SCOTTISH HOSPITALS INQUIRY

Hearing Commencing 26 February 2024

Bundle 10 – Documentation relating to Supplementary Agreement 1 (SA1)

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NHS Lothian Internal Audit Report

Report for the Audit and Risk Committee 31 July 2020 and the NHS Lothian Board 12 August 2020

Governance and Internal Controls: Royal Hospital for Children and Young People, and Department of Clinical Neurosciences Edinburgh

Contents

It is the responsibility solely of NHS Lothian's management and directors to ensure there are adequate arrangements in place in relation to risk management, governance, control, and value for money.

1. Introduction

1. This report sets out our observations arising from our review of the governance and internal controls over the RHCYP project. Our internal audit scope (**Appendix 1**) was agreed in October 2019 following discussions at the Finance and Resources Committee and the NHS Lothian Board.

2. The scope of work was planned in two phases. Phase one, and a potential later phase depending on the work undertaken. As our internal audit work commenced, it was identified that phase one and phase two were in part linked.

3. This report covers:

    - Understanding the key events timeline.
    - Roles and responsibilities of the parties involved, linked to the key event timeline and decisions.
    - Respective controls including governance and assurance.

4. We reviewed documentation retained by NHS Lothian. Documentation included: project board minutes, project steering board minutes (from 2015 onwards), Finance and Resources committee minutes, Board minutes; workstream notes, retained email correspondence; reports and status updates, procurement documentation and settlement agreement.

5. To support our understanding of events and the documentation, we met with several individuals internal to NHS Lothian. In addition, we also spoke with Scottish Futures Trust, MacRoberts UK LLP, Mott MacDonald Limited, and Arcadius. This was to support our understanding only.

Previous reports into the RHCYP project

6. In scoping our work, we recognised previous reports commissioned. We sought not to duplicate previous work. This report builds on the work commissioned by Scottish Government, reported in August 2019, and is focused on seeking to understand why events occurred to compliment the “what happened”, which has been articulated.

7. Following the public inquiry announcement, it is intended that our work will support NHS Lothian in preparing for the inquiry.

Non-Profit Distribution (NPD) model and definition of Project Co

8. The project was delivered using the Non-Profit Distribution (NPD) model. Project Co is the Special Purpose Vehicle (SPV) established to deliver the project. The SPV is Integrated Health Solutions Lothian (IHSL) who are a separate corporate entity, set up to deliver the design, construction, and operation of the facility for the concession period. NHS Lothian’s contract is with IHSL. IHSL have senior debtor holders (EIB and M&G) and junior debt equity interests (Dalmore and Macquarie). The supply chain includes Multiplex (contractor appointed by IHSL to design and construct, supported by other parties including Wallace Whittle as mechanical engineers) and BYES (service provider appointed to deliver hard facilities management post completion).

9. For ease of reference we have referred to Project Co throughout or Multiplex where specifically that is appropriate.

2. Overall summary

Scope of work

10. In our capacity as internal auditors, we were commissioned to review the key events within the Royal Hospital for Children and Young People (RHCYP) and Department of Clinical Neurosciences (DCN) project. Throughout the report we refer to the project as RHCYP. Whilst run as a single project, using the NPD model our review focused on the reasons for the material ventilation issues which delayed the opening of the RHCYP.

11. This report builds on the themes identified in the Scottish Government commissioned review of governance and internal controls (August 2019) and the Auditor General for Scotland's Section 22 Report (December 2019).

12. Our recommendations will support NHS Lothian in strengthening its control environment over capital projects. The RHCYP project spanned a decade so we recognise the controls at the beginning of the project have been developed and enhanced.

13. In addition, the report will support NHS Lothian's planning for the public inquiry as it has identified wider considerations beyond the environmental matrix.

14. To date the focus has been on the environmental matrix. This is the matrix used on the project to set out mechanical and ventilation requirements, alongside other design factors, for all spaces in the new hospital. An error existed over critical care ventilation (and the other four bedded rooms within the hospital) within the versions of the matrix developed first by NHS Lothian (2012) which continued into the versions created by Project Co (2014 onwards).

15. All projects require decisions to be taken which balance risk, delivery, quality, and financial implications. Factors influencing the RHCYP project over the past decade included financial affordability, the site of the hospital, clinical services now and the future, the timescale to deliver a new hospital, alongside external factors beyond the direct control of NHS Lothian. There is currently a suite of guidelines on building a hospital, which may contradict and/or be subject to interpretation, coupled with a lack of clarity over what guidelines are fundamental requirements and must be built into the design specification.

Ventilation

16. Ventilation is important to control infections and is designed considering the functional and clinical use of the space. SHTM 03-01 is the guidance outlining ventilation requirements within a hospital.

17. The error in the RHCYP was an air change rate delivered for the critical care department which did not comply with SHTM 03-01 guidelines. Later in the project, an air change rate of four air changes per hour was accepted in single rooms and the four bedded rooms, which also did not comply with SHTM 03-01.

18. SHTM 03-01 states, amongst other things, the air change rate in critical care should be 10 air changes per hour. SHTM 03-01 is guidance. However, the need to comply with SHTM 03-01 was within the contract and therefore a contractual requirement of the RHCYP project. The settlement agreement signed by NHS Lothian (February 2019) derogated the responsibility for Project Co to comply with SHTM 03-01 and agreed an air change rate of 4 changes per hour within critical care. This is accepted by NHS Lothian to be an error.

19. The settlement in February 2019 cemented the error contractually. However, the lack of clarity and understanding of requirements over ventilation in critical care, including four bedded rooms, existed in the RHCYP project since 2010/11.

20. SHTM 03-01 guidance includes other aspects of ventilation. Ventilation also includes air pressure, which can be positive, balanced, or negative depending on usage of the room. Required temperature ranges are set out, for example between 18 degrees to a maximum of 28 degrees. Lastly, the ventilation solution designed can be mechanical, natural or a combination of both and this alongside other factors influence the energy consumption of the building. Within the RHCYP project air changes, air pressure and air temperature were all factors which contributed to non-compliance with the SHTM 03-01.

Responsibilities – NHS Lothian and Project Co

21. NHS Lothian, the client, set the requirements for the new hospital. These are set out within the Board Construction Requirements of the contract. These requirements consider the use of the clinical space, including space for equipment, and are defined using the concept of operational functionality. NHS Lothian therefore approve the designs created by Project Co which will deliver operational functionality.

22. Project Co are responsible for designing and building the hospital, to meet the Board Construction Requirements. IHSL document the way in which they intend to design and build the hospital to meet the Board Construction Requirements in a set of Project Co Proposals.

23. In practical terms, given the nature of the project and its importance, NHS Lothian, and technical advisers, reviewed design elements beyond operational functionality. This is evidenced through the review comments on the environmental matrix. This may have resulted in confusion or a blurring of responsibility between NHS Lothian and Project Co.

24. The contract, through derogations and change control procedures, allow for inconsistencies when identified to be addressed between both parties. Where any party does identify inconsistency or design not aligned to requirements (within or beyond operational functionality) then it should be identified through the processes established within the contract.

25. However, the inconsistency of interpretation over four bedded rooms and further inconsistency between the Board Construction Requirements, Project Co proposals, and reviewable design data was never identified.

26. The Independent Tester validated requirements back to agreed reviewable design data, including the environmental matrix, where the inconsistency was built in. As what was delivered agreed to the reviewable design data and in the knowledge of the matters to be resolved following the February 2019 settlement agreement, the Independent Tester certified the building complete.

Early inconsistency in the project which was built into the later design

27. Between 2011 and 2014, our view is that NHS Lothian's requirements were ambiguous and may have been applied inconsistently or remained open to interpretation. This led to unintended contradictions and lack of clarity over what NHS Lothian required.

28. In this period there was no contractual obligation between NHS Lothian and Project Co. However, the lack of clarity here may have contributed to ongoing differing views between NHS Lothian and Project Co throughout the project.

29. Examples of this lack of clarity include:

    - Four bedded rooms being classified as generic rooms by NHS Lothian, although the three situated in critical care department would require differing ventilation.
    - Advice on mechanical and natural ventilation to give a maximum temperature range of 25 degrees, not the 28 degrees allowable in the SHTM 03-01, and the consequences of this on the design of ventilation in the RHCYP.
    - The inclusion of the draft environmental matrix within Volume three of the tender documentation.
    - The language used within the tender documents, including in the Board Construction Requirements, referring to the environmental matrix.

30. The final unresolved ambiguity is the Board Construction Requirements section within the contract. This sets out NHS Lothian's requirements and we believe, a potentially incorrect reference to the environmental matrix is included. This reference may confuse ownership of the matrix from Project Co to fall under some NHS Lothian responsibility. Although it is emphasised as internal auditors, we are not legal experts or contract specialists.

31. The contract and subsequent positions between both parties is legally and technically complex. This is evidenced in the differing views of experts commissioned to look at the ventilation pressure designed in the four bedded rooms (NHS Lothian's expert and Project Co expert). It is also evidenced by the differing opinions expressed by the two separate QC opinions obtained by NHS Lothian and IHSL, respectively. Views expressed include questions over the contractual status of the matrix, what was designed within reference design, the application of guidance within STHM 2025 (which was superseded with SHTM 03-01), Health Building Notices (HBN), RDS, and other guidance referenced.

Overall conclusion

32. NHS capital projects by their nature are complex. The RHCYP project spanned twelve years and encountered a complex series of circumstances. Alongside ventilation there were other difficulties and layers of issues during the life of the project that together created unique challenges for NHS Lothian. By 2018/19 significant matters were being considered and resolution sought in parallel to each other, not just ventilation.

33. Our review identified a collective failure from the parties involved. It is not possible to identify one single event which resulted in the errors as there were several contributing events.

34. Additionally, there were a series of factors external to NHS Lothian which influenced and shaped the project which were not within the direct control of NHS Lothian. These factors contributed to the complexity.

35. Ultimately the matters identified were of a very technical nature. The contract sets out that Project Co are responsible for designing and constructing the RHCYP to meet NHS Lothian's Board Construction Requirements. NHS Lothian are contractually responsible for approving design and construction matters only to the extent that they relate to operational functionality.

36. However, NHS Lothian and the technical advisers have a professional obligation where there is identified non-compliance to identify and highlight this for Project Co's attention. Significant dialogue between NHS Lothian and the technical advisers was identified with Project Co over reviewable design data. As many areas of non-compliance were identified, it is difficult to understand why the inconsistencies and lack of clarity set out within this report were not identified and/or acted upon. This includes critical care but also the differing interpretations which were unresolved.

NHS Lothian's arrangements

37. Our review identified three principal factors, alongside missed opportunities, where further questions were not asked by the NHS Lothian project team and the technical advisers.

Four bedded rooms

38. A determining factor in the project was the decision, taken in 2010, to have twenty, four bedded rooms. The SHTM 03-01 guidelines do not recognise four bedded rooms as a room type. The option, from a ventilation perspective, would be either single rooms or general wards. In both cases, 6 air changes per hour would be required with differing pressure regimes.

39. In error, it was assumed at an early stage of the project that the four bedded rooms would require the same mechanical and engineering solution and were classed as "generic rooms". However, three of these rooms were designed within critical care and therefore required different ventilation to achieve 10 air changes per hour. This was missed from the outset of the project and remained unidentified until June 2019.

Temperature

40. Clinical groups were engaged throughout the RHCYP project. From the outset, clinicians wanted the temperature capped at 25 degrees. The temperature range in the SHTM guidance allows for a maximum of 28 degrees. The decision by the clinicians was influenced by legacy issues within the Royal Infirmary Edinburgh.

41. In seeking to cap temperature, this informed a certain mechanical and natural ventilation solution. Based on a study undertaken by Hulley and Kirkwood in 2012 (mechanical and engineering advisers at the point of creating a reference design) it was agreed that a mechanical and natural ventilation system could be introduced which would deliver 4 air changes per hour. The SHTM 03-01 guidance sets out 6 air changes per hour, as referenced in the report produced by Hulley and Kirkwood. From the outset 4 air changes per hour was then captured in the environmental matrix and ultimately what Project Co delivered in February 2019 when the building was handed over.

42. The inclusion of 4 air changes per hour in the reference design produced by NHS Lothian instead of the required 6 air changes per hour was never raised for further consideration by the project team at this stage of the project, from what we can evidence.

Sharing the environmental matrix

43. An environmental matrix was produced by Hulley and Kirkwood (2012) for inclusion in the tender documents to support reference design. This matrix incorrectly showed in the detail against critical care 4 air changes per hour, not the 10 air changes per guidance. Although the cover worksheet referenced the need to comply with critical care 10 air changes, this was not in the matrix itself.

44. The draft environmental matrix was included alongside the Board Construction Requirements in Volume three of the tender documents and certain language within the tender documents imply, in error, that the environmental matrix is an NHS Lothian matrix and that bidders need to comply with the matrix.

45. Project Co are responsible for the environmental matrix and they took responsibility at preferred bidder stage for the matrix (September 2014), including making certain changes to the earlier version. Our understanding is that Project Co are responsible for the matrix, as linked to room data sheets, which is a Project Co deliverable in the contract. However, there may be potential ambiguity in the contract. The earlier errors in 2012 remained unidentified, with further errors made, for example, the inclusion of ensuites in the critical care rooms and the insertion of the word “isolation” in the critical care guidance note.

Missed opportunities

46. Our review noted missed opportunities to identify the error, which was subsequently built into the RHCYP project. These included:

- NHS Lothian and Project Co did not identify the lack of clarity on requirements for four bedded rooms and that this was not explicit in the Board Construction Requirements.
- The decision to include the matrix alongside the Board Construction Requirements in the tender documents. In addition, the apparent absence of a review of the matrix, and no documented quality check over the accuracy of the matrix.
- One bidder submitted a revised environmental matrix with the correct air changes identified for critical care which did not raise questions on the matrix submitted by Project Co.
- The inclusion of ensuites within critical care by Project Co in the environmental matrix in September 2014 was not identified until 2016. Although ensuites were flagged as incorrect, it was not identified that air changes were incorrect.
- The change by Project Co in their environmental matrix (2015) which added in the word “isolation” to the critical care air changes per hour guidance note in the first tab of the environmental matrix. This was not identified and demonstrates that Project Co were planning 10 air changes per hour only in the critical care isolation rooms.
- Numerous review comments on the environmental matrix between 2014 and 2017, although none related to critical care. Whilst NHS Lothian and the technical advisers were not responsible for checking on a line by line basis, we understand there was a professional obligation where an error or potential non-compliance was identified for this to be raised.
- Reviewable design data was moved to a category B (approved to progress) despite reservations by the NHS Lothian project team and technical advisers on ventilation compliance (pressure) and other non-compliance in design compared to Board Construction Requirements.
- Air pressure was considered from 2016 to 2018. When air changes were discussed, it was in relation to achieving the desired pressure and was not discussed for critical care.
- The clinical risk assessments completed by NHS Lothian in 2017 only considered air pressure and although three were completed for the critical care rooms, differing requirements for critical care were not identified.
- The Independent Tester did not identify the non-compliance with the guidance within critical care.
- Settlement signed in 2019 did not identify three of the four bedded rooms were within critical care and derogated in error the air change rate to 4 per hour. The settlement, also in error, derogated the single rooms in critical care to 4 air changes per hour.

47. These opportunities were not identified by the clinical director for the project, the Project Director, the project team, the technical advisers, those parties involved in reference design, Project Co including Multiplex, and the Independent Tester. Collectively the error was missed by all parties.

External contributory factors

48. In addition to the above, external to NHS Lothian were direct and indirect events which influenced decision making.

Delivery through an NPD model

49. Scottish Government announced in 2010 that the project would be delivered and funded through the Non-Profit Distribution Model (NPD). This model was new to Acute NHS Hospitals and as such un-tested, albeit the predecessor model (PPP) was not new.

50. Therefore, the project team and governance arrangements already established for the capital project, which commenced in 2007, were retrofitted into the NPD model. Between 2007 and 2010, NHS Lothian had invested in design work on the new hospital and significant consultation with clinical groups. This resulted in financial and time costs to NHS Lothian. Alongside this, the change in funding announcement delayed the project for at least twelve months at the time.

51. Recognising the delay in the project delivery timeline, the costs incurred on design, and the clinical engagement undertaken to date, it was decided that elements of the design within a reference design were to be shared within the procurement exercise. This decision was taken on the advice of Scottish Futures Trust and Scottish Government and noted in minutes as being helpful in reducing the procurement timeline.

52. Sharing a reference design is an option within the NPD model. However, with hindsight, this created potential ambiguity over design requirements by NHS Lothian, including how the environmental matrix was shared compared with Project Co's understanding of their responsibility to design and construct the hospital.

Financial standing of Project Co

53. The procurement for a supplier took place in March 2013 and resulted in a preferred bidder being appointed (Brookfield Multiplex). Then the funders were sought and appointed. The project agreement (contract) was signed between NHS Lothian and IHSL (Project Co) in February 2015. Decisions over this time period, fully supported by Scottish Futures Trust and Scottish Government, sought to minimise any risk to NHS Lothian as a result of the potential economic impact of the referendum and the general economic climate on funders and those interested in the project.

54. There were two key external events, in respect of Project Co, which necessitated certain decision making by NHS Lothian to either avoid additional costs to them and/or significant delays in the project which was already behind agreed timescales. We believe these to also have influenced decision making.

- In February 2015 when the contract was signed, Project Co's Proposals (i.e. their design to meet the Board Construction Requirements) was not agreed by both parties. Accordingly, the parties agreed that many elements of the developing design would be classified as Reviewable Design Data. Reviewable Design Data is a further articulation, including additional detail on how Project Co will deliver the Board Construction Requirements. This was substantial. However, Project Co wanted the contract signed so they could start receiving money, and Scottish Government and Scottish Futures Trust were keen to not delay the project further whilst this got agreed. We understand it is usual to not have Project Co's Proposals fully agreed at contract stage. However, post February 2015, this did result in significant back and forward discussions between NHS Lothian and Project Co and extensive time in following the change control processes set out in the contract. The pressure regime was one aspect of Reviewable Design Data not agreed in February 2015.

- Prior to the settlement in 2019, there was an increasing risk to the existence of Project Co due to a lack of cash flow between IHSL and Multiplex. This was recognised by NHS Lothian and Scottish Government and considered within the risks of agreeing a financial settlement. It was felt that without a settlement being reached, the viability of Project Co was under threat. This would have indefinitely stopped the project whilst a new project Co and associated funders were sought.

Recommendations

55. Our review focused on NHS Lothian's arrangements and documents we reviewed which were retained by NHS Lothian. During our review we noted certain wider observations which may be further explored during the public inquiry.

56. Our recommendations are focused on actions NHS Lothian can take now going forward to strength the control environment. Some of the points we identified were at a point in time, and the environment has already been amended. We acknowledge these recommendations may need to be taken forward in partnership with the NHS Scotland centre of excellence which is being developed.

Overall management commentary:

The Executive team welcomes the report and is committed to implementing its recommendations. We would like to acknowledge the extent of analysis that the Chief Internal Auditor has undertaken, particularly the review of complex and significant documentation over a 12-year period. This will assist the Board's preparations for the Public Inquiry.

This overview sets out some of the issues the Board will require to consider in preparation for the Inquiry. Inevitably the audit could only examine documentation held by the Board and it will be for the Public Inquiry to consider the relevant documents from other parties. This is particularly relevant to the key findings in the Audit that there was a collective failure by all parties to identify that 3 of the 4 bedded rooms were in critical care and SHTM03-01 applied. By the time the Settlement Agreement was signed in February 2019 the Hospital had already been designed and built with critical care ventilation to provide 10ACH in the isolation rooms and 4ACH in the 4 bedded and single rooms within critical care.

3. Contextual factors

57. During our review we identified contextual factors which shaped the project. The RHCYP project spans nearly twelve years. The project by its nature is complex. Alongside the complexities that come with building a new hospital, there were specific factors unique to NHS Lothian.

58. The factors summarised below contributed to the project timeline and decisions taken. Whilst not contributing to the root cause, they did shape and influence the project and are relevant considerations.

Early decision making

59. The need for a new children's hospital was first discussed in 2006. An option appraisal exercise was concluded, with the preferred site being adjacent to the Royal Infirmary Edinburgh (RIE). This decision followed guidance which recommended children's hospitals are co-located with an adult acute hospital. Once the preferred site was approved, the project developed through outline business case (OBC) and early capital design work in the period 2008 to 2010.

The site

60. The RIE is a Public Finance Initiative (PFI) hospital. This was an older, non-standard contract with an underlying ground lease which needed amended. The RIE was designed, built, financed, and maintained by Consort. Complex negotiations took place between NHS Lothian and Consort between 2010 to 2015. Negotiations focused on, but were not limited to, access to the land, the site of the RHCYP, drainage, and car parking. This was legally complex, and NHS Lothian were supported by the legal advisers, MacRoberts UK LLP.

61. Resolving the matters with Consort took significant focus by the NHS Lothian RHCYP project board particularly between 2011 and 2013. These discussions ran alongside the procurement exercise being undertaken.

62. Legal matters were resolved in an agreed settlement between NHS Lothian and Consort in 2014/15 (SA6 agreement) to allow the new hospital development to commence.

63. NHS Lothian, as evidenced in the project board documentation, had a difficult contractual relationship with Consort due to legacy RIE matters.

64. Given the relationship between both parties and the complexity of the matters being agreed, the focus of the project board including Senior Responsible Officer (SRO) and Director of Finance was on this contractual matter.

First Acute Hospital Non- Profit Distribution (NPD) and the change of funding arrangement

65. The RHCYP was initially to be delivered through Scottish Government capital funding. However, in 2010, the Scottish Government introduced a policy change and announced that the RHCYP would be funded instead as a Non- Profit Distribution (NPD) model.

66. The RHCYP was the first acute children's hospital to be built in Scotland, and NHS hospital under the NPD model. This funding model was new to NHS Lothian. NHS Lothian were actively supported by Scottish Futures Trust in understanding the procurement and governance arrangements and received their guidance and hands on support between 2010 and 2015.

67. NHS Lothian were not consulted on the change in funding model in advance of the decision being taken. Scottish Government representatives confirmed they could not identify a risk assessment being completed at the time.

68. Between 2006 to 2010, NHS Lothian commissioned design work on the new hospital, appointed a framework of advisers, and constructed a project team to oversee the delivery of the new hospital.

69. The change in approach required a new business case to be submitted and signed off by the Scottish Government in 2011 and did delay the planned timeline for delivering a new RHCYP by circa 18 months.

70. In 2010/11, NHS Lothian undertook a new procurement exercise for technical, legal, and financial advisers. The contract in place with principal design consultants (BAM) was stopped, and discussions took place, involving legal advice, over the aspects of the early design work BAM completed. This focused on what design work was the property of NHS Lothian and for NHS Lothian future use.

71. The RHCYP project board structure set up previously by NHS Lothian remained for the new project, as did the NHS Lothian team including the externally appointed programme director, to oversee the project.

72. By the time of the procurement commencing in 2012/13, NHS Lothian's initial timelines for the new hospital had already been pushed back by three years. In the period 2008 to 2010, there had been financial costs incurred to date and clinical time involved, when the project was to be capital funded. There was a desire, by the project team, fully supported by Scottish Government and Scottish Futures Trust, that this work was not lost. A decision was taken by the NHS Lothian project board that this work could inform the reference design to be shared within the procurement.

73. No assessment was completed by NHS Lothian on whether this early work was still applicable, particularly given the Department of Clinical Neurosciences (DCN) was then built back in, when funded through the NPD model.

74. In addition, although work had been progressed to create all the documents shared with bidders in the tender process, a substantial amount of additional work was undertaken through a series of contractors, overseen by the technical adviser appointed by NHS Lothian. The resultant reference design was shared within the tender documents. Further detail on this is set out in Section 4 key findings.

Department of Clinical Neurosciences (DCN)

75. In early considerations, the Department of Clinical Neurosciences (DCN) was to be co-located next to the new RHCYP. This was subsequently reconsidered by NHS Lothian and the Scottish Government and was determined to be run as a separate project on a different site. Therefore, this was not included in the capital OBC submitted. However, when the funding of the RHCYP changed, it was decided that DCN would in fact be co-located with the new children's hospital. This was finally decided in 2010/11. This resulted in the DCN and RHCYP projects being run as one project overseen by the same project team.

External factors outside of NHS Lothian's control and influence

76. Based on our review we noted certain factors, external to NHS Lothian, that influenced the decisions taken by NHS Lothian. These included:

- The need to issue the tender in 2012/13 and complete the procurement phase. The project was already behind planned timescales and any delays in procurement would push the project back further.
- There was a downturn in the economy at the time the tender was being advertised through the Official Journal of the European Union (OJEU). This created a concern for Scottish Futures Trust and Scottish Government that any extended timeline for procurement, alongside the economic outlook, would result in a reduction in potential bidders. There was a risk the economy would also impact interest from funders.
- The desire in 2012/13, expressed by Scottish Future's Trust and Scottish Government, to re-look at the competitive dialogue timeline and make that as short as possible. This was linked to the interests of funders and a concern on number of bidders and timeline to complete the new hospital.
- The need to keep to the planned financial close timetable agreed due to potential risks on funding leading up to and post the Scottish Independence Referendum.

Project Co financial position during the project

77. Out with the control of NHS Lothian is the underlying financial viability of the Project Co over the life of the project. Under the NPD model, Project Co consisted of IHSL and a series of funders who financially backed the project. At key points in time we can evidence in documentation the financial position of Project Co influencing decisions and project direction:

- NHS Lothian signed the Project Agreement (the contract) in 2015 as approved by the Finance and Resources Committee and the NHS Lothian Board. At this point in time, several matters were not agreed between both parties related to reviewable design data. However, IHSL and Multiplex, the builders, were keen to start the construction work. Up until this point IHSL and Multiplex had invested heavily in design and contract discussions so were keen to be on site so payments could be received. This was needed to support the cash flow of Multiplex.

- Leading up to the settlement (February 2019), given the ongoing discussions and disputes between IHSL and NHS Lothian, it was noted that there was a risk through a lack of cash flow that IHSL were no longer financially sustainable and would in effect collapse. If this happened, potentially a new Project Co and alternative funders would be required further delaying the project. This influenced NHS Lothian (with Scottish Government approval) to agree to the £11.2 million financial settlement.

NHS Lothian contextual matters

78. The RHCYP project started in 2006. From 2006 the landscape of the NHS in Scotland has changed. In addition, guidelines and best practice for new hospitals continues to be issued, including for example revised guidance on infection control. The design of the RHCYP was modelled using forecasted patient data and forecasted clinical needs with the aim of having a flexible space which can meet future service demands.

79. An external Project Director was appointed, pre-dating the NPD decision. A project team was created, and this project team remained in place over the life of the project, albeit individual roles changed.

80. NHS Lothian recognised from the outset that they required additional skills to deliver the project and appointed financial, legal, and technical advisers. The technical adviser role, undertaken by MML, was key to the project and the timeline of key events.

81. The Project Director and the Clinical Project Director were full-time project roles. Others, including the SRO, were involved in the project alongside fulfilling their wider NHS Lothian roles and responsibilities. Clinical groups were brought in to support the early design work alongside an ongoing engagement and sign off role and remit. Skills were brought into the project from within NHS Lothian for their clinical knowledge and experience.

Ventilation matters

82. From our review of the guidelines, including SHTM 03-01 and Health Building Notices (HBN) relevant to ventilation, we would note there are several key components to ventilation of a new hospital.

- Temperature. The ability to control temperature and the ability for that temperature to operate within a range, varying depending on what the clinical function of the space is used for.
- Natural and/or mechanical ventilation and how these operate together.
- Air change rates per hour.
- Air pressure, including how air is extracted between rooms and corridors. Depending on clinical use pressure can be positive, balanced, or negative.
- Energy consumption and environmental factors.

83. These do not operate in isolation. For example, to achieve a certain temperature would require a mechanical engineering solution which may only drive a certain air rate change per hour, based on an assumption that pressure between the room and the ensuite would need to be positive. There are 1700 rooms in the RHCYP with different clinical usage and therefore specific ventilation requirements.

84. The error within the RHCYP was on air change rates. Within the key timeline of events, air change rates were discussed, relative to pressure, but were never contentious. Air pressure was the dispute from 2015 onwards alongside a focus on temperature control.

4. Key events

85. Our internal audit work identified key points in time and/or decisions which we believe are important to the RHCYP project in respect of ventilation. These are set out in this section of the report, and where possible aligned to the project timeline.

Procurement through to preferred bidder stage (2011 to 2014) [1]

The twenty, four bedded rooms designed in the RHCYP

86. The initial design work (2008 to 2010) for RHCYP was for the hospital to be all single rooms.

87. In 2010 the Clinical groups involved in the project determined the design should include four bedded rooms. This would allow patients with similar clinical needs to be treated together, recognising the social and wellbeing benefits for the children. This was also decided to best fit a financially affordable workforce model for the new hospital.

88. A Chief Executives Letter (CEL 1999) required all new hospitals to be designed as single rooms. Therefore, four bedded rooms were a variation on this requirement. A request was submitted by NHS Lothian to the Scottish Government Chief Medical Officer for approval. Approval was granted in 2011 for the inclusion of twenty, four bedded rooms in the RHCYP. Of the twenty, four bedded rooms, three of these rooms were planned within the critical care department.

