- 1.5.3 We have not verified the reliability or accuracy of any information obtained in the course of our work.

³ As defined in paragraph 2.2.1



Independent Assessment of Governance Arrangements
NHS Lothian Royal Hospital for Children and Young People
KPMG LLP
Strictly private & confidential
9 September 2019

- 1.5.4 This Report is for the benefit of the Client and has not been designed to be of benefit to anyone except the Client. In preparing this Report we have not taken into account the interests, needs or circumstances of anyone apart from the Client, even though we may have been aware that others might read this Report. We have prepared this Report for the benefit of the Client alone.
- 1.5.5 This Report is not suitable to be relied on by any party wishing to acquire rights against KPMG LLP (other than the Client) for any purpose or in any context. Any party other than the Client that obtains access to this Report or a copy (under the Freedom of Information Act 2000, the Freedom of Information (Scotland) Act 2002, through the Client's Publication Scheme or otherwise) and chooses to rely on this Report (or any part of it) does so at its own risk. To the fullest extent permitted by law, KPMG LLP does not assume any responsibility and will not accept any liability in respect of this Report to any party other than the Client.
- 1.5.6 In particular, and without limiting the general statement above, since we have prepared this Report for the benefit of the Client alone, this Report has not been prepared for the benefit of any other Health Board nor for any other person or organisation who might have an interest in the matters discussed in this Report, including for example those who were involved in the Project detailed in this Report.



2 Executive Summary

2.1 Introduction

2.1.1 On 4 July 2019, the Scottish Health Secretary announced that the opening of the newly built NHS Lothian Royal Hospital for Children and Young People (the “**Hospital**”), due to open on 9 July 2019, was to be postponed due to issues identified with the air ventilation system at the Hospital (the “**Delay**”).

2.1.2 The Scottish Health Secretary took the decision⁴ to delay the opening of the Hospital following final safety checks which revealed that the ventilation system within the critical care areas of the Hospital required further work in order to meet national standards.

2.1.3 KPMG LLP (“**KPMG**” or “**we**”) has been instructed by NHS National Services Scotland (“**NHS-NSS**”), to independently establish the facts surrounding the decision to delay the move to the Hospital.

2.1.4 The focus of our review has been to establish what decisions were made by NHS Lothian (“**NHSL**”) in relation to the air ventilation issues and any other material issues that led to the Delay. We have detailed our main observations in relation to this in Section 2.2 below, and provide further details on specific areas of our scope in Sections 2.3 to 2.5.

2.2 Summary of findings

2.2.1 The information available to us indicates that:

- a) The key issue which led to the Delay was the non-compliance with the Scottish Health Technical Memoranda 03-01 (“**SHTM 03-01**” or the “**Standards**”) for air change rates in some of the Critical Care areas of the Hospital (the “**Issue**”). This Issue was brought to the attention of the NHSL Board on 1 July 2019 as a result of testing undertaken by a third party

⁴ The Cabinet Secretary announced this decision following communication with the NHSL chief executive regarding the identification of the ventilation system issues.



contractor, Institute of Occupational Medicine (“**IOM**”). This was as a result of IOM reporting the issue in relation to Critical Care to the NHSL Project Team⁵ on 24 June 2019. The actions taken by the Project Team before the Issue was reported to the NHSL Board are reported in Section 3.4. Further details as to the decisions that were made by NHSL once the Issue had been identified, when these were made, by whom and on what basis, are provided in Section 3 of this Report;

- b) Throughout all stages of the Project we have seen references made to the requirements of the Project Co⁶ to adhere to the Scottish Health Technical Memoranda (“**SHTM**”), including specifically SHTM 03-01 relating to ventilation systems. However, notwithstanding any contractual obligations, it appears that there has been confusion between the parties as to the application of these Standards. This appears to have stemmed from a document which was contained within the Project tender documentation, a version of which was used throughout the Project, which included details on the environmental specifications of the Hospital, the Environmental Matrix (“**EM**”). Elements of the EM were inconsistent with SHTM 03-01 from the tender process (which commenced in late 2012) onwards. Further details in relation to design specifications and air ventilation standards are provided in **Section 2.3** below;
- c) We have seen evidence of professional and technical advisors being involved throughout the Project. This included specific involvement in relation to ventilation issues. However, we have seen no evidence that professional or technical advice identified the Issue prior to June 2019. Further details in

⁵ The NHSL Board delegated responsibility for oversight of the Project to the Financial & Resources Committee which established the Programme Board and a smaller team (the “**Project Team**”)

⁶ Being Integrated Health Services Lothian Limited and Macquarie Capital, along with the following contractors: Brookfield Multiplex, Bouygues Energies and Services and HCP Management Services Limited. Collectively for the purposes of this Report referred to as “**Project Co**”



relation to professional and technical advice are provided in **Section 2.4** below;

- d) The governance processes and procedures surrounding the construction and commissioning of the Hospital operated in line with the structure that was put in place. There was regular dialogue between NHSL and the Scottish Government (“SG”) throughout the Project, with evidence of escalation of issues where required, albeit this was more focused on financial rather than technical matters. Further details of the governance arrangements are provided in **Section 2.5** below; and
- e) Once the Issue in relation to air change rates was known to the NHSL Board, steps were taken to assess the impact of the Issue, resulting in the Delay (see Section 3.4).

2.2.2 Aside from the specific Issue referred to in this Report, other ventilation systems were identified by IOM as having some deficiencies. We understand that all these deficiencies were considered rectifiable by NHS-NSS, and NHSL have an action plan in place to address each issue.

2.3 Design specifications and air ventilation standards

2.3.1 Our specific instructions were:

To determine the extent to which the design specifications with regard to air ventilation complied with the SHTM standards, and specifically SHTM 03-01, being the ventilation for healthcare premises standards, at each stage of the Project. It was agreed that KPMG would not undertake a technical review in respect of this but confirm that the Standards were included within the design specifications.

2.3.2 A summary of our observations are detailed below, with further details provided in Section 4 of this Report.

2.3.3 Throughout all stages of the Project we have seen references made to the requirements to adhere to SHTM, and specifically SHTM 03-01 in respect of ventilation systems; in particular within the Board’s Construction Requirements



(“BCR”) document which is the primary document at both the tender and Project Agreement⁷ stages. The BCR stated that Project Co must comply with SHTM for the design of the Hospital and that all recommendations and preferred solutions contained within the SHTMs must be adopted as mandatory.

- 2.3.4 It appears that there has been confusion between NHSL and Project Co as to the application of these Standards throughout the Project. This appears to have stemmed from the EM, details of which were inconsistent with SHTM 03-01 from the tender process, as we describe below.
- 2.3.5 A version of the EM was included within the BCR at both the tender and Project Agreement stages. The EM was referred to within the tender document as detailing “...*the room environmental condition requirements of the Board required within each department / unit / space / area [of the Hospital]*”⁸. The room environmental conditions included air change rates. There are inconsistencies within the tender process documentation in relation to the EM, with the BCR stating that bidders should “...*provide the Works to comply with the Environmental Matrix*”⁹ and the tender submission requirements stating that whilst bidders were required to “*undertake their own design, the Board [has] provided a draft Environmental Matrix*”¹⁰ and that “*bidders must confirm acceptance of the Board’s Environmental Matrix, highlighting any proposed changes on an exception basis*”¹¹.
- 2.3.6 Our work has identified issues within the EM, including inconsistencies with SHTM 03-01 and discrepancies within the document itself. Specifically:
- a) The version of the EM document provided by NHSL to bidders as part of the tender process, and referred to in the BCR as detailed above, included

⁷ The Project Agreement being an agreement with IHSL for the design, build, finance and maintenance of the Project on 13 February 2015

⁸ IPTD: Volume 3 Board’s Construction Requirements, Rev C, Subsection B, B (page 9)

⁹ IPTD: Volume 3 Board’s Construction Requirements, Rev C, Subsection C, Section 8 (page 102)

¹⁰ IPTD, Volume 1, Revision A, Appendix A (ii), Submission Requirements, Point C8.3 (page 105)

¹¹ IPTD, Volume 1, Revision A, Appendix A (ii), Submission Requirements, Point C8.3 (page 106)



reference to both the single bed cubicles and four-bed rooms in Critical Care as requiring four air changes per hour¹² (“**ac/hr**”). We understand this was not in compliance with SHTM 03-01 and should have been 10 ac/hr. This reference remained in subsequent versions of the EM; and

- b) The guidance note at the front of the EM document, provided at the tender and Financial Close¹³ stages of the Project, suggested that all Critical Care areas should be in accordance with SHTM 03-01, being the relevant part of the standards relating to ventilation, and “*10ac/hr Supply*”¹⁴. This is inconsistent with the content of the matrix, as detailed above. We note that this inconsistency appears to have been removed after Financial Close by the insertion of the words ‘*for isolation cubicles*’¹⁵, suggesting that only ‘isolation cubicles’ in Critical Care should have an air change rate of 10 ac/hr. However, we were informed by NHSL that this change was made by the Project Co, but was not flagged to NHSL (see paragraph 4.4.10 for further details).

2.3.7 We have not been instructed to consider how the inconsistency made its way into the initial matrix. However, we have seen no evidence that any party to the Project identified the issue, specifically in relation to the incorrect air change rates having been applied to Critical Care rooms, until June 2019 (see paragraph 3.4.7 to paragraph 3.4.14 for further details).

2.3.8 NHSL told us they had not reviewed the EM in detail from a technical perspective and they reviewed it for ‘operational functionality’, as detailed in the Project Agreement (as referred to further in paragraphs 4.4.6 and 4.4.7 below). It was

¹² Reference Design Envisaged Solution – RHSC / DCN Environmental Matrix version third issue, dated 19 September 2012 (page 5)

¹³ Being the date when the conditions of the financial agreement are fulfilled, prior to the funds being made available (“**Financial Close**”)

¹⁴ Document reference (tender version): Reference Design Envisaged Solution – RHSC / DCN Environmental Matrix version third issue, dated 19 September 2012 (page 2, note 15)). Document reference (Project Agreement version): WW-XX-XX-DC-001. Page 2, Note 15. Contained within Schedule Part 6, Construction Matters, Part 6 of the Project Agreement

¹⁵ Full wording read: “*10ac/hr Supply for isolation cubicles*” in a version of the EM dated 26 November 2015



assumed by NHSL that any changes to the EM would be highlighted by Project Co for discussion with them, and that it would be in compliance with SHTM 03-01, as detailed in the BCR. Despite this, the “exception-basis” approach to highlight proposed changes, referred to at paragraph 2.3.5 above, may have contributed to an assumed position that the original document, provided as part of the tender process, was correct.

- 2.3.9 Despite our understanding that NHSL and its advisors did not consider that they had an obligation to review the EM in detail from a technical perspective, we have identified multiple instances of comments being provided by the ‘Board’¹⁶ on particular sections of the EM. These included those elements which specifically related to the four-bed rooms in the Critical Care department. However, at no point did these comments refer to there being incorrect air change rates for those rooms.
- 2.3.10 Through correspondence between NHSL and Project Co regarding the EM, we have seen evidence of Mott MacDonald (on behalf of the Board) reminding Project Co that they must comply with the BCR and SHTM and that the “*Board not commenting, does not remove that obligation on Project Co*”¹⁷.
- 2.3.11 In addition to all of the above, in January 2019, the Board asked Integrated Health Services Lothian Limited (“**IHSL**”)¹⁸ for specific assurance that all critical ventilation systems were to be “*inspected and maintained in line with ‘Scottish Health Technical Memorandum 03-01: Ventilation for healthcare premises’*”¹⁹. IHSL confirmed in their response that all ventilation systems had been designed, installed and commissioned in line with SHTM 03-01²⁰.

¹⁶ We understand from Mott MacDonald that the ‘Board’ in this context refers to both themselves and the Project Team and not the ultimate NHSL Board.

¹⁷ Email from Mott MacDonald to Multiplex, among other recipients, on 17 October 2016 (document reference: 161017 MM-GC-002084). We understand from Mott MacDonald that the ‘Board’ in this context refers to both themselves and the Project Team and not the ultimate NHSL Board.

¹⁸ The party that NHSL Board entered into a project agreement with for the design, build, finance and maintenance of the Project and who formed part of the Project Co

¹⁹ Document: 10.11.4 31-01-19 IHSL.NHSL Plant Rooms Ventilation Systems

²⁰ Document: 10.11.4 31-01-19 IHSL.NHSL Plant Rooms Ventilation Systems



2.3.12 We have not been instructed to opine on the accountability of individuals or organisations in respect of the failure to identify the Issue and it is not within our area of expertise to consider the contractual implication of the failure. However, through our identification of the above matters, the following relevant observations have also come to light:

a) Lack of clarity in the Standards

Our work has identified that consideration of the Standards on a standalone basis, in relation to air change rates in rooms within the Critical Care areas of the Hospital, could be open to interpretation. Specifically, our review has identified that there is no definition of “Critical Care” in the Standards, and the extent to which “Critical Care” includes all types of rooms within that area of a hospital. Further, there is no explanation of the hierarchy which should be applied where different areas of the hospital overlap, for example, which standard should be applied to a ‘clean utility’ within a Critical Care unit.

However, the Project Agreement documentation, and specifically the BCR, referred to in paragraph 4.3.8 below, includes Clinical Output Based Specifications for each department. We note that the Critical Care Clinical Output Based Specification makes reference to the areas included in Critical Care with, for example, references to single cubicles, four bedded bays, isolation cubicles and clean and dirty utilities.

b) Opportunities to identify the Issue

It is our observation that, notwithstanding that the initial version of the EM issued by NHSL at the tender stage contained the inconsistency which ultimately resulted in the Delay, NHSL and its advisors did not regard the EM as their document and did not consider it their responsibility to ensure compliance with SHTM 03-01. Instead, NHSL considered the EM to be the responsibility of Project Co. NHSL considered it their responsibility to approve



it for 'operational functionality'²¹ and it was for Project Co to highlight any inconsistencies between the EM and the Standards.

We have seen evidence that NHSL and its advisors did challenge and seek explanations in relation to certain aspects of the EM relating to specific rooms in Critical Care, but this did not include specific reference to the air change rates.

Regardless of the contractual responsibilities, our work identified at least three specific instances where errors regarding the details of the air change rates relating to the four-bed rooms could have been identified by either NHSL (and their advisors) or Project Co:

- **November 2016:** Correspondence between the Board²² and Project Co referred to the air extraction of the four-bed rooms in Critical Care via the en-suite facilities. The specific comment noted by the Board was *"1-B1-063 Stated as supply of 4 ac/h, extract via en-suite, this room does not have en-suite facilities"*²³. Project Co's response was *"Room extract rate added"*²⁴. This suggests that both parties were in correspondence regarding a room in Critical Care (on the basis that rooms starting 'B1' were defined on the cover sheet of the EM as being located in Critical Care), which contained reference to four air changes an hour.
- **July 2018**²⁵: A document entitled 'Multi Bed - Ventilation Amendment Proposal to Achieve Room Balance [pressure]' was provided by Project Co, and subsequently approved by an individual from NHSL. Whilst this document was focused on the pressure regime, it stated *"Retain the*

²¹ As referred to a paragraphs 4.4.6 and 4.4.7

²² We understand from Mott MacDonald that the 'Board' in this context refers to both themselves and the Project Team and not the ultimate NHSL Board

²³ REV 07 ww-xx-xx-dc-xxx-001 - signed copy. Environmental Matrix comments, Second Batch, NHSL reference 7 (page 4)

²⁴ REV 07 ww-xx-xx-dc-xxx-001 - signed copy. Environmental Matrix comments, Second Batch, NHSL reference 7 (page 4)

²⁵ Being the date of approval of the document 'Multi Bed - Ventilation Amendment Proposal to Achieve Room Balance'



*supply ventilation at 4ac/hr...*²⁶ as part of the proposed solution against each of the four-bed rooms. This included rooms located in Critical Care, albeit this was not directly referenced on the document; and

- **February 2019:** As a result of a number of ongoing issues in dispute between NHSL and Project Co, an agreement was signed between the NHSL Board and IHSL on 22 February 2019 (the “**Settlement Agreement**”). The Settlement Agreement states “*The resolution of the Dispute submitted by Project Co through the Schedule Part 8 (Review Procedure) and agreed by the Board, is for 14 No 4 bed rooms to be balanced or negative to the corridor at 4 ac/hr*”²⁷. This wording was approved by both parties.

Furthermore, we also identified one example of comments provided to the Project Co by Mott MacDonald²⁸ (on behalf of NHSL) referred to as “*...initial technical comments on draft 1 of the Environmental Matrix*”, dated 13 October 2014²⁹. This document included 12 comments, one of which specifically refers to ventilation standards in respect of bedrooms stating “*Bedrooms 4ac/hr, SHTM says 6 ac/hr*”³⁰. Whilst this comment was not specific to a Critical Care bedroom, this suggests that comments other than those relating directly to ‘operational functionality’ were raised by NHSL.

c) **Role of the Independent Tester (“IT”)**

The IT advised KPMG that its role was to certify that the design had been built in accordance with what had been agreed between the parties. This is reflected in the IT’s scope of work, as set out in paragraph 4.7.2. The EM had been used as the basis for this agreement between the parties and, as such, the IT did not consider that it was responsible for reviewing its accuracy.

²⁶ Multi Bed - Ventilation Amendment Proposal to Achieve Room Balance

²⁷ Settlement Agreement, Schedule 1, Part 1, Technical Schedule, Item 7 (page 30)

²⁸ Attached to an email from Mott MacDonald to Multiplex, among others, dated 14 October 2019. (Document reference: 141014 MM-GC-000399)

²⁹ Document reference: 141013 Environmental Matrix Comments

³⁰ Comment 7. Document reference: 141013 Environmental Matrix Comments



Instead, the IT stated that it expected both parties to the Project to have undertaken a detailed review of the EM.

2.4 Professional and technical advice

2.4.1 Our specific instructions were:

To understand what professional and technical advice was given to the NHSL Board, in particular when derogations were proposed, who agreed them and the risk assessments that were undertaken to reach a final decision.

2.4.2 A summary of our observations are detailed below, with further information provided in Section 5 of this Report.

2.4.3 A number of professional and technical advisors were involved throughout the Project. Specifically, in respect of the Issue pertinent to the Delay:

- a) From the various documents we have seen, and the discussions we have held, there is evidence that, in arriving at the agreed resolution in the Settlement Agreement in respect of the changes required to the pressure regime to 14 of the four-bedded rooms, advice and support was provided to the Project Team by both technical advisors and internal clinical advisors, which was visible to the NHSL Board; and
- b) We have seen evidence that Mott MacDonald was involved in the Project on an ongoing basis, specifically in respect of reviewing and commenting on the EM.

2.4.4 We have not been instructed, and it is not within our area of expertise, to consider the responsibility of external professional or technical advisors to identify this Issue. However, despite the extensive internal and external technical advice received in relation to the Project, the Issue was not spotted.



2.5 Governance arrangements

2.5.1 Our specific instructions were:

To establish the governance arrangements that were in place in relation to the Project and the line of sight of NHSL and SG, along with the escalation arrangements to NHSL and SG.

2.5.2 A summary of our observations are detailed below, with further information provided in Section 6 of this Report.

2.5.3 From the information we have seen, the governance structure surrounding the construction and commissioning of the Hospital was operating in line with that described to us and issues were being escalated through the appropriate channels.

2.5.4 Oversight of the Project had been delegated by the NHSL Board to the Finance & Resources committee (the “**F&R Committee**”), which included four executives from the NHSL Board. The F&R Committee established a Project Programme Board which had day-to-day responsibility for managing the Project (the “**Programme Board**”). The Programme Board did not report directly to the F&R Committee. Instead, any key issues arising on the Project would be reported to the Director of Capital Planning and Projects (the “**DCPP**”) or one of the Project’s Executive Leads who would, in turn, escalate this to the NHSL Board and also inform the F&R Committee if the issue had an impact on the financing of the Project or its duration. As there was overlap between members of the various committees and boards, this facilitated the executive leaders of NHSL being kept informed of progress and issues.

2.5.5 Throughout our review, we have seen evidence of these governance arrangements operating in practice and it appears that, at each stage of the Project, personnel with the appropriate technical and clinical skills and experience were involved.

2.5.6 Further, where appropriate, external advice and guidance was sought. An example of such external advice being commissioned is the instruction of an independent third party to carry out checks following concerns raised by the



Infection Prevention & Control team (the “**IPC**”) in relation to the reporting format for ventilation checks. A further example is in relation to changes to the design requirements where we have seen evidence of the involvement of technical specialists such as Mott McDonald, as well as clinicians and medical professionals from relevant departments within NHSL.

- 2.5.7 In addition to the governance processes within NHSL itself, we understand that there was regular dialogue between NHSL and SG throughout the Project, with escalation of issues where required, albeit this was typically more focused on financial rather than technical matters.
- 2.5.8 The timeframe for moving to the Hospital was set in February 2019 when the Settlement Agreement was signed. At this time, it was known that significant work was still required in order to complete the Hospital, including a number of critical areas which were required to be completed before the building could be considered habitable. Such works continued into July 2019, including a significant amount of post-completion works. As such, the time available for rectification of any identified problems, prior to the scheduled opening date of the Hospital of 9 July 2019, was challenging and left little margin for error. The governance process established in order to implement the required actions, set out in the Settlement Agreement, is discussed in Section 6.4.
- 2.5.9 Once the Issue which led to the Delay had been identified, steps were taken by NHSL to notify SG of the Issue which led to the decision by the Health Secretary to delay the opening of the Hospital. We note that, due to the urgency of the matter, the ultimate escalation of the ventilation issues was made direct to the NHSL Board and not through the normal governance structure.



3 Background to the Project and the Delay

What decisions were made by NHSL, when these were made, by whom and on what basis these decisions were taken in relation to the air ventilation issues and any other material issues that led to the Delay.

3.1 Introduction

- 3.1.1 In this Section, in considering the facts surrounding why NHSL made the decision to delay the opening of the Hospital, we set out the chronological background to the Project, based on information communicated to us and documents provided to us.
- 3.1.2 Whilst this summary provides a high-level introduction to the Project and its timeline, the summary focuses on the timeline of events that led to the Delay and, in particular, the period between the signing of a Settlement Agreement by NHSL and IHSL on 22 February 2019 (the “**Settlement Agreement**”)³¹ and the planned opening of the Hospital on 9 July 2019.
- 3.1.3 In preparing this summary, we have considered the decisions taken by NHSL in relation to the air ventilation issues (and any other material issues that led to the Delay), when these were made, by whom and on what basis these were taken.

3.2 Pre-financial close

- 3.2.1 The NHSL Board approved a capital-funded business case for the Hospital in 2008. This business case was approved by SG for a Children’s Hospital only.
- 3.2.2 In November 2010, SG announced a Non-Profit Distributing³² (“**NPD**”) funding route, not only in relation to the Children’s Hospital but also the

³¹ Referred to in the NHSL Annual Audit Report dated June 2019 (<https://www.audit-scotland.gov.uk/report/nhs-lothian-annual-audit-report-201819>)

³² A form of public-private partnership procurement programme



Department of Clinical Neurosciences (the “**DCN**”). Various enabling works were required to be performed before construction could commence.

- 3.2.3 As a consequence of this preparation work, NHSL did not go to the market for a partner for the Project until November 2012. The Project was advertised in the Office Journal of the European Union (the “**OJEU**”), published on 5 December 2012. The NHSL Board proceeded to engage with three bidders during a nine-month competitive process. This process began in March 2013 and ended in December 2013. The winning bidder selected by the NHSL Board would then form an NPD company to deliver the Project.
- 3.2.4 Supporting the NHSL Board throughout this process were a group of professional advisors which included Mott MacDonald (technical advisors and project managers), MacRoberts (legal advisors) and Ernst and Young (Financial Advisors). The NHSL Board delegated responsibility for oversight of the Project to the Financial & Resources Committee (“**F&R Committee**”) which established the Programme Board which had day-to-day responsibility for managing the Project (the “**Programme Board**”) and a smaller team (the “**Project Team**”).
- 3.2.5 The Programme Board comprised the Project Team as well as representatives from clinical and operational areas, the Director of Finance, the Director of Communications, an NHSL Non-Executive Director and other stakeholders.
- 3.2.6 In March 2014, the NHSL Board appointed IHSL as its preferred bidder. IHSL’s team comprised Macquarie Capital³³, along with IHSL’s subcontractors; Brookfield Multiplex (“**Multiplex**”), Bouygues Energies and Services (“**Bouygues**”) and HCP Management Services Limited (“**HCP**”) (collectively for the purposes of this Report referred to as “**Project Co**”).
- 3.2.7 The NHSL Board entered into a Project Agreement with IHSL for the design, build, finance and maintenance of the Project on 13 February 2015. It was a requirement for the Project design, installation and operation to comply with

³³ Initially referred to along with IHSL as Project Co



guidance issued by HFS. Further details of the standards issued by HFS³⁴ is set out in Section 4.2.

- 3.2.8 The planned scheduled opening date for the Hospital was July 2017.
- 3.2.9 As required by the Project Agreement, an IT was appointed by the NHSL Board, IHSL, and IHSL's funders, as an advisor to provide certain services independently, fairly and impartially in connection with the Project. Arcadis NV was appointed to this role in February 2015³⁵.
- 3.2.10 We understand that, at the time of financial close in February 2015, being the date when the conditions of the financial agreement are fulfilled prior to the funds being made available ("**Financial Close**"), the designs for the Hospital had not been fully developed. This included issues relating to the design of the ventilation systems, including comments on the pressure regime which would be in operation in the Hospital and whether this was in compliance with the relevant standard (Scottish Health Technical Memoranda 03-01 ("**SHTM 03-01**" or the "**Standards**").

3.3 Construction phase

- 3.3.1 In early 2017, it became clear that the Hospital would not be opening on time, as originally planned in July 2017. Three specific issues were identified at that stage:
 - a) The design of the high voltage power resilience mechanism;
 - b) Ventilation issues (pressure regime³⁶); and
 - c) An issue with the provision of a Magnetic Resonance Imaging ("**MRI**") room.
- 3.3.2 Throughout the remaining period of 2017, discussions with Project Co on a) and b) above, and other emerging issues, continued without resolution. This

³⁴ The SHTM standards

³⁵ EC Harris was initially instructed, which was later acquired by Arcadis NV

³⁶ In relation to four-bedded rooms



ultimately resulted in both parties seeking legal advice and contemplating court action in order to resolve the issues in dispute.

- 3.3.3 It is our understanding that, in early 2018, the parties entered into a process of negotiated settlement. This included a number of technical workshops held in order that all of the unresolved issues could be raised and resolutions sought. At the workshops, which were held to consider the ventilation issues, there were detailed discussions regarding the required pressure regime in four bedded rooms.
- 3.3.4 In moving towards resolving this issue, a proposed solution was put forward in relation to the pressure in single bedrooms. This involved an adjustment of the air change rate from 6 air changes per hour (“**ac/hr**”) to 4 ac/hr with 2 ac/hr natural ventilation, which we understand from NHSL meant this still achieved 6 ac/hr, but through a ‘mixed mode’.
- 3.3.5 However, an issue remained regarding the pressure regime in multi-bed rooms. NHSL required 14 of the multi-bed rooms to be adjusted to have balanced or negative pressure. Four of the rooms considered as part of this process were located within the Critical Care areas of the Hospital³⁷. Reference was made in the proposed resolution of this issue to an air change rate of 4 ac/hr.
- 3.3.6 During this period, it became apparent that, whilst some of the earlier issues appeared to be resolved or solutions proposed, there were a significant number of other technical issues emerging at the Hospital which required the attention of various project teams.
- 3.3.7 On 22 February 2019, the Settlement Agreement was signed by NHSL Board and IHSL with the ultimate aim of resolving all known issues and opening the Hospital in July 2019.
- 3.3.8 The Settlement Agreement set out a total of 76 issues identified by the parties that required resolution. These 76 issues consisted of (a) 73 known issues

³⁷ Per SHTM 03-01, Appendix 1, Critical Care areas of a hospital require 10 ac/hr



where a solution had been agreed³⁸ (the “**73 Issues**”); and (b) three technical issues, being:

- a) Void detection;
- b) Heater batteries; and
- c) Drainage.

- 3.3.9 The Settlement Agreement included an agreed resolution to the ongoing issue relating to ventilation pressure in four-bed rooms (one of the 73 Issues) and also included reference to the agreement made in relation to the single bedroom pressure change.
- 3.3.10 In the context of achieving the air pressures required by NHSL, this agreed resolution stated “...agreed by the Board, is for 14 No 4 bed rooms to be balanced or negative to the corridor at 4 ac/hr. The remaining 6No 4 bed wards remain as per the environmental matrix...”³⁹. Of these 14 rooms, four of these 4-bed rooms were located within the Critical Care area of the Hospital.
- 3.3.11 We discuss the background to this agreed resolution in further detail in Section 5.3.
- 3.3.12 In relation to the other three technical issues (i.e. not the 73 issues), listed at paragraph 3.3.8 above, solutions were agreed and a programme of work planned to implement the solutions prior to the opening of the Hospital in July 2019.

3.4 Operational phase

- 3.4.1 The IT provided a “Certificate of Practical Completion” on 22 February 2019. This meant that the construction phase of the Project came to an end and the

³⁸ The Settlement Agreement contains a table with 81 items, however eight of these stated ‘NOT USED’

³⁹ Settlement Agreement, Schedule 1, Part 1, Technical Schedule, Item 7 (page 30)



Project entered into its operational phase. At this point, NHSL began payment of the annual services payment to IHSL.

- 3.4.2 During this operational phase, a significant number of outstanding works were required to be carried out by Project Co. In accordance with the Settlement Agreement, these works were performed in parallel with the NHSL Board's commissioning activities⁴⁰ for the Project.
- 3.4.3 Under the requirements of SHTM 03-01, a report on the ventilation system commissioning should be provided to the 'user department', 'infection control (where required)' and 'estates and facilities', following the commissioning⁴¹. In January 2019, the Project Team provided the Infection Prevention & Control (the "IPC") team with a copy of the proposed validation checklists that Multiplex was due to complete in respect of validating the ventilation system in the theatres. This was in order to ascertain if the checklists would be sufficient to meet the report requirements set out in SHTM 03-01⁴².
- 3.4.4 In May 2019, following ongoing correspondence with the Project Team, the IPC confirmed that they were of the view that validation checklists in the format submitted by Multiplex were not sufficient for the purposes of the requirements and instead requested that the Project Team arrange a third party validation of the ventilation systems in order to obtain the required report.
- 3.4.5 On 30 May 2019, the Project Team contacted the IOM, a third party firm of specialist validation experts with experience in hospital ventilation. The firm that NHSL typically used for validation for hospital ventilation was conflicted from undertaking this testing, as it was used by IHSL⁴³.
- 3.4.6 On 5 June 2019, IOM attended a site visit and familiarisation at the Hospital and testing commenced on 17 June 2019. IOM's testing involved the validation of

⁴⁰ Commissioning activities were in effect the preparation for receiving patients into the Hospital e.g. ensuring the equipment and relevant supplies were in place, that staff were familiar with the layout and that the Hospital was cleaned

⁴¹ SHTM 03-01, Part A, February 2014, Section 8.65

⁴² The requirements are set out in SHTM 03-01, Part A, February 2014, Section 8.64 to 8.65

⁴³ H&V Commissioning Services Limited



critical ventilation systems at the Hospital, which focused on a list of critical areas provided to them (including theatres, isolation suites, Critical Care areas and recovery areas). We understand that, at the time of testing, some elements of remedial work were still ongoing, which restricted IOM's access to particular areas of the Hospital. Mott McDonald helped to facilitate IOM's testing.

3.4.7 SHTM 03-01 states that an air change rate of 10 ac/hr is required in Critical Care areas⁴⁴. On 18 June 2019, IOM identified that some areas within Critical Care were not achieving 10 ac/hr. This was queried by IOM with Mott MacDonald and further testing was subsequently performed which was completed on 21 June 2019.

3.4.8 On 24 June 2019, IOM verbally informed the Programme Board of the ventilation issues that had been identified, in that the readings in terms of air change rates were not in line with SHTM 03-01, particularly in relation to operating theatres, isolation areas and Critical Care. This was followed by a written report dated 25 June 2019, which was circulated to the Programme Board, incorporating an issues log, which showed:

- a) 12 issues with Operating Theatres;
- b) 12 issues with air handling units; and
- c) One issue with Critical Care (referred to as "HDU" by IOM).

3.4.9 On 25 June 2019, IHSL assured NHSL that all of the issues identified by IOM could be resolved.

3.4.10 Between 25 June 2019 and 1 July 2019, various meetings were held by the Programme Board, together with representatives from the IPC team, Mott MacDonald, IOM, IHSL and Multiplex. These meetings focused on operating theatres and sought to establish:

- a) Whether the readings for ventilation found by IOM were correct;

⁴⁴ SHTM 03-01, Part A, February 2014, Appendix 1: Recommended air-change rates



- b) Whether the readings related to a sample or the whole area;
- c) Whether the readings were taken correctly;
- d) Whether the issues found could be resolved; and
- e) The minimum requirement for compliant operating theatres to allow the hospital to open.

3.4.11 As well as pursuing solutions to operating theatre ventilation, meetings were also held to try and establish, in relation to IOM's first reports regarding the Critical Care ventilation, whether:

- a) IOM's measurements were in fact correct;
- b) How extensive the results were across Critical Care;
- c) What the air handling units could actually deliver if they were adjusted; and
- d) The legal and contractual position in relation to these issues.

3.4.12 At 10am on 28 June 2019, a 'Joint Steering Group' meeting was held with NHSL, Multiplex and IHSL to discuss the emerging issues and the detail of IOM's report in relation to operating theatres. We understand that, detail of the Critical Care ventilation issues was not provided for this meeting and that the discussion focused on operating theatres. This was followed by a conference call later the same day to mobilise the necessary engineers to resolve issues with the operating theatres. At 4pm on 28 June 2019, IHSL informed NHSL that the operating theatre issues could be resolved from the following Monday (1 July 2019) but that the work required could not commence until the required engineers were available.

3.4.13 Additionally, on 28 June 2019, we understand that IOM informally provided more detail to the Programme Board regarding the issue of Critical Care air change rates. At this time, IHSL was asked whether Critical Care could, in fact, achieve the required rate of 10 ac/hr and IOM was asked whether the existing ventilation equipment could deliver 10 ac/hr.

3.4.14 On 1 July 2019, IOM provided more detail of the Critical Care ventilation issues it had found which indicated that the equipment was not capable of delivering 10



ac/hr. We understand from NHSL that on the same day, IHSL and Multiplex responded verbally that 10 ac/hr could not be achieved.

- 3.4.15 At 4:30pm on 1 July 2019, a meeting was held, called by the NHSL executive management team and the Project Team, which included the IPC Lead Nurse and Consultant Microbiologist, the Medical Director, the Children's Services Director and Associate Medical Director, and the Programme Board with two representatives of Multiplex, one representative of IHSL and one representative of IOM, to discuss the air ventilation issues in the operating theatres. Critical Care rooms were not discussed in this meeting as the NHSL Board required the opportunity to discuss this element of the issue internally first given its significance and that IHSL had confirmed that same day that 10 ac/hr could not be achieved using the current system.
- 3.4.16 Following this meeting, the Programme Board informed a representative of the NHSL Board of the issues with the air change rates within the Critical Care areas of the Hospital. This is the first time that the issue of Critical Care air change rates was escalated to a member of the NHSL Board.
- 3.4.17 On the evening of 1 July 2019, the issues with Critical Care were shared with other members of the NHSL Board which resulted in an urgent internal meeting being called at 9am on 2 July 2019. The Hospital was due to open only one week later, on 9 July 2019, and it was clear that the issues in Critical Care would not be resolved by this time. As such, attendees were tasked with investigating potential courses of action to address this situation. Attendees reported back at 1pm that day and a list of potential options was generated.
- 3.4.18 During 2 July 2019, the NHSL Board also briefed the Director General of Health & Social Care at SG and the Chief Performance Officer at NHS Scotland on the situation and the options.
- 3.4.19 Additionally, a conference call was arranged for 3 July 2019 between NHSL, HFS and Health Protection Scotland ("**HPS**"). HFS and HPS concluded that there was not enough information available to give assurance that the planned move to the Hospital should go ahead on 9 July 2019.