89. At this stage, and then throughout the project, it was not identified by NHS Lothian and the other parties involved[2] that the SHTM 03-01 guidelines on ventilation did not set out what the ventilation requirements would be for the twenty, four bedded rooms. Model room types referenced in Appendix 1 of the SHTM 03-01 include single rooms, critical care, theatres, isolation single rooms, and general wards.

90. Where no guidance exists, NHS Lothian should set out what they require within the Board Construction Requirements (within the contract). Where the contractor cannot comply with the Board Construction Requirements or has a different design solution proposal then Project Co, under the terms of the contract, should submit a derogation for approval. The contract sets out that where competing guidelines exist, the more onerous should be followed. However, it is silent on when there are no guidelines.

91. In our view, based on review of documentation and our understanding, the ventilation requirements for the four bedded rooms remained open to interpretation. First within NHS Lothian and then subsequently between NHS Lothian and Project Co. There was never clarity and agreement reached over this matter.

Four bedded rooms designed within the critical care department

92. The lack of clarity noted above is further complicated by the inclusion of three, four bedded rooms designed within critical care.

93. SHTM 03-01 includes requirements for critical care. Critical care, as set out in Appendix 1 to the SHTM, requires 10 air changes per hour and positive pressure. Whilst what constitutes critical care is not defined in the SHTM 03-01, it is our understanding that all space used to treat patients within critical care is a clinical area and would require 10 air changes per hour.

94. However, from the outset there is a failure by NHS Lothian to identify that the four bedded rooms within critical care require a different ventilation regime from the rest of the four bedded rooms within RHCYP. This is subsequently not identified by Project Co.

95. There is then a continued failing within the project, when the four bedded rooms are being disputed over air pressure, to subsequently identify those within critical care. This is not acknowledged by NHS Lothian or by Project Co.

[1] This stage shaped the project design and decisions taken by NHS Lothian and other parties involved in the project. It is noted that between 2011 and 2014 NHS Lothian had not entered a contract. The contract signed in February 2015 legally binds both parties contractually, and only from this date onwards.
[2] Mott MacDonald Limited (MML) and other technical advisers appointed, Multiplex Brookfield Construction (design and build), Wallace Whittle (mechanical engineers appointed by Multiplex), and Acadis (Independent Tester).

96. Throughout the project, discussions and review took place between the NHS Lothian technical advisers, the NHS Lothian project Team including Clinicians, IHSL, and Multiplex, yet no party identified firstly the lack of clarity and secondly that three four bedded rooms (out of the twenty) were located within critical care.

Generic and key rooms at design stage

97. The report produced, outlining the creation of a reference design (2012), recommended that within the ITPD reference design only drawings and specifications which should be shared are those for the rooms determined as "generic" and for the list agreed as key rooms.

98. Generic rooms were defined as "rooms which occur multiple times in the new RHCYP and require the same design". The generic room clinical output specification was produced and agreed by NHS Lothian with input from MML and the clinical project team members.

99. There are 1,839 rooms within the RHCYP design. Of these, 756 rooms (41%) were covered by 31 generic room specifications.

100. We believe at this stage that four bedded rooms were incorrectly classified as a generic room. This is what was subsequently shared with bidders through clinical output specifications and broader reference design information. Given three four bedded rooms are within the critical care department and per SHTM 03-01 guidelines require a differing air change rate and pressure, the same mechanical and ventilation criteria cannot be applied to these rooms.

101. The critical care department was determined as a key room and a separate clinical output specification was shared in 2013 for critical care.

102. At this stage NHS Lothian and MML did not identify a risk of differing interpretation, and how the generic specification was to be interpreted and applied within critical care, and the differing requirements both of which are contradictory.

103. Both the generic room specification and the critical care clinical output specification were marked as approved by the clinical Project Director. Both documents were shared within Volume three of the tender documents.

104. The importance of this lack of clarity is demonstrated in the creation, and subsequent updates of the environmental matrix. Each room is classed per type of room. Four bedded rooms were specified as having 4 air changes per hour. Within the critical care department, where a four bedded room is referenced the generic specification was automatically copied across. This failed to identify that the four bedded room was in critical care. It is this error which is later not identified through review.

Early design work completed by NHS Lothian and determining how to use this work within the new procurement required

105. In January 2011 it was decided by the Project Director and project board to use the completed early design work through the creation of a reference design. This was to recognise early work completed including involvement of clinicians in design and the costs NHS Lothian incurred between 2008 and 2010 on the project.

106. Sharing of the reference design was intended to provide guidance to prospective bidders over the design principles and requirements of NHS Lothian.

107. This approach was endorsed by Scottish Government and Scottish Futures Trust to reduce the procurement timeframe. This also ensured work to date was not wasted.

108. Technical advisers MML produced a procurement option paper for the project board to consider and approve.

109. The paper outlined three options on reference design including the benefits to NHS Lothian and the bidders in adopting the differing approaches:

- Option A: Mandate clinical functionality (clinical functionality was the terminology used in the paper but within an NPD project the language is operational functionality).
- Option B: Mandate full design. This would mean that bidder needed to comply with the full design as already prepared by NHS Lothian.
- Option C: Mandate more detailed design with room for innovation from bidders. This was a hybrid approach which would still allow the bidders to innovate in design, which they would not be allowed to do under option B.

110. The options paper presented recommended the project board approve option A. This is not clearly captured in the project board minutes but we understand through discussions that option A was endorsed.

111. In our opinion, based on the review of the documentation and the subsequent reference design that was shared with the bidders during procurement, we believe what happened in practice went beyond what was approved by the project board. There is not a rationale documented that sets out why this was the case and how decisions on reference design were later taken by the reference design team and brought back into the NHS Lothian project team.

Operational functionality

112. Operational functionality is recognised NPD terminology. Operational functionality is a spatial concept.

113. NHS Lothian's responsibility is to define room layout, adjacencies, and how each individual clinical space will be utilised, including equipment.

114. Operational functionality is the only risk that NHS Lothian retain under the contract whereas design and construction risk rests with Project Co. If NHS Lothian incorrectly define operational functionality, for example the space no longer fits the equipment needs, then the cost to rectify the design, including any delay to the project, is solely incurred by NHS Lothian.

This boundary, between NHS Lothian and Project Co needs to remain clear.

Operational functionality is defined in the Project Agreement (Page 160 to 163 within definitions) as:

1. The following matters as shown on the 1:500 scale development control plan and site plans: point of access to and within the site and facilities; the relationship between one or more buildings that compromise the facilities; and the adjacencies between different hospital departments and within facilities.
2. The following matters shown on the 1:200 scale plans: point of access to and within the site and facilities; the relationship between one or more buildings that compromise the facilities; the adjacencies between different hospital departments and within facilities; and the adjacencies between rooms within hospital departments within the facilities.
3. The quality, description, and areas (in square metres) and the minimum critical dimensions of those rooms and spaces as indicated on drawings.
4. The location, and relationship of equipment, furniture, fittings and user terminals as shown in 1:50 plans in respect of: all bed and trolley positions; internal room elevations; actual ceiling layouts; the non-clinical services and supplies, storage distribution and waste management spaces; and ICT requirements.
5. The location of and the inter-relationships between rooms within the departments within the facilities.

115. Based on the above definition, mechanical and engineering requirements do not fall into the definitions of one to five as these are spacial in nature.

Creation of a reference design

116. NHS Lothian worked with MML between June 2011 and May 2012 to agree an approach to the creation of a reference design.

117. Approval was sought and granted to use early design work produced by BAM as principal consultants between 2008 and 2010. The decision to make use of this work was supported by Scottish Government and Scottish Futures Trust. The benefit of this was set out in the project board minutes as being able to make the procurement timeline as short as possible.

118. MML produced a report entitled “Reference design approach” dated May 2012. This was approved by the project board.

119. The report defines operational functionality and how within the reference design created, NHS Lothian would be mandating operational functionality. As operational functionality was to be mandated, the bidders could not make any amendments to these requirements and had to demonstrate compliance in the final proposals submitted.

120. Various versions of the reference design approach were considered and captured in differing drafts of the overall report produced by MML. This recognises the evolution of the approach and how the approach and thinking was developed between NHS Lothian, MML, Scottish Futures Trust, and Scottish Government. As the first Acute NPD in Scotland, thinking was still being developed and tested.

121. The report sets out that alongside mandated operational functionality, other information will be shared with bidders as helpful for bidders in articulating their proposals. This was noted as including room data sheets, output specifications for all generic rooms (including four bedded rooms), and key rooms (of which critical care was included).

122. In earlier versions of the reference design report produced by MML we noted:

- In one version the environmental matrix is classified as being mandated operational functionality.
- An updated draft states, “Similarly the environmental matrix specifies parameters and criteria that need to be met and for which bidders will be required to advise the levels that will be achieved in their particular design”.
- There is reference to the environmental matrix forming an appendix of the Board Construction Requirements.

123. Whilst the above points were updated in the final reference design report, there was no mention of the environmental matrix. We believe this evolution of thinking then moved through to the work of the reference design team and further ambiguity was seen in documentation. As a result, not all parties involved in the creation of the reference design may have had the identical level of understanding. Ambiguity, unintentionally, may have continued also into the documents which were shared within the tender process, and clarity over the purpose of the documents being shared.

Involvement in reference design team

124. A reference design team was established to oversee the development of the agreed reference design and the documents agreed for inclusion in Volume three and four of the tender documentation (Invitation to Participate in Dialogue, ITPD).

125. The reference design team consisted of:

- Hulley and Kirkwood, mechanical engineering
- Davis Langdon (led design team)
- Nightingale Associates (concept architects)
- Turner and Towsend
- BMJ (clinical architect)
- ARUP (infrastructure, transport, and fire)
- Montague Evans (limited town planning role)

126. In addition to the external parties noted above, NHS Lothian representatives attended the reference design team meetings, including the clinical Project Director.

127. Davis Langdon were appointed as the principal sub-contractor by MML. The role of Davis Langdon was project management.

128. Prior to 2010, Davis Langdon, Hulley and Kirkwood, Nightingale Associates, and BMJ were working with NHS Lothian on the capital RHCYP project. We understand, given their roles previously, they continued to be involved. As noted, David Langdon were sub-contracted by MML. Davis Langdon further sub-contracted to the other parties involved.

129. During 2012, Davis Langdon ceased to exist as an organisation and at that stage any roles fulfilled by Davis Langdon were transferred to MML.

130. A concern was highlighted by Scottish Futures Trust over the reference design team arrangements. The concern was over the number of advisers and that the advisers could gain a competitive advantage by joining the organisations who were bidding on the procurement.

131. NHS Lothian took steps to ring fence the work of the reference design team and ensured that this team had no access to the wider procurement information, which could give a competitive advantage. Once the reference design was completed, all parties involved were no longer contracted and could join bidding teams.

132. However, the point on the number of advisers involved, and their contracting arrangements, remained unaddressed. The concern by Scottish Futures Trust did not appear to be escalated within a key stage report and we noted no further discussion.

Reference design team project arrangements

133. The reference design team worked separately from the NHS Lothian project team and board. The linkage was between MML and Davis Langdon and the lead clinicians. From what we can evidence there was no clear reporting line in place between the reference design team and the project board. As a result, it may have been possible for this group to expand on the agreed remit and go beyond what was agreed by the project board. The reference team appeared to work independently on decision making.

134. As the reference design team left the project as the tender documentation went to bidders, they were unable to answer any questions of design detail the bidders may have had during competitive dialogue. This was acknowledged as a risk. However, this would be addressed by the Project Director and MML if design questions raised in competitive dialogue.

135. Given Hulley and Kirkwood created the matrix, and also supported wider on mechanical and engineering advice, specific thinking on the planned 4 air changes per hour through a combination of mechanical and natural ventilation may not have been fully understood by all parties.

136. We reviewed a series of project plans produced which governed the documentation and timeline for producing the reference design for inclusion in the tender. Inconsistencies were noted in the project plan, including:

- The incorrect inclusion of the environmental matrix as a mandated document.
- Environmental matrix referenced as included in an appendix.
- No reference to the environmental matrix as a shared document in either Volume three or Volume four.
- Documentation listed as within Volume three subsequently changed to Volume four.

137. This demonstrates a further lack of clarity over the status of the environmental matrix in the tender documents, and for what purpose the environmental matrix was being shared.

Documentation produced by reference design team

138. Whilst we could locate some minutes and documents produced by the reference design team, we do not believe these were the full suite of documents. As well as retaining documents on a shared internal NHS Lothian drive, an additional portal system was used to exchange documents between Project Co and NHS Lothian. The search functionality and overall user friendliness of the portal is limited.

139. Based on our understanding of the documentation reviewed, it is noted that the reference design team decided not to produce standard room sheets. However, the information to be included in the Invitation to Participate in Dialogue (ITPD), some of which would traditionally be in room sheets, included:

    1. General requirements
    2. Clinical output specifications (generic rooms and key rooms including critical care)
    3. Environmental matrix
    4. Design notes and schedule of operational equipment
    5. Accommodation schedule
    6. Operational functionality by reference design, as described in the documentation

140. It is unclear what control was in place to review the suite of ITPD documentation for completeness, accuracy, and consistency. In addition, the differing schedules were signed as approved by different members of the NHS Lothian project team, depending on the nature of the output.

141. Disclosable design data and information only was implied rather than explicitly stated in each of the documents shared within Volume three and Volume four of the tender documents. We believe a bidder, experienced in similar projects, would understand what NHS Lothian's responsibility was compared with Project Co's responsibility. However, there could have been a risk of misinterpretation, particularly where there was contradictory information.

142. Within the suite of documents listed, contradictions existed in:

    - The environmental matrix showed single rooms and four bedded rooms to have 4 air changes per hour
    - Clinical output specifications record the need for Project Co to comply with SHTM 03-01, which is 6 air changes for single rooms, 10 air changes for critical care, and no definition of guidelines for four bedded rooms.

Tender documentation – Inclusion of the environmental matrix in Volume three of the ITPD

143. The draft environmental matrix was included in Volume three of the ITPD. Volume three was overseen and produced by the reference design team. Sitting within Volume three were the clinical output specifications and schedule of accommodation, which directly relate to NHS Lothian requirements and what was defined as operational functionality. Hulley and Kirkwood produced the environmental matrix dated 2012 for inclusion in the tender. The matrix is identifiable as Hulley and Kirkwood via the logo. The matrix does not, and never, included NHS Lothian's branding.

144. Hulley and Kirkwood were specifically commissioned by Davis Langdon to deliver a mechanical and engineering project specification. Within this specification, an environmental matrix is recorded as a deliverable.

145. We noted an earlier matrix produced by Hulley and Kirkwood when working for principal consultants BAM. This version produced in 2010, correctly records critical care as requiring 10 air changes per hour in accordance with SHTM 03-01. This earlier version would have been produced on a design that pre-dated 2010. At this stage, four bedded rooms were not within the design.

146. The environmental matrix dated 2012 which was included in the tender documentation records, in the detail, includes critical care as requiring 4 air changes per hour. The guidance note tab at the front of the matrix (an excel document) correctly stages the SHTM 03-01 critical care guidelines of 10 air changes per hour. It is unclear how this is then subsequently incorrect in the detailed matrix. This looks to be, based on our review, human error in copying across the four bedded room generic ventilation criteria into the critical care room detail.

147. It would be reasonable to conclude that a control should have existed for Davis Langdon to confirm the accuracy and completeness of the environmental matrix. In addition, MML, as Davis Langdon was a sub-contractor, are contractually responsible for the quality of work undertaken.

148. NHS Lothian should have had a control in place to seek and be provided with assurance over the technical accuracy of the environmental matrix, and wider documentation related to reference design prior to inclusion in the tender. We have not been able to evidence a control within Davis Langdon, MML or NHS Lothian.

Mechanical and Engineering considerations by Hulley and Kirkwood on Temperature Control

149. In February 2012 Hulley and Kirkwood produced a report titled "Ward room thermal comfort analysis". This focused on mechanical and engineering solutions to achieve temperature control.

150. Based on our review of documentation, we identified strands of discussions (but not one paper or articulation of the problem and potential solutions) on:

- The clinical teams desire to cap temperature in the RHCYP to 25 degrees. This appears to flow from historical issues at the Royal Infirmary Edinburgh where temperatures were considered too high. The SHTM 03-01 allows for a temperature range with a maximum of 28 degrees. However, the clinical teams wanted to ensure no more than 25 degrees was reached.
- The desire to achieve this temperature while obtaining the most efficient energy solution for the building resulted in a mechanical and engineering solution which would have the optimum result.

151. The report outlines a ventilation solution to achieve the maximum 25-degree temperature cap. The solution set out is for ventilation with an air change rate of 4 air changes per hour.

152. We understand, based on discussion with the Project Director and Director of Capital Planning this would be a combination of mechanical ventilation (4 air changes per hour) and natural ventilation. The combination of mechanical and natural ventilation would result in 6 air changes per hour. This is what is required in the SHTM.

153. However, the combination of ventilation to that effect is not explicitly set out in the Hulley and Kirkwood report.

154. It appears that this report was accepted as the reference design, as articulated in the draft environmental matrix, which sets out air change rates of 4 per hour. We believe this is the origin of the 4 air changes being in the matrix from the outset.

155. However:

- The report did state that critical care required 10 air changes per hour and therefore did not inform the study undertaken by Hulley and Kirkwood. Given this acknowledgement, it is unclear why Hulley and Kirkwood did not ensure 10 air changes per hour was reflected in the environmental matrix for critical care.
- The draft environmental matrix states 4 air changes for all single rooms and four bedded rooms. There is no reference in the matrix to a combination of natural and mechanical ventilation to achieve the 6 air changes per the SHTM 03-01 guidelines.
- Natural ventilation includes the ability to open a window. Within critical care, due to infection control, a window would not be able to be opened.

Invitation to Tender documentation – The structure

156. The ITPD had four Volumes:

Volume	Content
One	Background and structure to the Invitation to Tender. Included NHS Lothian overview and financial and technical pro-forma.
Two	Project Agreement (draft contract, Project Co would be required to sign). Articles of association.
Three	Board Construction Requirements. This included clinical output specifications and the draft environmental matrix as an appendix.
Four	Data including reference design, civil/engineering structures, site drawings, planning, mechanical and engineering concept drawings, and energy outlines.

157. What information was included in the tender and where it was located evolved as the ITPD was built. From our review we were unable to note a rationale for why the draft environmental matrix was included in Volume three. As Volume four included reference design, this would have been the more obvious place for inclusion, if required at all.

158. The ITPD states there is no legal obligation between the bidder and NHS Lothian at this stage. A contractual obligation exists when the contract is awarded and signed by both parties. There are caveats within Volume one of the ITPD in relation to sharing of information only. However, individual documents are not marked information only (or as disclosable data). Recognising Volume four contains the reference design based on our understanding from how reference design was developed, this would be information only. However, the environmental matrix is included in Volume three alongside NHS Lothian requirements including clinical output specifications. Therefore, it is potentially less clear the overall status of the matrix – as a requirement or to inform the bidders design.

Approval of the ITPD

159. As evidenced in the project board minutes, significant time was spent reviewing Volume one and Volume two. Both documents were developed through ongoing iterations including legal adviser input.

160. It is noted that whilst the legal adviser's input into the project agreement included in Volume two, they did not write the Board Construction Requirements. We understand Board Construction Requirements were drafted by MML, reviewed, and signed off by the Project Director. However, we cannot evidence this in the documentation we reviewed.

161. From a review of the Board Construction Requirements shared within the tender documents, we noted within the mechanical and engineering section a statement that "Project Co shall provide the works to comply with the environmental matrix." This further creates a question over the status of the matrix. In addition, given the Board Construction Requirements list all guidelines for Project Co to comply, we believe this statement is not required.

162. The project board minutes note the approval of the ITPD for issue to the bidders shortlisted. However, from the project board minutes, it is unclear if Volume three and Volume four were reviewed.

Competitive dialogue phase (2012/13)

163. Three bidders participated in the competitive dialogue stage of the procurement. This stage took place between March 2013 and November 2013. An agreed structure was established, and a series of individual bidder meetings were held. These meetings were facilitated by the NHS Lothian project team and attended by MML for the technical input. After each stage, feedback was given to the bidder to support them in preparing their final tender submission. Where non-compliance was identified or a response at this stage was considered below expectation this was fed back.

164. We noted one bidder, not the appointed Project Co, outlined in their submissions that reference design was 4 air changes per hour and not 6 changes per hour as required in the SHTM guidelines, but this was acceptable to NHS Lothian. In the same submission, the bidder also notes the positive pressure to corridor, built into reference design, and acknowledges this is one option allowable, the alternative being balanced or negative pressure. We were unable to identify any further discussion or approval of this, by the NHS Lothian project team, in the documentation we reviewed.

Tender evaluation

165. Design and construction were one of the workstreams established. Guidelines for evaluating the tenders was produced and approved by the project board. This was to ensure consistency in approach and scoring within each evaluation workstream.

166. Mechanical and engineering submissions were evaluated within the design and construction workstream. The evaluation team comprised the Project Director, a representative from estates and facilities, and a technical adviser from MML. The team evaluated all three bidders mechanical and engineering submissions.

167. Design and construction submissions were allocated 23% of the quality assessment (out of 40% set for quality). Within this, the mechanical and engineering score constituted 3% (3 marks out of a possible 100).

168. Of the three bidders, Multiplex scored the lowest on the mechanical and engineering submission. Based on our review of the three bidder responses, the Multiplex bid appeared to lack detail compared to other tenders received. As we are not technical experts, we cannot comment on the quality of the technical information submitted.

169. Question eight within the submission required the bidder to answer: “Bidders are asked to confirm they comply with the NHS Lothian environmental matrix. Where they do not comply, to explain areas of non-compliance”. Multiplex’s response noted, “We comply with the environmental matrix”.

170. Another bidder responded to this question noting compliance alongside the inclusion of a revised environmental matrix where the bidder had identified changes they would propose. The changes included by this bidder did correct the environmental matrix to record critical care as requiring 10 air changes per hour. Other corrections were also made.

171. We note:

- The language used in the tender document implies the matrix is the responsibility of NHS Lothian, which bidders must comply with in their tender response, rather than a document shared by NHS Lothian to inform the bidders design only.
- Multiplex included a contradiction in the response which was not identified. The submission confirms compliance with all guidelines, including SHTM 03-01, whilst also confirming they will comply with the environmental matrix included in the tender (which is now known not to comply with SHTM 03-01).
- 3% for assessing mechanical and engineering is low, given the significance of this to the design and construction of the hospital (although at the time the high-profile issues were not reported and it is acknowledged a number of matters are important in the design and construction of a hospital).
- The evaluation team did not identify that one bidder corrected the error within critical care in the environmental matrix and there was not a read across between bidder responses.
- If one of the requirements was to demonstrate the mechanical and engineering design complied with the guidelines, including SHTM 03-01, two out of three bidders in confirming compliance with the draft environmental matrix may have submitted a non-compliant tender.

Clinical output specifications

172. A clinical output specification (COS) was prepared by each individual clinical team for all RHCYP departments. These were all approved by the Clinical Project Director. The output specifications and wider decisions, involving clinical engagement, were approved by the Clinical Project Director. Although the Clinical Project Director was a member of the NHS Lothian project board, little clinical discussion took place at the project board.

173. Healthcare planners were commissioned by NHS Lothian in 2011 to support with the preparation of the COS. The remit was to review the COS’s focused on ensuring that single clinical solutions were not presented in error, and incorrectly transferring risk to NHS Lothian which should rest as Project Co risk.

174. COS’s set out:

- Anticipated patient numbers modelled
- Number of rooms and room types including clinical and non-clinical spaces
- Equipment required including IT requirements

175. Each COS includes a section entitled environmental criteria.

176. Certain COS’s were included in reference design and the tender, including the critical care specification. The remainder were completed during 2014 and included as an appendix to the Board Construction Requirements within the signed contract.

177. A paper was presented by the Clinical Project Director to the project board. This set out an overview to producing the COS and an example COS. The full pack of COS’s was not submitted to the project board for review or approval. These were signed as approved by the Clinical Project Director.

178. Between 2011 and 2012, there were eight versions of the COS for critical care produced. There was little difference between the eight.

179. The final version dated October 2014, included in the contract, did not reflect all the review comments shared by the healthcare planners in early reviews. Annotations by healthcare planners noted where the COS was setting out one clinical solution, and a risk re operational functionality being prescribed. Not all these references appeared to be removed.

180. From our review of the final COS for critical care we note:

- The environmental section references the need to comply with SHTM 03-01, as well as Health Building Notices.
- Whilst the environmental section cross references to guidelines, other sections do stray into environmental requirements, for example “positive pressure lobbies”. It is not clear if this is across all rooms, or only limited to isolation rooms, which we believe was the intention.
- There is a reference to cohorting patients and all rooms requiring the same specification, but this is not further articulated, and the implications are unclear.
- It is not clear, based on our review, if the COS’s are more detailed than they needed to be as in places they were prescriptive when the cross reference to the guidance to be complied with may have been sufficient, to avoid contradictory comment.

181. From 2016/17 there was an ongoing dispute between Project Co and NHS Lothian regarding pressure regimes. This focused on the four bedded rooms. NHS Lothian determined rooms were to be balanced or negative in pressure. Project Co had designed the rooms as positive pressure. Project Co interpreted positive being what NHS Lothian required per the COS. There is ambiguity over the COS which may have led to either interpretation, based on our review.

Room data sheets

182. Room data sheets are contractually the responsibility of Project Co. There is a requirement, within the contract, that these are produced and submitted to NHS Lothian. The project team review the room data sheets and mark these as approved, where the information contained relates to operational functionality. Room data sheets show in greater detail the design and construction elements of the RHCYP including mechanical and engineering requirements.

183. Room data sheets are connected to the environmental matrix. The environmental matrix is the one document which captures all requirements for the 1,839 rooms. It is used by Project Co as a reference point without the need to refer to individual room data sheets.

184. Room data sheets are a recognised element of new build projects. There is not a prescribed way that these are created. In the case of the RHCYP, the environmental matrix was developed first, and this information replicated in the room data sheets.

185. The room data sheets submitted by Project Co at preferred bidder stage in September 2014 included:

- Generic four bedroom (multi-bed) within critical care specifies 4 air changes per hour with positive pressure.
- High acuity room in critical care incorrectly identifies 4 air changes per hour with positive pressure.
- Single bed isolation room in critical care is recorded correctly as 10 air changes per hour in accordance with the SHTM.
- Reference to ensuite facilities being within the design of critical care rooms.

186. As at September 2014 the project team did not approve the room data sheets. This unapproved status was acknowledged in the contract and formed reviewable design data which was not approved at point of contact.

187. The inaccuracies in the individual room data sheets correspond to what is set out in the environmental matrix. The inclusion of ensuites within critical care is a new error that first appears in the September 2014 environmental matrix produced by Project Co.

188. There are two reviews by the project team at this stage (and beyond) which may have identified the ventilation errors: the environmental matrix and the room data sheets. Despite numerous review comments being captured on both the matrix and room data sheets by the project team, and MML on behalf of the project team, these errors were missed.

Infection Control

189. The Board Construction Requirements include the need for Project Co to comply with Infection Control requirements (including specific reference in the mechanical and engineering section). This references guidelines:

- SHFN 30 “Infection control in the built environment: Design and planning”
- HAI-Scribe
- Health Facilities Scotland – Healthcare Associated Infection – Systems for controlling risk in the built environment
- NHS Lothian Infection Control manual

190. Throughout the project there are key prescribed points for Infection Control engagement, via the HAI-Scribe process.

191. The NHS Lothian Infection control team undertook, at preferred bidder stage, a review of the design to assess compliance with infection control requirements (HAI-Scribe 2). The review is based on the design drawings, room data sheets, and other information provided by Project Co. The assessment in November 2014 included a “no” response, against ventilation. The response included comment that further drawings were awaited to allow infection control to confirm ventilation was appropriate.

192. As drawings were not agreed at the point of contract, caveats were included in the contract over the respective status of the reviewable design data submitted by Project Co to NHS Lothian.

193. Based on our review we did not evidence the ventilation assessment being escalated through to the SRO and project board.

194. In November 2014, there was a flag that infection control was not able to assess ventilation as being compliant with infection control requirements. This issue got wrapped up into the wider outstanding reviewable design data between both parties. This was an early warning sign over ventilation which was not acted upon until later in the project, when both parties disputed ventilation pressure.

195. We can evidence infection control input during the project and consultation, or inclusion of infection control representatives, within specific design and construction consultations. Infection control also supported the clinical groups at points in time.

196. From review of the timeline of Infection Control engagement we note:

- Infection control involvement in the decision to endorse the environmental matrix to status B in 2016 was not evident
- Attendance at meetings with Multiplex to discuss the pressure requirements during 2016
- Involvement in July 2017 four bedded clinical risk assessments considering pressure. Whilst involved, we did not identify any evidence that Infection control raised concerns over critical care’s inclusion in the pressure discussions and need for different air changes.
- Representatives attended the project operational commissioning group meetings
- Infection Control were copied into emails between clinical teams and between clinical teams and the project team.

197. It is unclear, based on the limited documentation we have reviewed relevant to Infection Control, the relationship between the clinical teams and Infection Control in respect of who’s view would take precedence over the other. It is also difficult to fully understand how Infection Control were engaged in decision making compared with being included for information or action. In certain emails Infection Control were one of many receiving the email.

The Project Agreement (contract, signed in February 2015 at financial close)

Derogations agreed at financial close between Project Co and NHS Lothian

198. When the Project Agreement was reached, 42 derogations were agreed between NHS Lothian and Project Co. Derogations are where Project Co are unable to deliver a requirement within the Board Construction Requirements or propose an alternative solution. These need to be approved by NHS Lothian.

199. Of the 42 derogations, those relevant to our review were:

- Identification by Project Co of the incorrect guidance reference in a clinical output specification (an HBN is noted instead of the SHTM) and corrected to relevant SHTM.

- One in respect of the environmental matrix. The detail captured in this request by Project Co is less detailed than others and looked incomplete. Through discussion we understand this derogation arose to recognise at the time of signing the contract not all reviewable design data was agreed between both parties, and the matrix was included within reviewable design data.

- Derogation to accept non-compliance with the guidelines on 100% single rooms.

200. Although derogations were agreed, at this stage Project Co appears to have not identified that the SHTM 03-01 was silent on four bedded rooms, and that the Board Construction Requirements did not articulate NHS Lothian's specific requirement for these rooms.

Project Agreement (Contract)

201. Scottish Futures Trust have a model NPD contract, although this model contract does not include the technical specification element (Board Construction Requirements). The model contract was reviewed and updated by the legal advisers where changes were required.

202. The contract is 750 pages with numerous sections. Certain sections of the contact are owned by NHS Lothian, others are Project Co sections. The contract sets out what the change control requirements are, and how derogations to the contract are to be managed and agreed.

203. A draft project agreement was issued with the tender documents. This is what was signed by both parties in February 2015. The contract was considered by Finance and Resources Committee who recommended approval. This was endorsed by the NHS Lothian Board and approved by the Scottish Government. Scottish Government approval was required given the financial value of the contract.

Contract sections relevant to our review were:

Schedule 6 construction matters:

- Section 3: NHS Lothian's Board Construction Requirements
- Section 4: Project Co proposals
- Section 5: Reviewable design data (Project Co's expansion in more detail on how Project Co proposals will be delivered to meet Section 3)

Other relevant schedules include:

- Schedule 8: Review procedures (Derogations) including clause 12.6 (Board design approval-RDD review)
- Schedule 12 Change control

204. The contract, within Schedule 6, Section 3 states that where contradictory guidelines are within the Board Construction Requirements then the more onerous shall take precedence, and the more recent guidelines take precedence. NHS Lothian would determine what constitutes the more onerous requirement.

205. Where there is a conflict resulting from the use of the guidelines, Project Co should involve NHS Lothian in the decision making. The final decision rests with NHS Lothian.

Board Construction Requirements

206. Board Construction requirements are where NHS Lothian set out clinical and operational requirements for the RHCYP including specific design or construction requirements NHS Lothian want, which Project Co are to comply with. Within this section there is a list of all guidelines that Project Co are to comply with. This listing includes SHTM 03-01.

207. Therefore, we understand as at February 2015 there was a contractual obligation for Project Co to design and construct the RHCYP to comply with SHTM 03-01. Specifically, the critical care department should have had 10 air changes per hour. However, there is, we believe, an incorrect reference to the inclusion of the environmental matrix within the BCR's, which may, depending on legal interpretation, mean Project Co had to comply with the matrix and SHTM 03-01 guidance, which are now known to be contradictory.

208. SHTM 03-01 are guidelines. Our understanding is that as guidelines, they can be deviated from. However, the inclusion of the SHTM 03-01 in the contract makes this contractual.

Reviewable Design Data (RDD)

209. Reviewable design data includes detailed drawings of the RHCYP, room data sheets, and the environmental matrix. RDD is an extension of detail, setting out how Project Co proposals will be implemented to comply with the Board Construction Requirements. This will include detail that was not yet known or fully articulated when Project Co proposals were produced.

210. At the point, the contract was signed, RDD was not agreed by both parties. RDD had been assessed by NHS Lothian. Where the RDD item has been assessed as being category A or B in status then this was accepted, and Project Co could proceed with that build element. Where an RDD item was categorised as C or D this was not accepted, and review comments were outstanding to be able to move the categorisation.

211. The listing and corresponding categorisation of all RDD items was collated by MML and reviewed by the project team. This listing was included in the contract, with legal advice sought on how to contractually reflect the position.

212. Following the contract being signed, the contract protocol was followed by both parties to sign off the outstanding RDD items. NHS Lothian would only sign off RDD where it concerned operational functionality. It is difficult to understand, on review of the environmental matrix in particular, how this constituted operational functionality.

213. Where a design change was identified by Project Co, this had to follow the change protocol. Agreeing outstanding RDD was not a mechanism to agree changes to design and construction which were not previously captured in Project Co proposals.

214. The Volume of RDD that was outstanding at the point of the contract being signed was in our view substantial. Whilst we understand through discussion it is not unusual to have RDD matters outstanding at the point of contract, agreeing RDD and the exchange of paper work back and forward between both parties between 2015 and 2017 was extensive.

215. We could not identify a risk assessment as at February 2015 on the outstanding RDD and the need to enter the Contract, and the consequences for NHS Lothian on both possibilities. However, we do note the desire from Project Co to start the construction, to support their cash flow, given significant work on design to date had been incurred and payments could not start until the contract was signed. We also noted in project minutes the impact on a further delay on the timeline for delivery.

216. The assurance paper prepared by MML for the Finance and Resources Committee in 2015 did not identify any significant technical risks to NHS Lothian regarding the outstanding RDD.

Construction (2015 to 2019)

Environmental Matrix

217. An environmental matrix was included within the tender documentation.

218. Project Co took ownership for the matrix, in 2014 and the environmental matrix was a live document, subject to review by NHS Lothian project team and updates by Multiplex as the building construction commenced.

219. Some comments were successfully closed off and amended in the matrix. However, based on our review of the comments across each version of the matrix, no explicit concern was noted on the environmental matrix recording that what was set out in the matrix for critical care was incorrect. This remained the case throughout the entire project.

220. As noted earlier, the environmental matrix was an aspect of RDD which was not agreed by both parties prior to the contract being signed.

221. The environmental matrix was given a level B endorsement in 2016 from the project team. This allowed Project Co to carry on with the construction, as set out in the matrix. At the stage, the project team approved the environmental matrix and the ventilation equipment had started to arrive on the RHCYP site.

222. However, in endorsing the matrix, we note the following comments by MML:

"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."

223. Given the comment, and the ongoing concern of non-compliance, it is unclear why the matrix was subsequently endorsed. And whether full consideration was given by the project team, including advisers, on any implication for this to the future project delivery. The non-compliance referred to included pressure of the four bedded rooms, which was only resolved via Settlement in February 2019, four years after the comments were raised.

224. As no flag was included in the matrix as the principal route to start with of identifying non-compliance with the Board Construction Requirements, the default position was that critical care arrangements were assumed to be correct.

225. Further commentary on versions of the Environmental Matrix, the requirements set out for critical care, and the comments by the project team are set out in **Appendix 3 of the report.**

Ventilation correspondence

226. In the documentation reviewed, we identified certain ventilation correspondence between Project Co and NHS Lothian. The first one was in 2016, then further dialogue in early 2017. The correspondence did not relate to critical care. However, they did indicate a potential confusion between Multiplex's mechanical engineers and the clinical commissioning team on exact ventilation requirements. This included ventilation requirements to meet HSCRIBE infection control, and what arrangements would need to be in place to satisfy these requirements. The responses back to the queries by the project clinical director, copied to others in the project team, including MML give short responses and re-direct Project Co back to the incorrect environmental matrix.

227. This correspondence, if identified at the time, may have raised an increased flag to the project team on ventilation and the understanding of Project Co and whether this was aligned to NHS Lothian's understanding.

Relationship between Project Co and NHS Lothian

228. From our review of project documentation, we note a deterioration in relationship between NHS Lothian and Project Co. Many matters were submitted back and forth between both parties, and either partially or unresolved for longer periods of time. Examples include:

- Comments on the environmental matrix and up to a six-month gap before an updated environmental matrix was shared.
- Communication coming to NHS Lothian direct from Multiplex, rather than via IHSL, and equally NHS Lothian corresponding directly with Multiplex not IHSL, in attempts to see resolution.

- Pressure was flagged as a review comment on the environmental matrix in 2015 but only started to get resolved in 2018.

229. At the same time, from 2016 onwards the project team and MML were identifying concerns over design and installation compliance. As a result, the project team and MML increased their review and commentary on the submissions by Project Co, within the RDD process.

230. Our understanding is that the NPD contract ensures that Project Co are fully responsible for design and construction. The remit of NHS Lothian, and therefore the technical advisers supporting the project, only relates to operational functionality. However, when on review, an area of non-compliance is identified, then under professional obligations to deliver the project, this was notified to Project Co for correction. From 2016 onwards parallel matters were being debated between both parties routinely.

Four bedded rooms and pressure regime

231. There was an assumption by all parties that by 2016/17, everything already set out to date had been agreed and was correct.

232. When future discussions shifted to the pressure regime, this did not trigger the need to re-look at air changes, and wider compliance with the guidelines. Although comments existed in the environmental matrix, none were specifically raised within critical care.

233. The environmental matrix references ongoing comment by the project team on pressure regimes. This is not specifically related to the critical care department. The design of the four bedded room was positive pressure. The project team comment is that pressure should be balanced or negative. This was identified firstly in the four bedded room within Haematology and then broadened out to all four bedded rooms.

234. Project Co submitted in May 2016 a ventilation derogation request, for pressure and adjusting pressure via ensuite extracts. This was rejected by NHS Lothian and further discussion took place.

235. Comments in response from Project Co is initially to make the adjustment to ventilation in the ensuites, to give the room ventilation pressure desired. However, on further review, this was leading to excessive air changes per hour being required, impacting on energy efficiency.

236. It is on the review of the annotations by Project Co within the environmental matrix to change air rates to achieve desired pressure that it is identified by the project team and MML that critical care incorrectly references the inclusion of ensuites. However, no comment is made on critical care ventilation, pressure, or air changes.

237. Ongoing discussions took place between Project Co and the project team on pressure regime. This included NHS Lothian reviewing what they required, and what changes would be necessary.

Risk assessment for critical care (ventilation)

238. The subsequent risk assessments completed by the clinical teams in 2017/18 for the multi-bed rooms focused on the ventilation pressure regime, not air changes. The risk assessments were completed when it became apparent that Project Co, were not planning on changing the ventilation pressure designed. Risk assessments were completed to support the project team's evaluation of options available.

239. However, the opportunity to identify that three out of the twenty rooms were in critical care, and that critical care requirements were set out in the SHTM 03-01 was missed.

240. The completed risk assessments were undertaken by the clinical teams and did not appear to consider the guidelines that needed to be complied with, for example SHTM 03-01, and how these were complied with or otherwise.

241. Each risk assessment was signed off by the Deputy Associate Nurse Director. These were then assessed by the project clinical director and two commissioning managers. The risk assessments were first undertaken in 2017, but not signed off by the project clinical director until February 2018. It is unclear why there was delay in signing off these assessments.

Independent tester

242. The independent tester is a joint appointment between NHS Lothian and Project Co and is built into the contract.

243. The Independent Tester routinely visited the RHCYP site and reviewed the testing that Multiplex, and others, were completing. Following the Independent Tester visit, a report was produced for NHS Lothian and Project Co which identified a list of matters arising. Matters identified were categorised by the Independent Tester using a red/amber/green rating. A red rating was used to identify significant deficiencies which would delay the project delivery.

244. Within the contract there is a scope of work for the Independent Tester. This includes:

> Undertake regular inspections during the works, as necessary, in accordance with the Project Agreement. Report on the completion of the project identifying any work that is not compliant with the Board Construction requirements, Project Co's proposals and the Approved Reviewable Design Data (Approved RDD) and/or the completion criteria.
>
> Within Section 3 of the scope of services (design review) it states:
>
> Monitor the detailed working drawings and specifications for a sample number and type of rooms which in his professional judgment is appropriate to be selected by the Independent Tester to verify that they comply with the Approved RDD as described in the Project Agreement.

245. From a review of the contract, it does allow for the Independent Tester to certify based on the approved Reviewable Design Data. How this sits with the clause on identifying work not compliant with the Board Construction Requirements is unclear.

246. It is unclear if the Independent Tester should be responsible for identifying non-compliance with guidelines, including SHTM 03-01 within approved RDD, or where there are discrepancies between the guidance and what is agreed within RDD.

247. Reviewable design data agreed between Project Co and NHS Lothian includes the individual room data sheets.

248. Within the SHTM 03-01, it is stated "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)".

249. In discussion with the Independent Tester it was noted, in their view, the specific requirements contained in the A-Sheets (the room data sheets) as incorporated into the environmental matrix takes precedence.

250. Schedule Part Ten "Outline Commissioning Programme" notes that the Independent Tester reviews the commissioning test results against the room data sheets, and the environmental matrix, not the general requirements within SHTM 03-01. However, this interpretation still appears to be subject to agreeing what is delivered is in accordance with the contract.

251. The room data sheets for critical care were not compliant with 10 air changes per hour as set out in the SHTM 03-01. The room data sheets were developed using the information in the environmental matrix, which shows critical care as being designed to have 4 air changes per hour.

252. Between financial close to approval of the environmental matrix, within the RDD process there were no changes to critical care.

253. From review of the Independent Tester reports, we note they were aware of the dialogue between Project Co and NHS Lothian on ventilation in the four bedded rooms. They did not identify any non-compliance within critical care testing as the testing validated what was in the agreed critical care room data sheets – 4 air changes per hour.

254. In discussion with the Independent Tester, we noted this role is not an arbitrator in disputes. From our review of the project steering board minutes, we note references to both parties, NHS Lothian, and Project Co, seeking to engage the Independent Tester in providing a view over which judgement on pressure within the four bedded rooms was correct.

255. The dispute between NHS Lothian and Project Co only related to ventilation pressure. It did not at any stage cover the air change rates designed. Both parties felt the other was unreasonably trying to influence the work of the Independent Tester and therefore compromise the independence of the role.

256. In 2018, following requests by Project Co and NHS Lothian, the Independent Tester provided a view. The view set out that there were conflicting views regarding the standards for the four bedded rooms and that in the circumstances the Board had the final decision regarding the standards. Following the commercial and technical meetings, NHS Lothian delegated the 6 air changes to 4 air changes within the settlement for the four bedded rooms.

257. In February 2019, the Independent Tester signed off the completion certificate and the building was handed over to NHS Lothian. The Independent Tester references the agreed financial settlement between IHSL and NHS Lothian in February 2019 and notes this resolves the disputed items between both parties.

258. Given the Independent Tester's expertise and knowledge, including SHTM 03-01, it would not be an unreasonable assumption that non-compliance within critical could have been identified and raised with Project Co and NHS Lothian.

Site visits by MML

259. In 2018 MML, on behalf of NHS Lothian, commenced a programme of site visits.

260. We understand this was considered necessary given the increasing number of concerns MML and the project team had on design compliance and the quality of work being undertaken. This was separate from the work of the Independent Tester.

261. The MML reports produced after the site visits focused on identifying poorer construction or evidence where the contractor appeared to be behind the project schedule. These were considered by the project team and raised in liaison meetings between NHS Lothian and Project Co.

Identification of ventilation and pressure regime

262. From 2016 to 2019, certain matters were subject to ongoing discussion between NHS Lothian and IHSL.

263. Ventilation was identified through comments in the environmental matrix on non-compliance with SHTM 03-01. Initial comments were noted in September 2014. This was in respect of the pressure regime, not air changes. It related to how Multiplex were proposing to ensure pressure within the room, between pressure in the room to ensuite. This was designed as positive. In achieving pressure overall in each room, it was identified there would be an impact on energy consumption and temperature under Multiplex plans. It is emphasised this non-compliance was identified as pressure only. No comments on ventilation were annotated on the matrix on critical care. The only annotation, through review by both parties on the matrix, was the identification in 2016 that critical care was identified incorrectly as having ensuite facilities.

264. The points raised continued to be unaddressed in subsequent updates of the matrix. Initially Project Co agreed to resolve the comments on pressure (February 2017). However, subsequently on review, determined they did not agree with the comments and would not make a change. When this happened, the issue was escalated. An early technical workshop was held by both parties and a resolution agreed, which was later withdrawn.

Differing view and interpretation

265. The project team and MML disagreed with Project Co, specifically Multiplex on the design of the ventilation pressure in the four bedded rooms. NHS Lothian stated the design should be balanced or negative pressure, not positive as was designed.

266. NHS Lothian commissioned an expert to consider the design on their behalf and form a view (David Rollinson, October 2017). This view was considered by Project Co, who separately commissioned DSSR Consulting engineers (December 2017). Subsequently two QC opinions were sought, as both parties considered legal action, prior to agreeing to seek contract resolution.

267. As internal auditors we are not legal experts, in what is a complex legal matter. Our review of these reports, and the QC opinions, recognising the legal privileged nature of these documents, noted:

- Reference to a Chief Executive Letter (CEL) 19 (2010) and SHTM 2.60 which require compliance with ADB sheets. ADB sheets require balanced or negative pressure to corridor in multi-bedrooms. There is a note on the Environmental matrix, from 2012 throughout, which implies the existence of the environmental matrix is in replacement of ADB sheets on the project.

- Industry guidelines for infection control set out the need for balanced or negative pressure.

- SHTM 03-01 allows for positive pressure on general wards

- Project Co understanding that the design of the four bedded rooms were the same in design as a general ward. A general ward, per SHTM 03-01, can have natural ventilation and therefore a different pressure regime.

- Question of was there clarity over whether the design was to treat the four bedded room as a single room or a general ward, and did both parties have the same view in design from the outset.

- Reference to Scottish Health Planning Notes (SHPN 04-01) and how these interfaces with SHTM 03-01. SHPN 04-01 – is Adult In-Patient facilities guidelines which reference four bedded rooms.

- 8.5.3 of the Board Construction Requirements references Air Quality. The section notes that "Project Co shall provide natural ventilation wherever possible, except where……e) Clinical requirements, as detailed in the Room Data Sheets, do not allow in areas such as isolation rooms, where positive or negative pressure are required…".

- Understand the Board may have an issue with air change rates but not subject to this report.

268. The expert report commissioned by NHS Lothian in October 2017 records "Understand the Board may have an issue with air change rates but not subject to this report". We believe this was about the 6 air changes versus the 4-air change rate. We identified no future further consideration of air change rates, the focus up to settlement continued to be on air pressure.

Dispute Resolution

269. Alongside ventilation significant matters of disagreement existed between Project Co and NHS Lothian. NHS Lothian explored options on how these matters could be resolved, including potential legal action. Several contract commercial meetings were held between both parties, on advice from NHS Lothian's legal advisers. At one stage resolution looked unlikely and NHS Lothian planned to pursue legal action through Court proceedings. At this point Project Co indicated a willingness for further discussion and resolution, resulting in ultimately the settlement in February 2019.

270. At this stage it is understood Project Co were experiencing cash flow difficulties. A risk was identified that the funders of the project could withdraw their funding support. The consequences, for NHS Lothian, would have been significant including a substantial time delay on the project and a risk that new funders may not be identified. Following discussions at the NHS Lothian Board and with Scottish Government approval, NHS Lothian entered commercial discussions to reach a settlement.

271. To reach a settlement (February 2019) there were a series of technical workshops, alongside commercial negotiation throughout 2018, to seek resolution on the technical matters. This included ventilation pressures.

Signed settlement agreement (SA1)

272. The settlement agreement was signed in February 2019. This followed a period of 18 months of discussions and negotiation. Whilst discussing and agreeing the more significant matters (including ventilation, but also discussions on drainage, fire dampeners and heater batteries), smaller items were agreed between both parties.

273. MacRoberts had a significant role in advising and concluding the settlement agreement. This included supporting NHS Lothian in contract negotiations, reviewing the legal contract and liaising with IHSL's legal advisers. This did not involve the completeness or accuracy of the technical items collated and included in the settlement, as this was technical in nature.

274. In reaching the settlement agreement, the position on ventilation and the accepted change happened within the technical workshops. We have not located all the minutes and decisions taken in the various technical workshops that led to the settlement agreement. We note certain documents are legally privileged and these are retained by MacRoberts. However, MacRoberts were not involved in the technical workshops.

275. The listing for inclusion in settlement was firstly developed by Project Co and subject to iterations through the commercial and technical workshops. The Project team, including MML, were involved in reviewing the listing. We did not identify an independent review of this listing, from anyone who had not been involved in the discussions, and therefore were removed from the detail history and look objectively.

276. As ventilation had been agreed, unlike drainage, heater batteries and fire dampeners it was not prominent in the papers prepared for the NHS Lothian Board.

277. NHS Lothian approved the signing of the Settlement Agreement in February 2019, following Scottish Government approval over the financial settlement. The settlement agreement approved for signing included a list of 81 items.

278. Within the settlement agreement it was agreed that the pressure within all twenty, four bedded rooms would be changed to negative or balanced.

279. The settlement agreement re-iterates what was already shown throughout the project in the environmental matrix that these rooms would have 4 air changes per hour. Captured in the settlement is the formal sign off that the three four bedded rooms within critical care were to have 4 air changes per hour. It was not identified at this stage, as it had not been previously identified, that critical care required 10 air changes per hour in accordance with SHTM 03-01.

280. Included in the settlement was the confirmation that all single rooms were to have 4 air changes per hour instead of 6. Whilst this was designed from the outset, this settlement inadvertently accepted 4 air change rates per hour within the single rooms located in critical care, in error.

5. Further observations not within NHS Lothian's influence

281. Within our review we identified further observations, which were not within the direct control or influence of NHS Lothian. These factors shaped the project and are points of context. As outside of our agreed internal audit scope, we have captured these observations below. These observations may be further explored within the public inquiry. Considering these points may lead to further improvements in delivering projects within the NHS and may fall under the remit of the centre of excellence being established within NHS National Services Scotland.

Guidance vs requirements

282. As set out in the Board Construction Requirements (of the contract) there is a substantial listing of all relevant documentation a contractor must comply with in their design and construction.

283. These include SHTMs, HBNs, and Chief Executive Letters (CELs). The documentation referred to has been developed and built up over a period. Consequently, there is not one comprehensive guide. In addition, there is no real clarity over what a guideline is, and open to interpretation and local decision, compared with what is a requirement and must be delivered.

284. The current suite of documentation cross-references multiple times to further guidelines or requirements. It is unclear how any contradictions across all these documents are subsequently addressed, and what would take precedent.

285. Lastly, in the case of the RHCYP project, when a project spans a lengthy period, if new guidelines are introduced over this timeframe at what point do you change approach. Albeit there would be a likely time and cost associated with the change.

286. It is a complicated map which needs greater clarity including what must be complied with, what is optional, and how contradictions are addressed. There should be one comprehensive source of standards setting out a clear framework.

287. Within the contract there is a list of requirements and guidelines that the contractor must comply with when building a hospital. What is unclear is whether these are requirements, so need to be in place, or if guidelines, what is the degree of interpretation that both NHS Lothian and/or IHSL have. There is not one suite of comprehensive standards that set out a clear framework.

288. A clarity over requirements versus guidelines would also help NHS Board's forecast in the costs and/or time of complying with all requirements, from the start of the project.

Assessment of mechanical and engineering requirements at procurement stage

289. The procurement for RHCYP took place in 2013. NHS Lothian followed the Scottish Futures Trust model weighting at the time which was sixty percent price and forty percent quality. Now greater weighting is given to quality than price in procurements.

290. The forty percent allocated to quality was segmented into elements with a combination of pass/fail questions and weighted questions. Mechanical and engineering accounted for three percent of the forty percent.

291. Given the history of ventilation, alongside wider design and build issues across the public sector, how much weighting mechanical and engineering should be given in the future should be considered.

Infection Control

292. The role of infection control is principally set out in Scottish Health Facilities Note 30 Version 3 "Infection control in the built environment: design and planning" (January 2007).

293. Infection control involvement is described in an advisory capacity. Infection control offer advice and guidance at certain points in time during the project.

294. The guidance and advice should be currently weighted up alongside financial implications, project delivery, and clinicians who are providing the services. It is not seen as more or less significant.

295. The role of infection control in future projects should be considered and built in. This could include role and remit through attending the project board, the sign off at points in time, and the weighting of the advice particularly where there are conflicting views.

Independent Tester role on NPD projects

296. Within NPD projects, the role of an Independent Tester is set out in the contract. This is an independent role appointed by both parties (NHS Lothian and Project Co). The contract sets out that the Independent Tester will validate that the design and build is following the Board Construction Requirements, Project Co proposals, and Reviewable Design Data.

297. The Independent Tester is an independent role and does not mediate between both parties. The contract sets out the need to comply with Board Construction Requirements and Project Co proposals, and the Independent Testers duties in respect of this obligation. However, it is not clear on what happens when there is an identification of inconsistency in requirements, what is the process in this circumstance, and what is the role of the Independent Tester.

298. The Independent Tester validates compliance through own testing and overseeing Project Co testing, completed by Project Co.

299. The Independent Tester asserts it is not a role that provides blanket assurance that all guidelines will be met, and that the building complies with all guidelines. The final certificate issued by the Independent Tester allows the building to be handed over and confirms the design as agreed is what is delivered.

300. Once the building was handed over, NHS Lothian were required to validate ventilation before moving patients into the new RHCYP. A third party, IOM, was commissioned in May 2019 to undertake this validation. IOM were commissioned to check ventilation against the SHTM 03-01 standards. This did not consider what was designed and contracted.

301. In future, there may be options to expand or better articulate the role of the Independent Tester. For example, if the Independent Tester had been validating back directly to SHTM 03-01, the error would have been identified. There is also consideration of whether the Independent Tester could have a broader role and/or be complemented through an on-site clerk of works role.

Building handover – sequencing

302. SHTM 03-01 requires an independent validation of ventilation to be commissioned. This is post building handover but before the facility is open to patients. This can only take place when building work is completed. For RHCYP, this stage was reached in May 2019. The building was handed over in February 2019.

303. Currently this is a client activity. Any non-compliance would then be discussed between both parties and resolved within the terms of the contract in place.

304. Given the significance of ventilation, it could be better to have the sign off on ventilation compliance before the building is handed over.

Technical Expertise

305. In March 2011, Scottish Government wrote to all NHS Board Chief Executives setting out the Scottish Government's conditions for delivering projects through the NPD model.

306. Within the letter it notes that the project team should provide a challenge function to advisers. In the case of NHS Lothian, technical advisers were appointed as NHS Lothian did not have these skills. The technical advisers worked alongside the project team, providing advice and guidance, which was subsequently followed by NHS Lothian.

307. Given the technical matters that arose, and the need for technical input and expertise, it is unclear how the project team would be able to effectively challenge the advice provided.

308. Going forward, a framework on how technical advice should be followed on these projects which considers much of this expertise will rest with advisers rather than within the NHS, would be beneficial. In particular, how a reasonable challenge can be established over the accuracy of advice and what assurance can be formally sought from technical advisers via the project director role.

Clinical involvement

309. Significant clinical engagement and direct involvement occurred over the life of the RHCYP project. Clinical groups are brought in for their clinical expertise. Those brought in to the project, do so for a period typically in addition to their clinical roles. Whilst fully understanding clinical requirements, they may be less familiar with the balancing, on capital projects, over clinical service delivery, financial impact, and project impact.

310. There may be merit in exploring how future clinical engagement takes place, including supporting clinical groups in whether the contribution is clinical services or supporting the delivery of the project, to achieve clinical requirements within the framework of guidelines for building new hospitals. At times, given the multiple guidelines, the two roles may contradict. There is also limited clarity on what the guideline states compared with what solution clinical groups may prefer, and how this is determined.

Timescales

311. By their nature capital projects bring complexity and delivery over a long period. It would be beneficial for clarity over how changes in guidelines or potential difficulties identified in other capital projects across the NHS and wider public sector are captured and factored into ongoing projects. All project decisions need to consider financial implications, quality factors and impact on project delivery timelines.

312. Building on this would provide greater clarity over decision making within the governance framework and how decision-making flows through the project governance established.

Scottish Futures Trust

313. The RHCYP project was the first large Acute NPD being undertaken in Scotland. NHS Lothian worked with Scottish Futures Trust to develop arrangements and inform NHS Lothian understanding. The project evolved rather than followed a descriptive set out pathway, particularly in the early stage.

314. Scottish Futures Trust had a dual role – advice and guidance to NHS Lothian and assurance over the project through key stage reviews. This assurance was undertaken on behalf of Scottish Government.

315. Observations relevant to Scottish Futures Trust are:

- Between 2010 and 2014 Scottish Futures Trust were represented on the NHS Lothian project board providing advice and supporting decision making. Alongside this role, they were providing independent assurance. Whilst each key stage report has a second reviewer, there may remain a potential conflict in fulfilling both roles.