- 3.4.20 At 2pm on 3 July 2019, the NHSL Board met with the Chief Performance Officer for NHS Scotland in order to discuss the options available. This was followed by an email setting out the respective options.
- 3.4.21 A communications plan was created by NHSL on 3 July 2019 and press and staff briefings were scheduled for 4 July 2019.
- 3.4.22 On 4 July 2019, it was decided by SG that in order to ensure consistent and up to date briefings were provided to staff, patients and the wider general public, all announcements would be routed through the Cabinet Secretary.
- 3.4.23 At 4pm on 4 July 2019, the postponement of the move to the new site was announced by the Cabinet Secretary.

3.5 Summary

- 3.5.1 Whilst there were significant issues relating to ventilation throughout the life of the Project, the specific issue (being air change requirements in Critical Care areas not complying with the SHTM 03-01 standard) which gave rise to a decision to delay the opening of the Hospital was not identified to the NHSL Board until 1 July 2019. Indeed, this issue only became apparent to any member of NHSL when IOM completed its testing of the ventilation system and reported the issue in relation to Critical Care on 24 June 2019.



4 Design specifications and air ventilation standards

To determine the extent to which the design specifications with regard to air ventilation complied with the SHTM standards, and specifically SHTM 03-01, being the ventilation for healthcare premises standards, at each stage of the Project. It was agreed that KPMG would not undertake a technical review in this respect but confirm that the Standards were included within the design specifications.

4.1 Introduction

- 4.1.1 In this Section, we have considered the extent to which the design specification with regard to air ventilation included reference to, and complied with, the SHTM at each stage of the Project. Our consideration of this includes:
- a) At Section 4.2, we summarise the standards relating to air ventilation which were relevant to the Project and provide the relevant extracts from SHTM;
 - b) At Sections 4.3 to 4.5, we consider whether the design specifications with regard to air ventilation were referred to at each stage of the key stages of the Project; being:
 - Invitation to Participate in Dialogue (“ITPD”) (the tender process);
 - Financial Close, being the signing of the Project Agreement; and
 - The Settlement Agreement.
 - c) At Section 4.6, we detail the process that was to be followed in order to make any changes to the Project Agreement and in turn to designs of the air ventilation;
 - d) At Section 4.7, we provide details on the ITs role in the Project, specifically in respect of its involvement in monitoring the works for compliance with the BCR, and in effect the design specifications; and
 - e) At Section 4.8, we provide details of assurances provided by IHSL in January 2019 in respect of compliance with SHTM 03-01.



4.2 SHTM standards

- 4.2.1 HFS provides operational guidance to NHS Scotland bodies on a range of healthcare facilities topics. As part of its role, HFS issues guidance publications known as “SHTMs”. SHTMs give comprehensive advice and guidance on the design, installation and operation of specialised building and engineering technology used in the delivery of healthcare. The focus of SHTM guidance remains on healthcare-specific elements of standards, policies and up-to-date established best practice. They are applicable to new and existing sites, and are for use at various stages during the whole building lifecycle.
- 4.2.2 SHTM 03-01 ‘Ventilation for healthcare premises’ is the relevant guidance which is pertinent to the ventilation issues and the Delay. Part A ‘Design and validation’, of the latest version of SHTM 03-01⁴⁵, provides details of the recommended air change rates for each component of a hospital⁴⁶.
- 4.2.3 Section 7 ‘Specialised ventilation systems’, of the latest version of SHTM 03-01, contains design information for a range of healthcare ventilation applications, listing ‘*critical areas and high-dependency units of any type*’ as being one of the departments that require a degree of specialised ventilation⁴⁷. This section of SHTM 03-01 describes how ventilation systems should be designed for various departments and references recommended air-change rates as being contained within SHTM 03-01 Appendix 1: Table A1 (“**Appendix 1**”). An extract from Appendix 1 is provided below:

⁴⁵ Version 2 dated February 2014

⁴⁶ Within Appendix 1: Recommended air-change rates

⁴⁷ SHTM 03-01, Version 2 dated February 2014, page 82

Figure 1: Extract from Appendix 1: Table A1 of SHTM 03-01

Appendix 1: Recommended air-change rates

Application	Ventilation	ac/Hour	Pressure (Pascals)	Supply Filter	Noise (NR)	Temp (°C)	Comments For further information see Section 6
General ward	S / N	6	-	G4	30	18-28	
Communal ward toilet	E	10	-ve	-	40	-	
Single room	S / E / N	6	0 or -ve	G4	30	18-28	
Single room WC	E	3	-ve	-	40	-	
Clean utility	S	6	+ve	G4	40	18-28	
Dirty utility	E	6	-ve	-	40	-	
Ward Isolation room	-	-	-	-	-	-	See SHPN 4; Supplement 1
Infectious disease Iso room	E	10	-5	G4	30	18-28	Extract filtration may be required
Neutropenic patient ward	S	10	+10	H12	30	18-28	
Critical Care Areas	S	10	+10	F7	30	18-25	Isolation room may be -ve press

4.2.4 It is noted from the above table that ‘Critical Care Areas’ require 10 ac/hr. As set out in Section 3 of this Report, the source of the Delay was rooms within the Critical Care department of the Hospital not meeting this required 10 ac/hr.

4.2.5 We have been unable to identify any definition of ‘Critical Care Areas’ within the SHTM. It is therefore unclear, from SHTM alone, if the definition of Critical Care Areas within SHTM 03-01 includes, for example, single rooms and clean utility areas located within Critical Care, or if these fall under the different recommended air change rates shown in the table above. However, we note that the Project Agreement documentation, and specifically the BCR, referred to in paragraph 4.3.8 below, includes clinical output based specifications for each department. The specifications relating to Critical Care (the “**Critical Care Clinical Output Based Specifications**”) include references to the areas



included in Critical Care with, for example, references to single cubicles, four bedded bays, isolation cubicles and clean and dirty utilities.

- 4.2.6 We also note that SHTM 03-01 refers to, “*Specific requirements for hospital departments*” and states “*Specific requirements for individual spaces and departments are included in the Health Building Notes (HBNs) and Activity Database (ADB) A-Sheets, or Scottish Health Planning Notes (SHPNs)* ⁴⁸”.
- 4.2.7 As previously mentioned, the Delay itself was as a result of both the ‘single bed cubicle’ and ‘four bedded bays’ within Critical Care being identified as non-compliant with the air change rates set out in SHTM 03-01. Individuals at NHSL are of the view that SHTM 03-01 is predominately focused on an adult care environment and does not explicitly consider the different ways in which children’s hospitals manage patients in Critical Care, for example, through the use of four-bedded bays to cohort patients with the same infection at times when admission rates are high and Critical Care support required may exceed isolation room capacity.
- 4.2.8 Without clarity on the definition of Critical Care Areas in the Standards as a stand-alone basis and, in particular, in respect of how four-bedded bays should be classified under SHTM 03-01, the relevant air change rate for particular rooms could be open to interpretation.
- 4.2.9 NHSL are of the view that such four-bedded bays should be included under ‘Critical Care Areas’ in the table at Appendix 1 of SHTM 03-01, and included reference to four-bedded bays in their Critical Care Clinical Output Based Specifications. However, an alternative interpretation from the Standards alone could lead to them being classified under a ‘General Ward’, which carry different recommended air change rates.

⁴⁸ SHTM 03-01 V2 Part A paragraph 2.60



Previous standards

4.2.10 The SHTM standard that preceded SHTM 03-01⁴⁹ was SHTM 2025. Through review of the documents we have been provided in relation to SHTM 2025, we cannot see any reference to any recommended air change rates for Critical Care areas.

4.3 ITPD stage (March 2013)

4.3.1 The ITPD issued to bidders, dated 11 March 2013, makes reference to the specific room requirements for the Hospital (the “**Room Information**”) being detailed in a number of documents, including⁵⁰:

- a) The BCR;
- b) The EM;
- c) The Schedule of Operational/Design Notes;
- d) The Equipment Schedule;
- e) The Equipment Responsibility Matrix;
- f) The Draft Schedule of Accommodation; and
- g) The Operational Functionality elements of the Reference Design.

4.3.2 As part of their response to the ITPD, bidders were required to develop ‘Room Data Sheets’ (“**RDS**”) for 11 of the rooms within the Hospital. None of these rooms appear to be located in the Critical Care area of the Hospital⁵¹. The RDS were to incorporate the Room Information, as detailed above. RDS for the

⁴⁹ October 2011 was the date of the first publication of SHTM 03-01

⁵⁰ ITPD Volume 1, section 2.5.3 ‘Room Data Sheets’

⁵¹ On the basis that the EM index refers to the department code for Critical Care being ‘B1’ and none of the 11 room references detailed in section 2.5.2 of the IPTD have the prefix B1



remaining rooms were to be developed by the preferred bidder prior to Financial Close.

- 4.3.3 We understand from NHSL that, of the documents listed above, it is only the BCR and the EM that refer to SHTM 03-01 and/or Critical Care. Details of these documents are set out below.

Board's Construction Requirements

- 4.3.4 The BCR are the NHSL Board's detailed requirements for the Project. The BCR included within the ITPD⁵² make a number of references to SHTMs, as detailed in the following paragraphs.
- 4.3.5 Section 2.3 (NHS Requirements) of the BCR states that, *"unless the Board has expressed elsewhere in the Board's Construction Requirements, a specific and different requirement, the Facilities shall comply with but not be limited to the provisions of the NHS Requirements..."*⁵³. These NHS Requirements include the following in relation to SHTM:

"v. Health Technical Memoranda & Scottish Health Technical Memoranda (HTM & SHTM)

*Project Co shall, in relation to all SHTM and all HTM (except HTM where an SHTM exists with the same number and covering the same subject matter): take fully into account the guidance and advice included within such SHTM and HTM; ensure that the Facilities comply with the requirements of such SHTM and HTM; and adopt as mandatory all recommendations and preferred solutions contained in such SHTM and HTM"*⁵⁴.

⁵² ITPD: Volume 3, Board's Construction Requirements, Rev C, August 2013

⁵³ ITPD: Volume 3, Board's Construction Requirements, Rev C, August 2013, Section 2.3 (page 22)

⁵⁴ ITPD: Volume 3, Board's Construction Requirements, Rev C, August 2013, Section 2.3, part v. (page 24)



4.3.6 The BCR⁵⁵ makes direct reference to SHTM 03-01 on a number of occasions within the Project Agreement, specifically in Sub-Section C:

a) Section 5.2 Infection Prevention & Control:

“Project Co shall ensure all aspects of the Facilities allow for the control and management of any outbreak and/or spread of infectious diseases in accordance with the following:

...

f) Ventilation in Healthcare Premises (SHTM 03-01)”⁵⁶

b) Section 8.1 Minimum Engineering Standards:

“The following is a non-exhaustive list of SHTM’s, HBN’s and HTM’s applicable to the Facilities:

...

h) SHTM 03-01: Ventilation in Healthcare Premises”⁵⁷

c) Section 8.5.3 Air Quality, i. Internal:

“Particular attention shall be given to the risk of cross infection within the hospital... Project Co shall demonstrate through submission of information to the Board as Reviewable Design Data for review by the Board...how the proposals facilitate the control and management of an outbreak and spread of infectious diseases, and in particular shall comply with the requirements of SHTM 03-01...”⁵⁸

d) Section 8.7.8 (Mechanical Ventilation & Air Conditioning) also makes direct reference to SHTM 03-01 and how the *“Project Co shall demonstrate how the*

⁵⁵ ITPD: Volume 3, Board’s Construction Requirements, Rev C, August 2013

⁵⁶ ITPD: Volume 3, Board’s Construction Requirements, Rev C, August 2013, Subsection C, Section 5.2 (page 68)

⁵⁷ ITPD: Volume 3, Board’s Construction Requirements, Rev C, August 2013, Subsection C, Section 8.1 (page 104)

⁵⁸ ITPD: Volume 3, Board’s Construction Requirements, Rev C, August 2013, Subsection C, Section 8.5.3 (page 104)



*proposals facilitate the control and management of an outbreak and spread of infectious diseases in accordance with SHTM 03-01 ...*⁵⁹.

- 4.3.7 Specific reference is also made to ventilation of 'isolation rooms' as being required to be designed and installed in accordance with SHTM 03-01⁶⁰.
- 4.3.8 Subsection D of the BCR sets out a number of specific clinical requirements, including the Critical Care Clinical Output Based Specifications⁶¹. We note that the Critical Care Clinical Output Based Specifications refer to "*SHTM 2025: Ventilation*" as containing 'design guidance' for the Project⁶², as opposed to the updated standard, SHTM 03-01. As referred to in Section 4.2.10, these previous standards did not specify air change rates recommended for Critical Care areas.
- 4.3.9 Subsection B of the BCR defines the EM as detailing "...*the room environmental condition requirements of the Board required within each department / unit / space / area...*"⁶³. Sub-Section C, Section 8, states that the "*Project Co shall provide the Works to comply with the Environmental Matrix*"⁶⁴. We have provided further details on the EM below.

Environmental matrix

- 4.3.10 An EM was provided as part of the Room Information within the ITPD⁶⁵ (the "**ITPD EM**") from which the bidders were asked to develop their RDS and their design specifications.

⁵⁹ ITPD: Volume 3, Board's Construction Requirements, Rev C, August 2013, Subsection C, Section 8.7.8 (page 119)

⁶⁰ ITPD: Volume 3, Board's Construction Requirements, Rev C, August 2013, Subsection C, Section 8.7.22 (Ventilation and Air Conditioning of Isolation Rooms) (page 124)

⁶¹ B1 Critical Care, Clinical Output Based Specifications, dated January 2013

⁶² Section 1.9 Design Guidance, page 15 of the B1 Critical Care, Output Based Specifications, dated January 2013

⁶³ ITPD: Volume 3 Board's Construction Requirements, Rev C, Subsection B, B (page 9)

⁶⁴ ITPD: Volume 3 Board's Construction Requirements, Rev C, Subsection C, Section 8 (page 102)

⁶⁵ Entitled the 'Reference Design Envisaged Solution – RHSC / DCN RDS Environmental Matrix'



- 4.3.11 The bidder's technical submission requirements contained within the ITPD referred to the EM in the following context:

“Whilst Bidders are required to undertake their own design, the Board has provided a draft Environmental Matrix as part of the ITPD documentation. Bidders must confirm acceptance of the Board’s Environmental Matrix, highlighting any proposed changes on an exception basis”⁶⁶.

- 4.3.12 The EM details environmental standards (for example, temperature, heating, ventilation) on a room-by-room basis. The EM consists of a cover sheet ‘index’ showing the different department codes, and references the page on which the associated details can be found. Department ‘B1’ is listed as ‘Critical Care / HDU / Neonatal Surgery’.

- 4.3.13 Following the index, there is a page of guidance notes which include⁶⁷:

*“**HDU bed areas - Design Criteria - HBN 57** gives specific guidance as well as SHTM 03-01 - esp Appendix 1 for air change rates - 10ac/hr Supply...”*

*“**Critical Care Areas – Design Criteria – SHTM 03-01 – esp Appendix 1** for air change rates – 10 ac/hr Supply...”*

- 4.3.14 The main body of the EM includes tables detailing, for each department and each respective room, the corresponding environmental standards. These include, among other things, details of the temperature, heating, cooling and ventilation (including supply air change and pressure).
- 4.3.15 Despite the guidance note, referred to at paragraph 4.3.13 above, advising that all Critical Care Areas should be in accordance with SHTM 03-01 and, specifically, 10 ac/hr supply, we identified that the ITPD EM table for Critical Care

⁶⁶ Appendix A (ii) Submission Requirements, Section C8.3 (page 105)

⁶⁷ The ITPD EM, entitled ‘Reference Design Envisaged Solution – RHSC / DCN RDS Environmental Matrix’ version third issue, dated 19 September 2012 (page 2, note 15)) (Document reference: 20120919 Environment Matrix (ITPD))



(Section B1 – page 5⁶⁸) includes the following types of rooms - ‘Single Bed Cubicles’, ‘Open Plan Bay (4 bed)’ and ‘Open Plan Bay (3 cots)’, all of which are detailed with supply air change rates of 4 ac/hr.

- 4.3.16 The ITPD EM was therefore inconsistent between the guidance notes and detailed content contained within it. The detailed content which stated supply air change rate of 4 ac/hr was also inconsistent with the Critical Care air change rate of 10 ac/hr detailed in SHTM 03-01. We understand the current Project Team are not aware of why the document states 4 ac/hr.
- 4.3.17 We understand from NHSL that, as part of the process of developing the capital-funded project (see paragraph 3.2.1), documentation relating to the design and build was produced. We understand that an EM was developed by the Design Consultant used for this capital scheme and a version of this was shared as part of the tender process⁶⁹.
- 4.3.18 We have seen a ‘first issue’ of an EM, which we understand was part of the capital scheme, which is dated 9 September 2010 and is described as ‘Royal Hospital for Sick Children – Edinburgh, HK Doc - RDS Environmental Matrix’, which within the ‘B1 – Critical Care / HDU / Neonatal Surgery’ section refers to ‘open plan bay (4 beds)’ as having 10 ac/hr and balanced pressure⁷⁰. We note, however, that the ITPD EM is entitled ‘Royal Hospital for Sick Children and Department for Clinical Neurosciences – Edinburgh Reference Design Envisaged Solution - RHSC / DCN RDS Environmental Matrix’⁷¹. The version control within the ITPD EM shows the ‘first issue’ of this document as being dated 3 February 2012 and not 9 September 2010 as referred to above⁷². However, from the dates detailed within them, it would appear that these are two different documents, but

⁶⁸ Reference Design Envisaged Solution – RHSC / DCN RDS Environmental Matrix version third issue, dated 19 September 2012 (page 5)

⁶⁹ The ITPD EM

⁷⁰ Document reference: RHSC RDS Environmental Matrix Sept 2010_iss1_rev-

⁷¹ Document reference: Reference Design Envisaged Solution – RHSC / DCN RDS Environmental Matrix version third issue, dated 19 September 2012

⁷² Reference Design Envisaged Solution – RHSC / DCN RDS Environmental Matrix version third issue, dated 19 September 2012



that the IPTD EM could be an iteration of the 'first issue' document⁷³ provided to us.

Preferred bidder letter

- 4.3.19 A letter was issued by NHSL to IHSL on 5 March 2014, advising that their final tender, submitted on 13 January 2014, had been accepted (the "**Preferred Bidder Letter**")⁷⁴.
- 4.3.20 As part of the Preferred Bidder Letter, IHSL was asked to "...use its best endeavours to diligently develop...", among other things, Project Co proposals and RDS⁷⁵. These technical schedules were to be "...finalised in conjunction with the Board to ensure that both parties are satisfied that these technical Schedules robustly address[ed] the Board's Construction Requirements..."⁷⁶.

Period between issue of Preferred Bidder Letter (March 2014) and Financial Close (February 2015)

- 4.3.21 During the period between NHSL issuing the Preferred Bidder Letter and Financial Close, we have seen evidence of ongoing correspondence between NHSL and Project Co in respect of comments on the EM. We understand from Mott MacDonald and NHSL that, when the 'Board' has been referred to in the below correspondence, this refers to comments from both themselves and the Project Team and not the ultimate NHSL Board. This correspondence includes the following:
- a) Comments provided to Project Co⁷⁷ referred to as "...initial technical comments on draft 1 of the Environmental Matrix", dated 13 October 2014⁷⁸.

⁷³ Document reference: RHSC RDS Environmental Matrix Sept 2010_iss1_rev-. Dated 9 September 2010

⁷⁴ Document reference: 7.1.13 Preferred Bidder Status Letter dated 5 March 2014

⁷⁵ Section 4.4 of Schedule Part 1 - Terms of Preferred Bidder Appointment (Document reference: 7.1.13 Preferred Bidder Status Letter dated 5 March 2014)

⁷⁶ Section 4.4 of Schedule Part 1 - Terms of Preferred Bidder Appointment (Document reference: 7.1.13 Preferred Bidder Status Letter dated 5 March 2014)

⁷⁷ Attached to an email from Mott MacDonald to Multiplex, among others, dated 14 October 2019. (Document reference: 141014 MM-GC-000399)

⁷⁸ Document reference: 141013 Environmental Matrix Comments



This document included 12 comments, one of which specifically refers to ventilation standards in respect of bedrooms⁷⁹:

"Bedrooms 4ac/hr, SHTM says 6 ac/hr

Bedrooms have no extract

Bedroom en-suites 10 ac/hr, SHTM says 3 ac/hr

Bedrooms stated as positive pressure, SHTM says 0 or –ve pressure..."⁸⁰.

- b) IHSL responded to the above comments on 27 October 2014. Specifically, in respect of comment 7 detailed above, IHSL stated:

"The scheme is based on the Reference design throughout which is essentially mixed mode with openable windows and 2/3rds mechanical supply air to all bedrooms. This gives physiological benefits with access to fresh air control by user and obvious Energy benefits. We have amended the environmental schedule to show the room being balanced which is provided by the opening window" 81.

- c) An email from Mott MacDonald (on behalf of NHSL) to Multiplex⁸², among others, attaching the notes from a meeting held on 11 November 2014. The notes attached state:

"Project Co shall update the Environmental Matrix to reflect the following Board comments"⁸³.

A specific comment relating to bedroom ventilation was:

⁷⁹ Comment 7. Document reference: 141013 Environmental Matrix Comments

⁸⁰ Document reference: 141013 Environmental Matrix Comments

⁸¹ Document reference: 20141027 Environmental Matrix Comments

⁸² Document reference: 20141111 RE Environmental Matrix NHSL Comments Feedback
3

⁸³ Document reference: 111114 RDD Part 4 Enviro Matrix comments



“Detailed proposal awaited on bedroom ventilation to achieve balanced/negative pressure relative to corridor.”⁸⁴

- d) On 19 January 2015, Multiplex emailed sketches of the proposed pressure regime to Mott MacDonald and NHSL⁸⁵. A report was also provided to Mott MacDonald and NHSL detailing Project Co’s review of air movement within single bedrooms under various ventilation scenarios⁸⁶. Mott MacDonald responded to the email containing the sketches with a number of comments, including:

“The critical factor from SHTM 03-01 for infection control will be the resultant pressure within the room being balanced with or negative to the corridor”⁸⁷.

- 4.3.22 We note that throughout the above correspondence there is reference to ventilation and SHTM 03-01. However, there is no specific reference to Critical Care rooms and the focus of the discussions appears to have been centred on the pressure regime in the rooms, rather than air change rates.

4.4 Project Agreement stage (February 2015)

- 4.4.1 The Project Agreement, dated 12 and 13 February 2015, states that the overall responsibility of Project Co is to carry out the works “so as to procure satisfaction of the Board’s Construction Requirements”⁸⁸. Details of the BCR contained in the Project Agreement are detailed in paragraph 4.4.4 below.
- 4.4.2 The Project Agreement also includes a list of Reviewable Design Data (“**RDD**”) and the status of the approval of such data as at Financial Close. Further details on this are provided in paragraph 4.4.5 below.

⁸⁴ Bullet point 4. Document reference: 111114 RDD Part 4 Enviro Matrix comments

⁸⁵ Document reference: 150129 MM-GC-000432

⁸⁶ RHSC – DCN Edinburgh. Air Movement Report For Single Bedrooms (Draft). Document reference: 13.01.15 20141127 air movement

⁸⁷ Document reference: 150129 MM-GC-000432

⁸⁸ Project Agreement, Schedule Part 6 (Construction Matters), Section 3 (Board’s Construction Requirements), Revision I



- 4.4.3 The RDD relevant to air change rates is included within the RDS and the EM. We have provided details of the RDS and EM in paragraphs 4.4.8 to 4.4.12 below.

Board Construction Requirements

- 4.4.4 The references to SHTM 03-01 within the Project Agreement BCR⁸⁹ are consistent with those in the BCR provided at the ITPD stage, as detailed in paragraph 4.3.6 above. We note that the reference to SHTM 2025 in the Critical Care Clinical Output Based Specifications also remained in the Project Agreement version.

Reviewable Design Data

- 4.4.5 The process for RDD is detailed in Schedule Part 8 (review procedure) of the Project Agreement. RDD is classified as either approved or non-approved based on the classification level ascribed by NHSL Board Representatives⁹⁰. Level A (no comment) or Level B (proceed subject to amendment as noted) are in effect approved (collectively “**Approved RDD**”), whereas Level C or Level D are classified as non-approved⁹¹.
- 4.4.6 Appendix 1, Table A, of Schedule Part 8 (review procedure) of the Project Agreement provides details as to the meaning of the aforementioned approval levels against each category of RDD. The table refers to the Level A and Level B approvals for RDS’ as follows:

“endorsement of any room data sheet means that Project Co may proceed to construct in accordance with the Submitted Item and that the Board is satisfied that the design and other information in the relevant room data sheet satisfies Operational Functionality.”⁹²

⁸⁹ Project Agreement, Schedule Part 6 (Construction Matters), Section 3 (Board’s Construction Requirements). Document reference: RHSC DCN BCRs A B C Rev I clean 230115

⁹⁰ Project Agreement, Schedule Part 8, Review Procedure, Appendix 1 (page 241)

⁹¹ As detailed in Schedule Part 6 (Construction Matters), Part 5, Reviewable Design Data (page 27)

⁹² Project Agreement, Schedule Part 8, Review Procedure, Appendix 1 (page 241)



4.4.7 NHSL has advised us that reviewing such documents for ‘operational functionality’ did not, in their opinion, consist of a technical review as to the extent to which they were in compliance with the Standards.

Room Data Sheets and Environmental Matrix

4.4.8 Relevant design data included within the Project Agreement includes the RDS and an updated version of the EM⁹³ (“**Project Agreement EM**”). The RDS contain environmental data for each room, including supply air change rates. We understand that the Project Agreement EM was a summary of the RDS.

4.4.9 We note that the Project Agreement EM format and design is similar to the ITPD EM, with the same index and a page of guidance notes. As with the ITPD EM, the Project Agreement EM guidance notes refer to Critical Care Areas design criteria being SHTM 03-01 and “10ac/hr Supply”⁹⁴. However, again consistent with the ITPD EM, included within the ‘B1’ section of the Project Agreement EM⁹⁵ (referred to as ‘Critical Care / HDU / Neonatal’) are rooms referred to as ‘Single Bed Cubicles’, ‘Open Plan Bay (4 bed)’ and ‘Open Plan Bay (3 cots)’, all of which are detailed with a supply air change rate of 4 ac/hr. The Project Agreement EM therefore remained inconsistent between the guidance notes and detailed content contained within it. The detailed content which stated a supply air change rate of 4 ac/hr was also inconsistent with the Critical Care air change rate of 10 detailed in SHTM 03-01.

4.4.10 We note that, whilst the Project Agreement EM guidance notes refer to Critical Care Areas design criteria being SHTM 03-01 and “10ac/hr Supply”⁹⁶, that a later version of the EM, dated 26 November 2015, contains guidance notes that state “10ac/hr Supply for isolation cubicles”⁹⁷. We understand from NHSL that the

⁹³ Contained within Schedule Part 6, Construction Matters, Part 6 of the Project Agreement. Document reference: WW-XX-XX-DC-001

⁹⁴ Document reference: WW-XX-XX-DC-001. Page 2, Note 15. Contained within Schedule Part 6, Construction Matters, Part 6 of the Project Agreement.

⁹⁵ Document reference: WW-XX-XX-DC-001. Section B1 – page 5

⁹⁶ Document reference: WW-XX-XX-DC-001. Page 2, Note 15. Contained within Schedule Part 6, Construction Matters, Part 6 of the Project Agreement

⁹⁷ Document reference: WW-XX-XX-DC-XXX-001 (rev 1)



addition of the words ‘for isolation cubicles’ in this version of the EM was never flagged as a change to the Project Team. We note that this version of the EM contains other parts of the guidance notes in red. This small change in the text had the effect of removing the inconsistency between the guidance notes and the detail in the matrix, as referred to above.

- 4.4.11 We note that the Project Agreement EM was classified as ‘non-approved’ at the date of the Project Agreement, with the Board requesting that Project Co update the EM to reflect a number of comments, including “*Detailed proposal awaited on bedroom ventilation to achieve balanced/negative pressure relative to corridor*”⁹⁸. We have seen initial reference to this comment in November 2014, in an attachment to an email from Mott MacDonald to Multiplex⁹⁹ (see paragraph 4.3.21 above). We note that this comment remained in all versions of the EM provided to us, from the Project Agreement EM¹⁰⁰ to the EM included as part of a Settlement Agreement in February 2019¹⁰¹ (see Section 4.5 for further details of the Settlement Agreement).
- 4.4.12 Whilst the EM was classified as ‘non-approved’ under the RDD process at the point of Financial Close, we have not identified any Board comments within the RDD document specifically relating to air change rates and Critical Care.

4.5 Settlement Agreement (February 2019)

- 4.5.1 As set out in paragraph 3.3.7, on 22 February 2019, a Settlement Agreement was signed by NHSL Board and IHSL. The Settlement Agreement contained a schedule detailing 73 items¹⁰² which had been in disagreement between the parties and the agreed resolutions for each issue.

⁹⁸ Bullet point 4. Document reference: 111114 RDD Part 4 Enviro Matrix comments

⁹⁹ An email from Mott MacDonald to Multiplex, among others, dated 14 October 2019. (Document reference: 141014 MM-GC-000399)

¹⁰⁰ The document itself was undated but the Project Agreement was dated 12 and 13 February 2015

¹⁰¹ We understand from NHSL that the version included within the Settlement Agreement was version 11 which is dated 25 October 2017

¹⁰² Schedule 1, Part 1, Technical Schedule of the Project Agreement (Pages 26 to 54)



- 4.5.2 Two of these agreed resolutions were pertinent to the Delay and related to disputes between the parties as to the extent to which bedroom ventilation was in compliance with SHTM 03-01. Both of the resolutions in effect resolved to deviate from recommendations included within SHTM 03-01. Details of the agreed resolutions for these were as follows:
- a) 'Item 7 – 4 bed ventilation': for *“14 no 4 bed rooms to be balanced or negative to the corridor at 4 ac/hr”*¹⁰³; and
 - b) 'Item 13 – Single Bedroom Ventilation air changes'¹⁰⁴: to decrease *“the mechanical air change ventilation rate within single bedrooms from 6 air changes per hour (6 ac/hr) to 4 air changes per hour (4 ac/hr)”*¹⁰⁵.
- 4.5.3 We have commented on the above resolutions further in Section 5.3 below.

4.6 Changes to the Project Agreement

- 4.6.1 In projects of any nature, it will often become necessary for changes to be made to design plans, which in turn may impact compliance to a contractual requirement. In this Project, the design and build were required to be in compliance with the BCR which refer to SHTM 03-01, among other standards. In effect this makes compliance with SHTM 03-01 mandatory. As such, in order to ensure changes were adequately reviewed and agreed upon, a process to make any required changes was necessary.
- 4.6.2 During the tender process, bidders could put forward proposed 'derogations', being proposed changes to the proposed project agreement (including the BCR). At Financial Close, any accepted derogations were then incorporated into the

¹⁰³ Schedule 1, Part 1, Technical Schedule of the Project Agreement (Page 30)

¹⁰⁴ We understand from NHSL that the details of this agreed resolution were those contained within Project Co notice of change dated 14 May 2018

¹⁰⁵ Project Co notice of change dated 14 May 2018, Section 1.0. Document reference: 180522 Schedule 16 Project Co Change Notice No 051



contractual drafting of the BCR. From the NHSL's perspective, these matters were assumed closed or completed at Financial Close.

- 4.6.3 Following Financial Close, any deviations from the BCR and the signed Project Agreement, proposed by Project Co, could only be initiated and approved through the Project Co Change ("**PCC**") process. A PCC was defined in the Project Agreement as being, *"a Change that is initiated by Project Co by submitting a Project Co Notice of Change to the Board pursuant to Section 5 (Project Co Changes) of this Schedule Part 16 (Change Protocol)"*¹⁰⁶.
- 4.6.4 We understand from the Project Agreement¹⁰⁷ and discussions with NHSL that the PCC process was as follows:
- a) If Project Co wishes to introduce a PCC, it shall serve a Project Co Notice of Change ("**PCNOC**") to the NHSL Board;
 - b) The PCNOC shall set out the proposed PCC in sufficient detail to enable the NHSL Board to evaluate it in full. It should specify Project Co's reasons for proposing the PCC, indicate any implication of the PCC, indicate if any savings will be generated by the PCC, and request the NHSL Board to consult with Project Co with a view to deciding on whether to agree to the PCC and, if so, what consequential changes the NHSL Board requires as a result;
 - c) The NHSL Board shall evaluate the PCNOC in good faith, taking into account all relevant issues, including, among other things, whether the PCC *"may affect the quality of the Services and/or the Works or the likelihood of successful completion of the Works and/or delivery of the Services (or any of them)"*¹⁰⁸;
 - d) As soon as practicable after receiving a PCNOC, the parties should meet and discuss the matters referred to in it. We understand from NHSL, that on

¹⁰⁶ Project Agreement, Schedule Part 16, Change Protocol, Section 1, Definitions (page 389)

¹⁰⁷ Contained within Schedule Part 16: Change Protocol Section 5: Project Co Changes

¹⁰⁸ Project Agreement, Schedule Part 16, Change Protocol, Section 5, Project Co Changes (page 418)



receipt of a PCNOC, the Project Team and its advisors (including Mott MacDonald and MacRoberts) would review and comment on it. Comments and amended versions would then pass between Project Co and the NHSL Board, as required; and

- e) If the NHSL Board accepts the PCNOC (with or without modification), the parties shall consult and agree the remaining details as soon as practicable. Upon agreement, the NHSL Board shall issue a notice confirming the PCC, which shall set out the agreed details.

4.6.5 As part of the signing of the Settlement Agreement in February 2019, the resolution of a number of issues was reached. This incorporated a number of changes which had already been raised through the aforementioned PCC process, but had yet to be approved, along with further areas which remained in dispute and which were resolved in the Settlement Agreement. The agreed resolutions which had not been approved prior to the Settlement Agreement were termed ‘derogations’. The agreed resolutions included, among others, two which were pertinent to the Delay. We have provided further details of these, and the professional and technical advisors involved in the approval of them, in Section 5.3 below.

4.7 Independent Tester

- 4.7.1 As part of the ITPD, an IT was required to be appointed as an independent resource to provide inspection review and certify completion in respect of the Project.
- 4.7.2 The IT was jointly instructed by the NHSL Board and Project Co as part of the Project Agreement. The scope of work of the IT¹⁰⁹ included, among other things:
 - a) Providing monthly reports and undertaking regular inspections during the works¹¹⁰;

¹⁰⁹ Project Agreement, Schedule Part 13 ‘Independent Tester Contract’, Appendix 1 ‘Scope of Services – Independent Tester Contract’

¹¹⁰ Scope item 1.1



- b) Providing details of any tests carried out by Project Co, together with results obtained¹¹¹;
- c) Reporting on the completion status of the Project, identifying any work that was not compliant with the BCR, Project Co Proposals', Approved RDD and/or the Completion Criteria¹¹²;
- d) Monitoring the works for compliance with the BCR and Project Co's Proposals and compliance with law¹¹³; and
- e) Monitoring the detailed working drawings and specifications for a sample number and type of rooms which, in their professional judgment, is appropriate to be selected by the IT to verify that they comply with the Approved RDD¹¹⁴.

4.7.3 In respect of identifying work that was not compliant with BCR, the IT stated that in its view the ventilation flow rates were compliant with the BCR and in particular the EM and RDS. We understand from the IT that, the flow rates are derived by the design consultant from the air change rates specified in the EM and RDS.

4.7.4 We understand from the IT that it reviewed the testing and commissioning results for compliance with the EM and RDS, as required by the Completion Criteria detailed in the Project Agreement¹¹⁵. The IT used the EM as the basis for this review process, as this information is the referenced criteria for compliance and it was the IT's understanding that this would have been reviewed by the NHSL Board.

4.7.5 Specifically, in respect of SHTM 03-01 and air change rates, we understand from the IT that, it physically witnessed a proportion of the commission testing of the flow rates, as undertaken by Multiplex's specialist sub-contractors, and reviewed the results of all the tests that were completed. We understand from the IT that,

¹¹¹ Scope item 1.3

¹¹² Scope item 1.2

¹¹³ Scope item 1.9

¹¹⁴ Scope item 3.2

¹¹⁵ Contained within Schedule Part 10, Outline Commissioning Programme, Appendix B – Completion Criteria



in accordance with its scope of service, it did not physically test any systems but reviewed the following:

- a) That the testing methodology was in accordance with CIBSE¹¹⁶ commissioning code C;
- b) That the equipment that was used for testing flow rate and velocity was within certification/calibration test dates;
- c) That the testers were correctly recording the figures; and
- d) That the flow rates and pressure were in accordance with the design of the system itself.

4.7.6 The IT advised us that the design flow rates were used as part of the design process and, as such, the IT would not be expected to replicate that design process or reverse it to obtain the actual air change rates.

4.7.7 The actual calculation of air change per hour rates was considered by the IT to be a design function and, as such, outside their scope of work.

4.7.8 Following discussions with the IT, and from reviewing a sample of the monthly reports produced by the IT, we note that, whilst there was reference to other ventilation issues prior to April 2018, there was no reference to any ventilation issues specifically in respect of four-bedded rooms until April 2018. The IT key issues report dated April 2018¹¹⁷ states that the issue (no. 212) was raised in 2016, details of which are as follows:

“The IT understands that NHS Lothian and Multiplex are currently discussing an arrangement by which 14 of the 4 bedded rooms would receive negative pressure to the corridor ventilation systems. The IT is awaiting confirmation of this agreement in a format that would take preference to any other stated requirement.”

¹¹⁶ Chartered Institute of Building Services Engineers

¹¹⁷ The Royal Hospital for Children and Young People Edinburgh Key Issues Report No. 37, April 2018, Appendix D Compliance Issues Outstanding (reference nr 212, page 26)



4.7.9 Issue no. 212, as set out above, remains in the subsequent IT reports each month, with the September 2018 report including an additional explanation that Multiplex were “...going to forward on the Aconex Transmittal document to progress close out”¹¹⁸. We understand that the September 2018 report was the last report issued by the IT and that issue no. 212 was eventually rolled-up as part of the Settlement Agreement.

4.8 Compliance assurance from IHSL (January 2019)

4.8.1 In a letter dated 31 January 2019, a Project Co representative for IHSL, provided their responses to a number of queries raised by the NHSL Board regarding assurances in respect of plant rooms and ventilation systems. Specific assurance had been sought by the NHSL Board for IHSL to provide assurance that “All critical ventilation systems [to be] inspected and maintained in line with ‘Scottish Health Technical Memorandum 03-01: Ventilation for healthcare premises’”¹¹⁹. The IHSL’s Project Co representatives response to this was “Construction: - All ventilation systems have been designed, installed and commissioned in line with SHTM 03-01 as required, systems are maintained in such a manner which allows handover at actual completion to meet SHTM 03/01 standards”¹²⁰.

4.9 Summary

4.9.1 Throughout all stages of the Project we have seen references made to the requirements of the Project Co to adhere to SHTM, including specifically, SHTM 03-01 relating to ventilation systems.

4.9.2 Our work has identified issues within the EM, including inconsistencies with SHTM and discrepancies within the document itself. Specifically:

¹¹⁸ The Royal Hospital for Children and Young People Edinburgh Key Issues Report No. 42, September 2018, Appendix D Compliance Issues Outstanding (reference nr 212, page 25)

¹¹⁹ Document reference: 10.11.4 31-01-19 IHSL.NHSL Plant Rooms.Ventilation Systems

¹²⁰ Document reference: 10.11.4 31-01-19 IHSL.NHSL Plant Rooms.Ventilation Systems



- a) The version of the EM document provided by NHSL to bidders as part of the tender process, and referred to in the BCR, as detailed above, included reference to both the single bed cubicles and four-bed rooms in Critical Care as requiring 4 ac/hr. We understand this was not in compliance with SHTM and should have been 10 ac/hr. This reference remained in subsequent versions of the EM; and
- b) The guidance note at the front of the document provided at the tender and Financial Close stages of the Project suggested that all Critical Care Areas should be in accordance with SHTM 03-01, being the relevant part of SHTM relating to ventilation, and “10ac/hr Supply”¹²¹. This is inconsistent with the content of the EM as detailed above. We note that, this inconsistency appears to have been removed after Financial Close by the insertion of the words ‘for isolation cubicles’¹²², suggesting that only ‘isolation cubicles’ in Critical Care should have an air change rate of 10 ac/hr. However, we were informed by NHSL that this change was made by the Project Co and was not flagged to NHSL by the Project Co (see paragraph 4.4.10 for further details). Despite this change, the EM itself still referred to single bed cubicles and four-bed rooms in Critical Care as requiring 4 ac/hr, which we understand remained not in compliance with SHTM and should have been 10 ac/hr.

4.9.3 We have not been instructed to consider how the inconsistency made its way into the initial EM. However, notwithstanding contractual obligations, it appears that there has been confusion between the parties as to the application of these Standards. This appears to have stemmed from a document which was contained within the tender documentation, a version of which was used throughout the Project, which included details on the environmental specifications

¹²¹ Document reference (tender version): Reference Design Envisaged Solution – RHSC / DCN Environmental Matrix version third issue, dated 19 September 2012 (page 2, note 15)). Document reference (Project Agreement version): WW-XX-XX-DC-001. Page 2, Note 15. Contained within Schedule Part 6, Construction Matters, Part 6 of the Project Agreement

¹²² Full wording read: “10ac/hr Supply for isolation cubicles” in a version of the EM dated 26 November 2015. Document reference: WW-XX-XX-DC-XXX-001 (rev 1).



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of the Hospital, the EM. Elements of the EM were inconsistent with SHTM 03-01 from the tender process (which commenced in late 2012) onwards.



5 Professional and technical advice given to the NHSL Board

To understand what professional and technical advice was given to the NHSL Board, in particular when derogations were proposed, who agreed them and the risk assessments that were undertaken to reach a final decision.

5.1 Introduction

5.1.1 In this Section, we have provided details of the professional and technical advice given to NHSL, which was visible to the NHSL Board through the Project governance structure.

5.1.2 In particular, we have considered when derogations were proposed, who agreed them and the risk assessments that were undertaken to reach a final decision. In seeking to answer this point, in Section 5.3 below, we have focused on one of two changes to the Project Agreement that were pertinent to the Delay.

5.2 Professional and technical advisors

5.2.1 Throughout the Project, a number of advisors assisted NHSL in decision-making from a practical and clinical perspective, as well as from a technical perspective regarding designs and standards.

5.2.2 The Project Team itself consisted of technical and clinical professionals, whom we understand had many years of experience in the health sector. In addition to the Project Team, the other professional and technical advisors involved throughout the Project consisted of¹²³:

- a) Medical and non-medical experts from within NHSL;

¹²³ We understand Ernst and Young provided financial advisory support to the Project. We have not commented on their involvement in the Project further in this Section as they were not involved in providing technical advice



- b) Mott MacDonald – external technical advisor and project manager;
- c) MacRoberts – external legal advisor; and
- d) IOM – an independent ventilation tester appointed on 30 May 2019.

Medical and non-medical experts from within NHSL

- 5.2.3 In order to assist with the development of clinical output specifications and any ongoing queries or changes throughout the Project, the Project Team had access to medical expertise within NHSL, such as the IPC team and clinical care teams for each department.
- 5.2.4 The IPC team had a nominated individual who worked with the Project Team. This individual was invited to the design meetings, although it was at their discretion if they attended. They were asked to comment on drawings shared with them and ongoing discussions were held with them. The IPC team members were predominantly involved to provide operational functionality advice (as referred to at paragraph 4.4.6 and 4.4.7), rather than to comment on technical elements, such as the specifics of SHTM 03-01.
- 5.2.5 The clinical care teams were involved in the development of the Critical Care Clinical Output Based Specifications for the Project (as referred to in paragraph 4.3.8 above) and also attended design meetings for their department(s). The Critical Care Clinical Output Based Specifications were initially drafted by the Project Team and then passed to the relevant clinical teams to obtain more specific input and confirmation on, for example, the types of patients going into the wards, what functions the rooms had and the specific requirements of each room. Each ward and department nominated who they were going to involve in these advisory teams. The Critical Care clinical team consisted of a lead consultant, a lead nurse and a charge nurse.
- 5.2.6 In addition to the clinical care teams and IPC, NHSL also had access to non-medical professionals within its workforce, such as, estates and facilities staff, along with other NHSL contractors, such as the Authorised Engineers. These individuals were available as advisors to the estates team, NHSL-wide, in order to assist with a wide range of technical design elements should the Project Team



feel they required further input. We understand from the Project Team that, such input was not required on a regular basis and would be limited to ad hoc queries.

Mott MacDonald

- 5.2.7 Mott MacDonald was appointed in 2011 in order to provide project management and design services for the Project¹²⁴. We understand from Mott MacDonald that the design services related solely to ‘enabling works’¹²⁵. The ‘Post Financial Close Support Services Proposal’¹²⁶, prepared by Mott MacDonald, specifies a “*Technical Advisory and Project Management Appointment*”¹²⁷.
- 5.2.8 Mott MacDonald worked alongside the Project Team in order to assist in day to day and ongoing matters, including attending weekly or bi-weekly project management group meetings, as well as meetings relating to proposed PCC.
- 5.2.9 To this end, Mott MacDonald provided input and assistance with ongoing matters through the RDD process, such as providing comments on the EM and being on hand to support in the drafting of contractual documentation, including those containing health standard guidance, such as the BCR.
- 5.2.10 We understand from both Mott MacDonald and NHSL that, neither of them ever undertook a detailed review of the EM against SHTM 03-01 and that they responded on an exceptions basis, as and when operational functionality queries came to light¹²⁸. NHSL’s understanding of the contractual terms was that it was the Project Co’s responsibility to ensure the EM complied with the Standards.
- 5.2.11 We have seen evidence of the ‘Board’s’ ongoing involvement in the review of the EM both prior to, and after, Financial Close. We understand from Mott MacDonald that, the ‘Board’ in this context refers to both themselves and the Project Team and not the ultimate NHSL Board. We have seen specific comments made by the Board (including specifically comments referred to as

¹²⁴ Document: Mott MacDonald and NHSL Board contract

¹²⁵ Required to be performed before construction could commence (prior to IPTD stage)

¹²⁶ Drafted in 2015

¹²⁷ NHS Lothian – RHSC + DCN, Post Financial Close Support Services Proposal.

¹²⁸ Operational functionality being as described at paragraph 4.4.7



'technical') in respect of air change rates and pressure within bedrooms. An example of this is provided below:

- a) Comments provided to the Project Co¹²⁹ referred to as “...*initial technical comments on draft 1 of the Environmental Matrix*”, dated 13 October 2014 (being pre Financial Close)¹³⁰. This document included 12 comments, one of which referred specifically to ventilation standards in respect of bedrooms:

“Bedrooms 4ac/hr, SHTM says 6 ac/hr

Bedrooms have no extract

Bedroom en-suites 10 ac/hr, SHTM says 3 ac/hr

Bedrooms stated as positive pressure, SHTM says 0 or –ve pressure...”¹³¹.

- b) Comments were provided by Mott MacDonald (on behalf of NHSL) in an email they sent to Multiplex on 17 October 2016¹³² stating that:

“The Board have reviewed the Environmental Matrix and still has significant concerns on items that do not appear to comply with the BCR’s.

The Board notes the following general comments:

- 1. The Board has highlighted cells in blue and red bubble on the hard copy which require PCo review.”*

The email went on to explain that “*Whilst the Board has noted general and specific comments above, the Board reminds Project Co that unless the Board has already accepted a derogation, it is Project Co’s obligation to comply with the BCR’s / SHTMS etc, and*

¹²⁹ We understand that both MM and the Project Team reviewed the EM and provided their collective comments to Project Co.

¹³⁰ Document reference: 20141027 Environmental Matrix Comments

¹³¹ Document reference: 20141027 Environmental Matrix Comments. Comment 7

¹³² Document reference: 161017 MM-GC-002084



the Board not commenting, does not remove that obligation on Project Co.”

- 5.2.12 We note that the version of the EM with highlighted cells in blue and red¹³³, includes highlighted cells relating to four-bedded bays. Some of the four-bedded bays are included in the matrix part B1 which, as detailed in the index to the EM, is ‘Critical Care / HDU / Neonatal Surgery’ (these bays being pertinent to the issue that led to the Delay). The specific NHSL comments included in the EM includes one that states, “1-b1-063 Stated as supply air 4ac/h, extract via en-suite, this room does not have en-suite facilities”¹³⁴. We understand from NHSL and Mott MacDonald that, this comment was from a review of the ‘operational functionality’ detailed in the EM, as referred to at paragraph 4.4.6 and 4.4.7. However, at no point is the fact that the air change rates in this room is not in line with the SHTM 03-01 standard of 10 ac/hr noted. Project Co’s response is “room extract rate added”¹³⁵.
- 5.2.13 The version of the EM referred to above was subsequently signed off by a member of the Project Team as ‘Level B’ per the RDD approval process. The covering email from Mott MacDonald (on behalf of NHSL) to Multiplex for the approval at Level B, dated 7 November 2016, states that:

*“the Board have serious concerns over the upgrading Environmental Matrix to Status B considering some of the issues raised...being the same as the issues that had been raised since FC... However, as requested by Project Co, the Board has upgraded the Environmental Matrix to status B, noting the Board still does not believe the Environmental Matrix and resultant design complies with the Project Agreement.”*¹³⁶.

¹³³ Document reference: REV 07 ww-xx-xx-dc-xxx-001 - signed copy from C to D
¹³⁴ Document reference: REV 07 ww-xx-xx-dc-xxx-001 - signed copy from C to D. Environmental Matrix comments, Second Batch, NHSL reference 7 (page 4)
¹³⁵ Document reference: REV 07 ww-xx-xx-dc-xxx-001 - signed copy from C to D. Environmental Matrix comments, Second Batch, NHSL reference 7 (page 4)
¹³⁶ Document reference: 161107 MM-GC-002155



5.2.14 We note that, within this version of the EM, the air change rates included within the bedrooms listed in table B1¹³⁷ (relating to Critical Care as per the index to the EM) all remain at a supply air change rate of 4 ac/hr, consistent with previous versions of the EM.

5.2.15 The last version of the EM provided to us (rev 11) was dated 25 October 2017 and signed off at Level B for operational functionality (as referred to in paragraphs 4.4.6 and 4.4.7) by NHSL on 17 November 2017. The covering email from Mott MacDonald to Multiplex notes that:

“The Board would also like to note the design for single and multibedroom ventilation design being progressed by Project Co remains non compliant and this non compliance should either be rectified, a PCo change submitted for the Board’s consideration or a dispute raised between the parties”¹³⁸.

5.2.16 Mott MacDonald were also involved in correspondence regarding an ongoing dispute as to the bedroom ventilation pressure issues. For example, an email from Mott MacDonald (on behalf of NHSL) to an IHS representative, cc’ing in Multiplex, on 5 June 2017¹³⁹ explains why Mott MacDonald believed a PCC was required in respect of the changes to the pressure within four-bedded rooms and why they were of the view that the proposed design was not in line with the Standards.

5.3 **Advice sought in respect of changes to the Project Agreement**

5.3.1 As mentioned in paragraph 4.5.2 above, two of the agreed resolutions, which formed part of the Settlement Agreement, were pertinent to the Delay in that they impacted the ventilation regime and in turn its compliance with SHTM 03-01. Details of the agreed resolutions for these were as follows:

¹³⁷ Page 5

¹³⁸ Document reference: 20171117 MM-GC-003531

¹³⁹ Document reference: NEW 170619 R.A.M-GC-000285 Bedroom Ventilation. Contained within email trail.



- a) Item 7 – 4 bed ventilation: agreed resolution was for “14 no 4 bed rooms to be balanced or negative to the corridor at 4 ac/hr”¹⁴⁰; and
- b) Item 13 – Single Bedroom Ventilation air changes¹⁴¹: The agreed resolution was to decrease “the mechanical air change ventilation rate within single bedrooms from 6 air changes per hour (6 ac/hr) to 4 air changes per hour (4 ac/hr)”¹⁴².

5.3.2 There are interconnectivities in the history and context surrounding both of these agreed resolutions, which is described in the ‘background to the agreed resolution’ Section below. However, for the purposes of this Report we have focused on the detail of one of the agreed resolutions, Item 7 above, in order to illustrate the professional and technical advice sought in respect of it. Item 7 has not been previously approved through the PCC process and was therefore referred to as a ‘derogation’. We have used this terminology when explaining the details of it below.

5.3.3 The Item 7 agreed resolution specifically relates to changes to the pressure regimes in the 14 four-bedded rooms, however the wording used in the agreed resolution also refers to an air change rate at 4 ac/hr.

5.3.4 Of these 14 rooms, four of them were located in Critical Care. These were four of the rooms identified by IOM in their report dated 15 July 2019, along with the single bed cubicles, as not being in compliance with SHTM 03-01, and specifically the required 10 ac/hr rate, ultimately leading to the Delay in the Hospital opening.

5.3.5 All versions of the EM provided to us, which detailed the air change rates being applied to each respective room within the hospital, referred to an air change rate of 4 ac/hr for the Critical Care bedrooms, notwithstanding the guidance note in the IPTD EM and Project Agreement EM versions (referred to at paragraph

¹⁴⁰ Schedule 1, Part 1, Technical Schedule of the Project Agreement (Page 30)

¹⁴¹ We understand from NHSL that the details of this agreed resolution were those contained within Project Co notice of change dated 14 May 2018

¹⁴² Project Co notice of change dated 14 May 2018, Section 1.0. Document reference: 180522 Schedule 16 Project Co Change Notice No 051



4.4.10) which referred to an air change rate of 10 ac/hr. Therefore this agreed resolution in the Settlement Agreement did not in effect ever change the air change rate that had been detailed in the EM, albeit it was in effect, inadvertently, ‘approving’ an air change rate in these rooms of 4 ac/hr.

Background to the agreed resolution

- 5.3.6 As mentioned above in paragraph 4.3.22, we have seen evidence that issues with ventilation in respect of bedrooms, albeit not specific to single or multi-bed rooms, were raised by the Board¹⁴³ as far back as October 2014. We understand from conversations with NHSL and Mott MacDonald that, as a result of these comments having been made, there were ongoing discussions relating to ventilation design. From the evidence of the continued correspondence between the Project Team and Project Co that we have been provided, there is no direct reference to four-bedded rooms until September 2016. Prior to this all references had been made to ‘bedrooms’ or ‘single bed rooms’.
- 5.3.7 Project Co raised two derogation requests, dated May and July 2016 respectively¹⁴⁴, which specifically referred to single bedrooms. Mott MacDonald’s response on behalf of the ‘Board’¹⁴⁵ in September 2016¹⁴⁶ rejected the derogations and, whilst the derogations referred only to single bedrooms, NHSL’s response included a specific reference to a four-bedded room¹⁴⁷. We note that NHSL’s response asked Multiplex if the Project Co could “*confirm how compliance with SHTM in relation to air change rates, balanced ventilation and room heat recovery [would] be met.*” It is from this point in time that reference

¹⁴³ We understand from Mott MacDonald that the ‘Board’ in this context refers to both themselves and the Project Team and not the ultimate NHSL Board.

¹⁴⁴ Document reference (WW014): 03.06.16 Copy of 20160525 Derogation Deliverables - WW014. Document reference (WW015): 26.07.16 Derogation Deliverables - WW015-1

¹⁴⁵ We understand from Mott MacDonald that the ‘Board’ in this context refers to both themselves and the Project Team and not the ultimate NHSL Board.

¹⁴⁶ Document reference: 160922 MM-GC-002006 - Boards rejection of WW014 and WW015

¹⁴⁷ “*4 bedded room 1-L1-100*”. Document reference: 160922 MM-GC-002006 - Boards rejection of WW014 and WW015.



appears to have been explicitly made to air pressure in multi-bedded rooms¹⁴⁸ as well as single bedrooms.

- 5.3.8 We understand from NHSL that, in late 2016, following one of the ventilation design workshops to discuss the ongoing ventilation issues, the Project Team highlighted to the clinical team that the air pressure for the four-bedded rooms had been designed to be positive. We understand that due to the Project Team's prior clinical experience, they were aware that this would not allow for patients to be cohorted with the same infection; in direct contravention to the practical requirements of those rooms.
- 5.3.9 Project Co had classified all four-bedded rooms as 'general wards' in respect of the pressure regime, under the guidance provided in the table illustrated at Figure 1, page 33, and thus felt that the rooms having positive pressure had been designed in compliance with SHTM 03-01 pressure requirements given that no pressure regime was specified in the guidance for 'general wards'. However we understand from NHSL that they and their advisors were of the view they should be classified as having the same function as a 'single room' under the guidance, and should achieve balanced or negative pressure.
- 5.3.10 We understand from NHSL that the Project Team, including the clinical team members, met with Project Co in order to discuss this issue. Following this meeting, discussions were held with the Children's Clinical Management team which included a Director, Associate Medical Director, Nurse Director and two Clinical Nurse Managers (noting that this was only an issue for the Children's Hospital and not DCN). The basis of these conversations were the implications of not being able to cohort patients and whether this was something they could manage with, without a change being made to the air pressure regime. We understand that the focus of these discussions were on the air pressure regime, and its impact on operational matters.

¹⁴⁸ The terminology 'multi-bedded rooms' and 'four-bedded rooms' is used interchangeably



- 5.3.11 As the above discussions confirmed that it was not possible to cohort patients and, in turn, use the rooms as needed without a change to air pressure, the clinical team undertook a risk assessment on 5 July 2017. Such risk assessments were required in respect of any proposed changes to the project design which may result in impact to patient care. The risk assessment was in effect an operational review, as opposed to a technical assessment, and required input from the various specialists who were party¹⁴⁹ to the original discussions in order to accurately reflect the discussed risks in the document itself.
- 5.3.12 The output of the risk assessment was discussed with Project Co. However, Project Co stood by its view that the design as it stood was compliant with SHTM 03-01 and therefore did not agree to a PCC, being the only way to formally agree a change to the design. This was detailed in the Programme Board Paper 'Compliance Issues and Commissioning Delay' dated 24 July 2017¹⁵⁰:

“Ventilation to 4 bedded rooms – PCo design is based on an interpretation of a table contained in guidance where they have applied the ventilation regime for a general ward to the 4 bedded rooms. NHS Lothian, HFS Principal Engineer, the boards Authorising Engineer and Technical Advisors strongly disagree with this interpretation. A risk analysis has been carried out by the Clinical Director and the clinical Project Managers in collaboration with the Clinical Management Team and this work is felt to be essential in order for the new hospital to function safely and at optimal levels. Without the ventilation in the 4 bed rooms being installed correctly these areas will not be able to cohort and safely manage the influx of small children over the winter with infectious respiratory disorders as well as new and emerging conditions and also reduce the future proofing for these services.”¹⁵¹

¹⁴⁹ Parties involved are set out in an email dated 6th July 2017 'RE: Risk Assessment re 4 bedded room Ventilation'

¹⁵⁰ Document reference: Compliance Issues and Commissioning Delay 240717 FINAL

¹⁵¹ Point 5.2. Document reference: Compliance Issues and Commissioning Delay 240717 FINAL



“Two ‘without prejudice’ meetings have now been held, chaired by IHSL with two of their Directors present, to see if the two parties, NHS Lothian and Multiplex, can come to some agreement on the way forward. These meeting follow numerous meetings between the respective technical teams and copious amounts of correspondence. To date there has been no movement from either side with both sides believing their interpretation/analysis is correct.”¹⁵²

- 5.3.13 In January 2018, given that there had been a number of months without progression on this matter, the Project Team asked the clinical team to revisit the original risk assessment to validate that it remained correct. The outcome of the updated risk assessment remained the same, being that 13 rooms required a change to their air pressure (three of which were in critical care)¹⁵³. This dispute remained and, as such, was brought into the Settlement Agreement (see further details in the Section below).

Approval of the agreed resolution

- 5.3.14 As part of the Settlement Agreement, Project Co agreed to amend the pressure in 14 rooms¹⁵⁴, with the agreed resolution detailed in the Technical Schedule (“TS”) of the Settlement Agreement reading as follows:

“The resolution of the Dispute submitted by Project Co through the Schedule Part 8 (Review Procedure) and agreed by the Board, is for 14 No 4 bed rooms to be balanced or negative to the corridor at 4 ac/hr”¹⁵⁵.

¹⁵² Point 5.4. Document reference: Compliance Issues and Commissioning Delay 240717 FINAL

¹⁵³ Record of General Risk Assessment, dated 28 January 2018. 13 rooms consisting of 7 for which it was “essential” to change, and 6 for which it was “desirable” to change.

¹⁵⁴ We understand from NHSL that one additional room was included in the Settlement Agreement, compared to the 13 rooms listed in the risk assessment

¹⁵⁵ Settlement Agreement, Schedule 1, Part 1, Technical Schedule, Item 7 page 30



- 5.3.15 The agreement was detailed in the document *'Multi Bed – Ventilation Amendment Proposal to Achieve Room Balance'*¹⁵⁶ which showed the 14 room numbers included. Whilst this document did not explicitly state that four of these were Critical Care rooms, the room number prefixes for Critical Care all start '1-B1' as opposed to a different letter. The proposed solution detailed for all four rooms stated *"retain the supply ventilation at 4ac/hr..."*. This document was approved at 'Level A'¹⁵⁷ through the RDD process¹⁵⁸ in July 2018, the process for which includes review by Project Co, the Project Team, clinical teams and Mott MacDonald. We have seen no evidence that the air change rate of 4 ac/hr being applied to the Critical Care rooms was questioned during these reviews.
- 5.3.16 The approved document referred to in the paragraph above was then incorporated into the TS that ultimately formed part of the Settlement Agreement. We have detailed in Section 6.4 the governance arrangements in relation to approving of the Settlement Agreement and associated TS, and the extent of the awareness by the NHSL Board, and associated project committees, of the professional and technical advice sought in approving the content of the resolutions contained in the TS.

5.4 Summary

- 5.4.1 We have seen evidence of professional and technical advisors being involved throughout the Project. This included specific involvement in relation to ventilation issues.
- 5.4.2 We have not been instructed, and it is not within our area of expertise, to consider the responsibility of external professional or technical advisors to identify the Issue¹⁵⁹.

¹⁵⁶ Document reference: WW-SZ-XX-DC-XXX-010 Rev 7 Status A

¹⁵⁷ Signed by NHSL and Project Co on 26 July and 27 July 2018 respectively

¹⁵⁸ RDD process – in accordance with the levels as set out in the Project Agreement, Schedule Part 8 (Review Procedure), Clause 4.3 (page 239): Level A: No Comment, Level B: Proceed subject to Amendment as noted, Level C: Subject to amendment as noted, Level D: Rejected

¹⁵⁹ As defined in Section 2.2.1



Independent Assessment of Governance Arrangements
NHS Lothian Royal Hospital for Children and Young People
KPMG LLP
Strictly private & confidential
9 September 2019

5.4.3 However, in any event, we have seen no evidence that professional or technical advice identified the Issue prior to June 2019.



6 Governance and escalation arrangements

To establish the governance arrangements that were in place in relation to the Project and the line of sight of NHSL and SG, along with the escalation arrangements to NHSL and SG.

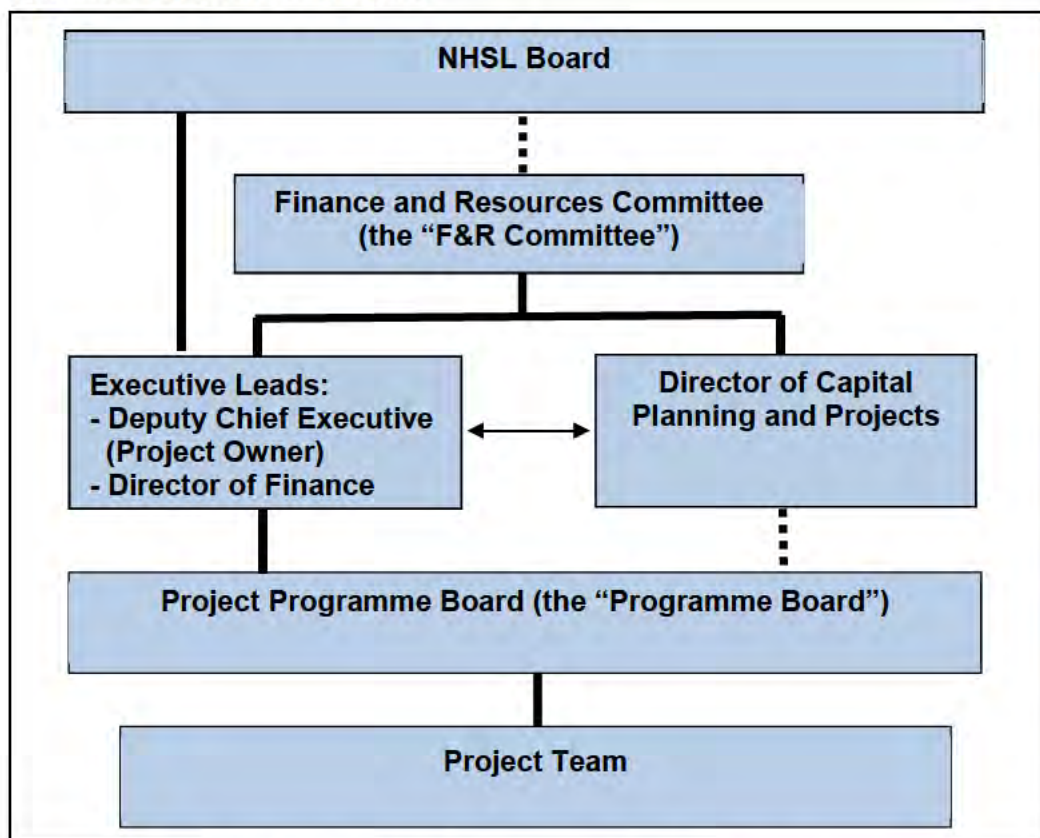
6.1 Introduction

- 6.1.1 In this Section, we consider the structure of the governance arrangements that were in place for the Project from the point of the Project Agreement onwards, and how matters were escalated through this structure to the NHSL Board and, ultimately, to SG. This is addressed in Sections 6.2 and 6.3 and in Section 6.4 we detail the escalation specifically in respect of the Delay.
- 6.1.2 In undertaking our review of the governance and escalation processes, we have, to the extent that the information was available to us allows, sought to obtain evidence that these processes were working in practice.
- 6.1.3 As set out in Section 5.3, the Settlement Agreement specifically addressed two of the agreed resolutions which were pertinent to the Delay. As such, in Section 6.4, we have also separately presented the governance arrangements which, we understand from our discussions and document review, were in place in relation to the Settlement Agreement and its implementation.

6.2 Governance and escalation structure within NHSL

6.2.1 The governance structure for the Project within NHSL is set out in the diagram below:

Figure 2: Governance structure



6.2.2 We set out further information in relation to each party in the governance structure and their respective interactions with other parties in the paragraphs which follow.

6.2.3 This summary is compiled from interviews performed during the course of our work, together with a review of available documentation, including minutes of the NHSL Board, Programme Board and F&R Committee. The minutes we have



seen indicated that the governance structure was operating in line with that described and issues were being escalated through the appropriate channels.

Project Team

- 6.2.4 The Project Team, led by the Project Director, is responsible for the day-to-day Project activities and is located at the Hospital site. The Project Director provides a monthly presentation to the Programme Board, detailing progress on the Project and areas of non-compliance, along with next steps in terms of Project activities.
- 6.2.5 We are advised by NHSL that individuals were selected for the Project Team on the basis of their experience, both in their specialism and involvement in other projects. The Project Team includes individuals with diversified specialisms, including those with engineering, clinical, medical and operational backgrounds. The Project Team also includes technical advisors from Mott MacDonald.

Programme Board

- 6.2.6 As set out in Section 3 above, the Programme Board comprises of the Project Team as well as representatives from clinical and operational areas, the Deputy Chief Executive, the Director of Finance, the Director of Communications, an NHSL Non-Executive Director, a representative from SG and other stakeholders.
- 6.2.7 We understand that the Programme Board is responsible for oversight of the Project. Specifically, this involved:
- a) Creation of a business case for the Project for approval by the F&R Committee and the NHSL Board;
 - b) Ownership of the procurement process and tender documentation, and the selection of three bidders (the final selection of the preferred bidder was performed by the F&R Committee); and
 - c) Oversight of the Project through to commissioning and completion.



- 6.2.8 The specific Terms of Reference (“**TOR**”) for the Programme Board changed over time as the Project evolved from the tender stage, through to the construction of the Hospital and beyond.
- 6.2.9 The Programme Board meets on a bi-monthly basis, although we are advised by NHSL that ad-hoc meetings were also held during the course of the Project, as required. The Programme Board receives a progress update from the Project Director at each meeting. In our discussions with NHSL personnel, we were informed that any actual or potential issues in respect of the Project (including the technical details) would be discussed and challenged by the Programme Board. Further, we were advised that solutions put forward by the Project Team would also be challenged and either supported or rejected by the Programme Board.
- 6.2.10 Matters or recommendations that needed to be escalated were typically referred to the Director of Finance as one of the two Executive Leads (the other being the Project Owner (the Deputy Chief Executive)), or the DCPP . Issues escalated would include significant changes to design, cost escalation, issues of non-compliance identified and any matters where an opinion or a decision was required from the Executive Leads. The respective Executive Lead would escalate this to the NHSL Board and also inform the F&R Committee if the issue had an impact on the financing of the Project or its duration.
- 6.2.11 We were advised by NHSL that, during the course of a project, it is normal practice for the Executive Leads to regularly attend the Programme Board meetings. Due to the nature of the issues that were being raised on this Project, one or more of the Executive Leads attend the bi-monthly meetings, with the Deputy Chief Executive typically chairing the meetings.

F&R Committee

- 6.2.12 The F&R Committee comprises:
- a) Four executive directors (who were also members of the NHSL Board); and
 - b) Seven non-executive directors.



- 6.2.13 It is our understanding that the F&R Committee has delegated authority from the NHSL Board in relation to financial governance, property and asset management strategy and strategic capital projects (such as the Hospital). The F&R Committee meets on a bi-monthly basis and its remit is to ensure that value for money is obtained from projects.
- 6.2.14 In advance of the F&R Committee's bi-monthly meetings, a paper called the Property and Asset Management Investment Programme ("**PAMIP**") is prepared by the DCPD for discussion at the F&R Committee. This document provides an independent view of all projects overseen by the F&R Committee and gives an update on the status of the Project and any issues identified which require the F&R Committee's consideration. The DCPD receives updates from the Programme Board and/or Project director on the status of the Project for the purpose of compiling this report.
- 6.2.15 We were advised by NHSL that, as the problems with the Project started to escalate around November 2015, supplemental documents were prepared by either the Project Director, DCPD or the Director of Finance, outlining these issues and recommendations which were submitted to the F&R Committee along with the PAMIP.
- 6.2.16 We were advised by NHSL that the papers submitted by the DCPD for any project should provide a level of assurance on specific individual matters. This level of assurance is determined by reference to NHSL's assurance model. This model provides a rating indicating the level of assurance attributed to the issue or action, being "Significant", "Moderate", "Limited", "None" or "Not Assessed Yet". This rating is included in any recommendations made to the F&R Committee. We have seen examples of this rating being given on some, but not all, of the documents we have reviewed. We understand from our discussions that, the F&R Committee would concentrate its review on those areas where the assurance rating attributed was "Moderate" or below.
- 6.2.17 A copy of the PAMIP and associated documents, together with a copy of the F&R Committee minutes, are approved by the NHSL Board (although, as noted above,



there is significant overlap between the members of the Programme Board, F&R Committee and the NHSL Board in any event).