- Based on our review of NHS Lothian project board minutes there was not always clarity on what decision was solely NHS Lothian's decision, or what decision needed to be taken based on advice from Scottish Futures Trust and Scottish Government to satisfy their requirements.

- The key stage review reports (five in total) identified areas for further consideration by NHS Lothian. The further considerations/actions were not risk assessed. On review, it was not clear what action NHS Lothian must take to progress to the next stage, and whether the observation was an improvement or a gap in NHS Lothian's arrangements to be addressed. In turn, the reports could have been clearer on what Scottish Government needed to be aware of, in terms of project delivery.

- Scottish Futures Trust appointed a Public Interest Board Member (PIBM). The PIBM is a member of Project Co Board and fulfils their responsibilities as an independent company director. The PIBM is to represent the public interest, fulfilled through the Board member role, as set out in the job description. When both parties encounter difficulties, the independence of the PIBM may be challenged.

Scottish Government Health and Social Directorate remit and responsibility

316. During the project, Scottish Government Health and Social Care Directorate sought and received assurances through a range of sources. In particular:

- Active attendance at NHS Lothian Project Board between 2010 to 2015 by the Deputy Director of Finance and Capital planning (at the time).
- Through Scottish Futures Trust key stage assurance reports.
- Formal sign off by Scottish Government on outline business case, full business case, prior to Financial Close and in 2019 in approving the financial settlement.
- Routine meetings between the NHS Lothian Director of Finance and/or NHS Lothian Chief Executive and relevant individuals within Scottish Government.

317. Going forward there may be benefit in greater clarity between the organisation, Scottish Futures Trust and Scottish Government over the expected sources of assurance over the life of the project and reporting lines. This should be clear on decision making responsibility versus assurance.

318. Where there is a change in Scottish Government policy, Scottish Government should work with the organisation to understand the impact, including unintended consequences. This should include a risk assessment.

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6. Recommendations

319. During our review we identified recommendations for management consideration. These are focused on the more significant matters arising from our review, designed to support NHS Lothian in strengthening its internal control environment. It is acknowledged that recommendations here may become superseded or impacted by the creation of the new National Centre for Reducing Risk in the Healthcare Build environment, which may result in a different framework for delivering projects.

Project route map outlining management activity and assurance activity

Report reference	
Section 4 and Appendix 4	**Recommendation:** Capital projects are governed by the scheme of delegation and standing orders. In the case of the RHCYP there was a project board, the involvement of Finance and Resources Committee and the NHS Lothian Board. Responsibility for decision making on the RHCYP project was not always clear and there was potentially less of a distinction between management and assurance. For future capital projects a road map approved from the outset, setting out the following would be beneficial: • The activities management have in place to identify and mitigate project risk and how this is to be reported • Role and remit of the SRO and the interface between the SRO and governance structures • The role of the Accountable Officer • The required skills, including capacity, and how this is going to be achieved • The structures in place to provide assurance to the SRO, to support the SRO in decision making. • Who has oversight of the "whole" project e.g. a single pair of eyes, in particular linked to contract responsibilities and ensuring delivery of the contract and can triangulate matters across the project. • How advisers are engaged, direct to support decisions or in an assurance role, and their interface into the project reporting lines • How governance structures, for example Finance and Resources and the NHS Lothian Board will receive assurance over the mitigation of risk and project decisions, and when and how this assurance will be received. • The distinction between assurance compared with updates for information, and the differing role anticipated This road map may then evolve during the project but would give clarity of management vs assurance, and the respective roles individuals, groups, and committees have within the project.
	Management Response: Within our current Scheme of Delegation, we have already defined for capital projects the roles of Senior Responsible Officer, Project Director, Project Manager, and Director of Capital Planning & Projects. Within that we have stipulated that the Director of Finance may not be a Senior Responsible Officer. There is also a link to the national capital process. It should be noted that the content of the Scheme was not in place at the start and during most of this project. A framework for decision making will be developed for capital projects. This will identify any required amendments to the Board's Standing Orders/Scheme of Delegation, and distinguish the role of management from those of the Board's Committees Action owner: Director of Finance Timescale: December 2020

Responsibility for making and approving decisions

Report reference Section 4 Appendix 4 and 5	**Recommendation:** The RHCYP project was complex, involving significant complex negotiations, both of a legal and technical nature. Throughout the project decisions were made routinely for example by clinical teams, the project team including technical advisers and project director. It is not always clear based on the project documentation retained what decisions were made when and by who, and how these were shared with the SRO, through the project board or project steering group or an alternative reporting process. Examples include: • Advice by the technical advisers and how this was formally captured as advice • How the project director and project team received assurance from the technical advisers and how this was assessed • The engagement of technical advisers direct with Project Co and how this was recorded as on behalf of NHS Lothian, and the clarity of who has a relationship with Project Co and for what purpose • How project changes and/or derogations are documented, assessed, and approved There should always be clarity over who, within NHS Lothian, is responsible for decision making, and what assurance has been provided to support that decision.
	Management Response: A process for agreeing and documenting technical changes/derogations is currently being developed for all Capital Projects. This will require to take account of the role and responsibility of the Centre of Expertise, as well as that of Technical advisers. This process for all Capital projects will be agreed by the Executive team Action owner: Director of Finance Timescale: December 2020

Clinical engagement

Report reference Paragraphs 86 – 88, 172-181, 189-197, 238-241 Appendix 4	**Recommendation:** Clinical stakeholders were identified and very involved in the project. However, there was not a clarity over the alignment (or otherwise) of the clinical need compared with guidelines and in which instance, what, would take a greater importance over the other. In addition, where clinical decisions were set out, how these linked and/or impacted on other decisions within the project. A framework for clinical engagement on future projects would support: • Clinicians being engaged and actively bought into the planned NHS Lothian outcomes. • Clarity over the specifications including how clinical practices, quality, financial, delivery is aligned and the weighting of the respective factors. • An understanding of the purpose of the engagement and involvement e.g. clinical expertise for a specific service. This could include how clinicians are trained to be involved in capital projects compared with trained through experience. • The balance between local ownership in the project vs responsibility for overall design • Involvement of Infection Control and how Infection Control advice, links to advice of others and how potential conflicting views are resolved If this framework were supported by greater clarity over what is a requirement compared with guidelines and a minimum requirement for a new hospital, this would support a greater understanding of what could be changed and what is required.
	Management Response: The Centre for Expertise will provide the clear framework for the minimum requirements for capital builds including an explicit determination of what is guidance and what is mandated. Inevitably local engagement with clinical teams will continue to be a key feature of capital projects going forward, given the need for local ownership and the rapidly changing nature of healthcare delivery. This requires the organisation to define from the outset what the Board's outcomes and specifications need to be, and each Project explicitly linked to the relevant Clinical Strategy A framework for clinical engagement, training requirements, and the process and delegated authority for derogations will be developed. This will be in line with the process for the agreeing and documenting technical changes referred to in Recommendation 2 Action owner: Director of Finance Timescale: December 2020

External Advisers

Report reference: Section 4 Appendix 5	**Recommendation:** NHS Lothian had technical, legal, and financial advisers. How each adviser engaged in the project, depended on the role and remit. The advisers with the most significant input through the project were MML as technical advisers. Over time the engagement with MML developed and whilst change orders were established, to approve new scopes of work, how NHS Lothian worked with MML on the project became less clear. Going forward, when working with external advisers we would recommend: • Ensuring clarity over reporting line • The distinction is clear between when the adviser is offering technical advice directly contributing to the decisions to be taken, compared with providing assurance to support NHS Lothian is taking a decision • How the advisers formally report into the project vs informal custom and practice as a member of the project team • Steps are taken to maintain the adviser's independence and objectivity We noted during our review the advice and input from the legal advisers was formal in nature, captured either through reports or formal email correspondence. This practice could be something to consider across all advisers.
	Management Response: It is fully accepted that there requires to be more clarity of the role of advisers, and their responsibilities at each stage of a capital project. The Board's Scheme of Delegation sets out that the Director of Capital is responsible for the implementation of the Board's overall capital plan through delivery of capital projects and applying project management resource and practices. This includes resource for Technical advisers. It is proposed that a review of the procurement of technical advisers is undertaken. This will include how the appropriate due diligence is undertaken on their brief, and how changes to this are managed. This review will include input from both the Board's Head of Procurement and the Centre of Expertise Action owner: Director of Finance Timescale: December 2020

Role, remit, and involvement in project boards

Report reference Appendix 4	**Recommendation:** In the case of the RHCYP project although the project board (and then the project steering board) had an agreed term of reference, this was not clear about who should attend, for what purpose and how this particular board was to support decision making. In particular, the project steering board (from 2015 onwards) had over 30 routine attendees. Going forward a clear framework for project boards for capital projects should be in place. This should include: • Ensuring right attendees are involved and defining what should be input into decision making. This should be a core group to facilitate the strategic discussions and focus on decisions. • The attendees have the capacity and skills required • Smaller sub-groups could support the project board and report to the project board, and this should be a defined reporting line. • Reporting lines from the project board into NHS Lothian's governance structure, including SRO (as referenced in earlier recommendations).
	Management Response: Over the last 15 years there has been a range of reports on how Projects should be managed. This includes the Scottish Capital Investment Manual which was updated during the course of the project. This is now reflected in the Board's Standing Orders with the role and responsibilities of the SRO, Project Director, Director of Finance, and Director of Capital Planning in relation to Capital projects set out. The Standing Orders requires that all Business Cases should be prepared in accordance with SCIM. The capital programme currently has several significant projects in comparatively early development. It is intended to undertake a rapid gap analysis of the membership, skills, and experience for Strategic Project / Programme Boards, in line with SCIM business case requirements and taking into account any emerging advice from the Centre of Excellence. This will be reported to Finance and Resources Committee. Action owner: Director of Capital Timescales: December 2020

NHS Lothian Framework for decision making

Report reference: Paragraphs 66, 77, 107 Appendix 4 and Appendix 5	**Recommendation:** Whilst most decision making rested directly with NHS Lothian, other parties were involved in either directly supporting the decision-making process or approval. In particular, the role of Scottish Futures Trust, as a member of the project board alongside producing key stage reviews. Without the sign off at key stages, NHS Lothian would not have been allowed to progress to the next project stage. The key stage reviews informed Scottish Government decision making, and the sign offs on the project as out with NHS Lothian's delegated authority. Based on our review of documentation the respective roles and responsibilities were not always clearly understood, by all parties involved in the project. On future projects it would be helpful for NHS Lothian to set out an overarching framework and timeline for the project, which can be approved by the NHS Lothian Board and/or Finance and Resources Committee (depending on delegations) This can build in: • Decisions to be taken by the NHS Lothian Board • Decisions where authority rests with Scottish Government and what informs Scottish Government decision making • How parties out with NHS Lothian inform decision making. This could be linked to the broader capital project route map, and built in here, or as a separate project document.
	Management Response: Scottish Government essentially defines health strategy and policy, and all Boards operate within the delegated authority that they have. Any capital scheme over £10m (and previously £5m) is beyond the Board's authority to take forward autonomously. NHS Lothian routinely works closely with Scottish Government and Scottish Futures Trust on capital and infrastructure projects/issues. For all major capital projects NHS Lothian requires approval from Scottish Government at key stages of the Project. Equally for Non-Profit Distributing (NPD) projects there was a gateway approach adopted by Scottish Futures Trust as the "owners" of the NPD process. NPD projects no longer exist. To address this recommendation further dialogue will be required with Scottish Government and Scottish Futures Trust colleagues. It is proposed that the outcome of this dialogue is incorporated within the actions set out in the Management responses above so that there is clear distinction in responsibilities amongst Scottish Government/Scottish Futures Trust/ NSS Centre of Expertise/NHS Lothian Action owner: Director of Finance Timescales: December 2020

Appendices

The following appendices set out additional information and detail, expanding further on commentary in the main body of the report.

Appendix 1 Internal Audit scope including limitations

Review of NHS Lothian's internal controls and governance, including engagement with advisors, over the period of the project to seek to understand why NHS Lothian ended up in the current position.

Background

A1 In July 2019 the opening of the new Royal Hospital for Children and Young people (RHCYP) and Department of Clinical Neurosciences was deferred. Following this announcement, the Cabinet Secretary for Health and Social Care commissioned two separate reports which were published in September 2019. The KPMG report focused on certain aspects of governance and decision making ("the what") and the report from NHS National Services Scotland – Health Facilities Scotland (NSS – HFS) focused on the technical aspects of the new hospital and the failings identified. In addition to the two reports commissioned by the Cabinet Secretary, NHS Lothian's External Auditors (Scott-Moncrieff) reported on certain arrangements in their Annual Report to those charged with governance, focused on financial management, as requested by Audit Scotland.

A2 Following the publication of the two reports the Scottish Government announced the appointment of a Senior Programme Director who will oversee the actions taken to ensure that the facility is fit for operation, reporting directly to SGHSCD.

A3 The Cabinet Secretary for Health announced that there would be a public inquiry into the delay, and the NHS Lothian Chief Executive and Chairman have been having ongoing discussions with the Director General for Health and Social Care/Chief Executive for Scotland in respect of the NHS Lothian action plan. As part of the creation of the action plan the NHS Lothian Finance and Resources Committee (alongside the NHS Lothian Board) are keen to explore various aspects of accountability over the timeline of the project, who was involved and when (in what decision making capacity) and the how and why NHS Lothian found themselves in the situation they did.

A4 The Finance and Resources Committee met in September 2019 and considered the NSS and KPMG Reports and agreed that given the Board's responsibilities on governance and internal controls it was important that action was taken to develop a robust action plan in response, to allow NHS Lothian to make the necessary improvements in its control environment and learn lessons for the future. The Committee also recognised the accountability of NHS Lothian and that there may be a need to take appropriate internal action, depending on the contractual arrangements in place with the respective advisors and/or follow NHS Lothian HR arrangements (depending on the findings identified in the review).

A5 Given the wider link to internal control and governance the Finance and Resources Committee in September 2019 discussed and agreed the involvement of internal audit.

Scope

A6 The scope is set out in phases and depending on the outcome of phase 1, phase 2 will be undertaken. This will allow us to better understand the internal controls and governance in place over the period of the project, and will support management in determining if there is further action NHS Lothian can take, either in respect of individuals or the advisors, which may then require specific HR and/or legal advice.

A7 It is recognised in the scope of our work that this was a complex project involving multiple project roles and stakeholders, and as an NPD project needed to operate within certain arrangements, including financial arrangements, and throughout the project these complexities and requirements would have informed decision making.

A8 Our work is designed to support NHS Lothian in collating a factual record in advance of the public inquiry, clarifying the timeline of events and critical decision making and to support NHS Lothian in pulling the findings of the three reports together to come up with an action plan to be agreed and implemented, demonstrating how lessons have been learned within the organisation.

Phase 1 (reflecting discussions within Finance and Resources Committee and a follow up conversation with the Deputy Director of Finance, as internal auditor sponsor):

- To produce a timeline of the key events and decisions over the project lifecycle up until the announcement to delay the opening. The timeline will seek to build in the context for the decision making, and the rationale for how/why events occurred, where this can be determined. This timeline will act as a formal record for all NHS Lothian Board members, supporting the timeline for the public inquiry and providing a factual record of events.
- Linked to the timeline we will consider the scope and remit (including commissioned role and expertise, ownership and involvement in decision making, alongside roles in providing assurance) for all advisors* to the project over the timeline. For each advisor, a record will be maintained of the involvement in the project, outlining respective roles, providing a factual record. Where we identify potential failings or gaps in internal control/governance this will be identified, and this will cover NHS Lothian staff and advisors.

A9 *Advisors will include for example those internal to NHS Lothian for example Accountable Officer/Chief Executive, Project Sponsor, project owner as well as external parties including MacRoberts, Mott MacDonald, Independent Tester, Scottish Future's Trust and Scottish Government. To explore the root cause of the underlying issues (focused on why). This will help understand any gaps in NHS Lothian's governance or internal control arrangements so that management can devise new or amended internal controls (detective and preventative) to demonstrate lessons have been learned and the future approach at NHS Lothian is strengthened, particularly in relation to programme management.

Phase 2:

A10 Phase 2 is dependent on the outcome from phase 1. If during the course of our work we identify any matters which indicate that either individuals and/or advisors did not act in accordance with the agreed role and remit we would look to use our healthcare advisory specialists to support a further review to determine any potential failings and the actions the NHS Board could consider taking.

A11 Grant Thornton specialists that would be available to support this work include specialists in NPD and PFI models, Health Estate, procurement and contract management and forensics. We also have access to relevant technical advisors who we can utilise, if required.

Internal Audit review sponsor

A12 The internal audit review will be overseen by the agreed internal audit sponsors. They are the Deputy Director of Finance; Chair of Finance and Resources; and Chair of Audit and Risk. Internal audit is an independent assurance function. The three sponsors are named in an overseeing role only not to direct the work or influence the conclusions of internal audit. The Internal Audit sponsors, as set out, have seen and agreed this scope.

Approach

A13 For phase 1 our approach will include:

- Reviewing the three reports and pulling out key messages and synergies
- Speaking to KPMG to understand the methodology for their review and process followed
- Reviewing all documentation that has been collated by NHS Lothian for the project, focusing on understanding and evidencing the internal controls in place, the governance arrangements, timeline, and role/remit of advisors and their involvement.
- Based on the above 3 points we will then determine what interviews are required and the interviews will be based on our documentation review, and questions arising from that - focused on internal control, governance, and key roles (internal and external to NHS Lothian).

Limitations of Scope

A14 Our review was undertaken in our capacity as NHS Lothian's internal auditors, and under the Public Sector Internal Audit Standards framework. Our work focused on governance and internal control based on review of documentation and meetings with relevant individuals. The content of this report is solely based on the documentation retained by NHS Lothian which we reviewed alongside meetings with individuals we considered necessary to support our understanding.

A15 Comments and conclusions made by internal audit in this report are based on our review of the documents we obtained and should not be regarded as offering legal advice or opinion. It is a matter for NHS Lothian to consider whether our findings merit further consideration and action and seek external views where appropriate.

A16 We identified several recommendations to support NHS Lothian going forward alongside certain wider observations which may be further considered within the public inquiry. These recommendations and observations are made in the context of our experience as internal auditors and may not represent all future actions. Should any additional information or documentation subsequently become available, relevant to our scope, we reserve the right to amend our findings considering that information.

A17 This report has been produced solely for the benefit of NHS Lothian and in our capacity as internal auditors for NHS Lothian. In preparing this report we have not considered the interests, needs, or circumstances of anyone apart from NHS Lothian.

A18 Any other party, other than NHS Lothian, that obtains access to this report or a copy under the Freedom of Information (Scotland) Act 2002 or through NHS Lothian's publication scheme or otherwise and chooses to reply on this report (or any part of it) does so at their own risk. To the fullest extent permitted by law Grant Thornton UK LLP does not assume any responsibility and will not accept any liability in respect of this report to any other party other than NHS Lothian.

Appendix 2 Project Timeline

2008-2010
- Project developed on Capital Design basis

2010-2011
- SG Policy change. Project delivery through NPD Model
- New procurement framework required to appoint technical, legal and financial advisors.
- New business case approved by Scottish Government which included approval for inclusion of 20 four bedded rooms – three of which were to be situated in critical care.

2011
- SFT – Independent Design Review
- A decision was taken that Early Design Work from 2008 – 2010 could still be used

2012-2013
- SFT – Pre Invitation to Participate in Dialogue Key Stage Review
- Procurement processes begin through competitive dialogue
- SFT – Pre-Close of Dialogue Key Stage Review

2014
- SFT – Pre-Preferred Bidder Appointment Key Stage Review
- Procurement progresses to preferred bidder stage

2015
- SFT – Pre-Financial Close Key Stage Review
- NHSL Sign Project Agreement with Integrated Health Solutions Lothian (IHSL)

Ongoing negotiations between NHS Lothian (NHSL) and Consort Healthcare PFI.

NHSL supported by MacRoberts UK LLP

Negotiations centred on land access, drainage, car parking and the site of the RHCYP

2016-17
- Ongoing dispute between IHSL and NHSL in respect of air pressure (4 bedded rooms) alongside other identified areas of non-compliance.

2017-18
- Ongoing risk assessments by clinical teams. Focussed on ventilation and not air change.

2018-19
- Risk identified that IHSL were no longer financially sustainable. Ongoing disputes unable to be resolved.

2019
- **February** - Settlement agreed with IHSL for £11.6m to correct drainage, fire detectors and heater batteries.
- **February** - Independent Tester issues completion certificate. NHSL take possession.
- **June/July** - Ventilation issues identified and move to hospital delayed.

The independent tester (Arcadis) performed checks of the tests and checks completed by Multiplex.

Appendix 3 Environmental Matrix

A19 The environmental matrix is a tool which captures mechanical engineering requirements (as well as other data) for the hospital in an excel workbook.

A20 The mechanical engineering requirements set out in the matrix, in the case of RHCYP, were then replicated in the individual room data sheets and detailed drawings.

A21 The matrix has 3 worksheets:

- One: Guidance notes. These reference specific requirements NHS Lothian requested, per the Board Construction Requirements, alongside specific SHTM and HBN guidelines which need to be complied with.
- Two: Sets out all the room types within the new hospital for example single bedroom, corridor, office, theatre etc. This includes for each room type the mechanical and engineering requirements have
- Three. Records all rooms in the hospital, split by department. There is a column showing room type, and data for this room type from worksheet two is copied over.

A22 There are 1,839 rooms/spaces within the RHCYP and therefore the environmental matrix is large. Alongside air change rates it captures heating, type of ventilation, pressure and other mechanical engineering aspects related to the plant to be installed.

A23 As the matrix is mechanical engineering in focus, we understand it is the responsibility of the Project Co, as Project Co are responsible for the mechanical and engineering design.

A24 The report into governance and internal control (August 2019) referred to the environmental matrix as an NHS Lothian document. Whilst a version of a matrix was included by NHS Lothian in the tender documents this matrix was never branded with an NHS Lothian logo.

A25 Under the NPD model, all NHS Lothian should retain responsibility for is operational functionality and the mechanical engineering of the RHCYP does not, we believe, meet this definition.

A26 We reviewed the copies of the environmental matrix retained by NHS Lothian. Where we have included dates, these reflect the dates per the NHS Lothian document being saved. Not all versions of the matrix included formal dates. Our comments on the matrices are set out below, for each version we obtained and reviewed.

When*	Who	Purpose	Internal Audit Comments
2010	Hulley and Kirkwood employed by BAM (principal consultants) for when the project was capital funded.	Early mechanical and engineering considerations to support the design of the RHCYP.	• Correctly identifies critical care as requiring 10 air changes per hour. • Does not include four bedded rooms, as these did not form the early design. • The matrix was not complete, representing the status of the design work in 2010.

*When is determined using the date of the document retained by NHS Lothian. It is noted that in agreeing RDD, including the environmental matrix, Project Co's system was used to support the sharing and review of documents by both parties. Therefore, the dates may differ between parties depending on how records were saved and filled.

When	Who	Purpose	Internal Audit Comments
2012	Hulley and Kirkwood. This version was commissioned by Davis Langdon under a mechanical and engineering specification to support reference design.	This version was commissioned by Davis Langdon (sub-contractor of MML) under a mechanical and engineering specification to support reference design. The specification included specific reference to the environmental matrix to support design. This matrix was included in Volume three of the tender documents, alongside Board Construction Requirements and Clinical Output Specifications. The tender specification, and all four volumes were NHS Lothian documents.	The guidance note worksheet (worksheet one) includes the following guidance: • **HDU**: HBN57, SHTM 03-01 and 10 ac/hr • **Critical care**: SHTM 03-01 and 10 ac/hr Worksheet two, the master room type, records four bedded rooms as requiring 4 air changes per hour. For critical care (worksheet three) all rooms are recorded as being 4 air changes per hour, positive pressure. Worksheet one notes: *'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.'* The narrative above continues in all future versions. This arises later, in the independent engineering specialist report commissioned to support Project Co, in their interpretation of pressure and NHS Lothian requirements, as a potential source of interpretation difference between the parties. Whilst the guidance note (worksheet one) is correct the detail shown within the critical care department is not in compliance with the SHTM.

When	Who	Purpose	Internal Audit Comments
September 2014	Wallace Whittle (Multiplex mechanical and engineering design consultants).	This version of the matrix was produced at preferred bidder stage, leading up to Financial close. This formed Project Co proposals.	On review of this matrix we note the following: • Hulley and Kirkwood logo has been removed • Guidance notes (worksheet one) remain the same, alongside a reference referring to preparation for financial close • Guidance for Critical care and HDU is still recorded as 10 ac/hr in accordance with SHTM 03-01 (worksheet one) • In worksheet two, the room master type, it sets out “Bedroom” (4 ac/hr and balanced) • HDU as a room master type has been removed • Bedroom 4 ac/hr via ensuite and balanced pressure (worksheet two) • Multi-bed wards 4 ac/hr via ensuite and positive pressure to ensuite (worksheet two) • B1 (Critical care) open plan four bed (multi-ward) 4 ac/hr via ensuite and positive to ensuite (Worksheet three) The room master type states the four bedded rooms as having ensuites and this is what has then been copied into worksheet three for all 20 four bedded rooms in the RHCYP. The three four bedded rooms in critical care do not have ensuites so this is an error. The first version of the matrix (2012) did not show critical care as having ensuite facilities. The air changes shown for critical care continues to not be in accordance with SHTM 03-01 guidance (4 air changes per hour not the 10 specified). The air-change rate for the individual bedrooms is not in accordance with SHTM 03-01 as the SHTM 03-01 appendix one shows bedrooms as requiring 6 air changes per hour. Within the matrix all bedrooms have 4 air changes per hour.

When	Who	Purpose	Internal Audit Comments
2015 (Version 3, post Project Agreement being signed)	Project Co	Project Co proposals, forming part of Reviewable Design Data (RDD) discussion. Noted in Project Agreement (February 2015) as part of RDD not agreed.	In addition to the three worksheets a tracker has been added into worksheet one tracking comments received by the NHS Lothian project team. The NHS Lothian project team included MML as technical advisers. Whilst comments are recorded it is not possible to determine who in the project team made what comments. Note 4 annotated on the matrix states “detailed plans awaited on bedroom ventilation to achieve balanced/negative pressure to corridor. Single bed ensuite extract to be increased noted”. Whilst not specific to critical care it indicates a review comment by NHS Lothian querying pressure regime. Worksheet one (guidance) has had the word “isolation” inserted after the note “critical care air changes 10 per hour”. The insertion of isolation implies 10 air changes per hour only applies to the isolation rooms in critical care. Who inserted the work isolation is unclear, but a reasonable assumption would be this was Multiplex as they are responsible for the matrix and have ownership for the changes to the matrix.
Version ww-xx-dc-xxx-001 (Revision 2)	Project Co	Iteration of the matrix as design was being developed.	This version of the matrix does not have a date. On review there are no material differences between this version, and the version dated 26 November 2015.

When	Who	Purpose	Internal Audit Comments
Version 5 (dated 26 November 2015 and 11 February 2016)	Project Co (branded with the Wallace and Whittle logo)	Environmental matrix with tracker, tracking changes made by Project Co following NHS Lothian review. Part of process of agreeing RDD, including detailed drawings.	There is a reference in here to 2nd batch of comments There is a schedule (built into worksheet one), which is marked up with either a tick or a cross noting if there is a drawing implication, comment received at financial close, or a comment post financial close. This schedule includes a column headed NHS Lothian reference. Comments from the NHS Lothian project team include references back to guidance and relevant SHTM detail and whether Multiplex are complying with the guidelines in their design. A comment by NHS Lothian includes “refer back to reference design drawings. Extract via ensuite (SHPN-04). If no ensuite – via room”. Specifically related to critical care we noted: • B1 Room 063: 4 air changes extract via ensuite. Response states “refer to reference design drawings if no ensuite extract is via room”. There is then a tick to say this was a post financial close comment, and a note saying no action required. • B1 Room 090: Area of 8m squared. Project co to populate areas. Response: review carried out; update schedule of accommodation required for this item. Now updated. From our review of the project team comments it is noted that a substantial number of comments are raised, identifying questions over design and subsequent compliance with guidelines. However, no comments were raised directly against critical care, specific to air change or pressure (other than the point on ensuites above).

When	Who	Purpose	Internal Audit Comments
Environmental matrix Version 7 (19 September 2016)	Project Co	Updated following NHS Lothian comment – continuing to track changes.	Note included stating this version had been updated to suit revised accommodation schedule and general mechanical updates per drawings. There is a specific comment from the NHS Lothian project team which notes critical care does not have ensuites and the need for this to be updated. The NHS Lothian review comment is only in respect of the inclusion of ensuites. It does not state that what is included in the matrix for critical care does not comply with the guidelines in SHTM 03-01. From review of comments and correspondence to Project Co on this version, we noted the following relevant comments from MML: *"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 Project Co to the issued raised as per MM-RFI-00172 & MM-GC-002006 relating to ventilation rates.".* Based on our review, and looking at the comments, this is specific to pressure. The NHS Lothian project team endorsed the EM to status B. However, it was noted by MML 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.".* This comment was made by MML direct to Project Co.