- 6.2.18 A Risk Register is also provided to the F&R Committee. This is completed by the Project Director and uses a “RAG”¹⁶⁰ rating system to assess the risks identified and associated with the Project. A copy of the Risk Register is provided to the F&R Committee for review and to inform its view of the overall level of assurance and/or risk attached to the Project.
- 6.2.19 As noted above, the Programme Board does not report directly to the F&R Committee. Instead, the Executive Lead for the Project updates the F&R Committee in relation to key issues that have arisen with the Project, such as issues leading to instigation of the Dispute Resolution Process (“**DRP**”) and any significant changes to design. The F&R Committee also approves the business case for the Settlement Agreement, which is discussed in more detail in Section 6.5.
- 6.2.20 While the Programme Board does not have a direct reporting line to the F&R Committee, the F&R Committee does have clear sight of the operation and status of the Project and the issues that are being identified. We were advised by NHSL that, the F&R Committee provide challenge and ask questions in relation to the Project, which would normally be answered by either the DCPD or the Director of Finance (who is also a member of the F&R Committee). The technical information provided to the F&R Committee is less granular than at Programme Board level.

NHSL Board

- 6.2.21 As detailed above, the NHSL Board delegated its authority for the Project to the F&R Committee. The F&R Committee does not formally report into the NHSL Board. However, there is significant overlap in terms of membership.

¹⁶⁰ Rating methodology: “Red, Amber, Green”



- 6.2.22 While the NHSL Board has delegated authority to the F&R Committee, the minutes of the F&R Committee are reviewed and approved by the NHSL Board. As such, the NHSL Board has oversight of the status of the Project and any issues raised.
- 6.2.23 Issues escalated by the Programme Board to the Executive Leads for the Project are formally discussed with the NHSL Board. The NHSL Board either provide support to help resolve the position, or accept or reject recommendations made to it after discussion of the issue.
- 6.2.24 The Programme Board submits papers to the NHSL Board containing recommendations for the NHSL Board's consideration. An example of this was the Programme Board suggesting that the DRP should be implemented following issues of non-compliance having been identified on the Project.
- 6.2.25 The NHSL Board raise challenge and questions on papers presented in respect of the Project. However, this is not a technical level of challenge. The papers submitted to the NHSL Board make reference to the technical advice provided by professional advisors on the Project. We were advised that it is not expected that the NHSL Board will review the technical advice in detail.

6.3 Escalation process for reporting to Scottish Government

- 6.3.1 We understand that quarterly meetings are held between the DCP, the Head of Property and Asset Management Finance (both of NHSL) and a representative from SG's Health Finance and Infrastructure team¹⁶¹.
- 6.3.2 These quarterly meetings are in relation to all projects being undertaken by NHSL and primarily focus on the monitoring and future expectations for the funding of major projects.
- 6.3.3 The meetings (together with written correspondence between NHSL and SG) became more frequent when issues arose on the Project (for example, the dispute which arose between NHSL and IHS and the Delay), in order to allow

¹⁶¹ Part of SG's Capital Investment team within the Health and Social Care Directorate



the Cabinet Secretary to be briefed on the position, its potential impact on the financial aspects of the Project, and the proposed course of action.

- 6.3.4 We were advised by NHSL that a representative from SG has a formal role on the Programme Board. However, whilst they rarely attend in person, they receive a copy of the minutes of these meetings.
- 6.3.5 In addition to the above meetings, NHSL provide an annual report to the Chief Financial Officer (“**CFO**”) for Health and Social Care at SG, giving an update on ongoing and potential future projects, together with a monthly Finance and Performance report. We understand that there was (and remains) open dialogue between the NHSL Board and the CFO at SG to allow any significant issues to be raised and discussed.
- 6.3.6 In summary, there is a formal process, in addition to an open dialogue, for the NHSL Board to raise issues with SG.
- 6.3.7 We were advised by NHSL that, following the Settlement Agreement, there were no issues raised to the NHSL Board in relation to the Project that required escalation to SG, or that would prevent the Hospital opening as planned on 9 July 2019.
- 6.3.8 In Section 3, we set out the background to the ventilation issue which ultimately prevented the Hospital from opening and how this was communicated through NHSL to SG. As set out at Section 3, once the issues which caused the Delay were brought to the attention of the NHSL Board on 1 July 2019, these were escalated to SG within 24 hours.

6.4 Escalation in respect of the Delay

- 6.4.1 We note that, due to the urgency of the matter, when it became known, the ultimate escalation of the ventilation issues was made direct to Executive Directors (as members of the NHSL Board) and not through the normal governance structure (by-passing the Programme Board and F&R Committee). However, by virtue of their roles in other parts of the governance structure (as described below), members of the Programme Board and F&R Committee were



automatically involved in the discussions of the options that could be available to resolve the issue and not postpone the move into the new Hospital.

- 6.4.2 It is clear from the minutes that, ventilation issues regarding air pressure, although not specific to Critical Care, were discussed by the Programme Board and contributed to its recommendation to pursue a DRP, which was accepted by the NHSL Board. This issue was escalated through the normal governance process.
- 6.4.3 We have seen no discussion of, or reference to, issues specific to air changes in any of the minutes for the respective boards and committee. This is in line with our understanding that, the specific issue (being ac/hr requirements in Critical Care areas not complying with the SHTM 03-01 standard), which gave rise to a decision being made to delay the opening of the Hospital, was not known to NHSL until 24 June 2019, when IOM completed its testing of the ventilation system, and subsequently identified to the NHSL Board on 1 July 2019.

6.5 Governance arrangements in relation to the Settlement Agreement

- 6.5.1 In this Section, we summarise the governance arrangements that were in place in relation to the Settlement Agreement and its implementation.

Approval of the Settlement Agreement

- 6.5.2 As referred to in Section 5.3, we were advised by NHSL that the Settlement Agreement contained resolutions to a number of issues which had arisen during the course of the Project. We understand from NHSL that these issues had built up over time and came from a variety of sources, including the residual risk register, Project Co Changes, a list of outstanding works and proposed, but not yet approved, Project Co changes.
- 6.5.3 We understand from NHSL that, depending on how they had arisen, some of these issues had been subject to discussions between the Project Team, Mott MacDonald and Project Co. Such issues were raised with the Programme Board



and discussed and noted at the time they arose (for example, the ventilation issue relating to pressure in four bedded rooms).

- 6.5.4 The negotiated solutions to these issues became the TS that was incorporated into the Settlement Agreement. The governance around approval for the TS and the Settlement Agreement are detailed below.
- 6.5.5 As described in Section 6.2 above, pursuing the DRP was proposed by the Programme Board and approved by the NHSL Board. Once the approval to pursue the DRP was given, discussions centred around the content of the commercial proposal put forward by IHSL to resolve the issues and avoid litigation. This proposal formed the basis of the Settlement Agreement. The F&R Committee approved the Programme Board's recommendation to engage with IHSL to discuss their proposal and, consequently, the business case for the Settlement Agreement. The NHSL Board ratified this decision and delegated responsibility to the F&R Committee to authorise the Director of Finance and Deputy Chief Executive to sign the Settlement Agreement on behalf of NHSL.
- 6.5.6 The negotiations leading up to the Settlement Agreement were conducted by the "Principals Group", which comprised the Deputy Chief Executive and Director of Finance of NHSL, and Directors from IHSL and Project Co. Others were involved, such as the Project Director and DCP, as appropriate.
- 6.5.7 We set out further information in relation to each party in the governance structure and their respective interactions with other parties in relation to the Settlement Agreement in the paragraphs which follow. As before, this summary is compiled from interviews performed during the course of our work, together with a review of available documentation, including minutes of the NHSL Board, Programme Board and F&R Committee. These minutes indicated that the governance structure was operating in line with that described and issues were being escalated through the appropriate channels.

Programme Board

- 6.5.8 We were advised by NHSL that the issues ultimately included in the TS had evolved over a period of time and been considered by the Programme Board as



they arose. We have seen evidence that, in July 2018, the Programme Board was advised by the Project Director that the TS was to be included as part of the Settlement Agreement.

- 6.5.9 NHSL advised us that a lot of the items in the TS were being negotiated between the Project Team and Project Co and that, as such, the TS evolved over time, with the items to be included in the TS being discussed between July 2018 and early 2019, prior to the Settlement Agreement being signed. We are advised that the TS discussed with the Programme Board included proposed resolutions to issues that were not “ideal” from NHSL’s perspective, but were “safe” for the purposes of moving towards an agreed resolution in order to open the Hospital as soon as practicable.
- 6.5.10 We were advised that the Programme Board was aware that Mott MacDonald (as technical advisor) was consulted in the drawing up of the TS. This was on the basis that the Project Team had been working closely with the technical advisors on the Project. The Programme Board would be provided with details of each item in the TS so they could review this and raise questions on it.
- 6.5.11 We are advised that the Programme Board supported and approved the content of the TS within the Settlement Agreement, although there was no formal “sign-off” process for this. In addition, in November 2018, the Project Team identified a further three major issues for inclusion in the proposed Settlement Agreement, being the void detection system, drainage, and heater batteries.
- 6.5.12 The Programme Board minutes in February 2019 evidence that, by that point, the Settlement Agreement had been updated for these three issues, had been agreed between the parties, and would be signed soon.

F&R Committee

- 6.5.13 We were advised by NHSL that, the business case for the Settlement Agreement was detailed in a paper dated 25 July 2018, presented to the F&R Committee by members of the Programme Board. Challenges and questions by the F&R Committee were answered primarily by the Project Director and DCP, but also by the Deputy Chief Executive and Director of Finance, as required. As



mentioned in Section 6.2 above, the business case for the Settlement Agreement was approved by the F&R Committee.

- 6.5.14 In January 2019, the F&R Committee minutes noted that the Settlement Agreement was to go to the NHSL Board for approval in February 2019.

NHSL Board

- 6.5.15 As described at paragraph 6.2.19, the F&R Committee provided copies of its minutes to the NHSL Board for review and approval as standard. However, a specific briefing and papers were provided to the NHSL Board by the Director of Finance on 6 February 2019 outlining the Settlement Agreement. Again, this demonstrates the escalation of issues through the governance process. We were advised by NHSL that whilst no technical details were provided regarding the proposed solutions, all papers submitted to the NHSL Board contained reference to the legal or technical assurance that underpinned the solutions. Given the governance structure in place, the technical assurance given in respect of the Settlement Agreement and TS was visible to the NHSL Board.
- 6.5.16 The NHSL Board minutes from February 2019 evidence that the NHSL Board discussed the draft Settlement Agreement, its terms and the potential risks arising from entering into it. Approval for the Settlement Agreement was granted by the NHSL Board on 6 February 2019 and the Deputy Chief Executive and the Director of Finance were authorised to continue negotiations on its behalf, and for either of them to sign the agreement.

Implementation of the Settlement Agreement

- 6.5.17 The Settlement Agreement was signed on 22 February 2019. The Hospital was due to open 19 weeks later, on 9 July 2019.
- 6.5.18 We understand that the implementation of the Settlement Agreement was monitored through weekly on-site meetings between the Project Team and Project Co, and that the Project Team was also on-site to observe the progress being made. At these weekly on-site meetings, Project Co were required to provide a plan of the work they were going to perform over the course of the



following week. We were advised that this gave the Project Team the opportunity to challenge or question the Project Co as appropriate.

- 6.5.19 In addition, we understand that daily “huddles” were held amongst specialist teams, such as with clinical representatives, who would discuss matters with members of Project Co to resolve any issues identified through commissioning, or to determine when access to certain areas could be obtained. We were advised by NHSL that these regular meetings ensured that progress was being made.
- 6.5.20 We were advised by NHSL that the above process provided assurance to NHSL that the work that had been agreed was progressing as planned.
- 6.5.21 NHSL advised that the final level of assurance would be given following the sign-off by the IT. The IT would be providing sign-off based on what was contained in the design specifications. The IT would expect that these design specifications had been agreed by both parties, i.e. NHSL and IHSL/Multiplex. NHSL therefore expected that, as the IT had signed off on the building, there would be no issues when IOM performed its testing. As such, NHSL was surprised when the ventilation system was highlighted to not be performing in line with requirements.
- 6.5.22 We were informed that, once the issue in relation to air ventilation had come to light through the IOM report, an internal Incident Management Team (“**IMT**”) was set up by the NHSL Board to investigate the matters raised in the IOM report and to liaise with IHSL going forward in relation to how these matters could be rectified.

6.6 Summary

- 6.6.1 The governance processes and procedures surrounding the construction and commissioning of the Hospital operated in line with the structure that was put in place.
- 6.6.2 There was regular dialogue between NHSL and SG throughout the Project, with evidence of escalation of issues where required, albeit this was more focused on financial rather than technical matters.

From: Morrison A (Alan)
Sent: 10 September 2019 12:48
To: Cabinet Secretary for Health and Sport; DG Health & Social Care; McLaughlin C (Christine)
Cc: Wright M (Malcolm); Rogers S (Shirley); McQueen F (Fiona); Hutchison D (David); Lea-Ross S (Stephen); Kirkwood R (Robert)
Subject: RE: URGENT: Further briefing for FM/Cab Sec discussion

Follow Up Flag: Follow up
Flag Status: Completed

Categories: Printed for DG

Andy

Detail on each question noted below. The accountability question was prepared by Christine:

Costs to autumn 2020

Each month we pay IHSL ~£1.35 million for the facility which is the main cost, but there are additional costs that will be incurred:

- Ventilation upgrades - £4.0 million – both critical care and haematology/oncology ventilation needs to be upgraded
- Maintenance - £2.0 million – this will be an estimate, but this is the costs required to maintain both sites to an acceptable standard
- Interventional Neuro-Radiology (DCN) - £1.7 million - Interim Modular solution and Equipment upgrades
- Additional Investment on both sites – £1.2 million (estimated). An example of this would be NHS Lothian have been offered a new Digital radiography room at the old Royal Hospital for Children to ensure general radiography services are maintained during the ongoing repairs/upgrade of facilities of the new RHSCYP. There is a need to upgrade the room infrastructure at the old site to install the room at a cost of £25k; this action will ensure smooth running of out-patient, In-patient and A+E radiology services until the hospital transfers.
- Project team – £1.0 million – the project team (which should have been disbanded by now) remains on site working on the project
- Double running - £1.1 million – this reflects the fact that it is less efficient to maintain two sites rather than one, so it is the costs of maintenance, facilities and other costs of keeping both sites open

Mitigation measures at existing site and Western General

Sick Kids

- A plan is underway to increase the floor space in the Emergency Department (ED) by approximately 50%. This will aid ED patient flow management, and be achieved by relocating some Outpatient clinics into the Surgical Admissions Unit (SAU)
- SAU activity is going to be absorbed into the surgical wards
- NHS Lothian are creating an additional 14 Medical beds (over and above their usual extra Winter bed capacity) by moving orthopaedic and spinal surgery into another ward area.
- NHS Lothian are out to recruitment currently for their usual additional Winter staffing (ED and Ward nursing)
- The Business case submitted for additional year- round ED staffing, particularly to support evening and night activity pressures, was approved some months ago and we have recruited most of the staff for Phase 1, including an Advanced Paediatric Nurse Practitioner for the ED
- SJH Children's ward is now open 4 nights/ week, which will reduce the pressure on the RHSC ED and inpatient service this Winter, compared to 2017/18 and 2018/19 when the SJH ward was closed completely to inpatients

DCN

- Plan to invest in Interventional Neuro-Radiology which is noted above

- Remains part of Western General Hospital campus for site and flow management
- Critical care capacity on the WGH will remain at 16 beds and will not reduce to 10 till after DCN moves. This is a planned temporary reduction to allow remedial works for improving water safety

Accountability

There will be a discussion on NHS Lothian escalation at HSCMB tomorrow morning. NHS Lothian is currently escalated to stage 3. An Oversight Group is in place, led by John Connaghan and a recovery plan is being developed for the first week in November. In broad terms, 3 of the 6 areas of performance are showing signs of improvement. We would therefore propose that we continue with the current approach for recovery in relation to the 6 areas of performance.

In relation to Sick Kids, we now have an action plan in place which will lead to the occupation of the building by Autumn 2020. However given the increase in number of issues to be rectified, the increased length of delay and increase in cost, we recommend that our level of intervention in relation to the RHCYP is now increased to Stage 4 in order to provide confidence that the plan of action will be delivered. We therefore propose putting in place a Senior Programme Director who will take responsibility for day to day delivery of the RHCYP operational phase from now until the site is fully occupied. The Senior Programme Director will work alongside the clinical and operational team in NHS Lothian and will report directly to SG, in line with Stage 4 escalation procedures. We will also make available additional independent technical advice. The Oversight Board will also remain in place.

We are working on identifying options for the programme director, subject to the proposal being accepted by DG/Cabinet Secretary.

In relation to consideration of removal of Accountable Officer status, the legal advice provided suggests that there is insufficient evidence due to the dispersed nature of responsibility for the situation in critical care. There are however important questions of system failure, which is the rationale for proposing a response based on escalation of the specific RHCYP programme to Stage 4.

>>>

Regards

Alan

From: Corr A (Andrew) [REDACTED] **On Behalf Of** Cabinet Secretary for Health and Sport

Sent: 10 September 2019 10:21

To: DG Health & Social Care [REDACTED]; McLaughlin C (Christine) [REDACTED];
Cabinet Secretary for Health and Sport [REDACTED]

Cc: Wright M (Malcolm) [REDACTED]; Morrison A (Alan) [REDACTED]; Rogers S (Shirley) [REDACTED]; McQueen F (Fiona) [REDACTED]; Hutchison D (David) [REDACTED]

Subject: URGENT: Further briefing for FM/Cab Sec discussion

Christine/Malcolm,

The Cabinet Secretary has had a brief discussion with the FM at Cabinet this morning and will speak again with her later today at Parliament. For that follow up meeting the Cabinet Secretary has asked for the following information:

1. More detail on costs to autumn 2020.
2. More detail on mitigation measures at existing site and Western General
3. Need to sort accountability question - so need to know what the detailed plan is here, what legal advice is and exactly what she can say we are doing on this (her view is that it is not credible to have nothing to say or something vague on this).

I would be grateful if this further information could be with us by 1300. The FM has asked to see both the NSS and KPMG reports and I will pass these to her office just now.

Thanks,
Andy

Andrew Corr
Private Secretary to the Cabinet Secretary for Health and Sport
The Scottish Government



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From: Bowman D (David) on behalf of Cabinet Secretary for Health and Sport
Sent: 26 September 2019 14:28
To: Morrison A (Alan)
Cc: DG Health & Social Care; Wright M (Malcolm); McLaughlin C (Christine); McQueen F (Fiona); Calderwood C (Catherine); Chief Medical Officer; Crowe B (Barbara); Cabinet Secretary for Health and Sport; Communications Healthier; Aitken L (Louise); Hart S (Suzanne); Klein G (Gerard); Hutchison D (David)
Subject: FW: Sick Kids - letters
Attachments: Letter from Jeane Freeman MSP_2.pdf; AGS_letter_to_Cab Sec Sept 19.pdf
Importance: High

Hi Alan

Further to my e-mail below, Ms Freeman has added that she would like the response to mention that it is helpful a section 22 is being drafted.

Regards

David Bowman
 Deputy Private Secretary
 Ministerial Private Office (Health)

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From: Bowman D (David) On Behalf Of Cabinet Secretary for Health and Sport
Sent: 25 September 2019 15:28
To: Morrison A (Alan) [REDACTED]
Cc: DG Health & Social Care [REDACTED]; Wright M (Malcolm) [REDACTED]; McLaughlin C (Christine) [REDACTED]; McQueen F (Fiona) [REDACTED]; Calderwood C (Catherine) [REDACTED]; Chief Medical Officer [REDACTED]; Crowe B (Barbara) [REDACTED]; Cabinet Secretary for Health and Sport [REDACTED]; Communications Healthier [REDACTED]; Aitken L (Louise) [REDACTED]; Hart S (Suzanne) [REDACTED]; Klein G (Gerard) [REDACTED]; Hutchison D (David) [REDACTED]
Subject: FW: Sick Kids - letters
Importance: High

Hi Alan

We have received the attached response today from the Auditor General.

I would be grateful if you could draft a response for the Cabinet Secretary's signature acknowledging the letter.

Regards

David Bowman
Deputy Private Secretary
Ministerial Private Office (Health)
St Andrew's House
Edinburgh

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From: Bowman D (David) **On Behalf Of** Cabinet Secretary for Health and Sport

Sent: 11 September 2019 15:21

To: Morrison A (Alan) [REDACTED]

Cc: DG Health & Social Care [REDACTED]; Wright M (Malcolm) [REDACTED]; McLaughlin C (Christine) [REDACTED]; McQueen F (Fiona) [REDACTED]; Calderwood C (Catherine) [REDACTED]; Chief Medical Officer [REDACTED]; Crowe B (Barbara) [REDACTED]; Cabinet Secretary for Health and Sport [REDACTED]

Subject: RE: Sick Kids - letters

Thank you for drafting these letters.

I have now sent them out (signed letters attached for reference).

They were also sent as word documents so that the link could be accessed.

Regards

David Bowman
Deputy Private Secretary
Ministerial Private Office (Health)
St Andrew's House
Edinburgh

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From: Morrison A (Alan) [REDACTED]

Sent: 11 September 2019 13:38

To: Cabinet Secretary for Health and Sport [REDACTED]

Cc: DG Health & Social Care [REDACTED]; Wright M (Malcolm) [REDACTED]; McLaughlin C (Christine) [REDACTED]; McQueen F (Fiona) [REDACTED]; Calderwood C (Catherine) [REDACTED]; Chief Medical Officer [REDACTED]; Crowe B (Barbara) [REDACTED]

Subject: Sick Kids - letters

Andy

I have added the following paragraph to each letter:

NHS Lothian is currently at level 3 of our performance escalation framework. However given the issues with the new hospital and the number of issues to be rectified, the Scottish Government Health and Social Care Management Board has escalated NHS Lothian to Stage 4 for this project. A Senior Programme Director will be appointed, reporting directly to Scottish Government.

Cabinet Secretary for Health and Sport
Jeane Freeman MSP



Scottish Government
Riaghaltas na h-Alba
gov.scot

[REDACTED]

Caroline Gardner
Auditor General for Scotland
By email

11 September 2019

I am writing to you today following my update to Parliament on the delay to the opening of the Royal Hospital for Children and Young People, the Department of Clinical Neurosciences and the Child and Adolescent Mental Health Service.

You will be aware that I had commissioned two reports – one from KPMG and one from NHS National Services Scotland (NSS) – both of which have been published today.

Through the work of the NSS report we now understand the range of issues which require to be resolved prior to occupation of the building. NHS Lothian accept the recommendations in the report and their action plan has also been published today.

The two reports and NHS Lothian's action plan can be accessed here:

- <http://www.gov.scot/ISBN/9781839601552> - KPMG REPORT
- <http://www.gov.scot/ISBN/9781839601569> - NSS REPORT
- <http://www.gov.scot/ISBN/9781839601637> - NHS REPONSE

As outlined in my statement to Parliament, children's services will remain on the current site, likely until Autumn 2020, and the Department of Clinical Neurosciences (DCN) is expected to migrate services in Spring 2020. There are risks associated with the timeline but they will be closely managed by the Oversight Board which I established last month to oversee this project.

NHS Lothian have identified some short-term investment options to help upgrade their current facilities, including securing a modular unit which will provide greater resilience to the DCN service, which the Scottish Government will support.

The KPMG report sets out a clear picture of human error and confusion over interpretation of standards and guidance - and missed opportunities to spot and rectify that error.

While the report sets out what happened, I now need to establish why there was confusion and why the errors were not identified earlier.

NHS Lothian is currently at level 3 of our performance escalation framework. However given the issues with the new hospital and the number of issues to be rectified, the Scottish Government Health and Social Care Management Board has escalated NHS Lothian to Stage 4 for this project. A Senior Programme Director will be appointed, reporting directly to Scottish Government.

It is important to note that my focus remains on patient safety and I am confident that staff will continue to provide their customary high standard of care while remedial works are taken forward.

I understand that you are considering whether the situation warrants a section 22 report. Please be assured that we shall fully cooperate with any further investigation you may decide to undertake.

Kind regards

A large black rectangular redaction box covers the signature area. A white horizontal bar is positioned across the middle of the box, containing the name "Jeanne Freeman" in black text.

Jeanne Freeman

Jeane Freeman MSP
Cabinet Secretary for Health and Sport
The Scottish Government

25 September 2019

Dear Cabinet Secretary,

Thank you for your letter of 11 September 2019 regarding the delay to the opening of the Royal Hospital for Children and Young People, the Department of Clinical Neurosciences and the Child and Adolescent Mental Health Service in Edinburgh.

After careful consideration of the reports by KPMG and NHS National Services Scotland (NSS) I have decided to draft a report under section 22(3) of the Public Finance and Accountability (Scotland) Act 2000. The report will be based on the auditor's report for NHS Lothian for the year ended 31 March 2019, and the reviews carried out by KPMG and NSS, and will go through our normal process for agreeing factual accuracy.

I intend to send the report to the Scottish Government for laying in Parliament by the end of November 2019. I will present the report to the Public Audit and Post Legislative Scrutiny Committee in Parliament in due course.

If you have any questions please do not hesitate to get in touch.

Yours sincerely


Caroline Gardner
Auditor General for Scotland

From: McLaughlin C (Christine)
Sent: 11 September 2019 10:21
To: DG Health & Social Care; Morrison A (Alan)
Cc: OCENHS Mailbox
Subject: Outcome of HSCMB discussion on NHS Lothian Escalation

To confirm that the HSCMB discussed a paper on escalation of NHS Lothian, as is standard practice to consider and review escalation when new information comes to light.

The Director General made a decision based on the HSCMB discussion, to escalate NHS Lothian to Stage 4 specifically because of the scale of the challenges in delivering the Royal Hospital for Children and Young People. Stage 4 is defined as 'significant risks to delivery, quality, financial performance or safety; senior level external transformational support required.

HSCMB also agreed with the proposed action to be taken in response in order to support the Board to deliver the project and to provide additional confidence in delivery.

This means that we will strengthen the management and assurance arrangements for completing all of the outstanding works necessary to open the facility. We will retain the role of the Oversight Board which includes senior figures from Scottish Government Health and Social Care Directorate, NHS National Services Scotland, Scottish Futures Trust and NHS Lothian. The Oversight Board will take overall responsibility for the completion of the works and opening of the hospital, reporting directly to the Cabinet Secretary. Underneath that Board a Senior Programme Director will be appointed, reporting directly to Scottish Government, supported by additional independent technical advice, to give the confidence that is required over the management and oversight of the actions identified in the reports that have been published today.

Christine



Christine McLaughlin

Chief Finance Officer NHS Scotland and Director of Health Finance, Corporate Governance and Value

[Redacted]

[Redacted]

From: Bowman D (David) on behalf of Cabinet Secretary for Health and Sport
Sent: 11 September 2019 13:24
To: Aitken L (Louise); McLaughlin C (Christine); Calderwood C (Catherine); Murray D (Diane); Smith G (Gregor); Rogers S (Shirley); Wright M (Malcolm); DG Health & Social Care; Chief Medical Officer; Hart S (Suzanne); Roche R (Rowena); Connaghan J (John) (Health); McCallum R (Richard); Neill S (Sean); Burkinshaw B (Beata); McQueen F (Fiona); Ives J (Josephine); Shepherd L (Lesley); Mair S (Suzi); Hutchison D (David); Crowe B (Barbara)
Cc: Cabinet Secretary for Health and Sport
Subject: Ministerial Statement: The Royal Hospital for Children and Young People (RHCYP)
Attachments: DH Statement 190911.docx

Good Afternoon

Please find attached a copy of the statement the Cabinet Secretary for Health and Sport will be giving today at 14:40.

DG Health & Social Care (private office) – Grateful if you could pass this on to the Chief Executive of NHS Lothian.

Regards

David Bowman
Deputy Private Secretary
Ministerial Private Office (Health)



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Parliamentary Statement

EDINBURGH CHILDREN'S HOSPITAL

Presiding Officer, I am grateful for this opportunity to update Parliament on the Royal Hospital for Children and Young People and the Department of Clinical Neurosciences.

Before I do, I want to put on record my sincere thanks to all the staff for their forbearance in difficult circumstances.

I am genuinely sorry that the considerable work they put into planning the move to the new hospital could not yet be realised. I am acutely aware that for many, the halt created significant personal challenges to important domestic arrangements.

This morning I met with the Chair of NHS Lothian and the Employee Director and have written again to all staff involved to update them on the current situation I am setting out to the chamber now.

Let me also record my thanks to the patients and families affected for their forbearance and patience. The safest possible care of their children is my overriding priority and I am sorry for any impact the current situation has had on them.

I will today also write to the Auditor General - I have kept her fully informed to date and I want to assure Parliament that we will of course fully co-operate with any further scrutiny Audit Scotland or Committees of this Parliament may choose to undertake.

Following my decision to halt the opening of the new facilities in July, I commissioned two reports – one from KPMG and the other from NHS National Services Scotland (NSS).

KPMG were asked to consider issues of governance and establish the facts leading to the decision to delay the move.

NSS were asked to examine the whole site to advise me on all relevant compliance issues. I am publishing both reports today.

NSS

The NSS report provides a detailed assessment of key buildings and identifies issues which require to be resolved to ensure

safety prior to occupation. While the report is technical, I want to highlight the following areas:

- **In ventilation**, and in addition to the issue previously identified in critical care, remedial action is required on the quality of work in a number of areas - with specific issues identified in Haematology / Oncology.
- **Water Systems** - Independent testing identified no widespread contamination of the water systems, but NSS has recommended some remedial and precautionary actions, as well as system-wide disinfection prior to occupation.
- **Drainage and Plumbing** – NSS has recommended active monitoring of the drainage system and concluded that elements of plumbing require monitoring and routine disinfection. However this is considered a low risk.

NHS Lothian have accepted all the recommendations and their action plan is also published today.

Phase two of NSS's review is assessing fire, medical gases and electrical safety and while that work is still in progress, there is no indication that findings in these areas will create a further delay beyond that which I will set out today.

It is clear that there is significant work to be undertaken to ensure the site is fully compliant.

The work that has been done over the past weeks to identify and plan the remediation of all of the outstanding issues allows me now to give a clearer indication of a realistic timeline for moving into the new hospital.

Next Steps – Timeline

The additional work recommended by NSS can be undertaken in parallel to the work to resolve the ventilation issue in critical care. The key consideration in determining when the move to the new facilities can take place is the time to rectify the critical care ventilation system.

This work includes designing, procuring and installing the solution for the critical care ventilation system, and then rigorously testing and validating it.

This is work that I regret to say will take time.

However, in the interests of patient safety, I will not authorise a move to the new site until this work has been completed, tested and found to be fully compliant.

The work will be carried out as quickly as possible - but to ensure that it is done properly and to give maximum certainty to staff and patients - I have concluded that children's services will remain on the current site, until **next Autumn**.

The Department of Clinical Neurosciences is unaffected by the issue in critical care - however the additional work required to rectify issues at the Children's Hospital may impact on the DCN clinical pathway.

I am, though, mindful of the challenges faced in the current DCN location and have asked that the work on the Children's Hospital is phased to allow DCN to migrate earlier. My current expectation is that the DCN will be able to move in Spring next year.

KPMG

The KPMG report on governance sets out a clear picture of human error and confusion over interpretation of standards and guidance and missed opportunities to spot and rectify that error.

Members can read the report in full but, in short, the main problem stems from a key document - the Environmental Matrix - first produced by NHS Lothian in late 2012, which was

inconsistent with the guidance, but was referred to throughout the project.

I want to be clear that I hold the principle of accountability in and of our health boards to be vitally important. This is a publically funded project of strategic importance, which has not been delivered by NHS Lothian in compliance with the standards and guidance. That is unacceptable. There are clearly issues to be considered now about accountability within the Board. They must be considered carefully and with due process. I will advise Parliament of the outcome of that work in due course.

Ladder of Escalation

NHS Lothian is currently at level 3 of our performance escalation framework.

However given the issues with the new hospital and the number of issues to be rectified, the Scottish Government Health and Social Care Management Board has escalated NHS Lothian to Stage 4 for this project.

This means that, in relation to this project, we have assessed that there are significant risks to delivery, quality, financial performance and safety and that senior level external support is required.

A Senior Programme Director will be appointed, reporting directly to Scottish Government.

Costs

All of this – the delay, the additional work needed at the new hospital, and the additional work needed to ensure the existing sites can continue to operate well – all comes at an additional cost.

Given that NHS Lothian had taken possession of the site, the unitary payment of £1.35 million per month requires to be made, even though the facilities are not yet open.

But these payments were already budgeted for and so strictly speaking this is not an additional cost.

The additional costs arise from the work needed to replace the critical care ventilation system, undertake the other remedial work identified by NSS and work in respect of the continued operation and improvement of the current sites.

These costs will continue to be refined - and I will keep Parliament updated. But I can advise members today that the current estimate of additional costs for these works is £16 million.

Accountability

This is a publicly funded project of strategic importance, which has not been delivered by NHS Lothian in compliance with the standards and guidance required for the safety of patients and

staff. The delay we now face will be borne by NHS staff in Lothian, by patients and their families and the additional cost will be borne by the Health Portfolio.

Presiding Officer, there have been many major infrastructure projects delivered by NHS Boards in Scotland – on time, on budget and in compliance. However, we cannot have a repetition of the problems we see today – that’s not right for the public purse and it’s not good enough for patients or staff.

In line with the Programme for Government, we will move swiftly to establish a new national body for reducing and effectively managing risks in the healthcare built environment. The new body will have oversight for the design, planning, construction and maintenance of major NHS infrastructure

developments – not least in order to ensure effective infection prevention and control.

Presiding Officer, the NSS and KPMG reports are detailed and I appreciate that members will not have had time to read them fully before this statement. So I have arranged to meet opposition party spokespeople tomorrow to answer any questions they have. I have also written to the Convenor of the Health and Sport Committee, and am of course very happy to provide his Committee with additional information or to attend to answer their questions.

As I set out earlier, my overriding priority – and I know that of this chamber – is patient safety. The children and families who depend on these hospital services should receive them in the safest way possible.

Check against delivery – embargoed until 14:40

The current situation is not one anyone would chose, but it is one that we will resolve and deliver the safe migration of service to the new Royal Hospital for Children and Young People and Department of Clinical Neurosciences.

From: McLaughlin C (Christine)
Sent: 11 September 2019 10:30
To: Morrison A (Alan)
Subject: FW: Sick Kids estimated costs

From: McLaughlin C (Christine)
Sent: 11 September 2019 10:29
To: First Minister [REDACTED]; Cabinet Secretary for Health and Sport [REDACTED]
Cc: McAllister C (Colin) [REDACTED]; Somers J (John) [REDACTED]; Hutchison D (David) [REDACTED]
Subject: RE: Sick Kids estimated costs

Apologies

The First Minister is correct that the Settlement Agreement was already known and planned for. This was funded from the unitary charge payments not made due to the initial delay to the programme.

Therefore it is correct to say that they are not part of the direct additional costs of the delay in July 2019.

The revised wording in the statement presents the information correctly.

Christine

From: Ward M (Martin) [REDACTED] **On Behalf Of** First Minister
Sent: 11 September 2019 09:29
To: Cabinet Secretary for Health and Sport [REDACTED]; First Minister [REDACTED]
Cc: McAllister C (Colin) [REDACTED]; Somers J (John) [REDACTED]; Hutchison D (David) [REDACTED]; McLaughlin C (Christine) [REDACTED]
Subject: RE: Sick Kids estimated costs

All,

The First Minister has noted the response and commented that it does not address her question about the Settlement Agreement Costs.

Could we please have a response on this?

FM also commented she included revised wording in the draft sent this morning.

Many thanks

Martin
Martin Ward
DPS/First Minister of Scotland

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From: Corr A (Andrew) [REDACTED] **On Behalf Of** Cabinet Secretary for Health and Sport
Sent: 11 September 2019 09:07
To: First Minister [REDACTED]; Cabinet Secretary for Health and Sport [REDACTED]
Cc: McAllister C (Colin) [REDACTED]; Somers J (John) [REDACTED]; Hutchison D (David) [REDACTED]; McLaughlin C (Christine) [REDACTED]
Subject: RE: Sick Kids estimated costs

Martin,

Officials have come back on the questions asked by the FM and their response is as follows (I am copying them in here in case the FM has any follow up questions throughout the morning):

The direct additional costs of the delay are estimated at £12.5m and I think it is important to be clear on that.

We will also be paying a unitary charge for a building that we are not occupying and the monthly charge is £1.35m. So for the period from July 2019 to April 2020 when we anticipate DCN moving in we will pay 10 months unitary charge of £13.5m. Worst case is that we will not occupy the building until November which would mean a unitary charge of 17 months which is a unitary charge of £22.9m.

On point 2, we do not believe that the costs on drainage and water are material and are assumed to be covered within general maintenance budgets.

We will amend the statement to reflect the differentiation in additional costs.

Thanks,
Andy

From: Ward M (Martin) [REDACTED] **On Behalf Of** First Minister
Sent: 10 September 2019 22:28
To: Cabinet Secretary for Health and Sport [REDACTED]; First Minister [REDACTED]
Cc: McAllister C (Colin) [REDACTED]; Somers J (John) [REDACTED]; Hutchison D (David) [REDACTED]
Subject: RE: Sick Kids estimated costs

Andy,

The First Minister has noted the estimated costs provided and has asked for clarification on the following:

1. Why would we include costs of settlement agreement as arising from this delay - it was already known and predates the most recent issues?
2. There is a £4m cost for fixing critical care and oncology ventilation - what about costs of other issues eg water, drainage identified in NSS report?
3. Lastly, if the unitary charge payments would require to have been made anyway had hospital opened on time, it's not correct to say they are an additional cost

All of which suggests that the net additional cost is £12.5 m - if we are absolutely sure about that (point 2 above is one query FM has) FM would have thought that's the figure we should use. Based on this breakdown it doesn't seem accurate for statement to talk - as current draft does - about cost of the delay being £40m+

Grateful if these points could please be passed on to the relevant officials to take forward and if a response could be provided for the First Minister as soon as practicably possible tomorrow morning.

Happy to discuss further if required.

Kindest regards

Martin

Martin Ward

DPS/First Minister of Scotland

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From: Corr A (Andrew) [REDACTED] **On Behalf Of** Cabinet Secretary for Health and Sport
Sent: 10 September 2019 21:44
To: First Minister [REDACTED]; Cabinet Secretary for Health and Sport [REDACTED]
Cc: McAllister C (Colin) [REDACTED]; Somers J (John) [REDACTED]; Hutchison D (David) [REDACTED]
Subject: Sick Kids estimated costs

Martin,

Here is a one page summary on estimated additional costs – in the spreadsheet and copied below for ease. Please let me know if the FM wants any further information regarding this.

Thanks,
Andy

Estimated Debit Entries - 2015-2016		
Description	Costs	Comments
Costs of operations and supplies		
Electricity	10,000	
Water	2,000	
Gas	3,000	
Telephone	1,000	
Costs of maintenance and repair		
Repairs	5,000	
Supplies	2,000	
Travel	1,000	
Printing	1,000	
Postage	1,000	
Costs of depreciation		
Buildings	10,000	
Furniture	5,000	
Equipment	5,000	
Costs of interest		
Interest	1,000	
Costs of insurance		
Insurance	1,000	
Costs of taxes		
Taxes	1,000	
Total	45,000	

From: Henderson C (Calum) on behalf of DG Health & Social Care
Sent: 13 September 2019 13:13
To: Executive, Chief; Houston (Brian [REDACTED])
Cc: DG Health & Social Care; McLaughlin C (Christine)
Subject: Letter from Malcolm Wright - 13 September 2019
Attachments: Letter - MW - B Houston and T Davison - NHS Lothian Level 4 Escalation - Sept 2019.pdf

Both

Please find attached from Malcolm Wright

Regards

Calum

Calum Henderson
Assistant Private Secretary to Malcolm Wright, DG Health and Social Care and Chief Executive
NHSScotland

[REDACTED]

Director-General Health & Social Care and
Chief Executive NHSScotland
Malcolm Wright



Scottish Government
Riaghaltas na h-Alba
gov.scot

[REDACTED]
[REDACTED]

Brian Houston, Chairman of NHS Lothian
Tim Davison, Chief Executive of NHS Lothian



13 September 2019

Dear Brian and Tim

Royal Hospital for Children and Young People & Department of Clinical Neurosciences

Following the decision to halt the move to the new hospital, the Cabinet Secretary commissioned two independent reviews. The first by NHS National Services Scotland (NSS) to undertake a detailed assessment of all systems in the new hospital that could impact on safe operation for patients and staff. The second by KPMG to conduct an independent audit of the governance arrangements for RHCYP, ensuring a full understanding of the factors that led to the delay in the hospital's opening on 4 July 2019.

Having reviewed the contents of both reports that were published on Wednesday 11 September I have concluded, on the basis of scale of the challenge in delivering the Royal Hospital for Children and Young People, that NHS Lothian is escalated to Level 4 of our performance framework for this specific project. This level is defined as 'significant risks to delivery, quality, financial performance or safety; senior level external transformational support required.

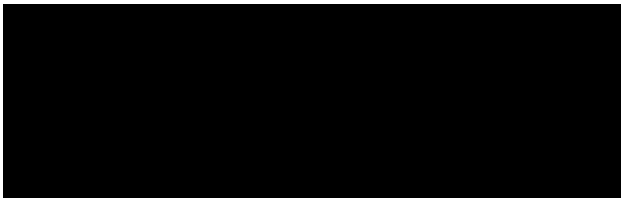
In her statement to Parliament on Wednesday 11 September, the Cabinet Secretary set out the steps that will now be taken to strengthen the management and assurance arrangements for completing all of the outstanding works necessary to open the facility. We will retain the RHCYP Oversight Board which includes senior figures from Scottish Government Health and Social Care Directorates, NHS National Services Scotland, Scottish Futures Trust and NHS Lothian. The Oversight Board will continue to take overall responsibility for the completion of the works and opening of the hospital, reporting directly to the Cabinet Secretary. Underneath that Board a Senior Programme Director will be appointed, reporting directly to Scottish Government and this will be further supported by additional independent technical advice, to give the confidence that is required over the management and oversight of the actions identified to ensure the facility is fit for occupation.

I have appointed Mary Morgan to the role of Senior Programme Director, effective from Monday 16 September. Mary is currently Director of Strategy, Performance and Service Transformation in NHS National Services Scotland and most recently was Director for the Scottish National Blood Transfusion Service and led the successful completion of the new

SNBTS facility (Jack Copland Centre). In her role as Senior Programme Manager Mary will have responsibility for the actions to ensure that the facility is fit for occupation. All other actions relating to the existing site and to the service migration to the new facility, will remain the direct responsibility of NHS Lothian. I expect Mary to work as part of the NHS Lothian team and within your existing governance arrangements, whilst also formally reporting to the chair of the Oversight Board.

The Cabinet Secretary has also clearly set out in parliament her concerns about the issues that have led to the delay and the non-compliance with standards and guidance. It is my intention to hold further meetings with you over the coming weeks to discuss the response of the Board to the two reports, and to address the accountability questions that have been raised in relation to the current status of the project and findings of fact made by KPMG and NSS.

Yours sincerely



Malcolm Wright
Director General for Health & Social Care and Chief Executive of NHSScotland

DRAFT**RHCYP/ DCN Executive Steering Group**

Minutes of the RHCYP/DCN – Executive Steering Group meeting held at 4:00pm on Monday 23 September 2019 in Meeting Room 5, Waverley Gate, Edinburgh.

Present: Susan Goldsmith (Chair); Jacquie Campbell; Sorrel Cosens; George Curley; Brian Currie; Tracey Gillies; Iain Graham; Donald Inverarity; Judith Mackay and Mary Morgan.

In Attendance: Douglas Weir.

Apologies for Absence were received from Janis Butler, Tim Davison, Lindsay Guthrie and Alex McMahon.

1. Welcome and Introduction

1.1 Susan Goldsmith welcomed and introduced Mary Morgan to colleagues at the meeting.

2. Minutes of the Previous Meeting held on 9 September 2019

2.1 Approved.

3. Matter Arising

3.1 Contract Management – with reference to Minute 6.2 of the previous meeting,; the paper referred to remained work in progress with the wider exercise looking at all of the PFI portfolio. It was agreed that the paper once finalised would be considered through the Executive Leadership Team.

3.2 Draft Duty Holder Responsibility Matrix – It was noted that the circulated matrix highlighted areas where assurance around the identification of individuals and their awareness of obligations still remained to be confirmed. It was noted that the matrix needed to be updated to reflect discussion at the Corporate Management Team where it had been agreed that further work was needed in respect of the allocation of responsibility for the discharge of duties. Although the Chief Executive was the overall Accountable Officer it was not felt to be appropriate for him to be identified as lead Director and that this should be assigned to a nominated Executive Lead or Executive Director.

3.2.1 Iain Graham advised that the matrix was a nationally produced template. Donald Inverarity advised that some of the terminology used reflected the English rather than

the Scottish position. Iain Graham advised that he would reflect these issues back to the source of the document.

- 3.2.2 Susan Goldsmith advised that next steps in terms of the completion of the matrix would be discussed at the Executive Director informal session to be held the following morning.
- 3.3 Supplementary Risk Assessment for Lochranza Ward Ventilation – Tracey Gillies advised that she had circulated to the Haematology / Oncology Clinical Team seeking comments and advising that the exact means to deliver issues would be discussed at a technical workshop. She commented that she felt that the risk assessment was very clear and she fully supported it. It was noted that it described that all clinical areas where children spent any length of time or underwent procedures needed to be at 10+10pa with HEPA filters. Tracey Gillies commented that it was also clear that non-clinical areas – which would include the playroom, would not need to be included. The playroom was for families and siblings, not just patients, during what could be a long and difficult stay and gave them an opportunity for outside space without leaving the ward which might be especially valued by families in a palliative phase. It was noted that the options available were either to specifically identify the rooms requiring 10+10 H12 (which was in the HVC) or to deliver the standard of 10+10 to the whole unit. Tracey Gillies commented that there was a feeling that the latter might be easier to do in engineering terms and this would be acceptable although it would need a plan to spell out that doors between the ward and playroom should be shut if playroom doors to the courtyard were open. The need for specified higher extracts from bathrooms to ensure correct air flow was noted. Tracey Gillies commented that it was clear to her that this was a large volume of space to deliver to and there would a need to have confidence that the engineering solution would deliver what was required. She advised that she did not want to be in the awkward position of in six months time having a solution which did not deliver what was required. She felt that any solution agreed at a workshop needed to be signed off as fit for purpose by a certified engineer.
- 3.3.1 Mary Morgan commented that the Oversight Board would require confirmation that the risk assessment had been agreed by clinicians and that any changes to the scope needed to be clear about requirements.
- 3.3.2 Brian Currie advised that it would be possible to devote 30 minutes of the scheduled meeting on Friday to discuss this issue.
- 3.3.3 Susan Goldsmith suggested that at the workshop meeting on Friday that there would be benefit in obtaining agreement of room schedules that needed the 10+10 solution. Tracey Gillies commented that the clinical risk assessment was clear about issues like the playroom. Brian Currie advised that he would obtain engineering views from HFS, NHSL Facilities and Mott MacDonald about the cost, programme and operational implications of a 100% approach as opposed to attending to areas that absolutely required the 10+10 solution.
- 3.3.4 It was agreed to discuss further at the workshop session on Friday and to bring the output back to the Executive Steering Group on 30 September 2019 hopefully with an internal consensus that could then be discussed at the Oversight Board.

4. Oversight Board Feedback – 19 September Meeting

- 4.1 Susan Goldsmith provided an update on the meeting which consisted of solely verbal reports. Amongst the issues discussed were fire, drainage, updated terms of reference and the impact of the statutory public inquiry, Lochranza Ward as well as options around DCN bi-plane imaging equipment replacement and whether a modular solution could be provided within the necessary timescale. Susan Goldsmith commented that for the next meeting it would be helpful to get a view back from Siemens in respect of procurement timelines. Jacquie Campbell would discuss with Michelle Carr and provide a written update on all issues including procurement to the next meeting.
- 4.2 Mary Morgan commented that a key issue was about whether procurement could be accelerated as well as links with the Glasgow position and issues around the potential future provision of thrombectomy services. Tracey Gillies advised on the need for a risk assessment around where the new machine could be located and the need to avoid 4 weeks of service downtime. She felt that the provision of the modular unit was more difficult than the securing of the machine.
- 4.3 Mary Morgan reported that the Oversight Board had also discussed other issues that needed to be addressed on existing sites.

5. Drainage Concern from Staff Side

- 5.1 The Steering Group discussed the circulated report that intended to address concerns raised by Unison about the drainage position at the new hospital. Brian Currie spoke to the circulated paper which set out a brief history of drainage issues and set out the 7 steps of mitigation measures following a failure analysis.
- 5.2 Brian Currie commented that the issue about the location and size of the sump in the basement and the external one had been discussed at previous workshops and other forum ,leading to the Settlement Agreement in Feb 2019 ,where additional measures had been put in place in order to step up mitigation against failure of the system. He provided a detailed synopsis of the various steps of failure and mitigation that had been put in place.
- 5.3 Brian Currie advised that although the situation was not ideal NHS Lothian had agreed the mitigation measures in the Settlement Agreement and that nothing further could practicably be put in place.
- 5.4 Susan Goldsmith commented that there would be a need to test the proposed response with Partnership colleagues. In particular it would be important to ensure that Tom Waterson was content with the paper and what it was illustrating in order that a unified view could be adopted moving forward. Alex Joyce advised that he would discuss with Tom Waterson the following morning and obtain a formal response from him. Brian Currie advised that he and Ronnie Henderson would be happy to discuss any aspects of the paper if this was helpful.

- 5.5 Mary Morgan advised that this issue had also been raised by clinical staff and it would be important to share confidence in this issue. Therefore any positive comments from the Lothian Partnership Forum and Unison in particular would be helpful. The point was made that if any issues of concern remained then these needed to be evidenced. Alex Joyce stressed that this was a single Trade Union issue and not a Partnership one.
- 5.6 It was agreed that the outcome of the meeting between Alex Joyce and Tom Waterson and any subsequent amendments to the paper would be discussed at the meeting the following week prior to being submitted for sign-off to the Oversight Board.

6. IHSL Steering Group Feedback – 19 September Meeting

- 6.1 It was noted that Mary Morgan had been introduced to the IHSL Team. There had been reasonable attendance at the meeting where concerns and anxieties around the public inquiry and press reaction had been evident. The point was made that there was a need for IHSL to strengthen their team in order to respond to outstanding issues. It had been positive however at the meeting that they had recognised the need to up their game.
- 6.2 IHSL had raised the need for greater clarity around what they needed to do; this would be picked up as part of the action log process. Susan Goldsmith felt however that there was a need to help them by being explicit about what was expected from them. The point was made that there would be opportunities at the workshop the following day to attempt to create a single action plan from the various reports and organisations. This would highlight who owned what parts of the process and the need for delivery.
- 6.3 It was reported that Bouygues had asked for an extra week to respond to the changes required in respect of critical care with there having been a nervousness displayed around media comment. It was agreed that it would be important to get senior players from Bouygues around the table as part of routine business with it being recognised that this would be of potential commercial benefit to them. If no response had been received from them in respect of critical care by Thursday then this would be escalated. Tracey Gillies commented that she felt that there would be benefit in Bouygues being in the room when issues were being discussed and this approach had proved to be successful elsewhere particularly in respect of water issues.
- 6.4 Brian Currie felt that progress was now being evidenced and that at the meeting the following day the intention was to go through NHS Lothian's response to the NSS published document and to provide contractors with instructions on how to proceed to deliver the necessary actions. Mary Morgan commented that it would be important that Bouygues were provided with an opportunity to be part of the solution moving forward.

7. Action Log / Progress Reporting

- 7.1 Brian Currie advised that the action plan had been updated since the previous meeting and contained issues not in the NSS report with the intention being to move to the provision of a single version of a tracker. Tracey Gillies reported that a high level report had been submitted in response to the NSS document detailing areas that had been addressed and other aspects that remained work in progress. She suggested that the forthcoming workshop should go through all of the tracker issues as in some instances they did not match up with the narrative in the NSS report. It would be important to ensure that the language in the NSS action plan and tracker documents applied a sense check to ensure that the language transferred across.
- 7.2 Sorrel Cosens advised that she was part way through pulling tracker reports together with there being a need to take an update paper to a forthcoming Oversight Board meeting. She commented that she would work with Mott Macdonald Ltd to obtain a single tracker and agreed report. Mary Morgan commented that if feedback from HFS and HPS was needed then she would be happy to discuss with them.
- 7.3 Brian Currie advised that the high level report that was already in the public domain was the document that would be discussed at the meeting with IHSL the following day. He advised that he would also be happy to discuss water and ventilation at the session the following day given that good attendance at senior level was anticipated.
- 7.4 Susan Goldsmith commented that although the report was in the public domain there was a need to get IHSL to deliver against the tracker and that if there were issues at a high level that they were uncomfortable with there was a need to address these. She felt that there was going to be a need for a series of workshops to address issues. Mary Morgan commented that in the future the opportunity to pull out clinical teams and have discussions with them would be helpful in building momentum.
- 7.5 Tracey Gillies commented in order to maximise the opportunities around the workshop session the following day that it would be important that NHS Lothian were clear about the work that needed to be fixed in order to avoid losing opportunities through obfuscation. Brian Currie commented that there were some direct Multiplex actions that needed to be addressed and it would also be good to discuss with them the IHSL position at the meeting the following day.

8. Technical Workstream Updates

- 8.1 Ventilation – Brian Currie advised that the expectation was that progress would continue to be made through continued discussions with NHS Lothian, Multiplex, Bouygues and IOM. Details of positive work that had either been concluded or was underway was provided. It was noted however that there were a number of issues that would be addressed and discussed at meetings later in the week. Brian Currie commented that he had high expectations that progress would be evidenced during the week and he felt that there was now better clarity about responsibilities and timelines. It was noted that HFS had been involved in ongoing discussions and the point was raised about whether it would be necessary to obtain something in writing from them acknowledging that they were content.
- 8.1.1 Brian Currie commented in respect of air handling units that a checklist was available that would be discussed at one of the workshop events later in the week where HFS,

IOM, HPS, Mott MacDonald, Donald Inverarity and Lindsay Guthrie would be in attendance.

- 8.1.2 Brian Currie commented that cabling would be an issue and consideration would need to be given to the forward programme if IHSL continued with their current position. It was noted that there had also been a rise in the number of ticket issues with the Bouygues Helpdesk and this remained an issue.
- 8.1.3 Discussion ensued around non-compliant issues raised by HPS particularly in respect of theatre grille issues.. Tracey Gillies commented that it was not enough to be aware of non-compliant issues but that there was a requirement for HPS to put forward proposals of how to fix issues to ensure compliance.
- 8.1.4 It was agreed that further feedback from the workshop sessions would be provided to the Executive Steering Group meeting on 30 September 2019 and thereafter to the Oversight Board.
- 8.2 Water – Susan Goldsmith commented that there was a requirement on IHSL and Bouygues in respect of monitoring regimes. Tracey Gillies commented that at the meeting the IHSL following day there should be an expectation around the triangulation of the water maintenance regime and the water safety plan and if there were any gaps this would need to be addressed. An update on work being undertaken by Lindsay Guthrie in this area was provided.
- 8.3 Drainage – Brian Currie advised that plumbing issues were being dealt with under the water workstream. Mary Morgan advised that there had been 3 areas referenced in the HFS report. As referred to earlier, staff concerns that had been raised with the Cabinet Secretary were being addressed.
- 8.4 Fire – Brian Currie advised that an all day workshop would be held on Friday of this week as part of this workstream. This would consist of a desktop exercise and would include the involvement of NHS Lothian Fire Officers. It was noted that if necessary Bouygues would arrange access to ceiling voids. Brian Currie advised that he hoped to drive down outstanding issues at the workshop session on Friday. Tracey Gillies commented that it would be important that the 3 fire related issues from the ventilation discussions were fully discussed, particularly in respect of dampers.
- 8.5 Electrical – Brian Currie advised that he was not anticipating anything of significant concern although the final report had yet to be received..
- 8.6 Medical Gases – it was noted that there was nothing currently of significance to report.

9. **Contracts Management Overview**

- 9.1 Brian Currie advised that the circulated paper represented a streamlined and updated version of the previous report. It was noted in respect of performance deductions that NHS Lothian was not minded to issue further penalty notices at this point but that deductions, where appropriate, would continue. It was noted that at the IHSL meeting the next day the intention was to go through key issues in order to

get Bouygues on board and to flush out any communication issues between them and Multiplex.

10. Communications Planning

- 10.1 Mary Morgan provided a detailed update on a walk around visit undertaken by the Cabinet Secretary, Chief Medical Officer and the Chief Executive of the NHS in Scotland and others to the existing RHSC facility. The issues discussed had been wide ranging and had included pay enhancement opportunities, sleep studies, communications with staff, unitary charge, £16m of additional funding from the Scottish Government and the need for a Lothian response on a service by service basis, expected future pinch-points, propositions for migration, the fact that new equipment was now 18 months old, winter and elective capacity, catering and facilities for families at the RHSC (currently only available until 2pm with a limited menu), possibilities around bringing the WRVS back on site, parents accommodation and vermin issues, staff feeling that the system had not listened to them (example provided of the 2 nurse call bells sounding the same and tracking hoists for lifting patients and the placement of curtain rails), staff health and wellbeing, staff retention, domestic staffing and catering, concerns about the current building leaking and being dirty in some parts, the need to make the building workable across the winter period including opportunities for primary care and the community to assist, pharmacy and laboratories struggling to undertake dual site working, opportunities to look at the strategy for young people across Scotland, preparedness of teams to treat a wider age range of patients in the new hospital and the need for DCN to move before spring.
- 10.2 The Cabinet Secretary had undertaken to produce a letter covering the issues highlighted during the visit. She had reported that the public inquiry scope would be wider than just Glasgow and Lothian and would look at infrastructures issues elsewhere. The Cabinet Secretary had also been clear that the Lothian Partnership Forum should be involved in issues moving forward.
- 10.3 It was reported that the Cabinet Secretary was keen to be advised of the names of the Executive Team members responsible for resolving issues on a site by site basis. She was also keen to receive detail about how the system would get through the winter period and how much this would cost along with the lead Director with responsibility for progressing this. An update had also been requested around catering.
- 10.4 Jacquie Campbell reported that she was involved in developing the NHS Lothian response to the forthcoming winter period and challenges that this might present, and that she would be the nominated lead. George Curley commented that he would progress issues raised around catering and associated services.
- 10.5 Mary Morgan commented that the visit although having raised a number of issues had been generally positive. In terms of communications with staff the Scottish Government were keen to sign-off an aligned communication within a 1 hour timeframe in order to ensure no delays. Judith Mackay would discuss with colleagues at the Scottish Government how to make the current process better. The possibility of using the Programme Director report were discussed. The Cabinet

Secretary had been clear that the Scottish Government were not vetoing communications with staff.

- 10.6 Judith Mackay commented that staff had not received an update on works for around 3 weeks. Following discussion it was agreed that Judith Mackay would pull together a proposal for discussion with Tim Davison on his return from leave. This could include issues around drainage, air handling and ventilation on a headline rather than detailed basis. Mary Morgan felt that this would be important and commented that there was a need to do something quickly about the catering situation. Updates on site visits by Directors should also be reported. Jacquie Campbell would provide an update on progress in respect of the development of winter plans. The expanded clinical walk around proposal would also be referenced. It was agreed that colleagues would submit narrative to Judith Mackay as soon as possible.
- 10.7 Tracey Gillies commented in respect of the fire position that it would be helpful if it could be reported that HFS concurred with the NHS Lothian view that there were no issues of concern. It would be important to maintain public confidence in view of recent FOI and media interest and comment.

11. Oversight Board Agenda for 26 September 2019

- 11.1 It was noted that the meeting on the 26 September 2019 had been stood down.

12. Any Other Competent Business

- 12.1 Costs of Works on Existing Sites – Susan Goldsmith spoke to the circulated paper and provided details of the breakdown around the £16m figure. She advised that every time the paper was updated it would be submitted to the Oversight Board for agreement. She commented currently that the number felt high and that there might be some flexibility. Mary Morgan commented that it would be positive to submit something firm to the Oversight Board. It was noted that the £16m figure was an agreed position with the Scottish Government. Mary Morgan advised that she would be meeting with Nick Bradbury to discuss the paper in further detail.
- 12.2 Ventilation and Water Workshops – It was agreed that there would be benefit in these workshops continuing.

13. Date and Time of Next Meeting

- 13.1 The next meeting of the Executive Steering Group would be held at 4:00pm on Monday 30 September 2019 in Meeting Room 5, Waverley Gate, Edinburgh.

From: Currie, Brian
Sent: 30 September 2019 17:06
To: Gillies, Tracey; Goldsmith, Susan
Cc: Morgan, Mary; Cosens, Sorrel; Curley, George; Inverarity, Donald; Campbell, Jacquie; Guthrie, Lindsay; Mackenzie, Janice; Henderson, Ronnie
Subject: RE: Updated risk assessment for Lochranza

Tracey

We have consulted with Mott MacDonald in relation to the engineering implications of delivering 10 a/c hr and 10+ pressure regime to all of the unit and can see no benefit in doing so strictly in engineering terms. Indeed the following issues suggest quite the contrary:

- Increased pressure in isolation rooms and increased air volume generally will require larger AHU's which may be difficult to find a suitable home for.
- Likely enhanced extract ventilation from surrounding corridors will be necessary.
- More extensive strip out and reinstatement with increased cost and programme durations.

In terms of design responsibility, this sits with IHSL. When a High Value Change Notice is issued IHSL are obliged to produce a detailed design to meet an output specification produced by NHSL with the High Value Change Notice. IHSL's design responsibility in connection with Changes is the same as their design responsibility in relation to any other Reviewable Design Data, i.e. **IHSL remain responsible for the design and NHSL's endorsement confirms Operational Functionality only.** I understand it is the Board's intention to ensure an appropriate governance process is in place to approve the design internally prior to the relevant endorsements being given, that we employ third party review (HFS/HPS, Authorising Engineers and Mott MacDonald) of the detailed design and that independent sign off of the construction be undertaken also by a third party.

We have cross checked the current risk assessment against the output specification in the HVC issued and there is no requirement to amend the change.

Regards

Brian

Brian Currie
Project Director - NHS Lothian
RHCYP + DCN

[Redacted]

[Redacted]



From: Gillies, Tracey
Sent: 23 September 2019 20:28
To: Currie, Brian; Goldsmith, Susan
Cc: Morgan, Mary; Cosens, Sorrel; Curley, George; Inverarity, Donald; Campbell, Jacquie; Guthrie, Lindsay
Subject: Fw: Updated risk assessment for Lochranza

Dear Brian,

See below for message sent to Haem onc Clinical team.

I think the risk assessment is very clear and I fully support it. It describes that all Clinical areas where children spend any length of time or undergo procedures need to be at 10 plus 10Pa with HEPA filter. It is also clear that non clinical areas - which would include the playroom, would not NEED to be included. The playroom is for families and siblings, not just patients during what can be a long and difficult stay and give them an opportunity for outside space without leaving the ward which may be especially valued by families in a palliative phase.

The option comes from either

- specify the rooms for 10+10 H12 (which was in our HVC)

Or

- deliver the standard of 10+10 to the whole unit. (Where would HEPA filters be?) hence the earlier emphasis on need - would not need to be but could be for ease of solution.

There is a feeling that this latter may be easier to do in engineering terms. This is the option in place in Monklands that Donald referred to and I think Ronnie has also mentioned. If it is, I think that's fine. I think it just needs a plan to spell out that doors between ward and playroom should be shut if playroom doors to the courtyard are open. It would need specified higher extracts from bathrooms to ensure correct air flow.

However what is also really clear to me is that this is a large volume of space to deliver to and we need to have confidence that the engineering solution will deliver what is required. Or to be frank, if it doesn't, we know who made that decision and why.

I don't want us to be in the awkward position of in 6months time having a solution delivered but which does not deliver what is required. While in normal circumstances I understand the design is up to IHSL, I think the least 3months have shown that that argument holds no water in accountability terms. So any solution agreed at a workshop needs, I believe, to be signed off by as fit for our purpose. Who should do that is up to Susan but it needs to be a certified engineer I would think.

Hope this clarifies what I meant this afternoon.

Tracey

From: Gillies, Tracey [REDACTED]
Sent: Monday, 23 September 2019 08:29
To: Jesudason, Angela; Eunson, Paul; 'DOYLE, Edward (NHS LOTHIAN)'; Bruce, Fiona; McGill, Julie
Cc: Morgan, Mary; Mitchell, Fiona (Director)
Subject: Updated risk assessmnetr for Lochranza

Dear Angela and colleagues (please could you forward on to relevant nursing and medical colleagues)
Please find attached the updated risk assessment for Lochranza. The exact means to deliver this will be discussed at a technical workshop but please come back to me with any queries. I've reattached the SBAR for ease
Tracey

ESCALATION ON BOARD PERFORMANCE FRAMEWORK: SICK KIDS'

- On 11 September, in response to the Royal Hospital for Children & Young People issues, Health Secretary made a statement to Parliament.
- The same day: the NSS report on the technical aspects; KPMG report on governance arrangements; and NHS Lothian action plan were also published.
- The Government have now escalated NHS Lothian to Stage 4 in the escalation framework for this project.
- As part of tailored support under escalation, a strategic programme director reporting to the Government has been appointed: Mary Morgan, Director of Strategy, Performance & Service Transformation at NSS.
- Board were previously escalated to Stage 3 on 12 July primarily as a result of the Sick Kids' issues and how addressing these will impact on senior management/leadership capacity/resilience.
- This is alongside other marked performance pressures in areas such as delayed discharge, waiting times and mental health provision.
- NHS Lothian have been escalated to level 4 on the escalation framework to provide confidence that the action plan and new hospital will be delivered.
- Mary Morgan will work closely with both the Government and senior management at NHS Lothian, and will oversee the safe delivery of the new Royal Hospital for Children and Young People.

SICK KIDS HOSPITAL

NOTE: 18 September – Tory debate saw SG amendment committing to public inquiry accepted (as was Labour’s on the same subject), but the Tories abstained on the final vote.

KPMG/NSS - 11 September - Health Secretary gave parliamentary statement publishing NSS/KPMG reports and NHS Lothian’s action.

Escalation – We’ve escalated NHS Lothian to level 4 in the escalation framework– meaning a strategic programme director (Mary Morgan), reporting to the Scottish Government, has been installed to oversee the completion of the project.

Delay - On 2 July NHS Lothian alerted SG to an issue with ventilation system in the critical Care unit of new Royal Hospital for Children and Young People.

- On 3 July, NHS Lothian and Health Facilities Scotland met to consider the various options available. They concluded due to the risks associated with undertaking invasive rectification works within a live patient environment, that critical care beds do not move until the problem has been fixed.
- On 4 July, the Health Secretary halted planned move in the interests of patient safety. This was communicated to staff and the wider public that day.
- W/C 8 July, Health Secretary announced that NHS National Services Scotland (NSS) would undertake a review on site compliance with technical specifications and standards.
- On 12 July KPMG were engaged to conduct an independent audit of the governance arrangements for the hospital, to provide an external and impartial assessment of the factors leading to the delay.

Top Lines

- Patient Safety is our top priority which is why we made the decision to delay the move to the new hospital and this will continue to be our focus.
- Having considered the calls of parents last weekend the Health Secretary Jeane Freeman confirmed on Tuesday that to increase public confidence we will establish a public inquiry into the new Royal Hospital for Children in Edinburgh and the Queen Elizabeth University site
- This inquiry will determine how vital issues relating to ventilation and other matters occurred. The Health Secretary has committed to returning to parliament to set out the full details of the inquiry.
- They inquiry will also be asked to establish how mistakes were made, and what steps can be taken to prevent them being repeated in future projects.

Last week the Health Secretary updated this parliament with her statement and published the independent reviews by NSS and KPMG.

- She also met with opposition spokespeople to discuss these reports after they had the opportunity to consider them properly.
- NHS Lothian have been escalated to level 4 on the escalation framework to provide confidence that the action plan and the new Hospital will be delivered.
- COO of NHS National Service Scotland started in the role of Strategic Programme Director on Monday.
- I would like to acknowledge the contribution of staff who have continued to provide high quality clinical services at both the Children's Hospital and the Department of Clinical Neuroscience in very difficult circumstances.

The NSS report reveals the range of issues which require to be resolved prior to occupation of the building - the main issues noted are management and assurance, ventilation systems, water systems and drainage and plumbing.

- The KPMG report sets out picture of human error and confusion over interpretation of standards and guidance, and missed opportunities to spot and rectify the error.
- Our Oversight Board is overseeing all rectification works including work to all aspects the required clinical and safety standards.
- The main problem which led to the issues with air changes in the critical care unit stems from an NHS Lothian document from 2012 (tender stage) which was inconsistent with guidance, but was referred to throughout project.

As the Health Secretary advised parliament last week, the estimated costs additional costs to complete the works recommended by NSS at the new hospital, to improve the usefulness of the existing sites, and to account for double running, is around £16 million.

- **Works at the new hospital - £6 million** (including £4m for rectification for critical care and haematology/oncology, plus £2 contingency to account for any issues in NSS phase 2 work.)
- **Costs of maintaining sites - £7.2 million** (including £1.5 million for dual running sites, £2m for additional maintenance at RHSC/DCN, £2m for improvements to existing facilities, and £1.7m for an interim modular unit at DCN to provide safe capacity.)
- **Project Team Costs over delivery period - £2.35 million** (including £1.5m for the project team, £0.6m for external advisers including legal, technical and financial, and £0.25m in 'aborted commissioning'.)
- **Independent reviews - £0.55 million.**

Detailed work is underway to ensure issues are rectified and that the new site meets the required clinical and safety standards

- NSS have undertaken a detailed assessment of all buildings systems in the new hospital which could impact its safe operation - including ventilation, drainage, water, fire safety, and medical gases.
- NSS will also provide assurance that current and recently completed major projects such as Dumfries and Galloway Royal Infirmary, and Balfour Hospital (Orkney) are compliant with statutory requirements and other guidance.
- KPMG have conducted an independent audit of the governance arrangements for the hospital, and of the factors leading to the delay.

Accountability

- The Health Secretary has made clear that she holds NHS Lothian accountable for delivery of the Sick Kids project.
- NHS Lothian have been escalated to stage 4 in the ladder of escalation.
- Given the number of issues to be rectified, the increased length of delay and increase in cost, we've now escalated NHS Lothian to stage 4.
- We've put in place a Senior Programme Director, Mary Morgan, who has taken responsibility for day to day delivery of the RHCYP operational phase from now until the site is fully occupied.
- She'll work alongside the clinical and operational team in NHS Lothian and will report directly to Scottish Government.
- Additional independent technical advice will be made available and the Oversight Board will remain in place.