When	Who	Purpose	Internal Audit Comments
Version 9 May 2017	Project Co	Continued dialogue between Project Co and NHS Lothian.	This notes that the matrix has been updated to reflect comments from the meeting on 17 January 2017, and responses (by Multiplex) dated 18 May 2017. For critical care this shows the following revision: • Open plan. 4 ac/hr. 1.8 positive pressure. • Open plan (3 cots). 4 ac/hr 1.9 positive pressure • Open plan (4 beds). 4 ac/hr. 0.5 positive pressure The guidance front cover tab remains unchanged and still records 10 air changes per hour in critical care (isolation rooms).
Version 10 September 2017	Project Co	Continued dialogue between Project Co and NHS Lothian.	This matrix notes updated NHS Lothian comments 28 August 2017 and then 12 September 2017 The tracker of comments between NHS Lothian and Multiplex are still recorded. There are now a cumulation of 50 review points NHS Lothian have raised in this matrix since 2015. Critical care in this version has changed: • B1 063 4 bed. 4 ac/hr. Extract of 3 and positive pressure • Open plan (cots). 4 ac/hr. Extract of 4 and balanced pressure Changes are still being made in red, to support tracking, and updated in the front tracker The guidance front cover tab remains unchanged and still records 10 air changes per hour in critical care (isolation rooms).

When	Who	Purpose	Internal Audit Comments
Version 11 October 2017	Project Co	Continued dialogue between Project Co and NHS Lothian.	NHS Lothian project board comments still included and notes revised schedules of accommodation. The information on critical care is still the same as previous, including the front cover tab referenced 10 air changes per hour in critical care (isolation rooms).

Summary

A27 Based on our review we note the following:

- No explicit comments were included by the NHS Lothian project team (and MML) related to critical care and compliance with SHTM 03-01
- Versions 3, 4, 6 or 8 could not be obtained. These may not exist; it may be due to referencing.
- The change to insert “Isolation” in the guidance tab was not marked in red by Multiplex, when at that stage all changes were to be marked in red to ensure easily identifiable. This change went unidentified by NHS Lothian.
- Each version of the matrix was reviewed by the NHS Lothian project team. MML in their project management support role collated comments and annotated the matrix directly with their observations as well, based on our understanding.
- Technical comments were made, including areas of non-compliance with guidelines, including non-compliance with SHTM 03-01 (out with critical care). None of these were in respect of critical care.

A28 There were substantial NHS Lothian project team (including MML) comments on the environmental matrix. Given NHS Lothian’s role was only to comment on operational functionality it is difficult to understand the connection between the matrix and operational functionality, given the purpose of the matrix and its focus on mechanical and engineering design. In addition, in reviewing the comments made, and other areas of non-compliance with guidelines identified, it is difficult to understand, why non-compliance with critical care was not identified.

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Appendix 4 NHS Lothian project and governance arrangements

A29 From the outset, as capital and then NPD NHS Lothian identified the need to appoint technical, legal, and financial advisers to support the project. The change to NPD delivery required a new procurement exercise to appoint advisers, including relevant experience of NPD/PPP projects.

A30 Project team arrangements were established pre 2010 and these remained the same, including the project director who was appointed on a full-time basis to the project.

A31 Scottish Futures Trust wrote to NHS Lothian outlining conditions of funding and support for the project. Within this letter, Scottish Futures Trust raised a question over the PPP/NPD experience within the project team and whether that was considered sufficient.

A32 Following the Scottish Futures Trust correspondence, and the change in funding, NHS Lothian reviewed the respective roles and responsibilities within the project. As part of this review, the SRO and project director reviewed the model roles provided by Scottish Future's trust with the NHS Lothian arrangements. The project team structure, roles and remits were discussed at the Finance and Resources Committee and approved.

A33 The full business case submitted to the Scottish Government in 2014, summarised NHS Lothian's roles as:

Role	Summary of Role
Senior Responsible Owner (SRO) (Director of Finance)	Overall responsibility for the project, being directly accountable to the NHS Lothian Board. Provides strategic direction and leadership and ensures that the business case reflects the views of all stakeholders.
Project Director	Lead responsibility for delivering the facilities and services agreed in the business case. Provides strategic direction, leadership and ensures that the business case reflects the views of all stakeholders.
Board Observer	NHS Lothian representative who will attend and participate (but not vote) at Project Co board meetings after financial close. This was determined to be the project director.
Project Clinical Directors	Represents clinical services in the project. Works with preferred bidder to financial close to complete design in line with the Board's Construction Requirements within the financial limits. Leads the implementation of the agreed service model in respective clinical services to deliver the associated benefits.
Head of Commissioning and Service Redesign	Ensures that the clinical enabling projects required in the RIE are delivered. Leads the overall service change and workforce planning implementation for the project. Leads planning for and co-ordinate the transition of services into the new facility in conjunction with Project Co.
Commercial lead (Director of Capital planning)	Manages the legal, commercial, and financial workstreams for NHS Lothian. Liaises with SFT regarding the funding competition. Interface with the RIE PFI contract. Supports the project director in relation to wider Board capital plan requirements.
Head of Property and Asset Management Finance	Responsibility for all finance aspects relating to NHS Lothian's capital plan / programme and lead financial input into the project.
Contracts Manager	Ensures that NHS Lothian expenditure is effective and efficient and that a productive relationship is established and maintained with Project Co. This role is endorsed by SFT and described in SCIM Guidance.

A34 A project board was created, chaired by the SRO. Whilst including the roles above this also included financial, estates and facilities representation from within NHS Lothian alongside the Director of Finance for Scottish Futures Trust and the Assistant Director of Finance and Capital for Scottish Government Health Directorate.

A35 A pivotal role was the project director. The project director was the interface between the project delivery teams, the professional advisers appointed, and the project board and SRO. Based on the organisation chart agreed in 2011, there were thirty different individuals, via groups, reporting to the project director.

A36 Project governance was fulfilled by the Finance and Resources Committee, the NHS Lothian Board and then Scottish Government (as the level of investment required ultimate decision making to rest with Government).

Observations

A37 Below we have identified our main observations in respect of NHS Lothian's governance and project management arrangements. Over a decade the control environment within NHS Lothian has changed. Given the nature of the technical matters, it is unlikely that differing management and governance arrangements would have identified the problem.

Governance observations	
NHS Lothian Board	NHS Lothian Board delegated business case consideration to Finance and Resources, as would be the usual arrangement for capital projects. Assurances over the project were received from Finance and Resources. In addition, update papers were presented. The NHS Lothian Board approved the contract in February 2015 and the settlement agreement in February 2019. Whilst routine updates were provided, often for information, they could have been more clearly structured to provide assurance to the Board. Despite the scale and the new NPD model, the Board, in terms of engagement, treated the project like any other capital project.
Finance and Resources Committee	Finance and Resources Committee can approve business cases within delegated financial limits. The NHS Lothian board approved an increase in delegated limits to Finance and Resources for the RHCYP project. The Committee were predominantly focused on the financial assurances for the project. Regular updates were provided either by the Director of Finance (in capacity as SRO and/or Director of Finance capacity) and/or the Director of Capital planning. The project director also attended the Finance and Resources Committee to present certain papers but was not a consistent attendee. Regular papers were presented, but like the Board there could have been greater clarity over what was an information paper, a paper providing assurance and a decision paper. Finance and Resources, following papers from the SRO and the advisers to the project reviewed the contract, which was ratified by the Board. From the outset there was no agreement, that we could evidence, which articulated the assurance needs of finance and resources over the project and how the assurances would be sought and achieved. If this had been agreed, there would have been a framework for reporting and clarity. Two Non-Executive members of the Committee attended the project board. Based on the documentation this was determined by Finance and Resources Committee, designed to support the project team. This was at the stage of complex Consort discussions and then the procurement of Project Co. We believe this created less of a distinction between the Finance and Resources non-executive assurance and scrutiny role, and that of operational management.
Scottish Futures Trust	Scottish Futures Trust have a role in providing assurance over the procurement and governance arrangements. This is done through formal key stage reviews. If Scottish Futures Trust were unable to provide assurance, Scottish Government would not approve.

Scottish Government	The RHCYP project was beyond the Board's delegated authority. Therefore, decision making rested with Scottish Government including the approval for NHS Lothian to sign the contract, and also the settlement in February 2019.

Project management observations	
Project Board (2010 to 2015)	SFT and the Scottish Government were members of the project board, contributing to discussions and providing advice. Whilst decisions rested with NHS Lothian, their roles were influential. The project board had many attendees and many groups supporting the project, who provided updates to the board or were in attendance. Collectively the project board made decisions. An alternative would have been to retain the larger project board structure, which then reported into a smaller leadership group. This would have allowed a strategic overview to be maintained as the SRO would not have been so close to detail.
Project Steering Board (2015 onwards)	This group had over 30 members and was too large to fulfil a steering board remit. On review of minutes it was more an information sharing group. Whilst the disputes between NHS Lothian and Project Co were outlined via project director updates the underpinning technical matters were not set out and discussed in detail. Ventilation is mentioned three times in the minutes between 2015 and 2019. Within the minutes there is no evidence over the scale of the difficulty and the exact dispute. Actions are noted including correspondence with the Independent Tester and Project co but follow up action and resolution is not reported back in a consistent way.
Clinical engagement	The appointed project clinical director was a member of the project board. Supporting this role was a myriad of clinical teams and clinical engagement. All these workstreams reported to the clinical director who updated the project board. From a review of project board minutes there is little updates on the clinical aspects of the project. Sign off, of documents relevant to the clinical aspects of the project were all signed by the clinical project director. In the governance structure, the clinical project director and the project director sat side by side. In practice, for sign-off of drawings (for operational functionality) if a clinical space the project clinical director signed off, if non-clinical the project director signed off. Although the project board was designed to include clinical input clinical engagement and decisions ran alongside but out with the project board.
SRO role and remit	When a capital project, an SRO was appointed. The first project SRO, due to a change in circumstance, had to step down and the Chief Executive asked the Director of finance to act in the SRO role. At the time of this decision NHS Lothian did not have a Chief Operating Officer. The SRO changed again in 2015 to the Deputy Chief Executive (Chief Operating Officer). The change was made by the Chief Executive. In practice, given the contract disputes, whilst the SRO was formally the Deputy Chief Executive, the Director of Finance was still involved heavily. It wasn't clear in the documentation we reviewed whether this was due to the significant financial and legal inputs required and acting in capacity as Director of Finance or whether the SRO was fully understood by all involved and who was doing what, as SRO. The Chief Operating Officer role is not a Board Member role, whilst they attend the Board. Therefore, Board updates continued to be provided by the Director of Finance. Lastly for a period the Deputy Chief Executive acted in capacity as Accountable Officer, whilst doing the SRO Role. This is an example of poor internal control, creating a risk over segregation of duties and review and oversight.

SFT Key stage reports	SFT produced key stage reports. These were acknowledged and referred to in update papers to the Finance and Resources Committee. The full reports were not shared with the Committee. Given the focus on this committee seeking assurances, the decision to share reports would rest with management.
Advisers	A framework for how advisers would report to NHS Lothian, including differentiating between technical input vs assurance over decision making was not clearly set out. Custom and practice built up over time, particularly with the technical advisers, who had the bigger adviser role on the project. The project team operated as one project team. When the technical advisers liaised directly with Project Co it is understood this was on behalf of NHS Lothian, but this was not articulated that we could evidence. From the outset, based on project team diagrams the technical advisers (finance, legal and technical) reported to the project director. Over time, the legal advisers, whilst still involving the project director, reported to the SRO for the project. An alternative could have been for day to day management this to rest with the project director, with the advisers then preparing papers for the project board, covering their remit, advice and assurance provided. At two stages in the project the advisers directly reported into NHS Lothian's governance structures. First, in 2015 when each adviser provided a supporting paper to give assurance to Finance and Resources and the NHS Lothian Board prior to signing the contract. There was varying degree of detail between the three advisers in these assurance statements. Subsequently there were legal assurances in February 2019 over the legal process, to support the NHS Lothian Board in agreeing the settlement. It is noted there was not the same degree of detail or input from the technical advisers to the NHS Lothian board at the stage of the settlement.
Liaison meetings and dispute resolution	A series of meetings were in place, providing project oversight between NHS Lothian and Project Co including liaison meetings. These became more important as disputes between both parties arose. Most dialogue and decision making appeared to take place in this forum. The minutes and agreed actions for all these meetings are not all retained by NHS Lothian. Although many will relate to legally privileged discussions and therefore, we understand will have been retained by the legal advisers. These discussions involved the Project director, Director of Finance, Director of Capital Planning and SRO. The Accountable Officer was not involved in these discussions. Evidence of Accountable Officer engagement and involvement is only at the NHS Lothian Board meetings contributing to discussions during the Board and certain Finance and Resources Committee meetings.
Settlement agreement	The dispute and discussions between both parties commenced in late 2017 and formal settlement was only reached in February 2019. This resulted in commercial dialogue alongside technical workstreams. The listing of items agreed within the settlement was developed over this time. Ventilation was an agreed settlement item. The full settlement agreement was presented to the NHS Lothian Board alongside statements from MacRoberts as the Board's legal advisers. Significant items including drainage and heater batteries were referenced explicitly in the covering papers as these remained disputed. Based on our review we could not evidence an independent review of the technical items compromising the settlement agreement. Everyone who was close to the detail, prepared the detail with no objective overview. Given the size of the listing, and that the error had been built into the project at an early stage the likelihood of it being picked up, would be reduced, but this was another opportunity missed.

Capacity and skills	Advisers were sought from the outset to support NHS Lothian. The technical advisers fulfilled general project management support and technical specialists. This skill was required and was brought into the project team with the project team working jointly together. Other roles in the project were fulfilled either through 100% project team for example project director, seconded into the project on a full-time basis from their substantive post e.g. clinical project director or fulfilled the role alongside other NHS Lothian roles and responsibilities. This was the case for the SRO, which is currently normal practice. Clinical input was through the views of clinicians aligned to clinical practices. Their role was not to understand the balance of clinical decisions vs project delivery and financial impact. They were not trained in project management or the delivery of capital projects. Recognising the scale and complexity of the project it is necessary to ensure individuals have the right skills but also the capacity to deliver the roles.

Appendix 5 Advisers and other parties involved, external to NHS Lothian

A38 The RHYCP is a complex project which evolved over a decade. The NHS Lothian project team recognised expertise was required for a project of this scale. In 2007/8 NHS Lothian appointed BAM as principal Supply chain partner to support the capital design.

A39 BAM appointed a series of consultants to work with them in fulfilling this role. NHS Lothian appointed Davis Langdon at this stage in a project manager capacity. In addition, as a capital project Ernst and Young UK LLP (EY) were appointed financial advisers.

A40 When the funding changed to an NPD, NHS Lothian, in accordance with procurement rules, undertook a procurement exercise to appoint technical, legal, and financial advisers, under procurement framework contracts.

A41 In 2010/11, the following advisers were appointed:

- Financial Advisers. Ernst and Young UK LLP (EY). This was a continuation of advice.
- Legal Advisers. MacRoberts UK LLP (MacRoberts). The CLO were not used as they did not have the required PPP/NPD experience or construction contract law expertise.
- Technical Advisers. Mott MacDonald Limited (MML). Prior to this stage MML had a small role, directly appointed by NHS Lothian as NEC Supervisor within the capital procurement process.

A42 There were two other key parties, external to NHS Lothian, involved in the project:

- Scottish Futures Trust (SFT). SFT were involved in providing advice and guidance to NHS Lothian on the NPD approach alongside assurance (procurement and governance) via key stage reviews.

- Scottish Government as project sponsor with ultimate approval through minsters from outline and full business case submissions.

A43 Role and responsibilities were set out in the covering paper to Finance and Resources in 2014, alongside the full business case. Extracted below is the summary table. What is set out remained the case throughout the project.

Role	Responsibilities
Project Manager – Mott Macdonald	The project manager will be co-ordinate the inputs of the appointed advisers and their interface with NHS Lothian and Project Co.
	Following financial close: • Coordinate due diligence on bidder solutions
Legal Advisers – MacRoberts LLP	The role of the legal adviser is to give appropriate advice in their areas of expertise, including up to financial close: • Evaluating and advising on all legal and contractual solutions. • Developing the contract documentation for the project, using SFT specific standard documentation where appropriate; and • Undertaking legal due diligence on Project Co's solutions.
	Following Financial Close: • Supporting the Commercial Lead in clarification and fine tuning of legal aspects. • Assisting NHS Lothian on implementation of the contract

Role	Responsibilities
Financial Advisers - Ernst & Young LLP	The role of the financial adviser is to give appropriate advice in their areas of expertise, including up to financial close: • Supporting the development of financial aspects of the FBC. • Developing the payment mechanism in conjunction with the technical advisers. • Reviewing funding and taxation aspects of the solutions; and • Preparing the accounting opinion for the Director of Finance.
	Following financial close: • Supporting the Commercial Lead in clarification and fine tuning of financial aspects. • Assisting NHS Lothian on implementation of the contract, for instance in the operation of the payment mechanism and reviewing calculation of the annual service payment.
Technical Advisers - Mott MacDonald Limited	The role of the technical adviser is to give appropriate advice in their areas of expertise, including up to financial close: • Supporting the development of technical aspects of the FBC. • Review of Project Co's proposals to ensure they meet NHS Lothian's objectives. • Developing the payment mechanism in conjunction with the financial advisers. • Undertaking technical due diligence and scrutinising costs of Project Co's proposals • Reviewing Project Co's planning submission. • Supporting the Project Director in clarification and fine tuning of technical issues.
	Following financial close: • Assist with general queries and assist with technical due diligence. • Support the Project Director in the construction and commissioning phase.

A44 Based on our review of documentation, other relevant points are below.

MacRoberts UK LLP

A45 Following early discussion between NHS Lothian and the Central Legal Office (CLO) by the Director of Finance and SRO for the project it was agreed that the CLO did not have the contract legal skills required for the project and sufficient legal expertise over NPD contracts.

A46 Key areas of legal input were:

- The SA6 agreement, which was the agreement between NHS Lothian and Consort Healthcare around the site, including the inclusion of the DCN.
- Any amendments to the contract templates for NPD projects, provided by SFT.
- Review of any legal documentation and/or contracts before signing, including the contract between NHS Lothian and IHSL.
- Litigation advice between 2017 and 2019 as contract discussions were ongoing between NHS Lothian and IHSL.
- The SA1 agreement which was the signed settlement in February 2019.

Mott McDonald UK LLP (MML)

A47 MML were the appointed technical advisers in 2011. Their services were procured via a public sectors contract framework and the contract signed by the SRO for the project in June 2011. The costs of the technical advisers were the largest costs NHS Lothian incurred, on external advisers for the project.

A48 MML employed sub-contractors Davis Langdon and Turner Townsend. We understand the appointment of Davis Langdon was requested by NHS Lothian as up to 2010/11 Davis Langdon had invested in the project, had cumulative knowledge, and had an established role. The contract in place was between MML and Davis Langdon.

A49 Within the 2011 contract a scope of work was included which broke down activities into deliverables, days input and who was responsible.

A50 The contract with MML, signed in 2011 has remained in place. In addition to this contract, project work orders were produced by MML throughout the project which were approved by NHS Lothian. These work orders consider changing scope, from the initial contract and additional work undertaken by MML. There are a substantial number of these over the life of the project.

A51 Specific roles that different individuals within MML have had on the project to date include:

- Technical advisers across a suite of specialist areas including mechanical and engineering advice.
- Developed the approach to reference design in 2011 following agreement by the NHS Lothian project board on procurement options.
- Involvement in the reference design work.
- Project management services providing support through project management working alongside the NHS Lothian project team.
- Involvement in technical workshops where technical advice was required.
- Supporting the technical evaluation of the three tenders received.
- Providing commissioned specialist advice for example an engineering report on the site of the RHCYP to support the SA6 agreement.
- Site visits. These were ad hoc and at the request of NHS Lothian.

A52 Based on the agreed roles and remits within the project, MML's principal reporting line with the NHS Lothian Project Director.

Number of advisers involved in the project between 2011 and 2013

A53 The number of parties, external to NHS Lothian involved between 2011 to 2013 was substantial and involved differing contractual arrangements.

A54 NHS Lothian directly contracted with:

- MML (contract signed in June 2011)
- Tribal Consulting. Tribal were appointed healthcare planners. Subsequently Tribal were taken over by Capita and between 2010 and 2012 both organisations were named in documentation.

A55 MML undertook work directly alongside the two sub-contractors MML entered into an agreement with – Davis Langdon and Turner Townsend. In addition, Thomson Gray were a sub-contracted party of MML's providing a cost advisory service.

A56 Davis Langdon, further sub-contracted work under their contract with MML to:

- Hulley and Kirkwood (H&K). Overseeing the mechanical and engineering project advice
- Nightingale Associates. As architects they were original appointed by BAM in the early stage of the project and this appointment retained their knowledge and experience to date.

A57 Davis Langdon initially acted in a project management role and oversaw the reference design work. Once reference design work was completed Davis Langdon left the project. At this stage (March 2013) the project management function transferred to MML. From March 2013 onwards MML were the only technical advisers working on the project.

Scottish Government remit

A58 Scottish Government:

- Representative attendance the project board to contribute to discussions and decisions. The project board was attended by the Scottish Government's Deputy Director of Finance and Capital planning covering the period 2011 to 2015.
- Scottish Government decision making and approval for example full business case.

A59 Scottish Government took the policy decision to change the project from being funded from capital to being funded as an NPD project. This decision was announced in 2010 without any prior discussion with NHS Lothian on potential implications or consideration of options.

A60 The deviation from the guidance in an NHS Scotland letter to Chief Executives (CEL) for all new hospitals to have 100% single rooms was signed off by the Chief Medical Officer for the Scottish Government in 2011. This allowed NHS Lothian to design the RHCYP with four bedded rooms.

A61 In addition, Scottish government signed off the revised outline business case in 2011, the final business case in 2015 to allow the contract to be signed, and the sign-off of the settlement sum in February 2019.

A62 Over this time Scottish Government approval was informed by the assurances from Scottish Futures Trust via key stage review reports, and direct representation on the NHS Lothian project board.

A63 Throughout the project, as they would with other capital projects, NHS Lothian kept the Scottish Government updated, and Scottish Government signed off the respective plans.

Independent Tester – Arcadis LLP

A64 In 2015 NHS Lothian and Project Co procured the services of an Independent Tester. This is a recommended role for NPD projects. The role is based on a risk assessment, to consider compliance with the build phase of the hospital with the contract between NHS Lothian and Project Co (namely the board construction requirements, project co proposals and reviewable design data). Routinely the Independent Tester provides reports to both parties and this included risk assessed actions, to be rectified, typically by Multiplex as the builder. The hospital cannot be handed over to NHS Lothian without the Independent Tester's final completion certificate.

Post building handover ventilation – I.O.M.

A65 As required in SHTM 03-01 post building handover an independent compliance check should be undertaken on the ventilation before the building is occupied. NHS Lothian commissioned I.O.M. to undertake these required checks. This is in accordance with the current guidelines in the SHTM 03-01. Although the building was handed over in February 2019 this only happened in May 2019 as the remaining work had not yet been completed by Multiplex for the testing to take place.

Scottish Futures Trust

A66 The role of SFT was notified to NHS Lothian in a letter, related to conditions of the NPD model. Within an update on the project to Finance and Resources, covering the funding change, the role of SFT was set out. SFT were automatically involved in the project, as agreed by Scottish Government and SFT.

A67 SFT attended the project board meetings between 2010 and 2015. In addition, SFT were also represented on the project steering group board established in 2015 and attended on an ongoing basis. SFT were the only party external to NHS Lothian who had membership of the steering group beyond 2015.

A68 SFT were engaged from an early stage. SFTs role is providing assurance, on behalf of the Scottish Government that the project is being delivered effectively and within the financial model agreed. This is done through the completion of key stage reviews. Key stage review reports are produced and signed off by NHS Lothian, submitted to Scottish Government. Without SFT sign off at each stage, NHS Lothian would be unable to progress to the next stage of the project.

A69 Alongside assurance, SFT also provided advice. Advice included sharing experiences of NPD projects, what skills and experience were required, key points in time, and templates. In addition, specific to this project, additional advice was needed over the site and the arrangements between NHS Lothian and Consort.

A70 There were 5 key stage reviews completed and reported by SFT:

- Stage 1: Approval of project pre-OJEU stage 2012
- Stage 2: Pre-ITPD stage. March 2013
- Stage 3: Pre-close of dialogue. December 2013
- Stage 4: Pre-preferred bidder appointment. February 2014
- Stage 5: Pre-financial close. February 2015


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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

ARCADIS Design & Consultancy for natural and built assets

THE ROYAL HOSPITAL FOR CHILDREN AND YOUNG PEOPLE, EDINBURGH

Key Issues Report No. 32

Site:	**Royal Hospital for Sick Children and** Department of Clinical Neurosciences and Child and Adolescent Mental Health Services – **Little France**
Report:	**Independent Tester Key Issue Report No 32**
Date:	**30th November 2017**
Present:	**John Edwards (Part) — Arcadis** **Alick Doyle (Part) — Arcadis** **Christian Darbyshire (Part) — Arcadis**

Introduction	Status / Compliance Risk Level
This Key Issues Report has been issued to record and inform the project parties of the key issues identified and inform of the IT's activities undertaken and planned. This report No 32. For RHSC and DCN has been issued to record the issues outstanding following the compliance reviews undertaken on the 1st, 3rd, 6th. 7th, 8th, 9th, 13th, 14th, 16th, 21st, 22nd, 23rd, 24th, 28th, 29th, 30th, November The report is issued on an exception basis with the exception of the progress noted; only issues identified by or have been brought to the attention of the IT have been noted in the report.	N/A

1.0	Activities undertaken	
Item	**Comments**	
1.1	To undertake a review of compliance and site progress and to inform the parties of the activities undertaken to date. The report comments on the following: The key site activities noted during site inspection A review of general progress in the absence of a formal programme. To reflect this, we have not reflected delay in our compliance risk rating. A review of compliance included areas offered as completed Witnessing of Testing and Commissioning A review of quality management in general	Note
1.2	**Progress and Site Activity**	
Item	**Comments**	
1.2.1	**Core & Stairs Progress** ▪ The IT team have continued to review the completion of the core and stairs. ▪ Stair cores continue to progress to completion on floor finish and balustrading works with general fit out progression throughout the Orange and Green zones as well as ongoing Pod & Street works to the	Multiplex

	Blue Zones. Approximately 85% of the works are now complete across the site. ▪ The IT is satisfied with the quality of works reviewed on site and the alignment with QA processes and specifications with no non-compliances identified in the sample reviewed. ▪ There are still concerns regarding the stainless-steel handrails in the stair cores that may be damaged due to the movement of people and materials. ▪ The finishing tiles to the main street have commenced in the reporting period (See photo A.6)	
1.2.3	**General External Works –** ▪ Final drainage, final attenuation, slabbing, kerbing, reduced level dig and hard landscaping finishes ongoing. ▪ Works ongoing to the Hospital Square, Entrance Plaza, final soft landscaping at the Ann Rowling building, remediation to the area of the old petrol station, to the PARU garden, to the service yard area and to the cycle path to the south of the energy centre. ▪ VIE trench now completed & moving forward with final service yard slab works. ▪ Cycle path works at the energy centre also completed with the area between the Blue1 Zone & the Anne Rowling building nearing completion. ▪ Spine wall concrete works progressing. ▪ The IT has noted dips on the newly laid sets by the entrance where the crane for installing the feature entrance steel was situated. ▪ Confirmation is sought by the IT on the section of existing service duct that is within the concrete zone of the main sign base at the entrance. ▪ The IT noted general building debris on a section of external plant area below the where gravel fill had been placed. ▪ The IT noted that there requires to be an infill slab piece in the section where the direction of the slab runs change ▪ During heavy rain, a drainage issue was noted on the section of paving running parallel to the Anne Rowling building, where the run is to the planted bed, and not out to the permeable monoblocks in the Taxi stand. (Photo A.4 & A.5)	Multiplex
1.2.4	**Drainage Installations:** ▪ The IC has been made aware that Drainage Testing results are now held in Zutec. Records exist for Above Ground Drainage (Static Test Results) and Rain Water Drainage. All records indicate systems are satisfactory	Multiplex
1.2.6	**Window Installation** ▪ All windows appear to be installed and the envelope is now watertight. ▪ The IT understands the previously noted window installation on the curved end of the Blue Zone, will have new curved cills installed. ▪ The IT previously noted that the perimeter seal to the GF windows was by way of a compressed foam fillet, detail of closure to brickwork to be checked and confirmed. ▪ Multiplex provided detail of the packer as being Tremic Illbruik compriband tape along with the product specification sheet.	Multiplex