High quality clinical service continues to be delivered from existing sites.

- The Health Secretary visited the existing Sick Kids hospital and Department for Clinical Neuroscience in July to meet with staff and patients, and she will be meeting them again on Monday.
- She also meet with staff side in August to discuss their concerns and to provide reassurance.
- To ensure all patients went to the correct hospital, all patients were contacted by phone or letter by the Health Board to inform them of developments. A helpline remains in operation for families and patients to clarify arrangements.
- Patient transport was also made available on the new site in case a patient turned up to the new hospital and needed to be transferred.
- Services have continued to be provided from the existing sites and plans for a phased migration of services when it is safe to do so are being developed.

We want to strengthen quality and control in the planning and construction of healthcare buildings.

- That's why as part of the Programme for Government I announced that we will create a new body which will have oversight for the design, construction and maintenance of major infrastructure developments within NHS
- It will involve a compliance function to ensure that construction and future maintenance is in line with statutory and other guidance.

NHS Lothian have a number of staff on site to look after the maintenance and logistical needs of the building, while security is a significant issue.

NOTE: A Sunday Mail investigation (15 Sept) reported 'around 70 workers are attending the ghost-ship hospital that has no patients'. Unions and politicians said they were 'flabbergasted' the NHS had so many staff on the site.

- Many of the staff have multi-faceted roles and some are already working across multiple sites
- NHS Lothian are reviewing current arrangements and will work with staff to ensure personnel on site are required while the building is unoccupied.

Reports that the hospital will cost an extra £90 million are inaccurate.

NOTE: The KPMG is expected to cost around £400k; the NSS report £150k.

- As part of the overall project, NHS Lothian needed to invest £80 million in enabling works to get the site ready for construction.
- These costs were known at the outset of the project and were factored into the decision to proceed.
- The costs were included in the full business case which is published and available on NHS Lothian's website.
- They are also reported in the regular updates to the Scottish Government's Infrastructure Investment Plan (IIP).
- £11.6 million was agreed as part of a Settlement Agreement following a previous issue reported with the building in February 2019. These have been reported in the Plan.
- £2 million of the £11.6 million agreed as part of a Settlement Agreement was paid in July. This payment is not part of the monthly service charge and does not relate to the delay that was announced in July.
- The total estimated additional costs for to rectify the issues causing the delay are £16 million.
- These costs arise from the work needed to fix the ventilation and other remedial work and from the continued operation of and improvement of the current sites.

Reports that the cost for the hospital is likely to almost triple, from £150 million to £416.2 million are inaccurate.

- An NPD contract means that NHS Lothian do not pay for the hospital during construction, but instead a unitary charge is paid every month once the hospital is complete over a 25 year period.
- Payments for the unitary charge began in February 2019 after the Independent Tester certified the hospital was complete.
- The annual unitary charge is approximately £15 million (though it will vary from year to year), so overall total contracted cost of the project over 25 years, including hard facilities management and lifecycle costs, is £432 million.

ABERDEEN HOSPITAL

NOTE: Daily Mail reports (18 September) the new Aberdeen hospital could run £50 million over budget. Reports claims from Health Committee convener Lewis Macdonald that this may be linked to problems at the Sick Kids and QEUH and that potential bidders may have gone back to the drawing board. Initial cost estimates for the Baird and ANCHOR centre indicated a target price of around £165 million. In the process of developing the Full Business Case, costs have risen to £220 million.

- The analysis of the tenders for the main construction works is underway. The tendered costs that have been returned are higher than estimated at the outline business case stage, reflecting the challenges within the construction sector and the wider uncertainty regarding Brexit and the economic position.
- NHS Grampian have commissioned an independent review of the project costs and are also using the opportunity to review the design of the facilities in light of the learning from the projects in Glasgow and Lothian.
- NHS Grampian is fully committed to the project and continues to have the full support of the Scottish Government.

Timeline.

- A programme of work including procurement, installation and a rigorous testing and validation is required before children’s services can migrate over.
- This means that children’s services will remain on the current site, likely until Autumn 2020. There are risks associated with this which will be closely managed by the Oversight Board.
- The Department of Clinical Neurosciences (DCN) is unaffected by the issue in critical care, but confirmation is required that the physical installation will not impact on the DCN clinical pathway.
- Our aim is that DCN will migrate services in Spring 2020.

ISSUES PRIOR TO JULY 2019

NOTE: *Before the current issues with the ventilation in critical care, this project had experienced problems which resulted in delays. It was originally due to be completed in May 2017.*

- *August 2016 - Multiplex (the building contractor) announced that due to the collapse of two key sub-contractors the project would be delayed by 6 months.*
- *March 2018 – Ventilation issues (different to the current problems) were causing problems and NHS Lothian were considering taking court action against IHSL.*
- *April 2018 – Court action was no longer being considered, instead both parties were working on a Settlement Agreement to resolve all issues.*
- *July 2018 – Both parties agreed in principle that a settlement agreement would be used to resolve all issues. This way forward was approved by the Health Secretary.*
- *September 2018 – Additional technical problems were identified, most notably with the drainage.*
- *February 2019 – Settlement Agreement was signed, which would allow project completion to be confirmed.*
- *Three significant technical matters remain (drainage, void detectors and heat sensors) but they would be addressed post-completion and at the same time the Board undertakes its commissioning.*
- *Risks of contractor and Board working at the same time were highlighted.*
- *July 2019 – Current issues with ventilation were notified to Scottish Government.*

- All these issues were publicly reported and acknowledged.
- The KPMG report provides a comprehensive summary of the issues.
- We are considering its findings carefully and will ensure that lessons are learned.

BACKGROUND**Recent Health Capital Projects Delivered Successfully**

Health Capital Projects Delivered Successfully				
Board	Project	£m	Completed	Procurement
NHS Dumfries & Galloway	Dumfries and Galloway Royal Infirmary	274.3	2017	NPD
NHS Orkney	New Balfour Hospital	67.5	2019	NPD
NHS Lothian	East Lothian Community Hospital phase 1	65.0	2018	hub
NHS Ayrshire & Arran	Acute Mental Health & North Ayrshire Community Hospital	54.8	2017	NPD
NHS Lothian	Royal Edinburgh Campus - Phase 1	49.0	2017	hub
National Services Scotland	Scottish National Blood Centre	38.1	2017	NPD
NHS Forth Valley	Stirling Care Village	36.0	2019	hub
NHS Greater Glasgow and Clyde	Gorbals Health Centre	20.0	2019	hub
NHS Ayrshire & Arran	Building For Better Care	27.6	2016	CDEL
NHS Tayside	NHS Scotland Pharmaceuticals Specials Service	26.5	2019	hub
NHS Highland	Raigmore Critical Care and Theatres	26.2	2019	CDEL
NHS Lanarkshire	Wishaw Health Centre	23.3	2017	hub
NHS Lanarkshire	Monklands Theatres and ICU	19.8	2018	CDEL
NHS Lanarkshire	East Kilbride Health Centre	19.5	2017	hub
NHS Grampian	Inverurie Health and Care Hub	13.9	2019	hub
NHS Greater Glasgow and Clyde	Maryhill Health Centre	13.7	2017	hub
NHS Lothian	NW Edinburgh Partnership Centre	11.0	2018	hub
NHS Greater Glasgow and Clyde	Eastwood Health & Care Centre	10.8	2017	hub
NHS Grampian	Foresterhill Health Centre	8.0	2018	hub

NHS Lanarkshire	Primary Care bundle - Kilsyth Health Centre	7.8	2017	hub
NHS Lothian	Firhill Partnership Centre	7.0	2018	hub
NHS Greater Glasgow and Clyde	The Adult and Older Peoples Continuing Care mental health accommodation in Inverclyde.	6.5	2018	hub
NHS Lothian	Blackburn Partnership Centre	4.0	2018	hub
Scottish Ambulance Service	Ambulance Telehealth - Phase 1	3.8	2019	hub

From: Henderson C (Calum)
Sent: 03 October 2019 11:11
To: Henderson C (Calum)
Subject: NHS Lothian Board Paper - RHCYP - 2nd October
Attachments: NHS Lothian Board Paper; RE: NHS Lothian Board Paper

From: Morrison A (Alan)
Sent: 27 September 2019 17:56
To: Cabinet Secretary for Health and Sport
Cc: DG Health & Social Care; McLaughlin C (Christine); Henderson C (Calum)
Subject: NHS Lothian Board Paper
Attachments: Board paper- RHCYP DCN - 2 October 2019.docx

David

Attached is NHS Lothian's board paper on the current situation at the Edinburgh Children's Hospital which they were going to circulate on Monday for discussion on Wednesday. Does the Cabinet Secretary have any comments?

Regards

Alan

Alan Morrison
Health Finance and Infrastructure
Scottish Government Health and Social Care Directorates



NHS Lothian

NHS Lothian Board
2 October 2019

Director of Finance

UPDATE ON THE ROYAL HOSPITAL FOR CHILDREN & YOUNG PEOPLE / DEPARTMENT OF CLINICAL NEUROSCIENCES ('RHCYP/DCN')

1 Purpose of the Report

- 1.1 The purpose of this report is to provide the Board with an update on the above project following the Finance and Resources Committee's consideration (on 25 September 2019) of the [reports which the Cabinet Secretary commissioned](#).

Any member wishing additional information should contact the Director of Finance in advance of the meeting.

2 Recommendations

The Board is recommended to;

- 2.1 Consider and discuss the issues raised in this report.

3 Discussion of Key Issues

Publication of the reports which the Cabinet Secretary Commissioned

- 3.1 The Scottish Government [published the reports](#) from the reviews which KPMG and NSS carried out in relation to 'RHCYPDCN' on 11 September 2019. The announcement stated that the Cabinet Secretary expects the Department of Clinical Neurosciences to move in Spring 2020, with the whole of the children's hospital moving to the new site in Autumn 2020. The Board's Finance & Resources Committee received and discussed these reports on 25 September.

Escalation of the Project to Level 4 of the NHS Scotland Performance Evaluation Framework

- 3.2 Upon review of the above reports, the Director-General has escalated NHS Lothian to Level 4 of the NHS Scotland Performance Evaluation Framework for this project. The existing RHCYP/DCN Oversight Board will continue. The Director-General has appointed a Senior Programme Director (Mary Morgan) who will report directly to the Scottish Government. In that capacity she is responsible for the actions to ensure the facility is fit for occupation. NHS Lothian will remain directly responsible for all other actions relating to the existing site and the migration of services to the new facility. The Scottish Government will give additional independent technical advice, to give confidence on the management and oversight arrangements to ensure that the facility is fit for occupation.

Public Inquiry

- 3.3 The Scottish Government subsequently [announced on 17 September](#) that there will be a statutory public inquiry into issues at the Queen Elizabeth Hospital (in Glasgow) and RHCYP/DCN.

Section 22 report

- 3.4 The Auditor General has advised NHS Lothian that she intends to prepare a [Section 22 report](#) on the project. The Auditor General prepares these reports when a matter of public interest, arising from a specific issue or concern, has been raised in the audit of public bodies. The Auditor General and the Board's external auditor prepare the report, and gives the Board an opportunity to review the draft for factual accuracy. The Scottish Government arranges for the Board's annual accounts and the Section 22 report to be laid before the Scottish Parliament. The Auditor General will brief the Scottish Parliament's Public Audit and Post Legislative Scrutiny Committee on the Section 22 report, and the Committee may decide to take evidence from the Board's Accountable Officer.

Continuing to use the Royal Hospital for Sick Children and DCN

- 3.5 Given the timeline for occupation announced by the Cabinet Secretary plans are being developed to address how existing sites might be supported over the winter period, and beyond
- 3.6 Over and above this the Cabinet Secretary, the Chief Medical Officer and the Chief Executive of NHS Scotland visited the existing RHSC and DCN on Monday 23 September to meet with staff. At the staff meetings staff raised some questions and concerns about the current sites at Sciennes and the Western General over the winter periods and until migration is complete.

These questions and concerns were in relation to a number of areas, namely:

- Current environmental issues
 - Catering arrangements within RHSC
 - Housekeeping arrangements for parent/ family accommodation at RHSC
 - Pharmacy and Laboratory services
 - INR equipment at DCN
 - Winter planning
 - FAQs for staff
- 3.7 These area of concern were rapidly risk assessed with a number of immediate actions taken including addressing catering and housekeeping issues at RHSC and re-signposting staff to FAQ's available on HR on line. The remainder will be incorporated into the single action plan being developed for both winter and to address environmental issues on the sites. This will be overseen by Jacquie Campbell, Chief Officer Acute Services. Progress will be reported through RHCYP/DCN Executive Steering Group then to Scottish Government Oversight Group.

The disposal contract for RHSC has been amended to facilitate continued operational use of the site. There are no additional obligations on the Board from this extension of time.

Update on the Progress Made to Resolve the Identified Issues with RHCYPDCN

- 3.8 The Board change required to rectify critical care ventilation and to make changes to Haematology/Oncology remains with IHSL for formal response, following a request to for a short period of additional time to engage with their supply change. Notwithstanding this there has been continual dialogue with IHSL and they have confirmed their commitment to work with NHS Lothian to resolve these issues as rapidly as possible
- 3.9 Progress continues to be made on other rectifications required with a number now complete. Where further review on solutions is required through workshops all parties have actively engaged including HFS and HPS. A verbal update will be provided to Board members following workshops taking place at the time of writing.
- 3.10 Finally the second stage of the HFS/HPS review is due to be completed by the 5 October and this should give us a comprehensive and complete schedule of all works to be programmed to deliver safe occupation.

4 Key Risks

- 4.1 The NHS Board received an update report on this project on 7 August 2019, and this highlighted the following risks:

‘There is a risk that there are further critical systems issues requiring rectification which will impact on the timeline for occupation. In addition there is a risk that IHSL will require extended engagement with their funders on changes required’

- 4.2 This reports highlights that the Scottish Government has subsequently published external reviews and appointed a Senior Programme Director. Both of these measures will shape the forward identification and management of risk.

5 Risk Register

- 5.1 The Board accepted a new risk to the corporate risk register on 7 August 2019. The risk (ID: 4813) is described as ‘There is a risk to patient safety, experience and outcome of care plus financial impact, due to the delay in providing clinical care for RHCYP and DCN patients on the Royal Infirmary of Edinburgh campus.’

6 Impact on Inequality, Including Health Inequalities

- 6.1 Management will need to undertake impact assessments as part of the programme of work.

7 Duty to Inform, Engage and Consult People who use our Services

7.1 Users of the service have been contacted to inform them of the change in the interim service provision. Continuing communication will focus on mitigating the disruption for service users.

8 Resource Implications

8.1 The resource implications of the delay have been discussed with the Scottish Government and provision has been made to meet the additional cost from within the national health budget.

Susan Goldsmith
Director of Finance
27 September 2019

From: Downie J (Jack) on behalf of Cabinet Secretary for Health and Sport
Sent: 30 September 2019 09:33
To: Morrison A (Alan); Cabinet Secretary for Health and Sport
Cc: DG Health & Social Care; McLaughlin C (Christine); Henderson C (Calum)
Subject: RE: NHS Lothian Board Paper

Alan,

The Cabinet Secretary has noted the paper without comment.

Thanks,
Jack

From: Morrison A (Alan) [REDACTED]
Sent: 27 September 2019 17:56
To: Cabinet Secretary for Health and Sport [REDACTED]
Cc: DG Health & Social Care [REDACTED]; McLaughlin C (Christine) [REDACTED];
Henderson C (Calum) [REDACTED]
Subject: NHS Lothian Board Paper

David

Attached is NHS Lothian's board paper on the current situation at the Edinburgh Children's Hospital which they were going to circulate on Monday for discussion on Wednesday. Does the Cabinet Secretary have any comments?

Regards

Alan

Alan Morrison
Health Finance and Infrastructure
Scottish Government Health and Social Care Directorates
[REDACTED]

Cabinet Secretary for Health and Sport
Jeane Freeman MSP



Scottish Government
Riaghaltas na h-Alba
gov.scot

[REDACTED]
[REDACTED]

NHS Lothian staff

C/O
Human Resources Director, NHS Lothian
Employee Director, NHS Lothian

September 2019

Dear colleague

I wanted to write to colleagues to thank many of you for taking the opportunity to meet with the Chief Medical Officer, Chief Executive of NHS Scotland **and me on Monday**, ~~and myself to allow us to hear from you with regards to the issues at the existing sites at Sciennes and the Western General as well as the migration to the Royal Hospital for Children and Young People.~~ **I said then that I would write to all staff, covering the issues I had the opportunity to discuss on Monday and giving you an update on the work we are undertaking.**

Start new paragraph here by referencing her previous letters to staff advising that work by Health Protection Scotland and Health Facilities Scotland had been carried out and that reports by KPMG LLP and HFS had been published – which made it clear that significant work needs to be undertaken to ensure the site is compliant.

This paragraph should then be followed by setting out the appointment of Mary Morgan and the work she will be doing.

This paragraph should then flow into the following....ie the establishment of a PI.

I wanted to provide a further update on the delayed move to the Royal Hospital for Children and Young People and Department of Clinical Neurosciences. In my statement to Parliament on 18 September 2019, I announced the establishment of a Public Inquiry. This Inquiry will consider both the Queen Elizabeth University Hospital campus and the Royal Hospital for Children and Young People in Edinburgh, determine how deficiencies in ventilation and other key building systems occurred and make recommendations on the steps we need to take to ensure past mistakes are not repeated in future infrastructure projects. The reports from KPMG and NSS that were published on 11 September will provide significant evidence to the inquiry. I have attached the links and summaries of the findings of both the KPMG and NSS reports in Annex's A and B respectively.

Mary Morgan was appointed as the Senior Programme Director and will be working as part of the NHS Lothian team. Mary has begun to deliver on the plan I set out to deliver a safe and compliant site for the new Edinburgh children's hospital and deliver on the timescales set out on completing the work on DCN by Spring next year and the Children's Hospital by next Autumn. Following the visit on Monday, Mary welcomed the opportunity to hear from staff regarding their concerns about timelines and issues highlighted following pre-visits to the new site. I would encourage staff to continue to share their concerns with Mary to seek assurances with regards to issues identified at the new hospital.

I was grateful for colleagues for sharing their questions about the current sites at Sciennes and the Western General over the winter periods and until migration is complete including concerns about catering provisions. Following these concerns being raised, the Board has given me the assurances they will continue to work with WRVS to support catering at the existing sites. Officials have shared your questions with Jacquie Campbell, Chief Officer for Acute Services to address the concerns you raised on Monday. I ask colleagues to escalate any concerns within their local management teams who will continue to ensure these are escalated and reported to Jacquie. [This paragraph needs reworked – this should reflect that the Cabinet Secretary has asked for a plan from NHS Lothian and that she should have sight of this imminently. On sight of this plan she will seek assurance from the Board that that the current sites will be manageable over the winter period and until migration is finalised. It should also reflect that Jacquie Campbell has been appointed to directly implement this plan and that staff should be able to feed into her work, raising concerns with her.](#)

I welcomed the views of many colleagues that the delayed move to the Royal Hospital for Children and Young People and Department of Clinical Neurosciences can be seen as a positive opportunity to further optimise how services for children and young people are delivered across NHS Lothian both in the near future and for the longer term.

I want to reiterate my thanks to colleagues for their patience and continuation to provide quality care to patients.

I will continue to provide further updates as work progresses.

JEANE FREEMAN

ANNEX A – KPMG REPORT

<http://www.gov.scot/ISBN/9781839601552> - KPMG Report

Summary of Findings

1. The key issue which led to the delay was the non-compliance with SHTM 03-01 for air change rates in some of the Critical Care areas of the Hospital which was identified by IOM and reported to the Project Team on 24 June and subsequently brought to the attention of the Board on 1 July 2019.
2. Throughout all stages of the project, references were made to the requirement to adhere to SHTMs, including specifically SHTM 03-01 which related to ventilation. However notwithstanding any contractual obligations, the report clearly identifies a picture of confusion between the parties as to the correct application of these Standards. This appears to have stemmed from a document produced by NHS Lothian at the tender stage in 2012 which was inconsistent with SHTM 03-01 and which was referred to throughout the project.
3. There is clear evidence that professional and technical advisors were involved throughout the project; specifically this includes involvement in relation to ventilation issues. However, there is no evidence that the problem was identified prior to June 2019.
4. Governance processes and procedures operated in line with the structure that was put in place. There was regular dialogue between NHS Lothian and Scottish Government throughout the project, with evidence of escalation where required, albeit this was focussed on financial rather than technical matters.
5. Once NHS Lothian's Board became aware of the air change issue, steps were taken to assess the impact. The Executive Team and the Project Team met to discuss the issues uncovered on 1 July 2019 and on the same day the issue was escalated to other members of the Board which resulted in an urgent internal meeting the following day at 9am. Later that day the Chief Executive and Chair briefed the Director General of Health and Social Care on the situation.

ANNEX B – NSS REPORT

<http://www.gov.scot/ISBN/9781839601569> - NSS Report

Summary of Findings

1. It was recognised by NHSL that critical care ventilation was not designed to current guidance. As a result this report focuses on other systems, however, they have provided advice on the contractor design intent for a new CCU system.
2. Key outstanding information includes the design intent for the natural ventilation component (see para 10 above).
3. The theatre ventilation has not been installed in accordance with current guidance (when maintenance is being undertaken, two theatres, rather than one, will be out of action).
4. Some of the water testing results, due to the time taken to process, are not yet available however it was found that there were certain fungi in the water, mainly at the taps as well as higher than anticipated total viable counts. Lessons learned across health systems strongly suggest that this should be eradicated before patients and staff move in. There would appear to be no systemic contamination of the hot and cold water systems.
5. The drainage for the hospital utilises one gravity system and two pumped systems. The pumped systems are used to overcome gravity as they are installed below the local water table and level of the external drains. We await an explanation of what foul waste and other sources drain into the basement sump. If suitable mitigation measures are in place, the drainage should not be an obstacle to occupation of the building.

From: MCLAUGHLAN, Edward (NHS NATIONAL SERVICES SCOTLAND)
Sent: 23 September 2019 14:04
To: [REDACTED]; [REDACTED]
Cc: IMRIE, Laura (NHS NATIONAL SERVICES SCOTLAND); RANKIN, Annette (NHS NATIONAL SERVICES SCOTLAND); STORRAR, Ian (NHS NATIONAL SERVICES SCOTLAND)
Subject: RE: RHC

Hi Lesley

The email trail refers to NHS Lothian, not GGC. We got confirmation from the board that they would adopt our recommended approach of starting from the guidance and agreeing any deviations on a risk assessment basis. The guidance says neutropenic wards should be ventilated at 10 air changes per hour with a 10 Pascal pressure difference to adjoining areas. The board instruction will be worded along the lines of "design a ventilation system to achieve this 10+10 regimen in all areas of Haem/onc", although there will be discussions during the process about what this entails in detail. How the play area is dealt with will be considered as part of this process.

Let me know if you need more.

[REDACTED]

Eddie McLaughlan
Assistant Director
Engineering, Environment and Decontamination
Health Facilities Scotland
Procurement, Commissioning and Facilities
NHS National Services Scotland

[REDACTED]

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From: [REDACTED]
Sent: 23 September 2019 09:12
To: MCLAUGHLAN, Edward (NHS NATIONAL SERVICES SCOTLAND) [REDACTED]; [REDACTED]
Subject: RE: RHC

Hi eddie

Hope you're well.

See email below. I wonder if you've had a response fro NHSGGC regarding this?

Thanks.

Kind regards,

Lesley

Lesley Shepherd
Professional Advisor
Scottish Government

From: "MCLAUGHLAN, Edward (NHS NATIONAL SERVICES SCOTLAND)"

[REDACTED]

Sent: 13 Sep 2019 11:54

To: "Shepherd L (Lesley)" [REDACTED]

Subject: RE: RHC

Thanks Lesley

This is similar to a question I asked in response to the draft Board Change. I'll let you know the outcome.

Thanks

[REDACTED]

Eddie McLaughlan
Assistant Director
Engineering, Environment and Decontamination
Health Facilities Scotland
Procurement, Commissioning and Facilities
NHS National Services Scotland

[REDACTED]

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From: [REDACTED]
Sent: 13 September 2019 08:44
To: MCLAUGHLAN, Edward (NHS NATIONAL SERVICES SCOTLAND) [REDACTED]
Subject: FW: RHC

Hi Eddie

Hope you're well. Thank goodness its Friday!

See attached email from CNO. I'm assuming that if NHS Lothian are dealing with the room air changes in haem onc then the en-suites will also be part of this review?

Thanks again Eddie.

Kind regards,

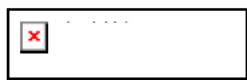
Lesley

Lesley Shepherd
Professional Advisor
Scottish Government

From: "McQueen F (Fiona)" [REDACTED]
Sent: 13 Sep 2019 07:29
To: "Murray D (Diane)" [REDACTED]; "Ives J (Josephine)" [REDACTED];
"Shepherd L (Lesley)" [REDACTED]
Subject: RE: RHC

Can we check that the haemato oncology ward will have all the correct air changes please. The board change specified that the individual rooms and multi bedded rooms had the 10 changes but was silent on en suite/bathroom/circulating areas/treatment rooms. I asked for assurance that all areas in the ward had appropriate air changes – it wasn't clear – but Tracy offered to have a small group – to help us understand... (it may well be that the air changes are appropriate but we need to have assurance)

F



Fiona McQueen | Chief Nursing Officer |

Chief Nursing Officer's Directorate | Scottish Government | [REDACTED]

[REDACTED]

[REDACTED]

From: McLaughlin C (Christine) [REDACTED]
Sent: 12 September 2019 18:19
To: McQueen F (Fiona) [REDACTED]; Morrison A (Alan) [REDACTED]; Murray D (Diane) [REDACTED]; Ives J (Josephine) [REDACTED]; Shepherd L (Lesley) [REDACTED]
Subject: RE: RHC

Fiona

I'll make sure it is in the minute but probably also good if Diane could follow up directly with Tracey?
Hope you have a lovely holiday - and get plenty of walking in!

Christine

Sent with BlackBerry Work (www.blackberry.com)

From: "McQueen F (Fiona)" [REDACTED]
Sent: 12 Sep 2019 16:47
To: "McLaughlin C (Christine)" [REDACTED]; "Morrison A (Alan)" [REDACTED]; "Murray D (Diane)" [REDACTED]; "Ives J (Josephine)" [REDACTED]; "Shepherd L (Lesley)" [REDACTED]
Subject: RHC

Christine- I'm off for the next couple of weeks and Diane is covering.

Just thinking about the discussions we had this morning about appropriate air changes in all of the haemato oncology unit- I assume it will be picked up in the minute- or one of the team can pick it up with the wee group proposed by Tracy
F

Sent with BlackBerry Work (www.blackberry.com)

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Tha am post-d seo (agus faidhle neo ceanglan còmhla ris) dhan neach neo luchd-ainmichte a-mhàin. Chan eil e ceadaichte a chleachdadh ann an dòigh sam bith, a' toirt a-steach còraichean, foillseachadh neo sgaoileadh, gun chead. Ma 's e is gun d'fhuair sibh seo gun fhiosd', bu choir cur às dhan phost-d agus lethbhreac sam bith air an t-siostam agaibh agus fios a leigeil chun neach a sgaoil am post-d gun dàil.

Dh'fhaodadh gum bi teachdaireachd sam bith bho Riaghaltas na h-Alba air a chlàradh neo air a sgrùdadh airson dearbhadh gu bheil an siostam ag obair gu h-èifeachdach neo airson adhbhar laghail eile. Dh'fhaodadh nach eil beachdan anns a' phost-d seo co-ionann ri beachdan Riaghaltas na h-Alba.

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From: Anderson D (David) (Health) on behalf of McCallum R (Richard)
Sent: 25 September 2019 16:24
To: Cabinet Secretary for Health and Sport
Cc: Aitken L (Louise); Klein G (Gerard); Communications Healthier; Hutchison D (David); DG Health & Social Care; McLaughlin C (Christine); Black A (Alasdair); Wilson S (Stuart) (HLTH); Grieve B (Bethany); McKinney J (Julie)
Subject: Finance update for Cabinet Secretary (including monthly NHS Board reporting)
Attachments: FW: Integration Authorities - Quarterly Consolidated Financial Reporting - Quarter 1 - First Report for 2019-20; NHS Scotland - Consolidated Monthly Reporting Month 5 - August 2019.pdf

Follow Up Flag: Follow up
Flag Status: Completed

Andy

I have set out below an update on the Month 5 consolidated financial position for NHS Boards for 2019-20. The consolidated report (attached) is due to be published on the Scottish Government's website on Friday 27 September. I have also set out an update for the Cabinet Secretary on the overall portfolio financial position.

NHS Boards – Month 5 position

The forecast consolidated deficit of £51.3 million is unchanged from Month 4. The four escalated Boards continue to report a forecast deficit of £46.7 million, and NHS Fife is reporting a deficit of £4.7 million. We have undertaken detailed Quarter 1 reviews with all NHS Boards, and as part of this we have agreed next steps in managing the in-year position, delivering further savings, and working towards anticipated outturns for 2019-20. In line with our planning assumptions to enable the Portfolio to deliver breakeven, we have set out our expectations to Boards as follows:

- the four escalated Boards to focus on reducing the extent of their projected deficits, so that the consolidated deficit for NHS Boards this year does not exceed £40 million,
- NHS Fife to develop a formal recovery plan detailing the Board's approach to securing financial balance in 2019-20, and
- All other Boards to work towards delivery of breakeven in 2019-20.

In terms of movement in the scale of financial challenge being reported by NHS Boards, the total forecast budget variance has reduced from £105 million to £97 million. This improvement is driven by a significant improvement from NHS Lothian, which a revised forecast budget variance of £0.4 million. This represents an improvement of £25.6 since Month 4, and is primarily driven by the progress in delivery of savings plans.

The improvement reported by NHS Lothian is offset by increased variances amounting to c£18 million across NHS Greater Glasgow & Clyde, NHS Orkney, and NHS Western Isles. NHS Greater Glasgow & Clyde are reporting a forecast variance of £35.8 million (increased from £19.8 million at Month 4) and this is due to increased cost pressures in property maintenance and clinical waste, and also challenges in delivering their required level of savings. NHS Orkney and NHS Western Isles are reporting forecast variances of £1.8 million and £0.7 million overspend respectively. This is driven by their challenges in filling vacancies and the associated agency and locum costs. Notwithstanding the scale of financial challenge, each of these three Boards is working towards delivery of a breakeven position and (as indicated above) we have made clear as part of the Quarter 1 reviews that this remains our expectation.

These movements highlight the wider significant risks facing NHS Boards and the Portfolio, and we remain in close contact and continue to closely challenge all Boards. In particular, finance officials have been in further discussions with both NHS Greater Glasgow and Clyde and NHS Western Isles this week to review the steps being taken to reduce projected variances. We are also requesting further detail from NHS Orkney and are undertaking a similar review of their action plan.

Lastly on NHS Boards, the year-end outturn will be closely related to the financial performance of Integration Authorities. The Cabinet Secretary received an update last week on the latest position for Integration Authorities – this is reattached to this email for ease of reference.

Overall portfolio position – 2019-20

The Portfolio is continuing to work towards delivery of breakeven in 2019-20, and this assumes full delivery of £130 million in Directorate savings along with £430 million of NHS Board savings. Further to this, we are also required to address a residual financial challenge in order to deliver breakeven and this is currently in the region of £50 million. While we have always recognised the residual challenge and it has formed part of our financial planning, the level of risk has increased as a consequence of in year pressures and underspends not materialising as expected. The scale of challenge takes account of on-going pressures such as those arising from the delays in NHS Lothian's Royal Hospital for Children and Young People, pay costs following the recommendations of the Doctors and Dentist Pay Review, an overall pressure on mental health and eHealth budgets to achieve breakeven while delivering on Programme for Government commitments, and addressing recent coverage on drug deaths. The scale of financial challenge also reflects the projected NHS Board deficits (outlined above) along with a range of emerging in-year pressures across Directorates, for example delivery of PfG commitments and the public inquiry, pay costs, and further risks associated with Brexit. Directors are fully aware of need to manage pressures within overall resources and are taking forward as a matter of urgency the Portfolio's approach to addressing the financial challenge.

Given the high level of risk to achieving a breakeven position for the Health portfolio and that the residual financial challenge will not be delivered through year-end slippage, Directors are currently undertaking a detailed review of potential options to secure at least £50 million in additional savings this year. With support from Finance Business Partners, Directors are undertaking a bottom up review of all budget lines, assessing where both recurring and non-recurring savings can be made. Options to reduce, defer or stop spend are also being considered, and HSCMB will meet again on 2nd October to further review progress. Following this exercise, we will provide a further update for the Cabinet Secretary's consideration.

The Chief Finance Officer has set out to Cabinet the scale of financial challenge across the wider Scottish Government, and that the Health Portfolio is expected to deliver breakeven without additional funding from the Scottish Government (beyond the contribution already agreed by Cabinet in May this year to mitigate the extent of the savings challenge). In view of this position and the risks outlined above, the DG Health and Social Care has made clear that no new spending proposals will be considered until financial balance has been secured and that any spending proposals after that point would require agreement from both the Cabinet Secretary and the DG as accountable officer.

Please let me know if the Cabinet Secretary requires further information at this stage. As noted above, further advice will be submitted following the review by HSCMB on 2nd October.

Richard

David Anderson

PA to Christine McLaughlin, Chief Finance Officer, NHS Scotland, and Director of Health Finance,
Corporate Governance and Value

PA to Richard McCallum, Deputy Director - Health Finance and Infrastructure



From: Black A (Alasdair)
Sent: 24 September 2019 12:26
To: Black A (Alasdair)
Subject: FW: Integration Authorities - Quarterly Consolidated Financial Reporting - Quarter 1 - First Report for 2019-20
Attachments: A25757294.pdf; A25757095.pdf

From: Peterson R (Robert)
Sent: 18 September 2019 16:26
To: Cabinet Secretary for Health and Sport [REDACTED]; Bowman D (David) [REDACTED]
Cc: [REDACTED]; McCallum R (Richard) [REDACTED]; Taylor A (Alison) (H&SC Integration) [REDACTED]; [REDACTED]
Subject: Integration Authorities - Quarterly Consolidated Financial Reporting - Quarter 1 - First Report for 2019-20

David

Further to our brief discussion, please find the attached for the Cabinet Secretary's information.

Regards

Robert

Cabinet Secretary for Health and Sport

This report is the first quarterly return from Integration Authorities for the financial year (2019-20), covering the period to 30 June 2019. These reports are produced and consolidated by Integration Authority Chief Finance Officers without direct input from Scottish Government Officials. These reports are routinely published online and previous reports have attracted limited political and media interest.

The report details a health and social care budget of **£9.237 billion**; which is currently forecast to overspend by **£84 million**. This however, as detailed in the supporting narrative, is the "operational position" before factoring in the provision of additional funding from Health Board and Council partners (some of which is repayable), the impact of financial recovery plans and the use of reserves. As in previous years, when these positive financial influences are incorporated, all Integration Authorities, with the exception of North Ayrshire, are forecasting a balanced cumulative financial position for 2019-20.

Integration Authority cumulative deficits are reported as a negative (or minus) general reserve. Even North Ayrshire, the only Integration Authority to have reported a deficit in their annual accounts to date, is anticipating an in-year surplus of **£1.486 million** which will be used to repay and therefore reduce their historical debt accumulated with the Council which stood at **£5.139 million** at the conclusion of 2018-19, to **£3.653 million**.

The forecast reserves position is to conclude the year with total reserves of **£113.2 million**, this is made up of **£80.6 million** (71%) of earmarked reserves and **£32.6 million** (29%) of general reserves. The total reserves forecast represent 1.2% of the £9.237 billion budget. Total reserves at the end of 2018-19 were £158.1 million, therefore the forecast position at the end of 2019-20

represents an in-year decrease of £44.9 million and is in line with the policy to prioritise specific earmarked reserves before making further in-year SG allocations (PCIF, ADP & Mental Health).

In the event of any media interest, the proposed lines are as follows:

- We expect all Integration Authorities to continue to develop their plans and work towards delivering a balanced financial position over the course of the remaining financial year, while ensuring they provide safe and effective care and deliver best value for money.
- All Integration Authorities, with the exception one, are forecasting a balanced cumulative financial position for 2019-20. For the one exception, North Ayrshire, they currently expect to deliver an in-year operational surplus of £1.486 million, which has enabled them to further reduce the cumulative deficit brought forward from the previous year.
- It is not unusual for Integration Authorities to begin the year with a relatively high variance against budget and for this to reduce throughout the year as savings plans are developed, expenditure patterns become clearer and additional financial support is provided by their Health Board/Council partners.
- Anticipated additional funding from Health Boards to address the deficit are already factored into the overall Health and Sport Portfolio budget.
- Along with all public bodies, every year Integration Authorities identify a level of savings in order to deliver financial balance. All savings generated are retained locally and plans are continually developed and delivered throughout the year.

We will continue to provide an update for the Cabinet Secretary's information in advance of publications.

Robert Peterson – External Financial Performance
Health Finance and Infrastructure
Directorate for Health Finance
Scottish Government



CIPFA IJB CFO Section

Integration Authorities

Financial Performance

Financial Year 2019/20 (Quarter 1)



OVERVIEW - BUDGET POSITION 2019/20

This is the first summary report which presents the overview of financial performance for all Integration Authorities (IA's) for quarter 1 of the financial year 2019/20. The position in respect of the NHS Highland Lead Agency arrangement is also included. The total budget for health and social care services in 2019/20 is currently forecast at £9,237m (Set Aside £812m; Non-Set Aside £8,396m; Reserves £29m). 26 IAs are reporting a set aside budget for 2019/20. This is expected to increase to 27 once Perth & Kinross is included.



FINANCIAL VARIANCES 2019/20 – YEAR-END OUTTURN AND YEAR TO DATE

IAs have different reporting approaches. At this stage of the financial year, 26 IAs report projected outturns for the year-end and 5 IAs report year to date (first quarter) positions.

Of the 26 IAs, representing £6,318m of the total budget, a year end overspend of £84.1m is projected. Projected outturns across these IAs vary as follows:

- 22 IAs are projecting overspends totalling £87m
- 1 IA is projecting a break-even position
- 3 IAs are projecting underspends totalling £3m

This is the position before additional financial support from partners, the impact of financial recovery plans and the further use of reserves is taken into consideration.

Year-end Projected Outturn

- £40m non delivery of savings
- £15m demographics
- £9m staffing pressures
- £7m prescribing
- £2m price increases
- £11.1m other net cost pressures

Projected cost pressures - £84.1m

Year to Date Position

- £2.9m non delivery of savings
- £1.8m demographics
- £0.9m staffing pressures
- £0.7m prescribing
- £3.9m net underspends

Year to date cost pressures - £2.4m

Of the 5 IAs, representing £2,919m of the total budget, a year to date overspend of £2.4m is reported at the end of quarter 1.

The year to date positions across these IAs vary as follows:

- 3 IAs are projecting overspends totalling £3.6m
- 2 IAs are projecting underspends totalling £1.2m



SIGNIFICANT FACTORS 2019/20

The factors contributing to the variances reported by IAs are detailed on the schedule which accompanies this covering report.

The key highlights are summarised as follows:

- the challenge to deliver savings, in particular planned reductions in services not materialising due to increased demand being experienced
- increased activity of acute services
- additional demand for services and the increasing complexity of health and social care needs across older people, adult and children's services
- the timeline to implement new models of service delivery taking longer than originally anticipated
- ongoing challenges associated with identifying further cost reduction and savings opportunities
- prescribing cost pressures; and
- staffing costs including the cost of locums.

As part of their financial strategies, 14 IAs are relying on the planned use of reserves totalling £29m at this stage of the financial year. The increase in costs is partly offset by underspends as a result of staff vacancies and slippage in the implementation of new funding, both of these provide non-recurring financial relief.

Work continues to be progressed to develop the set-aside monitoring arrangements.



IMPACT ON FUNDING 2019/20

It is currently estimated that the projected overspend totalling £86.5m will be addressed as follows:-

▪ Anticipated additional funding from NHS Boards	£26.7m
▪ Anticipated additional funding from Local Authorities	£6.4m
▪ Agreed financial recovery plan with no impact for partners	£16.4m
▪ Other	£7.0m

The funding impact of £30m remains 'not yet determined' or has still to be publicly reported in respect of 13 IAs.

A total of 4 IAs are in repayment arrangements with partners (£12.1m).

Repayment of Funding Advances

- £2.5m in 19/20
- £9.6m due 20/21 or later



UPDATE ON RESERVES

The net movement on IA's reserves is a decrease of £45m from 1st April 2019 of £158m to £113m (Earmarked £81m; Contingency £32m). The contingency reserve represents 0.4% of the total financial envelope of £9,237m. 9 IAs do not have a reserve. 4 do not have a contingency reserve. 1 IA has a negative reserve. For 17 IAs, the contingency reserves range from 0.03% to 1.2% of their available funding.



FUTURE REPORTS

IA's will continue to standardise presentation.

Integration Authority - Financial Monitoring information 2019/20

	Aberdeen City	Aberdeenshire	Angus	Argyll & Bute	Clacks & Stirling	Dumfries & Galloway	Dundee City	East Ayrshire	East Dunbartonshire	East Lothian	East Renfrewshire	Edinburgh	Eilean Siar	Falkirk	Fife	Glasgow City	Highland	Inverclyde
Figures in £0.000m	Grampian NHS	Grampian NHS	Tayside NHS	Highland NHS	Forth Valley NHS	Dumfries & Galloway NHS	Tayside NHS	Ayrshire & Arran NHS	Greater Glasgow & Clyde NHS	Lothian NHS	Greater Glasgow & Clyde NHS	Lothian NHS	Eilean Siar NHS	Forth Valley NHS	Fife NHS	Greater Glasgow & Clyde NHS	Highland NHS	Greater Glasgow & Clyde NHS

Overview																		
Basis	Population	Population	Population	Population	Population	Population managed	Population	Managed Services	Managed Service	Population	Managed	Population	Population	Population	Population	Managed	Managed Service	Managed Service
Based on data to	01/06/19	30/06/19	31/07/19	30/06/19	30/06/19	30/06/19	30/06/19	21/07/19	30/06/19	30/06/19	30/06/19	30/06/19	30/06/19	30/06/19	30/06/19	05/07/19	30/06/19	30/06/19
Committee Report Date	20/08/19	28/08/19	28/08/19	07/08/19	Not yet reported	25/09/19	27/08/19	28/08/19	05/09/19	11/09/19	14/08/19	N/A	Not yet reported	06/09/19	24/06/19	04/09/19	30/07/19	10/09/19

Funding (Full Year)																		
NHS Set Aside	46.416	28.524	9.734	0.000	21.872	0.000	0.000	23.430	19.602	20.567	17.046	92.917	6.548	27.479	34.841	132.578	0.000	16.857
NHS Non-Set Aside	184.766	183.618	114.464	205.328	120.261	311.960	162.890	166.661	79.893	88.968	68.429	356.118	34.821	133.998	390.749	677.025	536.773	87.912
Local Authority	90.799	111.143	47.501	70.638	52.285	75.729	77.047	91.167	55.062	53.431	49.279	216.969	19.315	65.971	153.122	416.796	100.613	50.529
Use of or (increase in) reserves - Non-Set Aside	0.000	1.405	0.000	0.000	0.320	2.900	0.000	0.000	0.000	0.695	0.000	2.360	0.000	0.070	0.000	10.298	0.000	1.747
Use of or (increase in) reserves - Set Aside	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total funding supporting budget	321.981	324.690	171.699	275.966	194.738	390.589	239.937	281.258	154.557	163.661	134.754	668.364	60.684	227.518	578.712	1,236.697	637.386	157.045

NHS Funding as % of total (excl use of reserves)	72%	66%	72%	74%	73%	80%	68%	68%	64%	67%	63%	67%	68%	71%	74%	66%	84%	67%
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Repayment of funding advances in 19/20 reflected in budget	0.000	0.000	0.000	0.100	0.703	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Repayment of funding advances made in 19/20, not in budget	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Repayment of funding advances (due in 20/21 or later)	0.000	0.000	0.000	4.182	0.000	0.000	0.000	1.705	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Analysis of Funding Pressures (where Additional in Year Resources provided for Pressures)																		
Funding pressure: Non-delivery of savings	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Funding pressure: Prescribing	0.000	0.000	0.000	0.000	0.000	0.919	0.000	1.138	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Funding pressure: Prices	0.000	0.000	0.000	0.000	0.000	7.022	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Funding pressure: Demographics	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Funding pressure: Staffing pressures	0.000	(0.003)	0.000	0.000	0.000	5.850	0.000	2.264	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Funding pressure: Other	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.356	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.290
Increased (decreased) use of reserves NON-SET ASIDE	0.000	1.405	0.000	0.000	0.320	0.000	0.000	(2.080)	0.000	0.695	0.000	2.360	0.000	0.070	0.000	5.578	0.000	0.000
Increased (decreased) use of reserves SET ASIDE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Other change to Budget	3.515	6.629	0.000	(0.114)	5.650	0.000	0.015	6.234	0.000	5.372	0.781	0.000	0.003	6.433	15.848	(10.703)	0.000	0.000
	3.515	8.031	0.000	(0.114)	5.970	13.791	0.015	7.912	0.000	6.067	0.781	2.360	0.003	6.503	15.848	(5.125)	0.000	1.290

Funding pressures as % of total funding (incl reserves)	1%	2%	0%	0%	3%	4%	0%	3%	0%	4%	1%	0%	0%	3%	3%	0%	0%	1%
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Integration Authority - Financial Monitoring information 2019/20	Midlothian	Moray	North Ayrshire	North Lanarkshire	Orkney	Perth & Kinross	Renfrewshire	Scottish Borders	Shetland	South Ayrshire	South Lanarkshire	West Dunbartonshire	West Lothian	Totals
Figures in £0.000m	Lothian NHS	Grampian NHS	Ayrshire & Arran NHS	Lanarkshire NHS	Orkney NHS	Tayside NHS	Greater Glasgow & Clyde NHS	Borders NHS	Shetland NHS	Ayrshire & Arran NHS	Lanarkshire NHS	Greater Glasgow & Clyde NHS	Lothian NHS	
Overview														
Basis	Population	Population	Managed Services	Managed Service	Managed Services	Population	Managed Services	Population	MANAGED SERVICES	Managed	Managed Service	Managed Services	POPULATION	
Based on data to	30/06/19	30/06/19	30/06/19	30/06/19	31/07/19	31/07/19	30/06/19	30/06/19	30/06/19	31/07/19	30/06/19	30/06/19	30/06/19	
Committee Report Date	12/09/19	29/08/19	29/08/19	27/08/19	N/A	27/09/19	N/A	N/A	05/09/19	04/09/18	27/08/19	07/08/19	10/09/19	
Funding (Full Year)														
NHS Set Aside	17.797	11.765	30.094	58.403	7.246	0.000	31.242	23.046	3.834	24.396	56.292	18.673	31.070	812.269
NHS Non-Set Aside	75.461	76.361	147.936	357.674	25.631	147.839	134.604	105.939	19.795	87.206	304.081	91.614	130.140	5,608.915
Local Authority	42.652	42.933	95.686	205.544	19.757	52.404	70.826	48.880	22.036	72.961	172.766	67.813	75.144	2,786.798
Use of or (increase in) reserves - Non-Set Aside	1.493	0.257	0.000	4.346	0.117	0.000	1.712	0.000	0.000	0.000	1.313	0.000	0.000	29.033
Use of or (increase in) reserves -Set Aside	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Total funding supporting budget	137.403	131.316	273.716	625.967	52.751	200.243	238.384	177.865	45.665	184.563	534.452	178.100	236.354	9,237.015
NHS Funding as % of total (excl use of reserves)	69%	67%	65%	67%	62%	74%	70%	73%	52%	60%	68%	62%	68%	Ranges from 52% to 74% for the 26 IAs with a set-aside budget. Ranges from 68% to 84% for the 5 IAs with no set-aside budget.
Repayment of funding advances in 19/20 reflected in budget	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.053
Repayment of funding advances made in 19/20, not in budget	0.000	0.000	1.486	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.486
Repayment of funding advances (due in 20/21 or later)	0.000	0.000	3.653	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.540
Analysis of Funding Pressures (where Additional in Year Resource														
Funding pressure: Non-delivery of savings	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Funding pressure: Prescribing	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.057
Funding pressure: Prices	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.022
Funding pressure: Demographics	0.000	0.041	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.041
Funding pressure: Staffing pressures	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.017	0.000	0.000	0.000	0.000	8.128
Funding pressure: Other	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.646
Increased (decreased) use of reserves NON-SET ASIDE	1.493	0.000	(0.230)	0.000	0.000	0.000	1.712	0.000	0.000	0.000	0.000	0.000	0.000	11.323
Increased (decreased) use of reserves SET ASIDE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Other change to Budget	3.004	2.080	3.353	1.435	7.950	0.387	0.000	4.972	0.000	0.000	20.899	0.481	8.360	92.584
	4.497	2.121	3.123	1.435	7.950	0.387	1.712	4.972	0.017	0.000	20.899	0.481	8.360	122.801
Funding pressures as % of total funding (incl reserves)	3%	2%	1%	0%	15%	0%	1%	3%	0%	0%	4%	0%	4%	1%

Integration Authority - Financial Monitoring information 2019/20

Figures in £0.000m

	Aberdeen City	Aberdeenshire	Angus	Argyll & Bute	Clacks & Stirling	Dumfries & Galloway	Dundee City	East Ayrshire	East Dunbartonshire	East Lothian	East Renfrewshire	Edinburgh	Eilean Siar	Falkirk	Fife	Glasgow City	Highland	Inverclyde
	Grampian NHS	Grampian NHS	Tayside NHS	Highland NHS	Forth Valley NHS	Dumfries & Galloway NHS	Tayside NHS	Ayrshire & Arran NHS	Greater Glasgow & Clyde NHS	Lothian NHS	Greater Glasgow & Clyde NHS	Lothian NHS	Eilean Siar NHS	Forth Valley NHS	Fife NHS	Greater Glasgow & Clyde NHS	Highland NHS	Greater Glasgow & Clyde NHS

Budgeted Expenditure (Full Year)

Set Aside	46.416	28.524	9.734	0.000	21.872	0.000	0.000	23.430	19.602	20.567	17.046	92.917	6.548	27.479	34.841	132.578	0.000	16.857
Delegated Acute Services	0.000	0.000	0.000	17.258	0.000	133.206	0.000	0.000	0.000	0.000	0.000	0.000	2.272	0.000	67.340	0.000	180.911	44.508
Community Health (incl FHS, excluding prescribing)	141.062	110.538	77.101	92.854	91.835	120.072	130.321	130.937	61.168	59.837	52.663	221.669	26.824	75.107	249.303	415.329	280.142	25.142
Prescribing (ONLY excl other FHS)	40.189	44.460	21.724	18.829	28.426	35.666	32.569	25.478	18.725	20.470	15.766	80.528	5.725	37.365	74.106	131.352	42.951	18.262
Local authority services	90.799	139.763	63.140	70.638	52.285	97.345	77.047	101.413	55.062	62.787	49.279	273.250	19.315	87.478	153.122	557.438	133.382	50.529
Unidentified Savings	0.000	0.000	0.000	0.000	0.000	(5.980)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Other (explain below)	3.515	1.405	0.000	76.387	0.320	10.280	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.089	0.000	0.000	0.000	1.747
Total budgeted expenditure	321.981	324.690	171.699	275.966	194.738	390.589	239.937	281.258	154.557	163.661	134.754	668.364	60.684	227.518	578.712	1,236.697	637.386	157.045

Set aside as % of total budget

	14%	9%	6%	0%	11%	0%	0%	8%	13%	13%	13%	14%	11%	12%	6%	11%	0%	11%
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Unidentified savings as % of total (before savings)

Explanation of 'other'

	0%	0%	0%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Intergation & Change Funding PCIP Action 15 and ADP	Use of Earmarked Reserves	0.000 Cross boundary flow corporate services	Investment in Integrated Structure	E-Health Reserves strategic	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
													0.000 This is actually additional funding for Set Aside - slight disparity in the budget of £0.089m which will be resolved for next quarter				0.000 Planned use of EMRs	

FORECAST Variances (Full Year)

Forecast Outturn - Set Aside	46.416	28.524	9.734	0.000	22.990	0.000	0.000	23.430	19.602	21.022	17.046	96.556	6.721	28.875	38.672	0.000	0.000	16.857
Forecast Out-turn - Non-Set Aside	276.172	298.505	159.874	278.772	176.868	0.000	242.253	257.987	138.597	143.098	118.175	578.958	53.677	201.884	554.445	0.000	661.127	139.675
Forecast variance - Set Aside	0.000	0.000	0.000	0.000	1.118	0.000	0.000	0.000	0.000	0.455	0.000	3.639	0.173	1.396	3.831	0.000	0.000	0.000
Forecast Variance- Non-Set Aside	0.607	2.339	(2.091)	2.806	4.002	0.000	2.316	0.159	3.642	0.004	0.467	3.511	(0.459)	1.845	10.574	0.000	23.741	(0.513)
Total	0.607	2.339	(2.091)	2.806	5.120	0.000	2.316	0.159	3.642	0.459	0.467	7.150	(0.286)	3.241	14.405	0.000	23.741	(0.513)

Forecast variance as % of total budget

	0%	1%	-1%	1%	3%	0%	1%	0%	2%	0%	0%	1%	0%	1%	2%	0%	4%	0%
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Analysis of Forecast Variances (Combined Set Aside & Non-Set Aside)

Non-delivery of savings/ exceeding savings	0.000	0.000	0.000	2.178	3.980	0.000	0.996	0.247	1.100	0.000	0.000	2.270	0.000	1.396	0.320	0.000	22.200	(0.513)
Prescribing	0.000	(0.141)	0.853	(0.152)	1.441	0.000	0.364	0.000	0.000	(0.047)	0.000	1.241	0.000	1.543	1.000	0.000	0.000	0.000
Prices	0.000	0.680	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Demographics	0.000	3.412	0.000	0.000	1.118	0.000	1.424	0.885	0.942	0.354	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Staffing	0.607	0.738	0.000	0.560	0.000	0.000	0.000	0.600	0.000	0.000	0.000	0.173	0.262	0.000	0.000	0.000	0.000	0.000
Other Material Overspends (commentary required)	0.000	0.000	0.000	0.000	0.672	0.000	0.219	0.702	0.000	0.000	0.750	0.000	0.000	0.000	15.686	0.000	2.951	0.000
Other Material Underspends (commentary required)	0.000	(0.800)	(2.944)	0.000	(2.185)	0.000	(0.687)	(1.675)	0.000	0.152	(0.283)	3.639	(0.407)	0.000	(2.601)	0.000	(1.410)	0.000
Residual variances	0.000	(1.550)	0.000	0.220	0.094	0.000	0.000	0.000	0.000	0.000	0.000	0.000	(0.052)	0.040	0.000	0.000	0.000	0.000
Total	0.607	2.339	(2.091)	2.806	5.120	0.000	2.316	0.159	3.642	0.459	0.467	7.150	(0.286)	3.241	14.405	0.000	23.741	(0.513)

YEAR TO DATE Variances (Part Year)

Year To Date Budget - Set Aside	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Year To Date Budget - Non-Set Aside	0.000	0.000	0.000	0.000	0.000	90.960	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	231.442	0.000	0.000
Year To Date Actual - Set Aside	0.000	0.000	0.000	0.000	0.000	92.816	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	230.723	0.000	0.000
Year To Date Actual - Non-Set Aside	0.000	0.000	0.000	0.000	0.000	92.816	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	230.723	0.000	0.000
Year To Date variance - Set Aside	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Year To Date variance- Non-Set Aside	0.000	0.000	0.000	0.000	0.000	1.856	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	(0.719)	0.000	0.000
Total	0.000	0.000	0.000	0.000	0.000	1.856	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	(0.719)	0.000	0.000

Year To Date variance as % of total YTD budget

	0%	0%	0%	0%	0%	2.0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	-0.3%	0%	0%
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Analysis of Year To Date Variances (Combined Set Aside & Non-Set Aside)

Non-delivery of savings/ exceeding savings	0.000	0.000	0.000	0.000	0.000	1.438	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.100	0.000	0.000
Prescribing	0.000	0.000	0.000	0.000	0.000	0.428	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Prices	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Demographics	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Staffing	0.000	0.000	0.000	0.000	0.000	0.110	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Other Material Overspends (commentary required)	0.000	0.000	0.000	0.000	0.000	0.346	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.410	0.000	0.000
Other Material Underspends (commentary required)	0.000	0.000	0.000	0.000	0.000	(0.466)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	(3.229)	0.000	0.000
Total	0.000	0.000	0.000	0.000	0.000	1.856	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	(0.719)	0.000	0.000

Integration Authority - Financial Monitoring information 2019/20

	Midlothian	Moray	North Ayrshire	North Lanarkshire	Orkney	Perth & Kinross	Renfrewshire	Scottish Borders	Shetland	South Ayrshire	South Lanarkshire	West Dunbartonshire	West Lothian	Totals
Figures in £0.000m	Lothian NHS	Grampian NHS	Ayrshire & Arran NHS	Lanarkshire NHS	Orkney NHS	Tayside NHS	Greater Glasgow & Clyde NHS	Borders NHS	Shetland NHS	Ayrshire & Arran NHS	Lanarkshire NHS	Greater Glasgow & Clyde NHS	Lothian NHS	

Budgeted Expenditure (Full Year)

Set Aside	17.797	11.765	30.094	58.403	7.246	0.000	31.242	23.046	3.834	24.396	56.292	18.673	31.070	812.269
Delegated Acute Services	0.000	0.000	0.000	0.000	0.000	0.000	15.638	0.000	2.864	0.000	0.000	0.000	0.000	463.997
Community Health (incl FHS, excluding prescribing)	49.046	48.176	94.907	287.936	21.137	121.566	85.041	89.992	10.481	63.338	239.381	72.308	94.421	3,639.634
Prescribing (ONLY excl other FHS)	18.008	16.399	30.036	70.808	4.611	26.273	35.302	22.795	6.450	23.868	66.013	19.306	35.719	1,068.179
Local authority services	52.552	54.976	118.679	208.820	19.757	52.404	71.161	48.880	22.036	72.144	172.766	67.813	75.144	3,171.204
Unidentified Savings	0.000	0.000	0.000	0.000	0.000	0.000	0.000	(6.848)	0.000	0.000	0.000	0.000	0.000	(12.828)
Other (explain below)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.817	0.000	0.000	0.000	94.560
Total budgeted expenditure	137.403	131.316	273.716	625.967	52.751	200.243	238.384	177.865	45.665	184.563	534.452	178.100	236.354	9,237.015

Set aside as % of total budget

Unidentified savings as % of total (before savings)

Explanation of 'other'

FORECAST Variances (Full Year)

Forecast Outturn - Set Aside	18.197	0.000	30.094	0.000	8.067	0.000	31.242	25.316	4.842	24.396	0.000	18.673	32.340	569.612
Forecast Out-turn - Non-Set Aside	119.807	0.000	246.210	0.000	45.254	205.103	207.142	159.049	43.591	160.976	0.000	160.381	204.938	5,832.518
Total	138.004	0.000	276.304	0.000	53.321	205.103	238.384	184.365	48.433	185.372	0.000	179.054	237.278	6,402.130
Forecast variance - Set Aside	0.400	0.000	0.000	0.000	0.821	0.000	0.000	2.270	1.008	0.000	0.000	0.000	1.270	16.381
Forecast Variance- Non-Set Aside	0.201	0.000	2.588	0.000	(0.251)	4.860	0.000	4.230	1.760	0.809	0.000	0.954	(0.346)	67.755
Total	0.601	0.000	2.588	0.000	0.570	4.860	0.000	6.500	2.768	0.809	0.000	0.954	0.924	84.136

Forecast variance as % of total budget

Analysis of Forecast Variances (Combined Set Aside & Non-Set Asi

Non-delivery of savings/ exceeding savings	0.000	0.000	0.215	0.000	0.000	0.519	0.000	5.066	0.628	0.300	0.000	(0.459)	0.000	40.443
Prescribing	(0.236)	0.000	0.000	0.000	0.000	0.707	0.000	0.300	0.000	0.000	0.000	0.000	0.000	6.873
Prices	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.185	0.000	1.865
Demographics	0.818	0.000	2.564	0.000	0.000	1.943	0.000	0.184	0.000	0.000	0.000	1.359	0.000	15.003
Staffing	0.000	0.000	0.261	0.000	(0.251)	1.304	0.000	0.950	2.140	0.000	0.000	0.451	1.270	9.065
Other Material Overspends (commentary required)	0.400	0.000	0.000	0.000	0.821	0.387	0.000	0.000	0.000	0.509	0.000	0.000	0.000	23.097
Other Material Underspends (commentary required)	(0.381)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	(0.257)	0.000	(9.839)
Residual variances	0.000	0.000	(0.452)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	(0.325)	(0.346)	(2.371)
Total	0.601	0.000	2.588	0.000	0.570	4.860	0.000	6.500	2.768	0.809	0.000	0.954	0.924	84.136

YEAR TO DATE Variances (Part Year)

Year To Date Budget - Set Aside	0.000	2.941	0.000	14.601	0.000	0.000	0.000	0.000	0.000	0.000	14.073	0.000	0.000	31.615
Year To Date Budget - Non-Set Aside	0.000	28.945	0.000	148.739	0.000	0.000	0.000	0.000	0.000	0.000	116.782	0.000	0.000	616.868
Total	0.000	31.886	0.000	163.340	0.000	0.000	0.000	0.000	0.000	0.000	130.855	0.000	0.000	648.483
Year To Date Actual - Set Aside	0.000	2.941	0.000	14.601	0.000	0.000	0.000	0.000	0.000	0.000	14.073	0.000	0.000	31.615
Year To Date Actual - Non-Set Aside	0.000	29.782	0.000	149.645	0.000	0.000	0.000	0.000	0.000	0.000	116.271	0.000	0.000	619.237
Total	0.000	32.723	0.000	164.246	0.000	0.000	0.000	0.000	0.000	0.000	130.344	0.000	0.000	650.852

Year To Date variance - Set Aside	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Year To Date variance- Non-Set Aside	0.000	0.837	0.000	0.906	0.000	0.000	0.000	0.000	0.000	0.000	(0.511)	0.000	0.000	2.369
Total	0.000	0.837	0.000	0.906	0.000	0.000	0.000	0.000	0.000	0.000	(0.511)	0.000	0.000	2.369

Year To Date variance as % of total YTD budget

Analysis of Year To Date Variances (Combined Set Aside & Non-Se

Non-delivery of savings/ exceeding savings	0.000	0.000	0.000	0.360	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.898
Prescribing	0.000	0.257	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.685
Prices	0.000	0.173	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.173
Demographics	0.000	0.346	0.000	1.316	0.000	0.000	0.000	0.000	0.000	0.000	0.168	0.000	0.000	1.830
Staffing	0.000	0.061	0.000	0.602	0.000	0.000	0.000	0.000	0.000	0.000	0.106	0.000	0.000	0.879
Other Material Overspends (commentary required)	0.000	0.000	0.000	0.075	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.831
Other Material Underspends (commentary required)	0.000	0.000	0.000	(1.447)	0.000	0.000	0.000	0.000	0.000	0.000	(0.785)	0.000	0.000	(5.927)
Total	0.000	0.837	0.000	0.906	0.000	0.000	0.000	0.000	0.000	0.000	(0.511)	0.000	0.000	2.369

Integration Authority - Financial Monitoring information 2019/20

Figures in £0.000m

	Aberdeen City	Aberdeenshire	Angus	Argyll & Bute	Clacks & Stirling	Dumfries & Galloway	Dundee City	East Ayrshire	East Dunbartonshire	East Lothian	East Renfrewshire	Edinburgh	Eilean Siar	Falkirk	Fife	Glasgow City	Highland	Inverclyde
	Grampian NHS	Grampian NHS	Tayside NHS	Highland NHS	Forth Valley NHS	Dumfries & Galloway NHS	Tayside NHS	Ayrshire & Arran NHS	Greater Glasgow & Clyde NHS	Lothian NHS	Greater Glasgow & Clyde NHS	Lothian NHS	Eilean Siar NHS	Forth Valley NHS	Fife NHS	Greater Glasgow & Clyde NHS	Highland NHS	Greater Glasgow & Clyde NHS

FUNDING IMPACT OF VARIANCES

Funding Impact of Variances

	Forecast	Forecast	Forecast	Forecast	Forecast	Year To Date	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Year To Date	Forecast	Forecast	
NHS Board additional (reduced) funding*	0.000	0.000	0.000	0.000	0.000	1.118	1.856	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11.444	0.000	0.000	0.000
Local authority additional (reduced) funding*	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.961	0.000	0.000	0.000
Anticipated IJB Reserves to be used (increased) due to variance	0.000	0.000	(2.091)	0.246	0.000	0.000	0.000	1.403	0.000	0.000	0.467	0.000	0.000	0.000	0.000	0.000	(0.719)	0.000	0.000	0.000
Agreed financial recovery plan (no funding impact for partners)	0.607	0.000	0.000	2.560	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.173	0.000	0.000	0.000	0.000	13.041	0.000	0.000
Other	0.000	0.000	0.000	0.000	0.000	0.000	0.000	(1.244)	0.000	0.000	0.000	0.000	(0.459)	0.000	0.000	0.000	0.000	10.700	(0.513)	(0.513)
Funding impact per organisation or recovery plan not yet determined (eg in discussion) or publicly reported	0.000	2.339	0.000	0.000	4.002	0.000	2.316	0.000	3.642	0.459	0.000	7.150	0.000	3.241	0.000	0.000	0.000	0.000	0.000	0.000
	0.607	2.339	(2.091)	2.806	5.120	1.856	2.316	0.159	3.642	0.459	0.467	7.150	(0.286)	3.241	14.405	(0.719)	23.741	(0.513)	(0.513)	(0.513)

Savings Targets and Achievement

Savings Target (Full Year, including Set Aside where relevant)

Savings target	(4.631)	(2.100)	(2.094)	(9.823)	(7.245)	(19.402)	(5.936)	(2.312)	(3.700)	(1.479)	(3.682)	(19.090)	(1.815)	(5.241)	(8.857)	(18.255)	(31.200)	(1.429)	(1.429)
Forecast savings out-turn	(4.631)	(2.100)	(2.094)	(7.645)	(3.265)	(13.890)	(4.940)	(2.065)	(2.600)	(1.479)	(3.682)	(11.940)	(1.815)	(2.352)	(8.507)	(14.380)	(20.500)	(1.815)	(1.429)
Variance (+ = unfavourable)	0.000	0.000	0.000	2.178	3.980	5.512	0.996	0.247	1.100	0.000	0.000	7.150	0.000	2.889	0.350	3.875	10.700	0.000	0.000
Variance as % of savings target	0%	0%	0%	-22%	-55%	-28%	-17%	-11%	-30%	0%	0%	-37%	0%	-55%	-4%	-21%	-34%	0%	0%

Reserves

Potential Year End Reserve Balances *

	Forecast	Forecast	Forecast	Forecast	Forecast	Year To Date	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Year To Date	Forecast	Forecast
Contingency	2.500	0.000	5.491	0.000	0.000	0.000	0.561	0.318	0.041	1.077	0.272	0.000	1.500	0.316	0.000	14.251	0.000	0.000	1.010
Ear marked balances	1.318	0.000	0.400	0.079	1.657	5.500	0.100	0.000	1.853	0.000	3.265	0.000	4.340	6.552	0.000	23.048	0.000	0.000	4.524
Total	3.818	0.000	5.891	0.079	1.657	5.500	0.661	0.318	1.894	1.077	3.537	0.000	5.840	6.868	0.000	37.299	0.000	0.000	5.534

Integration Authority - Financial Monitoring information 2019/20

	Midlothian	Moray	North Ayrshire	North Lanarkshire	Orkney	Perth & Kinross	Renfrewshire	Scottish Borders	Shetland	South Ayrshire	South Lanarkshire	West Dunbartonshire	West Lothian	Totals
Figures in £0.000m	Lothian NHS	Grampian NHS	Ayrshire & Arran NHS	Lanarkshire NHS	Orkney NHS	Tayside NHS	Greater Glasgow & Clyde NHS	Borders NHS	Shetland NHS	Ayrshire & Arran NHS	Lanarkshire NHS	Greater Glasgow & Clyde NHS	Lothian NHS	

FUNDING IMPACT OF VARIANCES

Funding Impact of Variances	Forecast	Year To Date	Forecast	Year To Date	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Year To Date	Forecast	Forecast	Forecast
NHS Board additional (reduced) funding*	0.000	0.527	0.000	0.000	0.821	2.079	0.000	6.316	2.530	0.000	0.000	0.000	0.000	0.000	24.308
Local authority additional (reduced) funding*	0.000	0.310	0.000	0.000	0.000	2.781	0.000	0.184	0.238	0.000	0.000	0.000	0.000	0.000	6.164
Anticipated IJB Reserves to be used (increased) due to variance	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.025
Agreed financial recovery plan (no funding impact for partners)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	16.381
Other	0.000	0.000	0.000	0.000	(0.251)	0.000	0.000	0.000	0.000	0.000	(0.511)	0.000	0.000	0.000	8.233
Funding impact per organisation or recovery plan not yet determined (eg in discussion) or publicly reported	0.601	0.000	2.588	0.906	0.000	0.000	0.000	0.000	0.000	0.809	0.000	0.954	0.924	0.000	29.025
	0.601	0.837	2.588	0.906	0.570	4.860	0.000	6.500	2.768	0.809	(0.511)	0.954	0.924	0.000	84.136

Savings Targets and Achievement

Savings Target (Full Year, including Set Aside where relevant)	Forecast	Year To Date	Forecast	Year To Date	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Year To Date	Forecast	Forecast	Forecast
Savings target	(2.115)	0.000	(6.314)	(5.803)	0.000	(3.701)	0.000	(11.021)	(2.331)	(5.109)	(2.438)	0.000	(5.372)	(192.495)	
Forecast savings out-turn	(2.115)	0.000	(6.099)	(4.633)	0.000	(3.182)	0.000	(4.453)	(1.703)	(4.195)	(2.206)	0.000	(5.261)	(143.161)	
Variance (+ = unfavourable)	0.000	0.000	0.215	1.170	0.000	0.519	0.000	6.568	0.628	0.914	0.232	0.000	0.111	49.334	
Variance as % of savings target	0%	#DIV/0!	-3%	-20%	#DIV/0!	-14%	#DIV/0!	-60%	-27%	-18%	-10%	#DIV/0!	-2%	-26%	

Reserves

Potential Year End Reserve Balances *	Forecast	Forecast	Forecast	Year To Date	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Forecast	Year To Date	Forecast	Forecast	Mixed basis
Contingency	2.385	0.000	(3.653)	0.937	0.000	0.000	0.930	0.000	0.394	0.000	1.808	2.457	0.000	0.000	32.595
Ear marked balances	0.000	0.000	0.277	10.700	0.000	1.539	2.831	0.000	0.000	0.000	7.902	4.723	0.000	0.000	80.608
Total	2.385	0.000	(3.376)	11.637	0.000	1.539	3.761	0.000	0.394	0.000	9.710	7.180	0.000	0.000	113.203



NHS Scotland 2019-20 Consolidated Financial Reporting to 31 August 2019 (Month 5)

Purpose

This paper summarises the financial position for NHS Scotland for the reporting year 2019-20. It sets out the year to date position and the forecast position for the year end. The information contained in this report is a consolidation of the financial position as reported by all 22 NHS Boards. All NHS Boards report regularly and publicly on local financial performance and this information is available through individual NHS Board websites.