1.2.7	**Vinyl flooring** ▪ Internally vinyl flooring, ceilings, decoration, FF&E, doors, patient hoists, M&E final fix etc will all continue within all areas of purple, green & orange zones ahead of ongoing drive for room inspections. ▪ **Orange Zone** - ▪ The level 1 theatres continue to progress with ceilings and floorings nearing completion. Floor screed works to ground, first, second & third floor levels in the orange zone continue to all available areas. ▪ **Purple Zone** - ▪ Level 4 - Ceiling and flooring works are underway to level 4 work areas also with final floor screeding virtually completed also. ▪ **Blue Zone** – ▪ Complete, and all levels have now had room checks carried out. Some rooms facing on to the atrium are not at the time of writing advanced to a suitable point for checking (Radio Lollipop and Security office) ▪ **Green Zone** – similar to the orange zone, progressing well at varying stages throughout the floors dependant on programme. Floor screed works to ground, first, second, third & fourth floor levels in the green zone continue to all available areas. ▪ **Energy Centre** - Floor vinyl works completed ▪ The IC inspected the ongoing installation on level 5 and has concerns as to the quality of vinyl welding and bubbles in vinyl floors. This has been raised with Multiplex, and noted on Zutec inspection reports	Multiplex
1.2.8	**Envelope and Steel Framing System (SFS) / Cladding / Glazing screens** ▪ 100% of the curtain walling is completed ▪ The ECL Cladding (Render) is 99% complete. ▪ Entrance steel porticos have now been fitted with the fabric cover ongoing. ▪ The cladding finishes to the West elevation “open end” are progressing with just the wall end capping to complete. ▪ 08/11/17 - The IT witnessed the permeability tests to the rain screens CW-00-OB at all levels. The lower screen at Ground Floor failed with water ingress evident. Multiplex and Henshaw have carried out a full investigation and traced the problem to an incomplete section of gasket, along with insufficient gap from the bottom of the capping and the finishing slabs. ▪ 28/11/17 – The IT reviewed all the QA documentation for the rain screens, focusing on specific areas picked at random. On review of the documents, the IT is satisfied that the failure is an exception, and that with the extended testing carried out by Henshaw the issue is closed. ▪ The IT has requested to view all QA files for the entrance portico shelters, from the concrete footings through to the steel and fabric covering. ▪ Green Zone - all air permeability tests completed and passed	Multiplex
1.2.9	**Internal Partitioning** ▪ Partitioning continues to be progressed across the project. ▪ 99% of partitions are completed or in progress ▪ **Green Zone/Orange Zone** – progressing well, ▪ Damage to partitioning in corridor areas is due to be rectified as part of snagging and will be ongoing. ▪ The IT requires visual confirmation that all low-level glass panels are safety glass.	Multiplex

1.2.11	**Roof – General Roofs are 96% complete** ▪ Blue Zone - The envelope and roof works are completed with the building fully watertight. ▪ Purple Zone - Roofing works to the terrace are now completed to with slabs/ballast progressing to a finish. ▪ Green roof works (88% complete) continuing to the all remaining areas of courtyards as well as the RIE link and areas of the level 2 balcony. Final remaining courtyard D level 2now available also. ▪ Courtyards remain live to a few areas for Eco Green Roofs to be all completed in November. ▪ The IT noted some damage to the insulation in court yard areas arising from the use of wheeled access equipment. The IT will review how this is being monitored by Multiplex. ▪ The IT has issue with the current state of the 4th floor balcony area, where damage has occurred to the insulation from running some sort of wheeled device over the insulation. There are also significant amounts of rain water accumulations, with the insulation actually floating. – Multiplex to confirm course of remedial works to be undertaken. Multiplex has noted that the floating insulation has been resolved, however the IT has noted that there remain areas on the balcony where water is still not fully draining. ▪ It has been brought to the IT's attention that the access route to the fixed stair access for the PV roof is obstructed by large bore pipe. The access steps are also too steep for the safe carrying of tools and equipment to the PV roof.	Multiplex
1.2.12	**Mechanical Services:** ▪ **Green & Orange Zones** Fit out works continue progressing throughout Orange & Green zones with M&E final fix, decoration, flooring, ceilings and FF&E all in place at various stages within Green & Orange zones in line to meet with room review dates ▪ **Blue Zone –** Street underfloor heating & screed works completed along with high level decoration. ▪ **Blue 2 Zone** - Mercury M&E final installation continuing throughout the basement on all fronts along with commissioning with the link tunnel to the energy centre M&E installation completed. Commissioning ongoing also throughout the basement and energy centre. ▪ **Blue 3 Zone** - Internal M&E works completing with commissioning works also. Externally the final flashings etc are being installed with louvres now in place fully around the flues. The green roof works having completed. Incoming service works through the service yard and PARU gardens completed and service yard concrete works continue. ▪ Plantroom works on final installations to basement, level 2 & level 4 plantrooms and commissioning also progressing throughout. Lift installation completed with final architraves being installed. ▪ Energy Centre - In the main plant sections of the energy centre the M&E works continue. The VIE trench within the service yard is complete to the oil tanks & VIE with pipework completed also. ▪ The IT seeks confirmation on the suitability and compliance of the insulation material that fire collars are fixed into.	Multiplex

	Future Programme of Works ▪ M&E works will continue to all remaining areas of plantrooms to upper floors and basement along with final energy centre internal works continuing to completion. Building service commissioning will continue and ramp up ahead of increasing completion of systems.	
1.2.12.1	**Ventilation:** ▪ The IT has raised concerns regarding the alignment of duct connections to AHUs particular in the main 2nd floor plant room. The angle of transformation is steeper than that recommended by CIBSE and the IT is concerned that to obtain the correct air volumes against the resistance imposed by these transformation pieces noise could be generated that in turn will be noticeable in clinical areas. CI Tracker 157 ▪ Commissioning continues on all Ventilation Systems however the progress is slower than expected with the majority of the clinical areas still to be demonstrated. ▪ Blue 1 zone commissioning is nearing completion with 95% of the air systems fully balanced, and a sample of the commissioning witnessed. ▪ Orange Zone - reviews continued to take place last month along with successful final air tests	Multiplex
1.2.12.2	**Domestic Hot Water** ▪ Domestic H&C Water/ LTHW and Chilled WS (Pipework) distribution and connections nearing completion. ▪ Future works propose the filling of the Domestic Water System to Zone A	Multiplex
1.2.12.3	**Boilers** ▪ Boiler commissioning and setting up has been commenced in advance of the witnessed tests.	Multiplex
1.2.13	**Electrical Services** ▪ The majority of the building is now on a permanent supply allowing electrical testing and connections to take place. ▪ The majority of lighting is now on a permanent supply ▪ Commissioning of electrical services continues as witnessed by the IT.	Multiplex
1.2.13.1	**Nurse Call** ▪ The Nurse Call commissioning continues. ▪ The IT understands that modification to the layout of some areas has been affected after RDD that could have clinical functionality implications. The IT is monitoring this issue.	Multiplex
1.2.14	**Fire Safety Systems** ▪ Fire alarm cabling progressing across remaining zones. ▪ Testing and Commissioning has commenced with loop impedance witnessed by the IT ▪ Fire alarm – The IT has been informed that an updated Fire Strategy has been agreed and will soon be available for the IT to review. ▪ Live system testing started W/C Mon 6th Nov at the Energy Centre ▪ **The IT has noted and been made aware of areas where ceiling voids do not have fire detection i.e. Room 1-D6-037 – Physio store.**	Multiplex
1.2.15	**Lifts** ▪ 4 lifts are active - 3 for beneficial use	Multiplex

	▪ Schindler have completed all lifts and commissioning with final architraves only remaining to final lifts. Which will be fitted on completion of all other potentially damaging works.	
1.2.16	**External Works** ▪ External works continue well to all areas around the building perimeter. Works continue to the hospital square and the entrance plaza. Works continue also to the service yard slab and to the PARU garden area. ▪ Final drainage, final attenuation, slabbing, kerbing, reduced level dig and hard landscaping finishes ongoing. Works ongoing to the Hospital Square, Entrance Plaza and final soft landscaping at the Ann Rowling building. ▪ The east road external works have been completed. ▪ VIE trench now completed & moving forward with final service yard slab works. Cycle path works at the energy centre also completed with the area between the Blue 1 zone & the Anne Rowling building nearing completion. ▪ External planting (trees and shrubs) is well advanced in all areas ▪ Externally to the Orange zone, envelope works are primarily completed. The final courtyard works are nearing completion and will complete in November. Mast climbers are now fully away. ▪ Externally to the green zone the envelope is completed with final remaining gable end works in progress. The CAMHS envelope works have completed along with Henshaw's installation of the final anti ligature screens in place. ▪ The link tie in to the existing RIE has render completed along with curtain walling fully installed ahead of continued break through works. ▪ External louvres screens completed through the north and east elevations	Multiplex
1.3	**Project Quality Plan (PQP)**	
Item	**Comments**	
1.3.1	Appendix E- Compliance Issue Tracker for commentary and Multiplex feedback provides an update of the issues identified during ongoing reviews of the quality management documentation.	Multiplex
1.4	**Room Reviews**	
Item	**Comments**	
1.4.1	▪ The IT arranged to attend site in accordance with the Multiplex's fit out inspection and handover schedule. See Appendix C for full list To the end of November 2017, the IT has inspected a total of 165 rooms. The total number of rooms and room types inspected is 553, which equates to approximately 24% of the room types (Total 349) ▪ The IT arranged to attend in accordance with the programme, however it became clear that when Multiplex issue correspondence stating the areas and rooms are ready for inspection this does not mean the areas are complete. It became clear when inspecting rooms in late October and early November that a lot of Snags, Defects and Observations could be captured in areas deemed ready for inspection. ▪ Having spoken to different members of the Multiplex Team the IT is now aware that actual full room completion should be just before the	Multiplex

	final Fire Stopping inspections. This activity is the last prior to closing off rooms and should indicate no further work is required in that area. ▪ The IT is now to re-align room inspections to later stages of the build programme.	
1.5	**Testing and Commissioning**	
Item	**Comments**	
1.5.1	▪ The IT arranged to attend site in accordance with the Multiplex's 2-week look ahead programme, to witness the following 17 tests which were scheduled to be ready for witnessing in November 2017. To the end of November 2017, the IT has inspected a total of 22 Commissioning tests. The IT will be selectively targeting Testing and Commissioning to ensure as wide a spread of witnessing is achieved. ▪ The IT has reverted to Multiplex on some issues regarding missing information in the test packs and has shared suggestions that could be incorporated to make the testing and witnessing more efficient. ▪ See the Appendix D for details.	Note
1.6	**Issues Raised by the IT**	
Item	**Comments**	
1.6.1	▪ The IT has previously noted that a number of movement joints run through critical areas. ▪ The IT raised two concerns in respect of this issue: - The ability to provide appropriate surfaces to allow infection control. - Meeting the requirements of 3.7 Services Contract – Schedule 5 - FM Guide to Design and Construction Page 23 in respect of movement joints in critical areas ▪ Refer to item 158 Compliance Issue Tracker.	Multiplex
1.6.2	▪ The IT had further discussions with Multiplex and is still awaiting confirmation of the condensation calculations in respect of the insulation present in the steel substructure supporting the high-level window units above the large atrium. ▪ The IT has again discussed with Multiplex who state that due to a very small strip of insulation required it would not necessarily merit producing calculations and on inspection it will be evident there is no risk of condensation. The IT will consider this opinion and refer back to Multiplex in due course.	Multiplex
1.6.3	▪ In the absence of a revised completion programme, the IT is unable to comment on progress towards a completion date, however the testing and commissioning of key systems is progressing at a slower rate than expected.	Multiplex
1.6.4	▪ Following a previous review undertaken with Richard Hair (Bouygues FM) the IT noted the following issues and is awaiting confirmation from Multiplex that the issues have been addressed:	Multiplex

1.6.4.1	▪ A number of taps have been installed with inappropriate connections which would lead to warming of the local cold water. This item is still outstanding. ▪ Multiplex have initially replied indicating they do not believe the installation is non-compliant. The IT has responded; ▪ HTM 04-01 require in section 8.5 All cold-water distribution pipework, mains and cistern down-feeds should be located, as far as is practicable, to minimise heat gains from their environment. ▪ Pipework should not be routed through hot ducts or run adjacent to heat sources, such as radiators. ▪ Where hot and cold-water pipes are run horizontally together, the cold-water pipe should be located beneath the hot water pipe to minimise local warming by means of convection. The arrangements identified are not compliant with this requirement Refer to item 174Compliance Issue Tracker	Multiplex
1.6.4.3	A number of taps have been installed with the supply connections external to the IPS system. Multiplex replied. These are for water coolers as per the 400 series furniture layouts. The designers thought best to have pipework accessible via IPS rather than being hidden within wall. We do not consider the installation to be non-compliant **The IT refers -** These were supplies to hand wash basins in the blue zone. The IT will now check visually and confirm with Multiplex.	Multiplex
1.6.4.4	The support of some work surfaces would appear inadequate for the depth of work surface.	Multiplex
1.6.4.5	▪ The location of some smoke sensors within ceiling voids is inappropriate as testing will be an issue. ▪ Multiplex replied stating they do not believe the installations are non-compliant. **The IT refers** - To achieve best practice all detectors should be capable of being tested without the removal of other services. This was not the case in some detectors identified. The IT will now seek a visual check when accompanied with Multiplex. Refer to item 176 Compliance Issue Tracker	Multiplex
1.6.4.6	▪ The mounting of ventilation equipment within ceiling voids needs to be reviewed to ensure independent support and access to access doors and equipment is maintained. The revision of the access arrangements and locations of these items is being actively reviewed by Multiplex.	Multiplex
1.6.4.7	▪ The positioning of electrical distribution boards and other equipment within riser cupboards does not allow for doors to be opened through 90º in some cases and in others will require any person working on the equipment to reach into the riser cupboard due to the position and height of the partition below the access doors. The revision of the access arrangements and locations of	Multiplex

	these items is being actively reviewed by Multiplex however further examples were identified during July.	
1.6.4.8	▪ There is insufficient room to access the lighting control panels, mounted on the return partition wall, from inside the riser cupboards. The revision of the access arrangements and locations of these items is being actively reviewed by Multiplex.	Multiplex
1.6.4.9	▪ A number of locations were identified where the smaller diameter drainage pipe had joints located within floor slabs. The revision of these items is being actively reviewed by Multiplex. Refer to item 177 Compliance Issue Tracker	Multiplex
1.6.4.10	▪ There was a variation in the positioning of the plate heat exchangers mounted on the hot water cylinders located in the basement heat stations. Whilst some had the heat exchangers easily accessible and mounted on the front face of the hot water cylinders, others were located at the rear with no proper access. The revision of the access arrangements and locations of these items is being actively reviewed by Multiplex. ▪ Multiplex replied stating they do not consider the installation to be non-compliant as agreed recently with BYES. ▪ **The IT refers** - The PA requires best practice. The layout installed is not best practice and is therefore non-compliant and needs to be revised. The IT will now seek further clarification with Multiplex. Refer to item 178 Compliance Issue Tracker	Multiplex
1.6.4.11	▪ The framework on which the heat station pumps and other equipment is located prevents access to the fire damper access hatches, at high level, in a number of cases. The revision of the access arrangements and locations of these items is being actively reviewed by Multiplex.	Multiplex
1.6.4.12	▪ The location of the access cover to the below basement slab drainage in the centre of the intersection between two corridors running at 90º raises a concern with the IT in respect of the impact on both corridors should this need to be accessed during an operation situation as, when appropriate barriers are located around the access, movement in both corridors would be stopped. Consideration should be given to relocating the access so as not to impede the safe ongoing use of the corridor. ▪ Multiplex replied they do not consider the installation to be non-compliant. Position is as per reference design and FC documentation ▪ **The IT refers** - The PA requires best practice. The layout installed is not best practice and is therefore non-compliant and needs to be revised. The IT will now seek further clarification with Multiplex as to this issue.	Multiplex
1.6.4.13	▪ Water penetration through the ground floor slab is evident around the lightning protection down tape at high level in the basement. Whilst the completion of the building envelope will prevent further	Multiplex

	water ingress issues the IT is concerned on the effect the water will have had on the reinforcing in this area. The revision of the access arrangements and locations of these items is being actively reviewed by Multiplex. Refer to item 179 Compliance Issue Tracker	
1.6.4.14	▪ Remedial measures and a greater level of care needs to be taken in undertaking painting adjacent to electrical connection boxes as cable colours have been masked by paint. The revision of these items is being actively reviewed by Multiplex.	Multiplex
1.6.5	Corridor 2/COR/006 adjacent to riser 2/T2/008 ▪ It has been noted in the above area that there is a run of high level pipework that is anchored at both ends which requires flexible expansion bellows within the run. It is not possible to see if bellows have been fitted, as the pipe run is now obstructed by ventilation ducting. (Photo Nr A16) ▪ The IT requests confirmation of the presence of expansion bellows, and the proposed method of accessing them for routine maintenance and replacement. Multiplex to provide co-ordinated services drawings for the area indicating space grab and design modelling. Refer to item 161 Compliance Issue Tracker	Multiplex
1.6.6	▪ The IT seeks confirmation on the future testing and replacing of cables that pass-through walls. On a number of occasions, the IT identified cable ends with a terminated connector on the end awaiting connection to a device. The cable originates from behind a wall with no indication how that cable can be replaced or tested from both ends	Multiplex
1.6.7	▪ The IT has previous raised concerns of non-compliance in respect of ventilation systems. These items were incorporated into a schedule issued to IHS by multiplex in respect of changes. The IT has advised that specific derogations will be required in respect of any agreed changes. ▪ Multiplex replied - Please resubmit schedule for our information. Refer to item 162 Compliance Issue Tracker	Multiplex
1.6.8	▪ The IT has advised Multiplex that the paired basement HV sub-stations (1A, 1B, 2A and 2B will each need to conform fully to the requirements of SHTM 06-01 including fire and blast separation.	Multiplex
1.6.9	▪ IHS and the Board are discussing the interpretation of the requirements in respect of the MRI rooms and the pressure regime for 4 bedded rooms. Further discussions continue.	Note
1.6.10	▪ Various co-ordination issues have been identified by the IT as detailed in the attached photographs (Report 29). ▪ Multiplex asked for the re-issue of photos - The IT has re-submitted and awaits a reply	Multiplex

1.6.11	▪ The fixing of a fire collar to plasterboard and not directly to the slab was noted by the IT as detailed in the attached photograph (Report 29). ▪ Multiplex asked for the re-issue of photos - The IT has re-submitted and awaits a reply ▪ Further examples of poorly fitted fire collars have been noted in the basement rainwater tank room. (Photo Nr 21)	Multiplex
1.6.12	▪ The installation of pipe unions above the expansion joint in the main ventilation plant room was noted by the IT as detailed in the attached photograph.	Multiplex
1.6.11	▪ The potential non-conformance of the location of the alarm call reset button in respect of the WC seat was noted by the IT as detailed in the attached photograph. Multiplex have advised that this layout was requested by the Board and will be the subject of a change. ▪ This was discussed between the IT and Multiplex. The IT awaits confirmation of derogation sign off that this is now accepted by the board.	Multiplex
1.6.12	▪ The IT has been advised that the fire damper testing is being carried out on dampers not yet fitted. The IT notes that dampers require being tested and rest in their final positions, as there is a requirement for ongoing periodic testing, that necessitates suitable access to the dampers and their access panels Nov-17 The IT has satisfactorily witnessed FDDTs and is satisfied with the methodology. – Closed	Multiplex
1.6.13	▪ The IT notes that there are no access panels to the control valves on plasterboard ceiling mounted devices, i.e. Radiant panels in the stair wells. Photo Nr 13) ▪ The IT has also been made aware of apparent deficiencies in the fixing of radiant panels, leading to some of them being twisted out of shape (Photo Nr 14)	Multiplex
1.6.14	▪ Along with the lack of access panels for services, the IT has noted that there are no access panels for the required periodic load testing of the hoist fixings. (Photo Nr 17)	Multiplex
1.6.15	▪ The IT notes that there are ongoing issues with the rainwater collection tank in the basement, where the set levels for the pump are incorrect leading to water flowing out of the tell-tale opening leading to the floor being flooded, with areas of mould to the plasterboard wall perimeters. (Photo Nr A.19 & A.20)	Multiplex
1.6.16	▪ During electrical test witnessing, the IT was made aware that the breaker for AHU DB12 from Section board PE2/4/3 is a 160A breaker, and the cables are only 25mm armour which is no	Multiplex

	compliant. As well as being advised that this issue is rectified, the IT requires to know the back ground to how this issue has come about. Design error? Installation error? Or change that has not been fully impact assessed or incorporated. Refer to item 170 Compliance Issue Tracker	
	▪	
2.0	**Ongoing actions to be undertaken by the IT**	
Item	**Comments**	
2.1	▪ The IT will continue to attend site on a regular basis to review the site activity and compliance. Our next reviews are planned for each week during December up to the 23rd after which the IT will break till the 8th January 2018. with visits to coincide with NHS progress and compliance meetings	IT
3.0	**Statutory Authorities**	
Item	**Comments**	
3.1	▪ The IT will review comments made by Building Control.	Note
3.2	▪ The Building Warrant tracker is to be monitored on Aconex.	Note
4.0	**Key Issues**	
Item	**Comments**	
4.1	▪ All Key issues are now being tracked separately on the Key Issue Tracker appended to the report.	Note

Risk Register Legend:

HIGH	High – Potential show stopper, Completion at risk
MED	Medium – Capacity to affect or halt construction, Completion unlikely to be at risk
LOW	Low – Cosmetic issues or resolved by later construction processes, Completion is not at risk

Appendix A – Photographs

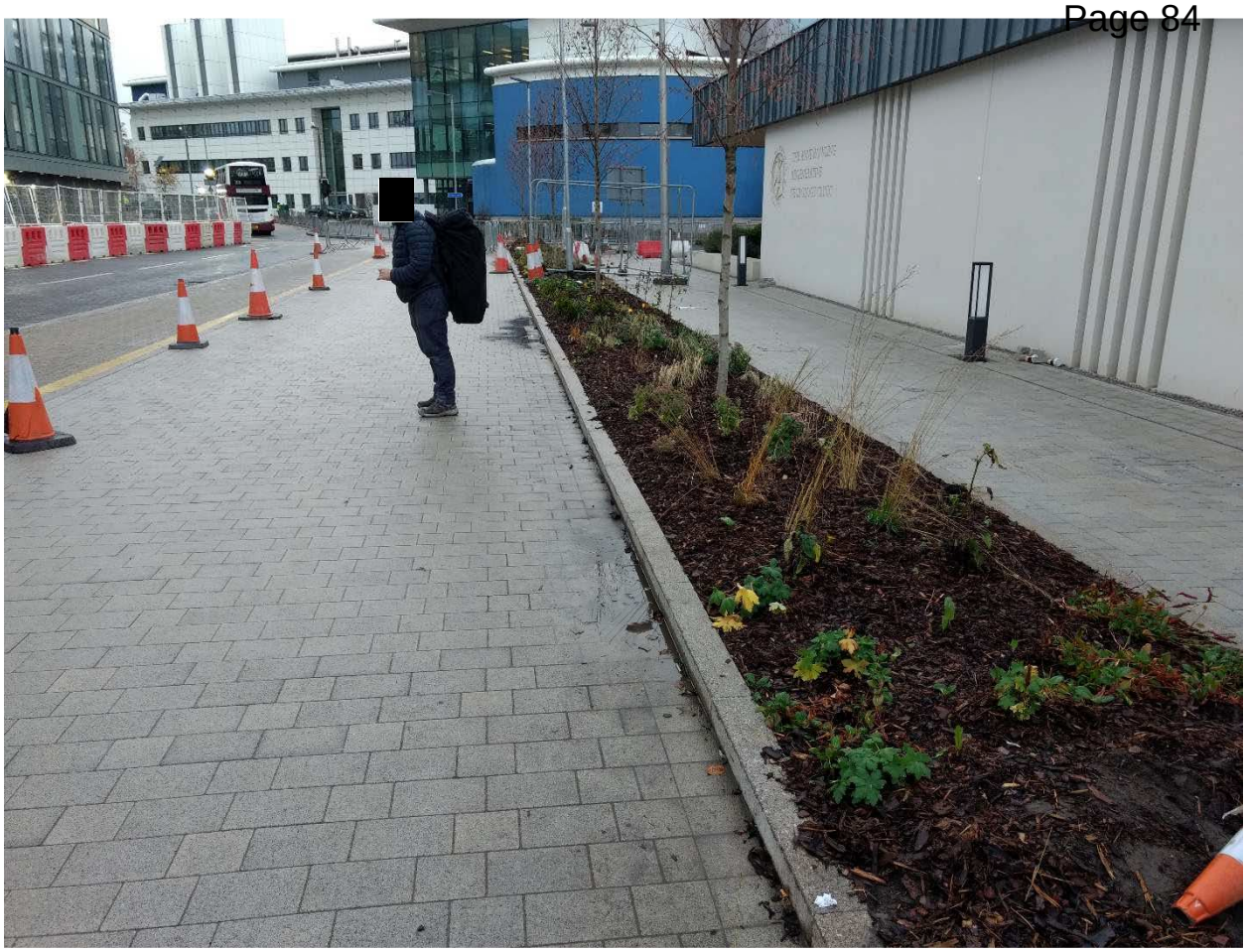
November 2017

A.1 – Soft and hard landscape progressing v- feature steel installed.

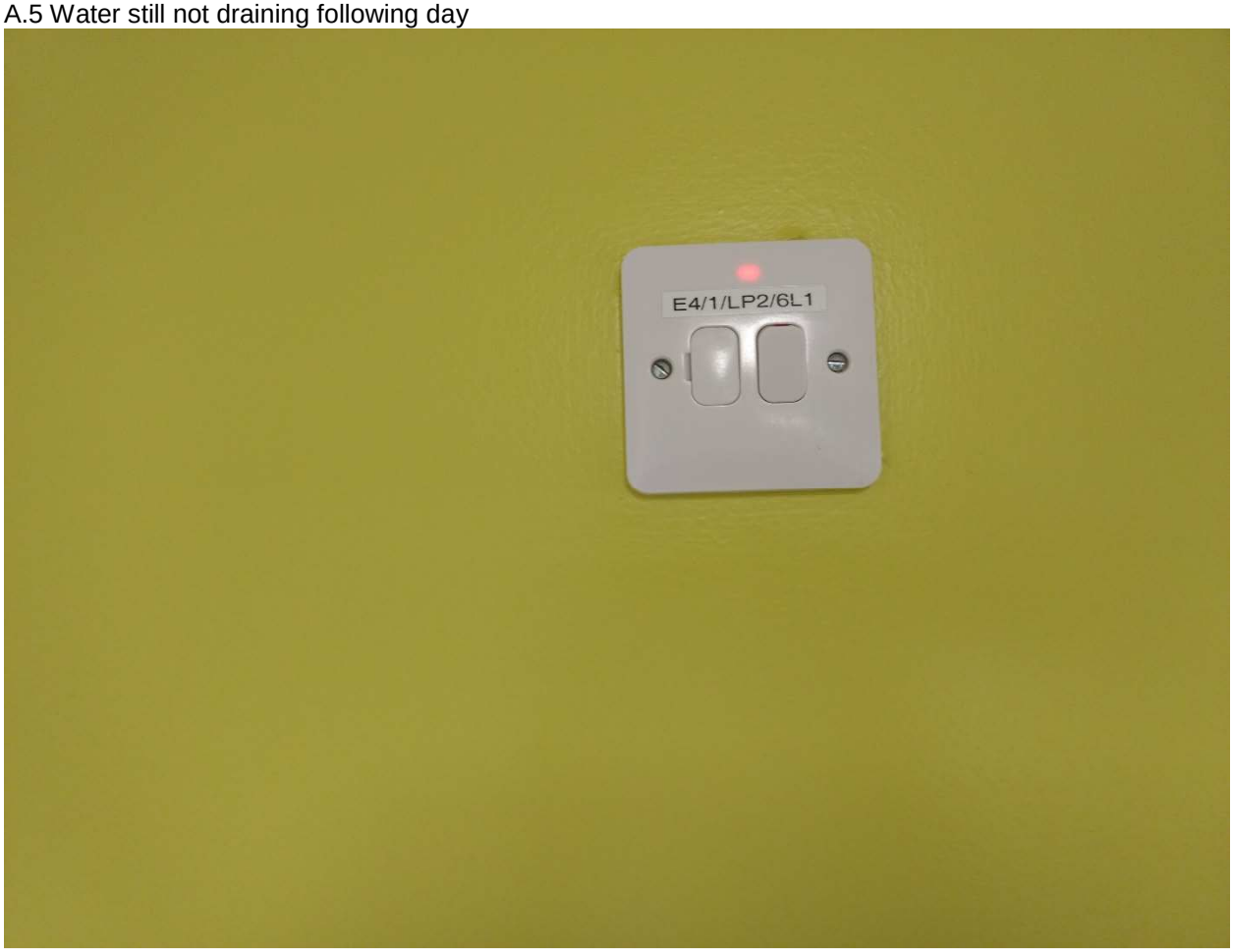
A.2 – West section approach

A.3 – Blue zone – Open plan desk areas

A.4.Water ponding due to wrong fall

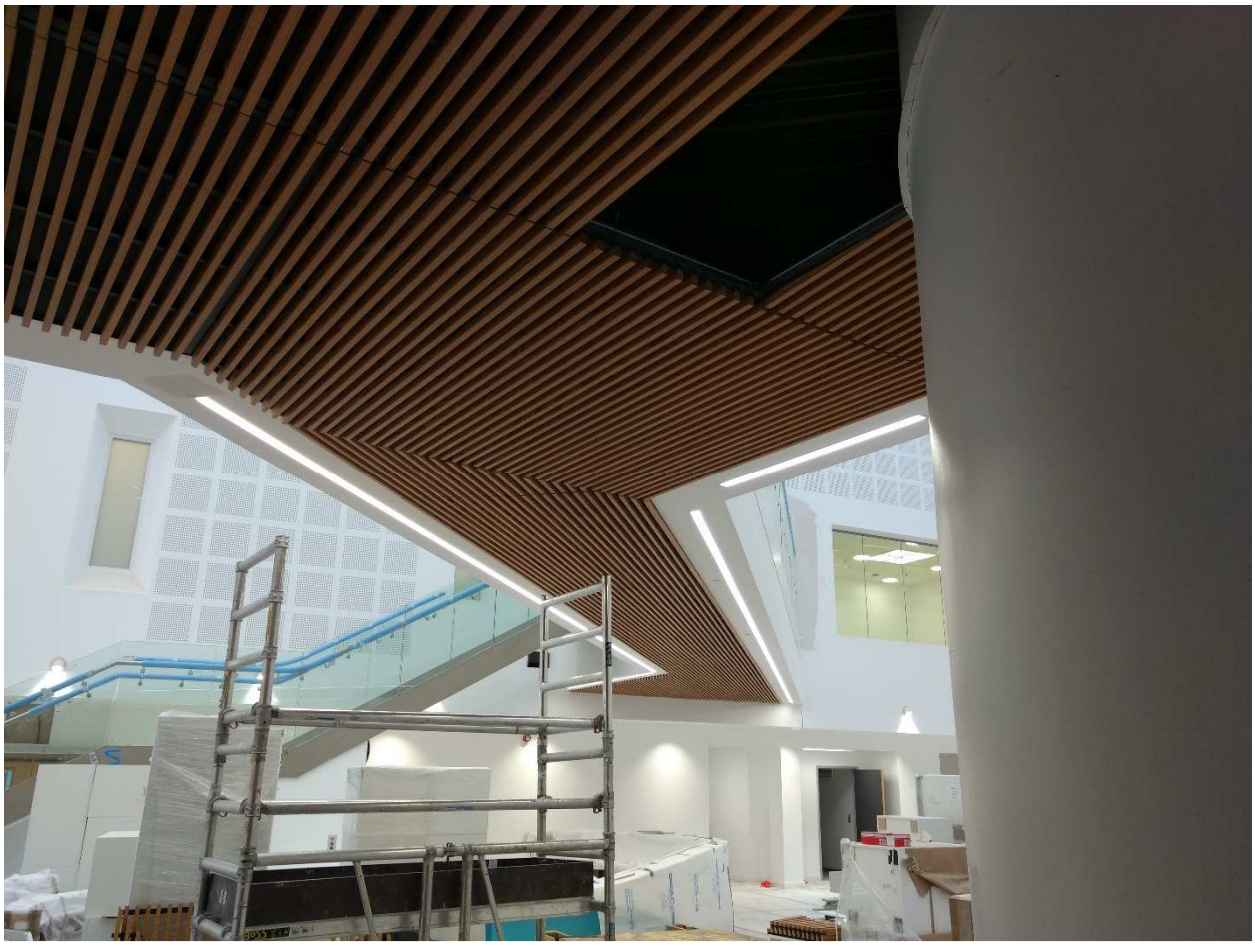


A.5 Water still not draining following day

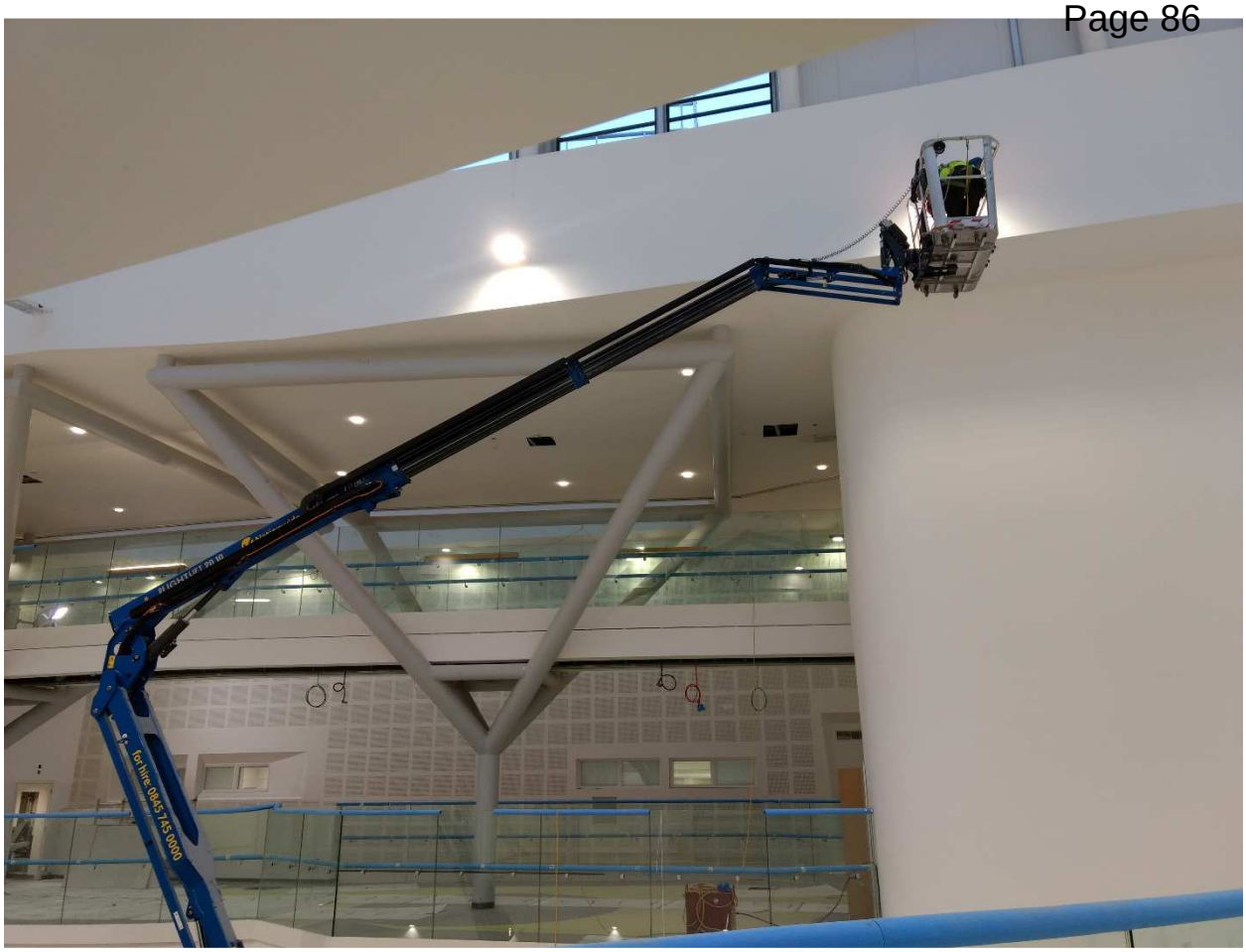


A.6 Illuminated light switch – illuminated area not apparent when powered off.

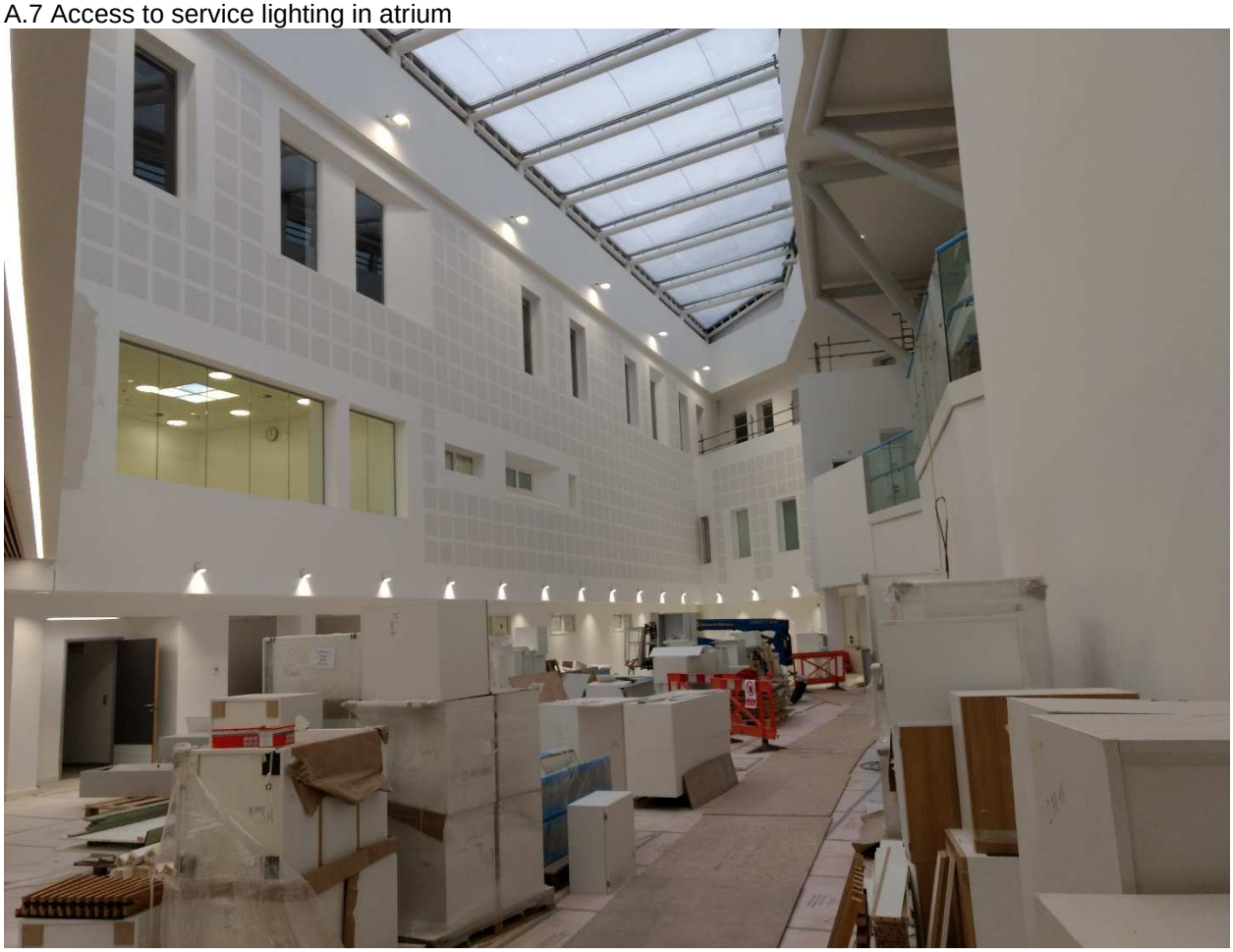
A.6 Floor tiles to main street.



A.7 Timber soffit feature in link to atrium

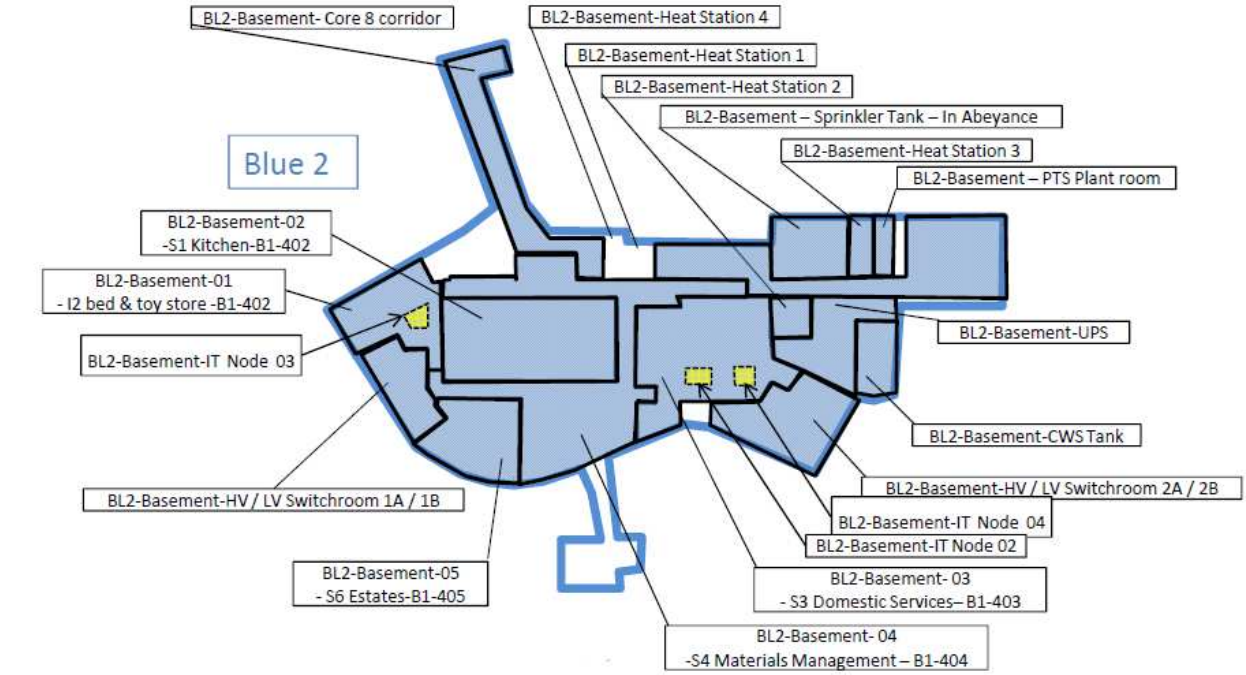


A.7 Access to service lighting in atrium

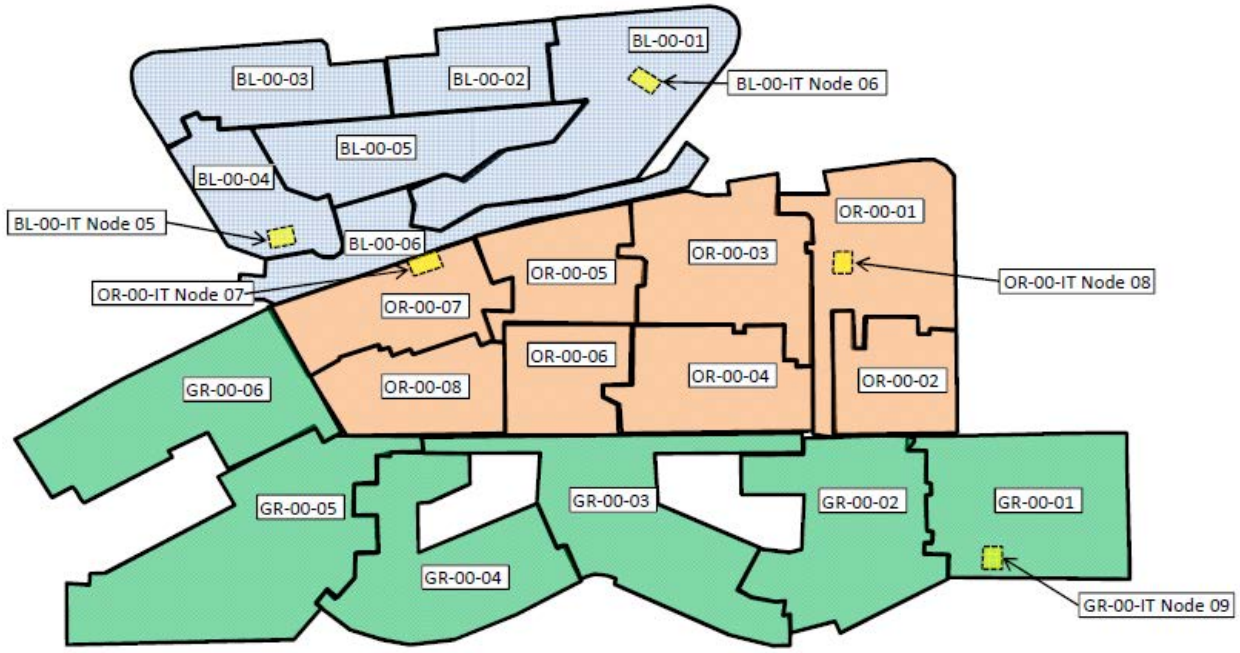


A.8 – Cabinets being stored in atrium area

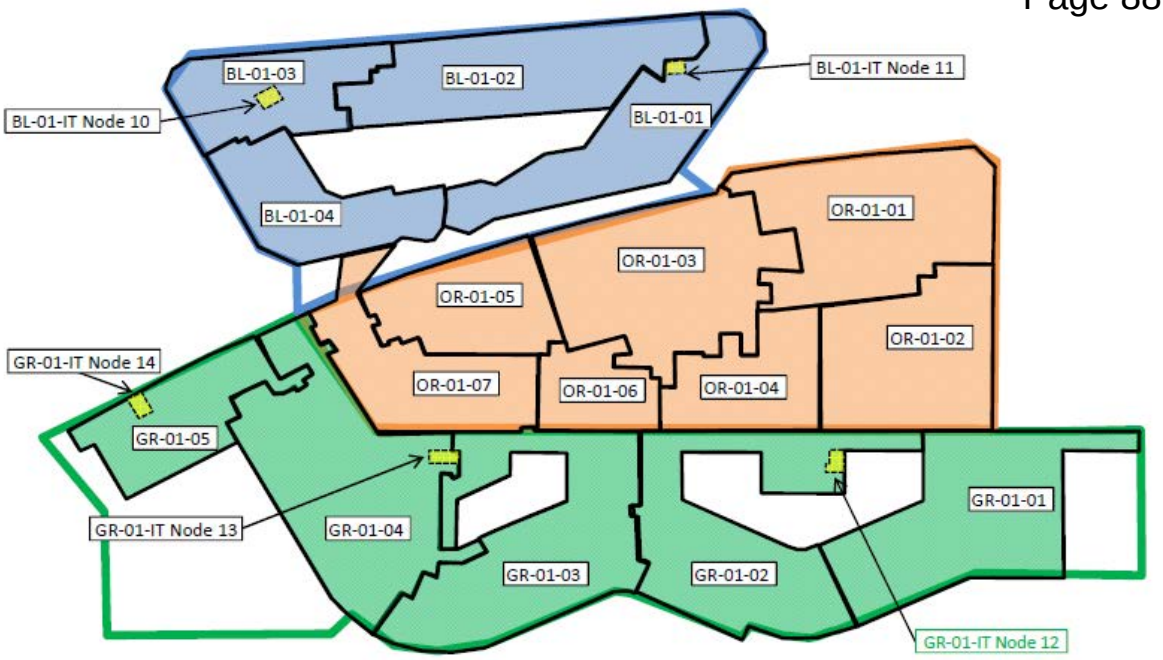
Appendix B – Original Site Location References



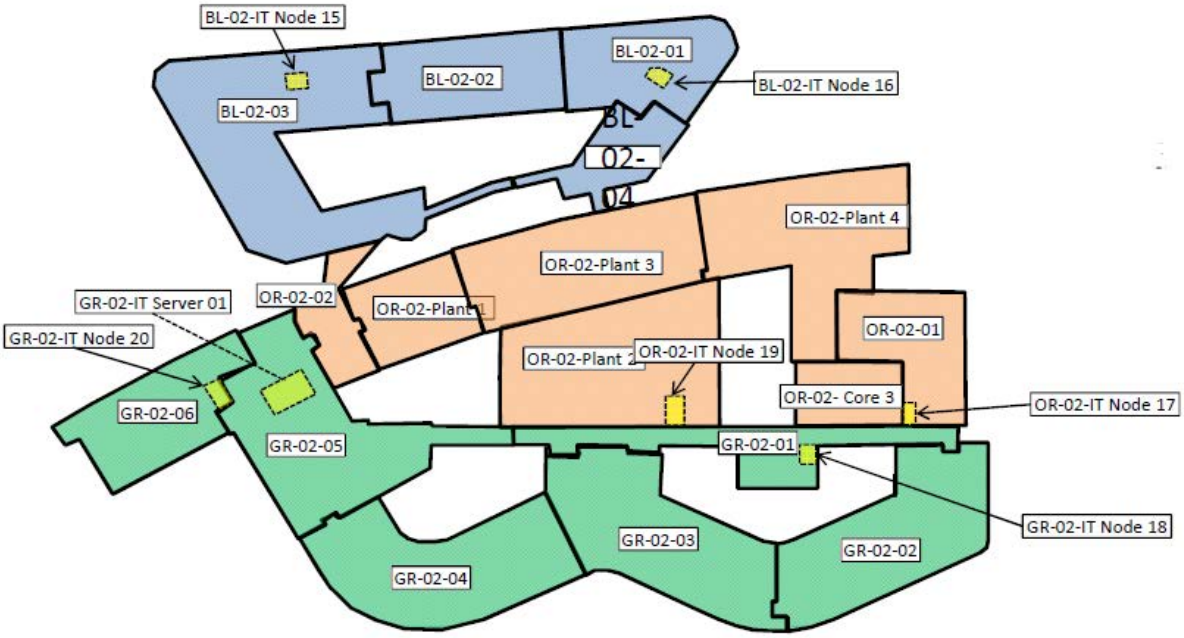
Basement



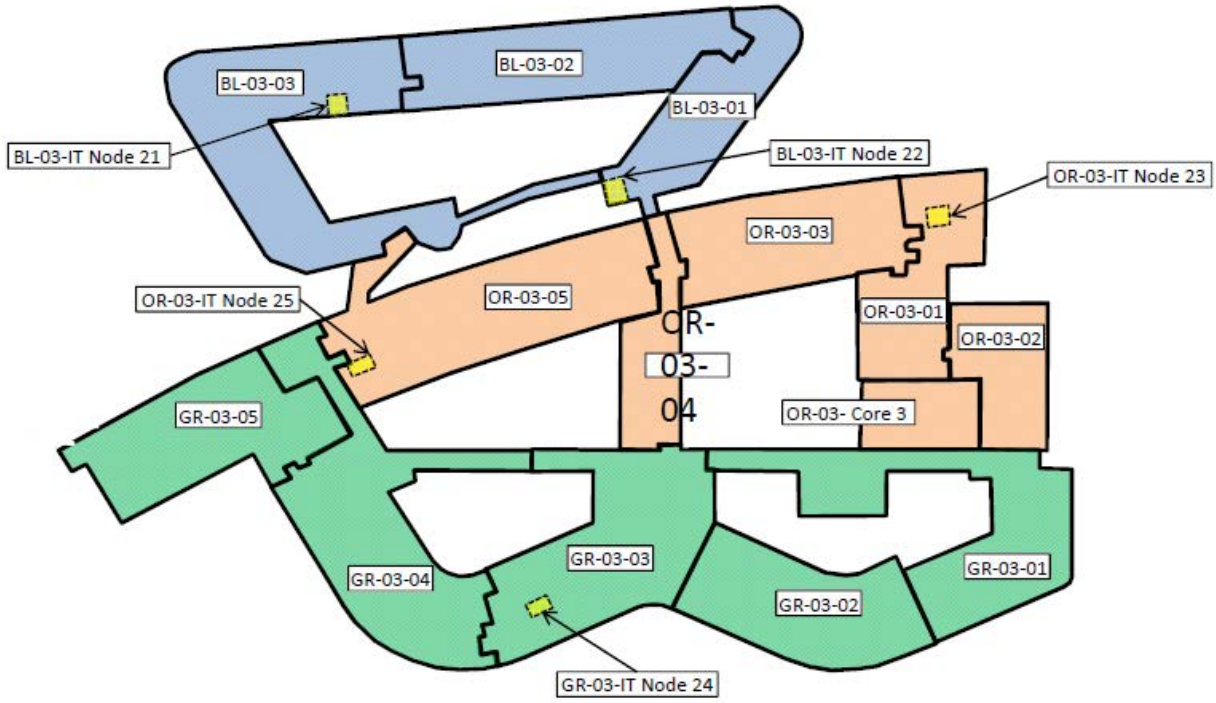
Ground



First



Second



Third

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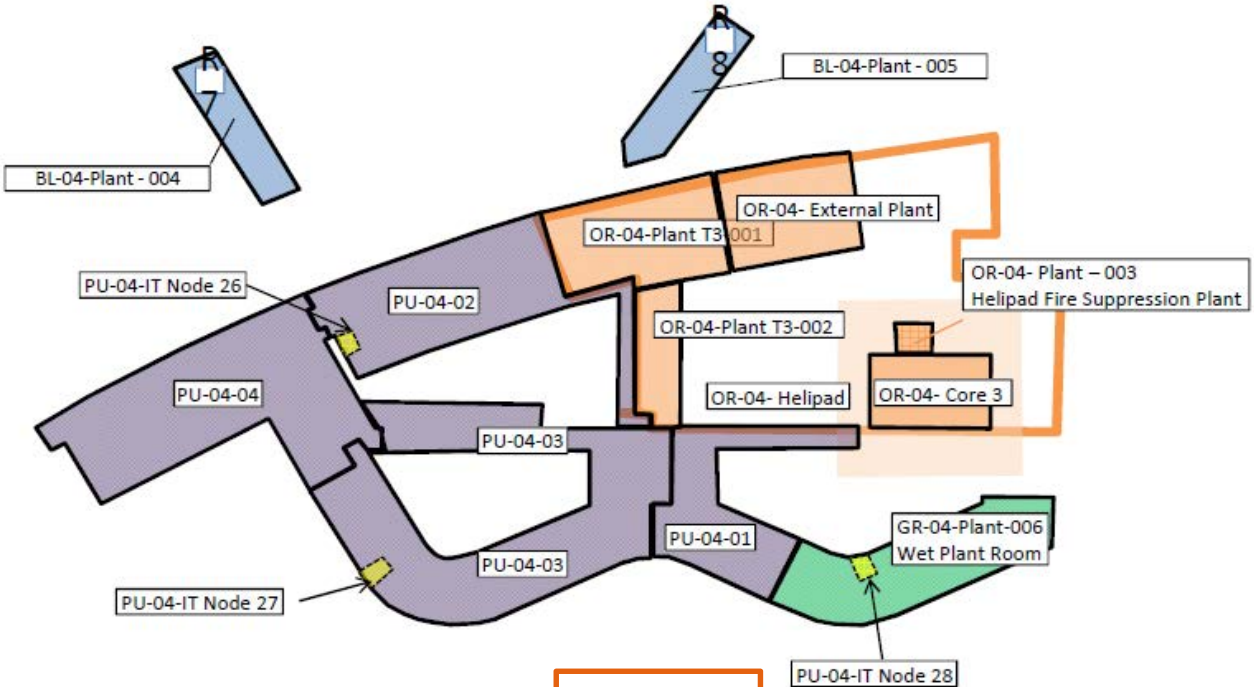