Context

The Health and Sport Portfolio resource budget in 2019-20 is £13.9 billion. This represents an increase of over £730 million from 2018-19 (5.6% uplift). As part of the budget approved by the Scottish Parliament, the 14 Territorial and 8 National Boards account for £11.3 billion of that spend, with the remainder administered directly by the Scottish Government. The NHS Board resource budget covers spending on operating costs such as pay, drugs and supplies.

In addition to the Budgets allocated at the outset of the year to NHS Boards, £2.5 billion is managed centrally by the Scottish Government Health and Social Care Directorates; the majority of which is allocated to NHS Boards over the course of the year. This includes total funding of £1.5 billion for the four professional groups of independent sub-contractors - medicine, pharmacy, dentistry and optometry.

The capital budget is £346 million in 2019-20 and funds investment in the NHS estate, equipment and maintenance.

Consolidated Financial Position

Based on the first five months of the year (April-August 2019), a balanced year end position is forecast for the Health and Sport Portfolio for both resource and capital budgets.

As part of annual financial plans, NHS Boards have identified a consolidated savings requirement of £432 million which is required in order to deliver financial balance. All savings generated are retained locally by Boards and plans are continually developed throughout the year. It is normal for Boards to begin the year with a relatively high variance against budget and for this to reduce throughout the year as savings plans are developed and as expenditure patterns become clearer.

At month 5, NHS Boards are reporting a year-to-date adverse variance of £58.8 million (16.8% improvement on the same period in 2018-19) and are forecasting a consolidated year-end adverse variance against budget of £97.2 million (9.2% improvement). This projected variance is expected to reduce through the year as further savings are identified and expenditure patterns become more certain. In-year pressures highlighted by NHS Boards at month 5 include pay and drugs costs, which represent the most significant proportion of Boards' budgets.

Five NHS Boards are anticipating a requirement for additional financial support from Scottish Government in 2019-20. The indicative level of additional financial support required is estimated at £51.3 million across the following Boards: NHS Tayside (£11.2 million); NHS Ayrshire and Arran (£14.8 million); NHS Highland (£11.4 million); NHS Borders (£9.3 million) and NHS Fife (£4.7 million). This compares with the actual total level of brokerage required in 2018-19 of £65.7 million.

The anticipated financial support required by Boards in 2019-20 is within the planning assumptions of the Portfolio and is not therefore expected to create a risk to delivering a balanced overall Portfolio outturn position. This overall portfolio forecast requires that all other Boards will deliver a balanced financial position, and therefore there is expected to be a reduction in the adverse forecast over the course of the remaining 8 months of the year.

Table 1 below summarises the financial position at 31 August 2019, with further analysis by NHS Board at Table 2.



Table 1: Summary of forecast outturn and indicative brokerage required

	2019-20 Forecast Outturn				Indicative financial support required
	Forecast Outturn	Budget	Variance		
	£m	£m	£m	%	£m
Resource Allocation					
Health and Sport Portfolio	13,864.8	13,864.8	0.0	0.0	0.0
<i>Included within:</i>					
Territorial NHS Boards	11,285.0	11,187.9	(97.2)	(0.9)	51.3
National NHS Boards	1,540.3	1,540.3	0.0	0.0	0.0
Capital Allocation					
Health and Sport Portfolio	213.3	213.3	0.0	0.0	0.0
<i>Included within:</i>					
Territorial NHS Boards	188.6	188.6	0.0	0.0	0.0
National NHS Boards	24.7	24.7	0.0	0.0	0.0

Capital

Capital allocations to NHS Boards in 2019-20 totals £213.3 million. Further breakdown by Board is provided at Table 2. In addition, a further £132.7 million held centrally will be used to support infrastructure investment across the sector, this includes projects such as the national Elective Centre programme as well as recurring commitments such as the Ambulance replacement programme and investment in radiotherapy equipment. This will ensure continued support from the capital investment strategy to support the delivery of the National Clinical Strategy and the Delivery Plan.

Key Developments

This report represents an early indication of the financial position on NHS Boards. Key movements will be reported in future reports as the position becomes more refined.



Table 2: Detailed financial position by NHS Board

	Revenue								Capital				
	Year to Date Position				2019-20 Forecast Outturn				Indicative Financial Support Required	Budget	Forecast Outturn	Variance	
	Budget	Actual	Variance		Budget	Actual	Variance						
	£m	£m	£m	%	£m	£m	£m	%	£m	£m	£m	%	
NHS Ayrshire and Arran	332.8	341.4	(8.6)	(2.6)	819.3	834.1	(14.8)	(1.8)	14.8	11.0	11.0	-	-
NHS Borders	157.4	157.7	(0.3)	(0.2)	225.2	234.5	(9.3)	(4.1)	9.3	2.4	2.4	-	-
NHS Dumfries and Galloway	139.6	141.8	(2.2)	(1.6)	349.7	354.5	(4.8)	(1.4)	-	6.7	6.7	-	-
NHS Fife	302.7	309.6	(6.8)	(2.3)	739.5	744.2	(4.7)	(0.6)	4.7	7.4	7.4	-	-
NHS Forth Valley	242.8	243.8	(1.0)	(0.4)	598.4	600.8	(2.4)	(0.4)	-	7.7	7.7	-	-
NHS Grampian	440.6	442.5	(1.9)	(0.4)	1,092.9	1,092.9	-	-	-	11.6	11.6	-	-
NHS Greater Glasgow and Clyde	1,014.6	1,031.8	(17.2)	(1.7)	2,504.6	2,540.4	(35.8)	(1.4)	-	43.1	43.1	-	-
NHS Highland	305.5	312.6	(7.0)	(2.3)	733.7	745.1	(11.4)	(1.6)	11.4	26.1	26.1	-	-
NHS Lanarkshire	543.8	543.9	(0.1)	(0.0)	1,345.0	1,345.0	-	-	-	14.8	14.8	-	-
NHS Lothian	637.8	642.5	(4.8)	(0.7)	1,687.2	1,687.6	(0.4)	(0.0)	-	38.0	38.0	-	-
NHS Orkney	24.2	25.0	(0.7)	(3.1)	64.3	66.1	(1.8)	(2.8)	-	1.0	1.0	-	-
NHS Shetland	24.2	25.6	(1.4)	(5.9)	63.3	63.3	-	-	-	1.0	1.0	-	-
NHS Tayside	348.3	354.8	(6.5)	(1.9)	877.3	888.4	(11.2)	(1.3)	11.2	16.7	16.7	-	-
NHS Western Isles	36.6	37.0	(0.4)	(1.1)	87.5	88.2	(0.7)	(0.8)	-	1.3	1.3	-	-
NHS National Services Scotland	201.1	201.0	0.1	0.1	496.4	496.4	-	-	-	5.7	5.7	-	-
Scottish Ambulance Service	114.1	115.8	(1.7)	(1.5)	281.7	281.7	-	-	-	3.3	3.3	-	-
NHS Education for Scotland	195.5	193.4	2.1	1.1	513.8	513.8	-	-	-	-	-	-	-
NHS 24	28.5	28.1	0.4	1.4	72.6	72.6	-	-	-	0.3	0.3	-	-
National Waiting Times Centre	30.3	29.8	0.5	1.7	84.8	84.8	-	-	-	15.2	15.2	-	-
The State Hospitals Board for Scotland	14.7	14.6	0.1	0.7	34.7	34.7	-	-	-	0.3	0.3	-	-
NHS Health Scotland	8.1	8.1	0.0	0.4	21.0	21.0	-	-	-	-	-	-	-
Healthcare Improvement Scotland	11.2	12.4	(1.3)	(11.5)	35.3	35.3	-	-	-	0.1	0.1	-	-
Total NHSScotland	5,154.3	5,213.1	(58.8)	(1.1)	12,728.2	12,825.4	(97.2)	(0.8)	51.3	213.3	213.3	-	-

Message

From: Matthew Templeton [REDACTED]
on behalf of Matthew Templeton [REDACTED]
Sent: 26/09/2019 22:15:34
To: Mark Griffiths [REDACTED]
CC: 'BEARD, Lee' [REDACTED]; 'Richard Osborne (MacCap)' [REDACTED];
'GORDON, David' [REDACTED]; Roger Thompson (External) [REDACTED]
Subject: RE: RHCYP: NHSL & BYES Video Call

Mark,

Setting to one side your email below, I believe on our conference call on Wednesday we collectively understood that IHSL and Bouygues were at an impasse. IHSL and NHSL are not prepared to meet Bouygues' conditions to procure their support in the delivery of the two Board Changes (amending the ventilation in Critical Care and Haematology).

We advised NHSL and Scottish Government earlier this evening that, at present, Bouygues are not prepared to deliver the ventilation works.

I hope to speak with Mary Morgan tomorrow to discuss next steps.

Regards

Matt

From: Mark Griffiths [REDACTED]
Sent: 25 September 2019 12:39
To: Matthew Templeton [REDACTED]
Cc: 'BEARD, Lee' [REDACTED]; 'Richard Osborne (MacCap)' [REDACTED];
'GORDON, David' [REDACTED]
Subject: RE: RHCYP: NHSL & BYES Video Call
Importance: High

Matt

Many thanks for your email and post our conference call of midday today I thought it best to lay out the BYES position here, from our perspective we believe that if IHSL can provide unequivocal assurances in respect of the items below we can then achieve BYES Board approval and move forward on focussing on the delivery of these two change notices and allowing the Board BYES and IHSL to focus upon the reoccupation of the facility. You may note that I have minimised distribution in my reply given statements on the PMS below and with SFT being in the distribution I thought this a prudent approach;

1. Warranties – as we have consistently stated we require indemnities to be in place in this regard, we are confident that IHSL can achieve this with position given their relationship with The Board.
 2. Income certainty – The BYES expectation here is that there will be a dedicated Project Bank account for these activities and all applications for payment will be approved and paid to BYES within 7 calendar days. We assume lenders approval is within your grasp and whilst we understand that this is a pre-requisite, we cannot influence this.
 3. Pass down liabilities – we are grateful that IHSL have finally agreed that they will opine on the historic matters in this respect. However we remain of the view, as we discussed yesterday and today, that IHSL have a remedy available to them under the construction contract (17 A 7) that allows you to resolve these matters directly with your Construction Contractor. For the avoidance of doubt we expect that IHSL will revert to this approach moving forward immediately and also retrospectively for all Defect and Snag related items for the period from handover to date. We would like to explore further with you the interpretation we have in respect of this
- A46304554

element of the Construction Contract as irrespective of whether happens with these change notices it is very likely we will now interpret Defect related items as needing to be addressed by IHSL via the Construction Contract moving forward.

4. PMS—we remain of the view that moving forward relief needs to be awarded fully to BYES, until the completion of the critical care works. This then allows the BYES team to be fully focussed upon the successful delivery of the change notice works without the distraction of the PMS as well which I am sure we all agree was not anticipated as being as punitive as it has been since the 22nd February to date. Additionally we are of the view at the moment that the PMS is seen as an income stream by some parties and we feel that an opportunity to reset this expectation and improve behaviours in regards to it's future application need to be seized upon for the good of both IHSL & BYES as well as The Board in making this contract work well for all parties.

No doubt we will talk again later this afternoon, but as we have stated at the beginning of this email we feel these change notices can be taken forward positively if we can resolve these items above promptly to satisfy all stakeholders. We look forward to your agreement to the above.

Yours Sincerely

Mark Griffiths MSc CIWFM

For and on Behalf of;
Bouygues Energies and Services FM UK Ltd

www.bouygues-es.co.uk 



Shared innovation

From: Matthew Templeton [REDACTED]
Sent: 24 September 2019 17:36
To: Mark Griffiths [REDACTED]
Cc: BEARD, Lee [REDACTED]; Richard Osborne (MacCap) [REDACTED]; Viv Cockburn [REDACTED]; Roger Thompson (External) [REDACTED]; Stephen Gordon [REDACTED]; Wallace Weir [REDACTED]; Steve Hudson [REDACTED]; GORDON, David [REDACTED]
Subject: RE: RHCYP: NHSL & BYES Video Call

Mark,

Over the past few weeks we have discussed in detail IHSL's request to BYES to undertake the two Board Changes requiring amendments to the ventilation systems in Paediatric Critical Care and Haematology/Oncology (HVC 095 & HVC 096).

Whilst we acknowledge BYES has written to IHSL on the 18th September 2019 (with respect to HVC 095) and on the 23 September 2019 (with respect to HVC 096) declining to progress with the Board Changes', we understand BYES are 'minded' to consider progressing with the Board Changes subject to the conditions set out in your email below.

Prior to considering and responding to each of the four conditions set out in your email below, we thought it worthy we rely discussions IHSL has held with NHS Lothian (NHSL) and the newly appointed Scottish Government Programme Director. We outlined BYES reservations in progressing with the Critical Care ventilation Board Change, the outcome of which was a video call with NHSL's Head of Capital Planning Iain Graham, BYES and IHSL (NHSL's note of the meeting is attached).

At our Steering Group last week, with your permission we advised NHSL and Scottish Government that whilst the discussion with Iain Graham was helpful, it had been considered insufficient by the BYES board to agree to the delivery of the ventilation amendments required to migrate patients into the new hospital. Specific details of NHSL's response are contained below, however the overriding feedback is that NHSL are very enthusiastic that BYES undertake the two ventilation Board Changes, for which NHSL consider would be a very positive and encouraging start to this new partnership.

NHSL and Scottish Government acknowledge the external focus on the project, however are asking for IHSL's and BYES support in delivering this critical infrastructure to enable the opening of the new hospital in the time frame committed to by the Cabinet Secretary. Should IHSL and BYES decline to undertake the works or be seen to seek commercial leverage/betterment from the situation, NHSL may self-deliver the works.

IHSL's response to your four points are as follows:

1. BYES and IHSL are aligned in seeking to ensure we are in a 'no better, no worse' position as a consequence of progressing with the Board Changes. Together we will seek to agree protection from NHSL where warranties are potentially invalidated as a consequence of the ventilation works. IHSL can provide a commitment to work with BYES in negotiations with NHSL, but we cannot guarantee the outcome of these discussions.
2. As per the attached meeting note, we understand NHSL will agree to no set-off of revenue payments against capital payments due under the Board Change. IHSL has agreed to investigate a Project Account, although this is subject to lender approval.
3. Subject to BYES agreement to progress with the Board Change, IHSL will review all Service Events logged on the Helpdesk which have attracted a Deduction and make an initial good faith allocation of responsibility based on the information logged on the Helpdesk and on a without prejudice basis to Multiplex or BYES for subsequent discussion and agreement between Multiplex and BYES. Furthermore, we are prepared to facilitate tripartite discussions between BYES and Multiplex to assist in resolving the disputes on the current Deductions, to assist BYES and Multiplex in agreeing an interface protocol and are committed to supporting both parties through this process. For the avoidance of doubt, and as maintained throughout, IHSL will continue to flow all Deductions down to BYES in accordance with the provisions of the Service Contract, which BYES can, where applicable, recover from Multiplex through the Interface Agreement.
4. As conveyed in the attached NHSL meeting note and reiterated at the Steering Group with Scottish Government present, NHSL will not provide unilateral relief for Service elements of the Paymech retrospectively or going forward. BYES will benefit from relief of Deductions in areas affected by the works being undertaken as part of the Board Change, where applicable. NHSL recognised a potential risk to BYES and agreed to consider a risk premium within the cost to be charged for the Board Change. BYES to consider and revert with an offer for NHSL consideration. IHSL consider this to be a very reasonable offer from NHSL and indeed it is extremely difficult to see NHSL changing their position with respect to retrospective and prospective relief on the PayMech given the external scrutiny on the project.

As advised, IHSL is required to respond to NHSL by 5pm on Thursday 26th September (where we have already received a small extension). IHSL requests a clear and unequivocal response from BYES on by 5pm on Wednesday 25th September 2019 (noting we have been already discussing these matters for several weeks). In the circumstances where BYES seek to maintain their position to decline the Board Changes, Scottish Government and NHSL have advised they would appreciate a meeting with BYES decision makers to understand the reasons why.

I am free tomorrow morning should you wish to discuss.

Regards

Matt

Matt Templeton
Director



Dalmore Capital Limited

[Redacted]

[Redacted]

From: Mark Griffiths [Redacted]
Sent: 13 September 2019 11:15
To: Matthew Templeton [Redacted]
Subject: RE: RHCYP: NHSL & BYES Video Call
Importance: High

Matt

In advance of our pre-call for our midday call with the Board enclosed are the discussion points we want to raise at midday;

Item
1. Warranties with MPX remain unaffected by any works BYES undertake for the Change BYES expectation is that this is an IHSL indemnity to BYES.
2. No option to offset Change Notice works income against any future PMS deductions – achieved by advance payment at 75% or an alternative security of Project income arrangement
3. The issue of allocation of defects related Pass Down Liabilities needs resolving – yesterdays call did not convince
4. The impact of the services elements of Pay Mech from 22 nd Feb to date , and the impact of these project activities under the change notice on the PMS until works end.

Look forward to speaking at 11-30

Kind regards Mark

*Mark Griffiths MSc CIWFM
Founder and Managing Director*

[Redacted]

[Redacted]

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SICK KIDS HOSPITAL

NOTE: 18 September – Tory debate saw SG amendment committing to public inquiry accepted (as was Labour’s on the same subject), but the Tories abstained on the final vote.

KPMG/NSS - 11 September - Health Secretary gave parliamentary statement publishing NSS/KPMG reports and NHS Lothian’s action.

Escalation – We’ve escalated NHS Lothian to level 4 in the escalation framework– meaning a strategic programme director (Mary Morgan), reporting to the Scottish Government, has been installed to oversee the completion of the project.

Delay - On 2 July NHS Lothian alerted SG to an issue with ventilation system in the critical Care unit of new Royal Hospital for Children and Young People.

- On 3 July, NHS Lothian and Health Facilities Scotland met to consider the various options available. They concluded due to the risks associated with undertaking invasive rectification works within a live patient environment, that critical care beds do not move until the problem has been fixed.
- On 4 July, the Health Secretary halted planned move in the interests of patient safety. This was communicated to staff and the wider public that day.
- W/C 8 July, Health Secretary announced that NHS National Services Scotland (NSS) would undertake a review on site compliance with technical specifications and standards.
- On 12 July KPMG were engaged to conduct an independent audit of the governance arrangements for the hospital, to provide an external and impartial assessment of the factors leading to the delay.

Top Lines

- Patient Safety is our top priority which is why we made the decision to delay the move to the new hospital and this will continue to be our focus.
- Having considered the calls of parents last weekend the Health Secretary Jeane Freeman confirmed on Tuesday that to increase public confidence we will establish a public inquiry into the new Royal Hospital for Children in Edinburgh and the Queen Elizabeth University site
- This inquiry will determine how vital issues relating to ventilation and other matters occurred. The Health Secretary has committed to returning to parliament to set out the full details of the inquiry.
- They inquiry will also be asked to establish how mistakes were made, and what steps can be taken to prevent them being repeated in future projects.

Last week the Health Secretary updated this parliament with her statement and published the independent reviews by NSS and KPMG.

- She also met with opposition spokespeople to discuss these reports after they had the opportunity to consider them properly.
- NHS Lothian have been escalated to level 4 on the escalation framework to provide confidence that the action plan and the new Hospital will be delivered.
- COO of NHS National Service Scotland started in the role of Strategic Programme Director on Monday.
- I would like to acknowledge the contribution of staff who have continued to provide high quality clinical services at both the Children's Hospital and the Department of Clinical Neuroscience in very difficult circumstances.

The NSS report reveals the range of issues which require to be resolved prior to occupation of the building - the main issues noted are management and assurance, ventilation systems, water systems and drainage and plumbing.

- The KPMG report sets out picture of human error and confusion over interpretation of standards and guidance, and missed opportunities to spot and rectify the error.
- Our Oversight Board is overseeing all rectification works including work to all aspects the required clinical and safety standards.
- The main problem which led to the issues with air changes in the critical care unit stems from an NHS Lothian document from 2012 (tender stage) which was inconsistent with guidance, but was referred to throughout project.

As the Health Secretary advised parliament last week, the estimated costs additional costs to complete the works recommended by NSS at the new hospital, to improve the usefulness of the existing sites, and to account for double running, is around £16 million.

- **Works at the new hospital - £6 million** (including £4m for rectification for critical care and haematology/oncology, plus £2 contingency to account for any issues in NSS phase 2 work.)
- **Costs of maintaining sites - £7.2 million** (including £1.5 million for dual running sites, £2m for additional maintenance at RHSC/DCN, £2m for improvements to existing facilities, and £1.7m for an interim modular unit at DCN to provide safe capacity.)
- **Project Team Costs over delivery period - £2.35 million** (including £1.5m for the project team, £0.6m for external advisers including legal, technical and financial, and £0.25m in 'aborted commissioning'.)
- **Independent reviews - £0.55 million.**

Detailed work is underway to ensure issues are rectified and that the new site meets the required clinical and safety standards

- NSS have undertaken a detailed assessment of all buildings systems in the new hospital which could impact its safe operation - including ventilation, drainage, water, fire safety, and medical gases.
- NSS will also provide assurance that current and recently completed major projects such as Dumfries and Galloway Royal Infirmary, and Balfour Hospital (Orkney) are compliant with statutory requirements and other guidance.
- KPMG have conducted an independent audit of the governance arrangements for the hospital, and of the factors leading to the delay.

Accountability

- The Health Secretary has made clear that she holds NHS Lothian accountable for delivery of the Sick Kids project.
- NHS Lothian have been escalated to stage 4 in the ladder of escalation.
- Given the number of issues to be rectified, the increased length of delay and increase in cost, we've now escalated NHS Lothian to stage 4.
- We've put in place a Senior Programme Director, Mary Morgan, who has taken responsibility for day to day delivery of the RHCYP operational phase from now until the site is fully occupied.
- She'll work alongside the clinical and operational team in NHS Lothian and will report directly to Scottish Government.
- Additional independent technical advice will be made available and the Oversight Board will remain in place.

High quality clinical service continues to be delivered from existing sites.

- The Health Secretary visited the existing Sick Kids hospital and Department for Clinical Neuroscience in July to meet with staff and patients, and she will be meeting them again on Monday.
- She also meet with staff side in August to discuss their concerns and to provide reassurance.
- To ensure all patients went to the correct hospital, all patients were contacted by phone or letter by the Health Board to inform them of developments. A helpline remains in operation for families and patients to clarify arrangements.
- Patient transport was also made available on the new site in case a patient turned up to the new hospital and needed to be transferred.
- Services have continued to be provided from the existing sites and plans for a phased migration of services when it is safe to do so are being developed.

We want to strengthen quality and control in the planning and construction of healthcare buildings.

- That's why as part of the Programme for Government I announced that we will create a new body which will have oversight for the design, construction and maintenance of major infrastructure developments within NHS
- It will involve a compliance function to ensure that construction and future maintenance is in line with statutory and other guidance.

NHS Lothian have a number of staff on site to look after the maintenance and logistical needs of the building, while security is a significant issue.

NOTE: A Sunday Mail investigation (15 Sept) reported 'around 70 workers are attending the ghost-ship hospital that has no patients'. Unions and politicians said they were 'flabbergasted' the NHS had so many staff on the site.

- Many of the staff have multi-faceted roles and some are already working across multiple sites
- NHS Lothian are reviewing current arrangements and will work with staff to ensure personnel on site are required while the building is unoccupied.

Reports that the hospital will cost an extra £90 million are inaccurate.

NOTE: The KPMG is expected to cost around £400k; the NSS report £150k.

- As part of the overall project, NHS Lothian needed to invest £80 million in enabling works to get the site ready for construction.
- These costs were known at the outset of the project and were factored into the decision to proceed.
- The costs were included in the full business case which is published and available on NHS Lothian's website.
- They are also reported in the regular updates to the Scottish Government's Infrastructure Investment Plan (IIP).
- £11.6 million was agreed as part of a Settlement Agreement following a previous issue reported with the building in February 2019. These have been reported in the Plan.
- £2 million of the £11.6 million agreed as part of a Settlement Agreement was paid in July. This payment is not part of the monthly service charge and does not relate to the delay that was announced in July.
- The total estimated additional costs for to rectify the issues causing the delay are £16 million.
- These costs arise from the work needed to fix the ventilation and other remedial work and from the continued operation of and improvement of the current sites.

Reports that the cost for the hospital is likely to almost triple, from £150 million to £416.2 million are inaccurate.

- An NPD contract means that NHS Lothian do not pay for the hospital during construction, but instead a unitary charge is paid every month once the hospital is complete over a 25 year period.
- Payments for the unitary charge began in February 2019 after the Independent Tester certified the hospital was complete.
- The annual unitary charge is approximately £15 million (though it will vary from year to year), so overall total contracted cost of the project over 25 years, including hard facilities management and lifecycle costs, is £432 million.

ABERDEEN HOSPITAL

NOTE: Daily Mail reports (18 September) the new Aberdeen hospital could run £50 million over budget. Reports claims from Health Committee convener Lewis Macdonald that this may be linked to problems at the Sick Kids and QEUH and that potential bidders may have gone back to the drawing board. Initial cost estimates for the Baird and ANCHOR centre indicated a target price of around £165 million. In the process of developing the Full Business Case, costs have risen to £220 million.

- The analysis of the tenders for the main construction works is underway. The tendered costs that have been returned are higher than estimated at the outline business case stage, reflecting the challenges within the construction sector and the wider uncertainty regarding Brexit and the economic position.
- NHS Grampian have commissioned an independent review of the project costs and are also using the opportunity to review the design of the facilities in light of the learning from the projects in Glasgow and Lothian.
- NHS Grampian is fully committed to the project and continues to have the full support of the Scottish Government.

Timeline.

- A programme of work including procurement, installation and a rigorous testing and validation is required before children’s services can migrate over.
- This means that children’s services will remain on the current site, likely until Autumn 2020. There are risks associated with this which will be closely managed by the Oversight Board.
- The Department of Clinical Neurosciences (DCN) is unaffected by the issue in critical care, but confirmation is required that the physical installation will not impact on the DCN clinical pathway.
- Our aim is that DCN will migrate services in Spring 2020.

ISSUES PRIOR TO JULY 2019

NOTE: *Before the current issues with the ventilation in critical care, this project had experienced problems which resulted in delays. It was originally due to be completed in May 2017.*

- *August 2016 - Multiplex (the building contractor) announced that due to the collapse of two key sub-contractors the project would be delayed by 6 months.*
- *March 2018 – Ventilation issues (different to the current problems) were causing problems and NHS Lothian were considering taking court action against IHSL.*
- *April 2018 – Court action was no longer being considered, instead both parties were working on a Settlement Agreement to resolve all issues.*
- *July 2018 – Both parties agreed in principle that a settlement agreement would be used to resolve all issues. This way forward was approved by the Health Secretary.*
- *September 2018 – Additional technical problems were identified, most notably with the drainage.*
- *February 2019 – Settlement Agreement was signed, which would allow project completion to be confirmed.*
- *Three significant technical matters remain (drainage, void detectors and heat sensors) but they would be addressed post-completion and at the same time the Board undertakes its commissioning.*
- *Risks of contractor and Board working at the same time were highlighted.*
- *July 2019 – Current issues with ventilation were notified to Scottish Government.*

- All these issues were publicly reported and acknowledged.
- The KPMG report provides a comprehensive summary of the issues.
- We are considering its findings carefully and will ensure that lessons are learned.

BACKGROUND**Recent Health Capital Projects Delivered Successfully**

Health Capital Projects Delivered Successfully				
Board	Project	£m	Completed	Procurement
NHS Dumfries & Galloway	Dumfries and Galloway Royal Infirmary	274.3	2017	NPD
NHS Orkney	New Balfour Hospital	67.5	2019	NPD
NHS Lothian	East Lothian Community Hospital phase 1	65.0	2018	hub
NHS Ayrshire & Arran	Acute Mental Health & North Ayrshire Community Hospital	54.8	2017	NPD
NHS Lothian	Royal Edinburgh Campus - Phase 1	49.0	2017	hub
National Services Scotland	Scottish National Blood Centre	38.1	2017	NPD
NHS Forth Valley	Stirling Care Village	36.0	2019	hub
NHS Greater Glasgow and Clyde	Gorbals Health Centre	20.0	2019	hub
NHS Ayrshire & Arran	Building For Better Care	27.6	2016	CDEL
NHS Tayside	NHS Scotland Pharmaceuticals Specials Service	26.5	2019	hub
NHS Highland	Raigmore Critical Care and Theatres	26.2	2019	CDEL
NHS Lanarkshire	Wishaw Health Centre	23.3	2017	hub
NHS Lanarkshire	Monklands Theatres and ICU	19.8	2018	CDEL
NHS Lanarkshire	East Kilbride Health Centre	19.5	2017	hub
NHS Grampian	Inverurie Health and Care Hub	13.9	2019	hub
NHS Greater Glasgow and Clyde	Maryhill Health Centre	13.7	2017	hub
NHS Lothian	NW Edinburgh Partnership Centre	11.0	2018	hub
NHS Greater Glasgow and Clyde	Eastwood Health & Care Centre	10.8	2017	hub
NHS Grampian	Foresterhill Health Centre	8.0	2018	hub

NHS Lanarkshire	Primary Care bundle - Kilsyth Health Centre	7.8	2017	hub
NHS Lothian	Firhill Partnership Centre	7.0	2018	hub
NHS Greater Glasgow and Clyde	The Adult and Older Peoples Continuing Care mental health accommodation in Inverclyde.	6.5	2018	hub
NHS Lothian	Blackburn Partnership Centre	4.0	2018	hub
Scottish Ambulance Service	Ambulance Telehealth - Phase 1	3.8	2019	hub

DRAFT**RHCYP/ DCN Executive Steering Group**

Minutes of the RHCYP/DCN Executive Steering Group meeting held at 4:00pm on Monday 30 September 2019 in Meeting Room 5, Waverley Gate, Edinburgh.

Present: Susan Goldsmith (Chair); Jacque Campbell; Sorrel Cosens; Brian Currie; George Curley; Tim Davison; Iain Graham; Lindsay Guthrie; Donald Inverarity; Alex Joyce; Judith Mackay and Alex McMahon.

In Attendance: Douglas Weir.

Apologies for Absence were received from Janis Butler, Tracey Gillies and Mary Morgan.

1. Minutes of the Previous Meeting held on 23 September 2019

1.1 Approved.

2. Style of Future Minutes

2.1 The style of future Minutes would be discussed at the Executive Director meeting the following morning.

3. Matters Arising

3.1 Risk Assessment for Lochranza Ward – Lindsay Guthrie reported that issues had been previously discussed at the Executive Steering Group. It was reported that positive meetings had been held with clinicians who were looking for an engineering steer about whether to extend the 10 air change / hour solution to the whole area or just the areas that needed this particular solution. Initial engineering advice from the Board's Technical Adviser and Hard FM Commissioning Manager is that a more extensive strip out and reinstatement with increased costs and programme duration would arise and that larger AHU's and enhanced extract ventilation to corridors would result. It was therefore agreed that the 10 air changes should not be extended and that this was consistent with the Board change issued. The final position would be taken to the Oversight Board.

3.2 Drainage Concerns from Staff Side – It was noted that a meeting would be held later in the week with Tam Waterson of Unison where he would be taken through the history of drainage issues and be advised of mitigating actions. Alex Joyce reported that he had held a positive discussion with Tam Waterson on this issue following the previous meeting. It would be helpful if Tam Waterson could confirm that he was content for this issue to be closed down.

- 3.3 Ventilation Review of Air Handling Units – The demonstration of a model AHU the previous week had raised a number of question which had been issued to IHSL following the demonstration. It was agreed that Iain Graham would prepare a paper on the options for resolution for submission to the Oversight Board.

4. Programme Director's Report

- 4.1 Brian Currie advised that the circulated paper reflected the draft report that Mary Morgan would take to the Oversight Board. The report covered in particular 2 high value Board Changes in respect of critical care and haematology / oncology. It was noted that the ability to deliver on these required to be confirmed by IHSL following discussion with Bouygues. The key issues around ongoing discussion related to the impact on warranties and indemnity issues as well as the position in respect of future performance deductions. It was agreed that the current commercial position would be considered at the Oversight Board.
- 4.3 Other aspects of the Programme Director's report were discussed including the position in respect of the consolidated tracker which was anticipated to be concluded in time for discussion at the meeting the following week. An update was also provided on water and flushing issues where concerns around duplication had been raised. George Curley would check and confirm the position in respect of flushing where the view was that this should be undertaken as per previous agreement by Bouygues and that cleaning only requirements should be undertaken by NHS Lothian.
- 4.4 In relation to Fire it was noted that the final report from HFS was still awaited but that extensive discussions were taking place with all parties including determining the position in other NHS hospitals. An update was also provided on the position in respect of medical gases and electricity.

5. Ventilation – Clinical Risk Assessments

- 5.1 Following discussion it was agreed that an update of Lindsay Guthrie's final report would be taken to the Oversight Board. A number of minor issues still needed to be resolved and were being worked on. The position in respect of 6 to 4 air changes needed to be finalised with the Oversight Board with a second report covering all other issues. It was noted that the final paper would address commissioning issues raised by George Curley.

6. Neuro-Interventional Radiology

- 6.1 Jacquie Campbell reported that an SBAR had been pulled together looking at all of the available options. The modular build option would take 9 months by which time it was anticipated that the new facility would be ready or almost ready for occupation. The do nothing approach and the alternative of providing new equipment and its future post RHSCYP commissioning was discussed. The position in respect of a

potential 4 week downtime in treating patients was discussed with it being noted that there might be a need to manage these patients in the north of England. NHS Glasgow's demand on NHS Lothian capacity was reducing although they were also using an old machine.

- 6.2 Jacquie Campbell and Tracey Gillies would discuss the risk balance between doing nothing versus the 4 week downtime option. It was noted that it would cost circa £900,000 to purchase a new machine.

7. Improvement to Soft Facilities Management Services

- 7.1 It was reported that following the Cabinet Secretary's visit to the current RHSC that an action plan had been developed to address general environment, patient hotel and staff catering facilities with specific actions explained to the Executive Steering Group. Sorrel Cosens advised that all of the issues raised by the Cabinet Secretary's visit would be pulled together into a single action plan and this would be monitored through the Executive Steering Group. George Curley noted that a similar exercise on FM was being undertaken for DCN. Following the Cabinet Secretary's visit a letter had been sent to all staff where it had been stressed that if staff had concerns that issues were not being addressed then these should be escalated directly to Jacquie Campbell. A single action plan would be brought back to the Steering Group once it had been completed.

8. Communications Planning

- 8.1 Judith Mackay felt there would be merit in issuing a staff communication following the Board meeting on Wednesday. The communication would consider issues like an update on drainage and ventilation as well as preparation for the winter period. It was noted that notwithstanding the Cabinet Secretary's visit that NHS Lothian had put in plans for Executive Walkrounds of the various sites where the same issues had emerged. Lindsay Guthrie undertook to send Jacquie Campbell a copy of the SBAR for proposed refurbishment work at RHSC at Sciennes.

9. Oversight Board Agenda

- 9.1 It was agreed that the key issues for discussion at the Oversight Board meeting later in the week were:-
- High value Board Changes for critical care and haematology/ oncology
 - Air handling unit cabling
 - Fire update

10. Date and Time of Next Meeting

- 10.1 The next meeting would be held on Monday 7 October 2019 at 4:00pm in Meeting Room 5, Waverley Gate, Edinburgh.



**Hearing Commencing 26 February 2024 Bundle 7 –
Documentation relating to the Cabinet Secretary’s
Decisions
Volume 3 (of 3)**