Roof

Appendix C – Room Review Schedule

Rooms Inspected in the period

Zone	Room No	Room name	DATE IT INSPECTED	INSPECTOR	ZUTEC	COMPLIANCE QUERY	COMMENT	REVIEW TARGET	OPEN / CLOSED
GR-01-03	1-B1-055	Waiting Area (Visitors)	29/11/2017	Christian Darbyshire	29/11/2017	Y	Window configuration not consistant with drawing	08/01/2018	O
BL-01-01	1-D1-010	Dirty Utility	24/11/2017	Christian Darbyshire	24/11/2017	Lock	Lock missing to CUP2517	08/01/2018	O
BL-01-01	1-D1-021	Consult/Examination (Cleft)	24/11/2017	Christian Darbyshire	24/11/2017	Bead head buffer	Bed head buffer missing - SIG2500 engaged/vacant sign missing	08/01/2018	O
BL-00-01	G-D1-010	Orthotics Workshop	29/11/2017	Christian Darbyshire	29/11/2017	Y	CUP1420 fume cupboard missing	13/01/2018	O
BL-00-01	G-D1-026	WC & handwash: specimen; wheelchair	29/11/2017	Christian Darbyshire	29/11/2017	Y	SEA001 - Double toilet seat missing	08/01/2018	
BL-00-01	G-D1-041	Outpatient Management Office	29/11/2017	Christian Darbyshire	29/11/2017	Y	OUT059 - iluminated spur missing, should be 2nr	08/01/2018	O
BL-00-02	G-D2-005	Exercise Room/Lung Function Laboratory	28/11/2017	Christian Darbyshire	-	-	-		
BL-00-02	G-D2-006	Echocardiography Room	28/11/2017	Christian Darbyshire					
BL-00-02	G-D2-009	ECG Procedure Room	28/11/2017	Christian Darbyshire	28/11/2017	-	Escutcheon missing - 4 hooks fitted instead of 2	07/01/2018	O
BL-00-02	G-D2-012	Domiciliary Sleep Studies	28/11/2017	Christian Darbyshire	-	-	-		
BL-00-02	G-D2-014	Exercise Tolerance Test Room	28/11/2017	Christian Darbyshire		-	-		
BL-01-04	1-D3-008	C/E Orthoptic (6 metre room)	24/11/2017	Christian Darbyshire	24/11/2017	Signage	iluminated signs, repeat call, missing		
BL-01-04	1-D4-003	Test Room	24/11/2017	Christian Darbyshire	24/11/2017	Ceiling height	Ceiling only 2.401m RDS 2.7m / Alarm, thermostat, BMS sensor all missing		
BL-01-04	1-D4-013	Mould Room	24/11/2017	Christian Darbyshire	24/11/2017	Y	Clock, Vacant engaged sign, Support legs, missing		
BL-00-04	G-D5-008	Surgery (standard)	29/11/2017	Christian Darbyshire	29/11/2017	Y	Blind missing - Xray sockets not engraved - Pop up services in wrong position	08/01/2018	O
BL-00-04	G-D5-009	Surgery (standard)	29/11/2017	Christian Darbyshire	29/11/2017	Y	Blind missing - Xray sockets not engraved - Pop up services in wrong position	08/01/2018	O
BL-00-04	G-D5-010	Surgery (standard)	29/11/2017	Christian Darbyshire	29/11/2017	Y	Blind missing - Xray sockets not engraved - Pop up services in wrong position - OUT059 Iluminated spur only 1 evident.	08/01/2018	O
BL-00-04	G-D5-001	Corridor	29/11/2017	Christian Darbyshire	-	-	-		
BL-01-03	1-D6-019	Equipment Decontamination	24/11/2017	Christian Darbyshire	24/11/2017	Y	Shower screen missing		
BL-01-02	1-D6-025	Infant Measuring Room	24/11/2017	Christian Darbyshire	24/11/2017	Signage	Vacant / engaged sign missing	15/12/2017	O
BL-01-02	1-D6-037	Store - Physio	24/11/2017	Christian Darbyshire	24/11/2017	24/11/2017	No smoke detector in ceiling void (1.844m) - One shelve unit missing.	15/12/2017	O
BL-01-02	1-D6-040	Splinting / Casting Room	24/11/2017	Christian Darbyshire	24/11/2017	Missing	SIG2500 Vacant engaged sign missing.	24/12/2017	O
BL-01-02	1-D7-003	Dressings Room (Burns)	24/11/2017	Christian Darbyshire	24/11/2017	Access	No access to mounting for hoist rail for periodic inspections.	15/12/2017	O
BL-00-004	G-D8-002	Interview Room	29/11/2017	Christian Darbyshire	-	-	-		

Zone	Room No	Room name	DATE IT INSPECTED	INSPECTOR	ZUTEC	COMPLIANCE QUERY	COMMENT	REVIEW TARGET	OPEN / CLOSED
BL-03-01	3-H3-002	Control Room	21/11/2017	Christian Darbyshire	21/11/2017		Ceiling incomplete - Bubble to vinyl - Wall sockets and data missing		
BL-03-01	3-H3-014	Practice Based Educators Office (4 person)	21/11/2017	Christian Darbyshire	21/11/2017	Cupboard missing			
BL-03-01	3-H3-019	Computer Carrels	21/11/2017	Christian Darbyshire	N		Ceiling incomplete	-	C
BL-00-03	G-K1-010	Interview Room	28/11/2017	Basheer Youssef Christian Darbyshire			LED light feature incomplete.		
BL-00-03	G-K1-011	Office 3 (2 person)	28/11/2017	Christian Darbyshire	28/11/2017	Y	BOA2501 only one board fitted	07/01/2018	O
BL-00-03	G-K1-016	Drop-In Lounge / Beverage Bay	28/11/2017	Christian Darbyshire	28/11/2017	Y	1X1200 sliding door missing	07/01/2018	O
BL-00-03	G-K1-023	Wheelchair Bay	28/11/2017	Christian Darbyshire	-	-	-	#VALUE!	
BL-03-03	3-K2-006	Lounge - non residents	22/11/2017	Christian Darbyshire	22/11/2017	Y	Sink, steel not ceramic - Spur switches not inuminated.		
BL-03-02	3-K2-059	Family Room for 4 persons 17	22/11/2017	Christian Darbyshire	22/11/2017				
GR-01-01	1-L1-004	Disposal Hold	06/11/2017	Alick Doyle					
GR-01-01	1-L1-027	Patient Waiting Area	06/11/2017	Alick Doyle					
GR-01-01	1-L1-001	Corridor	06/11/2017	Alick Doyle					
GR-02-03	2-L2-055	Sitting Room	06/11/2017	Alick Doyle					
GR-02-03	2-L2-125	Single Bedroom 4 (Adult)	06/11/2017	Alick Doyle					
GR-02-02	2-L2-128	DSR	06/11/2017	Alick Doyle					
BL2-Basement-02	B-S1-001	Preparation/Cooking Area	16/11/2017	Christian Darbyshire			Ceiling Incomplete - / Basheer checked previously,		
BL2-Basement-02	B-S1-003	Diet Prep Area	16/11/2017	Christian Darbyshire			Ceiling incomplete - cupboard handle missing - Pigeon hole shelves missing.		
BL2-Basement-03	B-S3-002	Linen Pool (clean)	15/11/2017	Christian Darbyshire	Y	Wall type has plastic sheet.	Should be type W1	01/01/2018	O
BL2-Basement-03	B-S3-002	Linen Pool (clean)	15/11/2017	Christian Darbyshire	Y	Connection unitn swithced 13	None	01/01/2018	O
BL2-Basement-03	B-S3-003	Supplies Store	15/11/2017	Christian Darbyshire	Y	Ceiling incomplete	None	01/01/2018	O
BL2-Basement-03	B-S3-007	Cleaning Equipment Store	15/11/2017	Christian Darbyshire	Y	Wall type has plastic sheet.	Should be type W1	01/01/2018	O
BL2-Basement-03	B-S3-008	Sanitary Bins Store	15/11/2017	Christian Darbyshire	Y	None	Repairs to bottom of wall	01/01/2018	O
BL2-Basement-03	B-S3-009	DSR	15/11/2017	Christian Darbyshire	Y	Floor - poor finish	None	01/01/2018	O
BL2-Basement-03	B-S3-010	Bulk Equipment Store	15/11/2017	Christian Darbyshire	Y	None	None		

Zone	Room No	Room name	DATE IT INSPECTED	INSPECTOR	ZUTEC	COMPLIANCE QUERY	COMMENT	REVIEW TARGET	OPEN / CLOSED
BL2-Basement-03	B-S3-011	Dictation/ 1:1/Phone Booth	15/11/2017	Christian Darbyshire	Y	Light switch - missing	None	01/01/2018	O
BL2-Basement-03	B-S3-012	Domestic Services Office (5 person)	15/11/2017	Christian Darbyshire	Y	CUP331 - Key cupboard	None	01/01/2018	O
BL2-Basement-03	B-S3-012	Domestic Services Office (5 person)	15/11/2017	Christian Darbyshire	Y	OUT004 - Ceiling outlet	None	01/01/2018	O
BL2-Basement-03	B-S3-012	Domestic Services Office (5 person)	15/11/2017	Christian Darbyshire	Y	SHE2500 - Pigeon holes	None	01/01/2018	O
BL2-Basement-03	B-S3-013	Curtain Store	15/11/2017	Christian Darbyshire	Y	Ceiling incomplete	None	01/01/2018	O
BL2-Basement -04	B-S4-004	Office (2 person)	06/11/2017	Alick Doyle					
BL2-Basement -04	B-S4-005	Porters Office	06/11/2017	Alick Doyle					
BL2-Basement -05	B-S6-003	BMS Room	16/11/2017	Christian Darbyshire	16/11/2017		Ceiling incomplete - Cabinet missing X2 - Shelf missing X4 - Worktop missing. - Into Zutec.		
BL2-B-CORE 8	B-S6-009	Workshop (NHSL)	16/11/2017	Christian Darbyshire	16/11/2017		-		
BL2-Basement-05	B-S6-011	Supervisors	16/11/2017	Christian Darbyshire	16/11/2017		Ceiling incomplete - Vinyl weld missing - into Zutec		
BL2-Basement-05	B-S6-012	Estates Library	16/11/2017	Christian Darbyshire	16/11/2017		Ceiling incomplete - Shelving units missing - Ino Zutek		
BL2-Basement-05	B-S6-013	Office	16/11/2017	Christian Darbyshire	16/11/2017		Ceiling incomplete - poor joints to vinyl. - entered to Zutek.		
BL2-Basement-03	B-V1-001	Confidential Waste	15/11/2017	Christian Darbyshire	Y	[illegible] plastic sheet.	None	01/01/2018	O
BL3-EC-Stair/Lift/Che	G-S6-016	Office / Reception	07/11/2017	Alick Doyle	07/11/2017	Y	Trunking Missing	10/12/2017	O

Appendix D –Testing and Commissioning Witnessing to end November 2017

	Path name	Name	DATE	WITNESSED BY	IDENTIFIER	IDENTIFIER	IDENTIFIER	COMMENTS	Site test sheets Requested	Multiplex - Group Management	Site Test sheets provided
125	\Low Voltage\Main Switchboard 1\Ground Floor Section Board E1/G	Test & Energise DB E1/G/LP1 - Radiology Lighting & Power (ZG8,G9, G11)	20/10/2017	Christian Darbyshire				Circuits live tested OK. Only supply from E1 Riser checked and energised. 60-70% of lights in are complete. NB DB E1/G/LP1 is situated in a cupboard where there is also a Power Unit that creates significant heat which has no means of being dispersed.	20/10/2017	Group Management	31/10/2017
385	\Low Voltage\Main Switchboard 2\Second Floor Section Board PE3/2	Test & Energise AHU 02-20	19/10/2017	Postponed				Cable pulling and connections not complete			
387	\Low Voltage\Main Switchboard 2\Second Floor Section Board PE3/2	Test & Energise AHU DB 7	17/10/2017	Christian Darbyshire				-			
423	\Low Voltage\Main Switchboard 2\Fourth Floor Plant Room Section Board PE 2/4 Chilled Water Plantroom T3-001	Test & Energise AHU DB 12(Dual From PF3/4)	17/10/2017	Christian Darbyshire				Test Completed Steve Colquhoun to check design (160A supply to 25mm cable) OK - checked and labled live	20/10/2017	Group Management	31/10/2017
439	\Low Voltage\Main Switchboard 2	Fourth Floor Plant Room Section Board PE3/4 Wet Plantroom R6	19/10/2017	Christian Darbyshire				Board checked with additional check to phases as lables have been fixed upside down. (Manufacture error) (Photo) Initial readings N-E showed fault - N isolated and fault cleared. Damage noted to side of main isolator (Photo)	20/10/2017	Group Management	31/10/2017
443	\Low Voltage\Main Switchboard 2\Fourth Floor Plant Room Section Board PE3/4 Wet Plantroom R6	Test & Energise AHU DB 10(Dual Supply From PE2/4)	17/10/2017	Christian Darbyshire				Test Completed OK - checked and labled live	20/10/2017	Group Management	31/10/2017
444	\Low Voltage\Main Switchboard 2\Fourth Floor Plant Room Section Board PE3/4 Wet Plantroom R6	Test & Energise AHU DB 11 (Dual Supply From PE2/4)	17/10/2017	Christian Darbyshire				Test Completed OK - checked and labled live	20/10/2017	Group Management	31/10/2017
447	\Low Voltage\Main Switchboard 2\Fourth Floor Plant Room Section Board PE3/4 Wet Plantroom R6	Test & Energise CHW Pump 3	23/10/2017	Christian Darbyshire				Completed test to Pump Nr3 to facilitate full circulation flush	31/10/2017	Group Management	
898	\Lighting Control\Second Floor	DB/E2/2/LP1 - DCN Neurophysiology (S7,S8)	17/10/2017	Christian Darbyshire				Lighting circuits checked out of sequence by request to facilitate other works.	20/10/2017	Group Management	31/10/2017
1332	\Nurse Call	First Floor	25/09/2017	Basheer Youssef							
1433	\Low Temperature Hot Water\Energy Centre & Primary Circuits	Pressurisation Unit Commissioning & Pump Pre-Commissioning	20/10/2017	Christian Darbyshire			By Request : SB P2/4 -> AquaTech pump pressurisation unit for pumps 1 and 2.	Pigeon droppings were present over the cover pate, and inside the unit. (See photo) Cleaned sufficiently to complete test and left powered down as a full clean will be required. Circuits checked and tested OK - left isolated till full clean is completed	20/10/2017	Group Management	31/10/2017
1691	\Ventilation\Fire Damper Drop Testing	Level 1 Zone F1 & F2	16/11/2017	Christian Darbyshire	Dampers witnessed: 01-412-001 01-412-025 01-413-015	01-413-011 01-413-009 01-413-008 01-420-001	Dampers on second floor feeding Theatres: 01-441-006, 01-411-005 01-410-009, 01-410-008 01-410-010, 01-412-003 01-412-017, 01-413-020	All dampers tested drop activated OK and reset. All dampers tested were easily accessible with the exception of 01-411-012, which had a degree of complexity.			

	Path name	Name	DATE	WITNESSED BY	IDENTIFIER	IDENTIFIER	IDENTIFIER	COMMENTS	Site test sheets Requested	Multiplex - Group Management	Site Test sheets provided
1856	\Ventilation	AHU 04-01 (The Pod Level 00 - RHSC Main Outpatients (D1), Cardiology and Respiration (D2), Family Support Services (K1), Paediatric Dentistry (D5), Social Work (D8). Pod (E1), Ambulatory Care (D10), RHSC Entrance (I1)	21/09/2017	Christian Darbyshire							
1864	\Ventilation	AHU 04-03 (The Pod Level 01 - RHSC Main Outpatients (D1), RHSC Therapies (D6), Plastics Dressing Clinic (D7), Orthoptics (D4), Audiology	14/09/2017 21/09/2017	Alick Doyle Christian Darbyshire				Test cancellled at short notice Test completed			
1865		AHU 04-03 (The Pod Level 01 - RHSC Main Outpatients (D1), RHSC Therapies (D6), Plastics Dressing Clinic (D7), Orthoptics (D4), Audiology (D4)	19/10/17 20/10/17	Christian Darbyshire				Checked Extract system at Plantroom. Device: DP Measurement Oxford Serial Number: 5501/HV06/1 Date Calibrated: 18/09/17 Issue with readings compared to previous commissioning. Ian Harding requested re-test with original device. Results confirmed as consistant on retest and minor adjustment to SG38 damper.	20/10/2017	Group Management	31/10/2017
1904	\Ventilation	DEF 02-04 (Level 01 - Operating Theatres, RHSC Surgical Day Case)	19/10/2017	Christian Darbyshire				Both circuits to fans tested OK. Earth connection to cover plate not fixed - corrected at test and left secure.	20/10/2017	Group Management	31/10/2017
2149		Medical Gas	28/09/2017	Basheer Youssef							
		Medical Gas	05/10/2017	Basheer Youssef							
		Medical Gas	05/10/2017	Christian Darbyshire				Checked all 4 pendants in all theatres, some dificulty in access due to position of power connector.			
2150		Medical Gas	28/09/2017	Christian Darbyshire	AVSM v17.6, 17.5,17.4,17.3,17.2,17.1						
2151	\Medical Gas	First Fix Pressure Test A.V.S.U to Bedhead	05/10/2017	Basheer Youssef							
2156	\Medical Gas\First Fix Pressure Test A.V.S.U to Bedhead \Ground Floor	Zone G1 (A.V.S.U 36,37,38,39) Pressure Test	28/09/2017	Basheer Youssef							
2686		Syphonic Drainage	20/09/2017	Basheer Youssef							
2687		Syphonic Drainage	20/09/2017	Basheer Youssef							

Appendix E - Outstanding Compliance Issues

REFERENCE NR	KIR REF	KIR NR.	DATE	ISSUE	OPEN - CLOSED	RAG STATUS
150	App E	27	Jul-17	Schematic drawings and a schedule have been developed by Multiplex in conjunction with the Radiological Protection Officer (RPA)		
				Correspondence presented to the IT identifies an E-mail from Janice Mackenzie (Clinical Director - Multiplex) stating		
				Simon, the RPA, has checked the latest version of the schedule and has confirmed that it now reflects all of the requirements".		
				The IT has noted that the comments and status of the items noted on the 'reviewed' version have not been updated from an earlier version which qualified the status of the individual items. The IT seeks to confirm that the total content of the measures detailed on the schedule, without qualification, meets the radiological protection requirements agreed by the RPA without further review or revision	O	MULTIPLEX
				The IT is in correspondence with Multiplex to establish clarity of the proposed schedule and confirmation of approval from other stakeholders		
151	App E	27	Jul-17	The IT has advised Multiplex that there are rooms/areas where fire stopping appears to have been completed but where additional services have subsequently installed penetrating walls which are currently without Fire Stopping.		
				Multiplex advised that all rooms/areas/walls will be inspected before the ceiling is completed. All remaining fire stopping will be attended to and a full video record of completed fire stopping in each area will be confirmed prior to Practical Completion.		
				The contractor Astins will undertake the survey using a methodology and technology called Firetronic	O	MULTIPLEX
				The IT is still awaiting outline document explaining how the review of the follow up Fire Stopping (due to additional services) will be audited and managed by Multiplex		
				Multiplex have confirmed that all defects noted have been included in the snagging on Zutec		
152	App E	27	Jul-17	Alcobond is the product used to create a fire break between vertical or horizontal areas in the external walls – the data sheets and specifications are available and have been reviewed by the IT. **The product itself is not specifically fire rated**. There are drawings showing where the product should be installed (vertical and horizontal) on each elevation and for each window on the elevations.		
			02/11/2017	Multiplex have confirmed the product as Lamotherm. Multiplex to provide evidence of the installation, and product specifications particularly with regard to fire rating.		
				Block A is the main location for this product and Multiplex state the design meets fire regulations for buildings below 18M. There are many photo's available of the installed product before it is obscured by render or paint. They are taken as evidence they match the designs and as reference.		
				One of the files provided is the specification sheet for the Stotherm Insulation – includes Lamella Mineral Boards for surrounding doors and windows. The word describing this material as "similar" to a material tested is picked up by WSP (employed to advise on fire performance and certification for the system), they state, ".. the wording above is ambiguous "Similar". it should be confirmed that the proposed system that is being provided in this project is compliant with the Non- Domestic Technical Handbook referenced above. Building control will require this to be confirmed	O	MULTIPLEX
				The IT has received reference material regarding the material supplied by Knauf as part of dry wall lining and cladding systems. These references identify the fire protection provided by the materials respective to their use and location. The IT still seeks confirmation that it is compliant with the "Non- Domestic Technical Handbook".		
				Multiplex have explained that a number of queries are to be answered in the proposed new Fire Strategy Document. The IT awaits this document.		

REFERENCE NR	KIR REF	KIR NR.	DATE	ISSUE	OPEN - CLOSED	RAG STATUS
153	App E	27	Jul-17	Stotherm anchor bolts on insulation blocks	O	MULTIPLEX
				Multiplex provided a document produced by their contractor ECL which outlines the methodology of installing		
				the Stotherm product with rotofix secure anchor bolts.		
				There are drawings within the document that identify the level of anchor bolts needed respective to projected wind loadings –		
				• 4 fixings per SqM = Green Bolts		
				• 6 fixings per Sqm = Blue Bolts		
				• 8 fixings per Sqm = Red Bolts		
				On the basis that this document had not been available to the IT when reviewing cladding and render quality documentation the IT has requested Multiplex to provide check and sign off sheets that indicate the correct anchor bolts were used on the correct elevations as per the wind loading drawings.		
				The IT has again discussed with Multiplex and awaits information.		
154	1.2.4	28	Aug-17	Above Ground drainage	O	MULTIPLEX
				The IT understands that the wrong fitting was installed on some internal drainage connections through slabs and that discussions regarding a possible warranty from the installers in respect of joints in the slab were being discussed		
155	1.2.11	31	Oct-17	The IT has issue with the current state of the 4th floor balcony area, where damage has occurred to the insulation from running some sort of wheeled device over the insulation. There are also significant amounts of rain water accumulations, with the insulation actually floating. – Multiplex to confirm course of remedial works to be undertaken. Multiplex has noted that the floating insulation has been resolved, however the IT has noted that there remain areas on the balcony where water is still not fully draining	O	MULTIPLEX
156	1.2.11	31	Oct-17	It has been brought to the IT's attention that the access route to the fixed stair access for the PV roof is obstructed by large bore pipework. The access steps are also too steep for the safe carrying of tools and equipment to the PV roof.	O	MULTIPLEX
157	1.2.12.1			The IT has raised concerns regarding the alignment of duct connections to AHUs particular in the main 2nd floor plant room. The angle of transformation is steeper than that recommended by CIBSE and the IT is concerned that to obtain the correct air volumes against the resistance imposed by these transformation pieces noise could be generated that in turn will be noticeable in clinical areas.	O	MULTIPLEX
				Multiplex commented that the AHU's and discharge trunking are "Oversized" by design to accommodate twin motors and meet with the requirement of SHTM 03-01 and the velocities in these sections is low. Multiplex will engage with their HVAC designers and consultants to establish the performance criteria and likelihood of noise being generated. Distribution ductwork continues to be installed in plantrooms and clinical areas with theatre ventilation ducting and ultra-clean hoods installed. There has been a number of areas where the ducting has been modified to avoid clashes with other services. This practice is continuing		
				In discussions with Multiplex the IT commented that ventilation access hatches should be installed prior to commissioning and system balancing. The IT can confirm that Multiplex's ventilation contractor is currently installing access hatches and an "As Built" drawing will be provided identifying the location of hatches.		

REFERENCE NR	KIR REF	KIR NR.	DATE	ISSUE	OPEN - CLOSED	RAG STATUS
158	1.6.1			The IT has previously noted that a number of movement joints run through critical areas		
				The IT has previously noted that a number of movement joints run through critical areas.		
				The IT raised two concerns in respect of this issue:		
				- The ability to provide appropriate surfaces to allow infection control.	O	MULTIPLEX
				- Meeting the requirements of 3.7 Services Contract – Schedule 5 - FM Guide to Design and Construction Page 23 in respect of movement joints in critical areas		
				The IT understands that Multiplex have agreed solutions with the Board to reconfigure spaces or to use an agreed type of movement joint. The IT would advise that where an agreed movement joint is to be installed in a critical area an agreed derogation would be required.		
159	1.6.4.7			The positioning of electrical distribution boards and other equipment within riser cupboards does not allow for doors to be opened through 90^{o} in some cases and in others will require any person working on the equipment to reach into the riser cupboard due to the position and height of the partition below the access doors. The revision of the access arrangements and locations of these items is being actively reviewed by Multiplex however further examples were identified during July.	O	MULTIPLEX
	1.6.4.8			There is insufficient room to access the lighting control panels, mounted on the return partition wall, from inside the riser cupboards. The revision of the access arrangements and locations of these items is being actively reviewed by Multiplex.	O	MULTIPLEX
160	1.6.4.12			The location of the access cover to the below basement slab drainage in the centre of the intersection between two corridors running at 90^{o} raises a concern with the IT in respect of the impact on both corridors should this need to be accessed during an operation situation as, when appropriate barriers are located around the access, movement in both corridors would be stopped. Consideration should be given to relocating the access close to the side wall of one corridor.	O	MULTIPLEX
				Multiplex replied they do not consider the installation to be non-compliant. Position is as per reference design and FC documentation		
				The IT refers - The PA requires best practice. The layout installed is not best practice and is therefore non-compliant and needs to be revised. The IT will now seek further clarification with Multiplex as to this issue.		
161	1.6.5	31	Oct-17	Corridor 2/COR/006 adjacent to riser 2/T2/008		
				It has been noted in the above area that there is a run of high level pipework that is anchored at both ends which requires flexible expansion bellows within the run. It is not possible to see if bellows have been fitted, as the pipe run is now obstructed by ventilation ducting. (Photo Nr A16)	O	MULTIPLEX
				The IT requests confirmation of the presence of expansion bellows, and the proposed method of accessing them for routine maintenance and replacement. Multiplex to provide co-ordinated services drawings for the area indicating space grab and design modelling.		
162	1.6.7			The IT has previous raised concerns of non-compliance in respect of ventilation systems. These items were incorporated into a schedule issued to IHS by multiplex in respect of changes. The IT has advised that specific derogations will be required in respect of any agreed changes.		
				Multiplex replied - Please resubmit schedule for our information.		
				The IT refers -		
				A change (derogation) is required in respect of the common supply air to the isolation rooms as SHTM 03-01 only permits this type of system for all buildings.	O	MULTIPLEX
				A change (derogation) is required in respect of the air change rates for the one bed rooms and WCs to ratify the agreement with the Board.		
				A change (derogation) is required in respect of the air change rates for the four rooms and WCs to ratify the agreement with the Board.		
				The IT awaits a further reply		

REFERENCE NR	KIR REF	KIR NR.	DATE	ISSUE	OPEN - CLOSED	RAG STATUS
163	1.6.8			The IT has advised Multiplex that the paired basement HV sub-stations (1A, 1B, 2A and 2B will each need to conform fully to the requirements of SHTM 06-01 including fire and blast separation	O	MULTIPLEX
164	1.6.11	29	Sep-17	The fixing of a fire collar to plasterboard and not directly to the slab was noted by the IT as detailed in the attached photograph (Report 29).	O	MULTIPLEX
				Multiplex asked for the re-issue of photos - The IT has re-submitted and awaits a reply		
				Further examples of poorly fitted fire collars have been noted in the basement rainwater tank room.		
165	1.6.11			The potential non-conformance of the location of the alarm call reset button in respect of the WC seat was noted by the IT as detailed in the attached photograph. Multiplex have advised that this layout was requested by the Board and will be the subject of a change.	O	MULTIPLEX
				This was discussed between the IT and Multiplex. The IT awaits confirmation of derogation sign off that this is now accepted by the board.		
167	1.6.13			The IT notes that there are no access panels to the control valves on plasterboard ceiling mounted devices, i.e. Radiant panels in the stair wells.	O	MULTIPLEX
168	1.6.14			Along with the lack of access panels for services, the IT has noted that there are no access panels for the required periodic load testing of the hoist fixings	O	MULTIPLEX
169	1.6.15	31	Aug-17	The IT notes that there are ongoing issues with the rainwater collection tank in the basement, where the set levels for the pump are incorrect leading to water flowing out of the tell-tale opening leading to the floor being flooded, with areas of mould to the plasterboard wall perimeters	O	MULTIPLEX
170	1.6.16	31	Oct-17	During electrical test witnessing, the IT was made aware that the breaker for AHU DB12 from Section board PE2/4/3 is a 160A breaker, and the cables are only 25mm armour which is no compliant. As well as being advised that this issue is rectified, the IT requires to know the back ground to how this issue has come about. Design error? Installation error? Or change that has not been fully impact assessed or incorporated	O	MULTIPLEX
171	1.2.9	31	Oct-17	The IT requires visual confirmation that all low-level glass panels are safety glass.	O	MULTIPLEX
172	1.2.12	31	Oct-17	The IT seeks confirmation on the suitability and compliance of the insulation material being used to collar the pipes where supported by brackets	O	MULTIPLEX
173		32	Nov-17	Surgery rooms G-D5-008 - G-D5-010 - Services pop up from floor in wrong position	O	MULTIPLEX
174	1.6.4.1			A number of taps have been installed with inappropriate connections which would lead to warming of the local cold water. This item is still outstanding.	O	MULTIPLEX
				Multiplex have initially replied indicating they do not believe the installation is non-compliant. The IT has responded;		
				HTM 04-01 require in section 8.5 All cold-water distribution pipework, mains and cistern down-feeds should be located, as far as is practicable, to minimise heat gains from their environment.		
				Pipework should not be routed through hot ducts or run adjacent to heat sources, such as radiators.		
				Where hot and cold-water pipes are run horizontally together, the cold-water pipe should be located beneath the hot water pipe to minimise local warming by means of convection. The arrangements identified are not compliant with this requirement		
				The IT is awaiting a reply to the above.		

REFERENCE NR	KIR REF	KIR NR.	DATE	ISSUE	OPEN - CLOSED	RAG STATUS
175		32	Nov-17	1-B1-005 - Waiting area (visitors) - Fitted window configuration is not consistant with drawings. Multiplex to confirm and provide details of instalation.	O	MULTIPLEX
176	1.6.4.5	31	Oct-17	▪ The location of some smoke sensors within ceiling voids is inappropriate as testing will be an issue.	O	MULTIPLEX
				▪ Multiplex replied stating they do not believe the installations are		
				non-compliant.		
				The IT refers - To achieve best practice all detectors should be capable of being tested without the removal of other services. This was not the case in some detectors identified. The IT will now seek a visual check when accompanied with Multiplex.		
177	1.6.4.9			A number of locations were identified where the smaller diameter drainage pipe had joints located within floor slabs. The revision of these items is being actively reviewed by Multiplex.	O	MULTIPLEX
178	1.6.4.10			There was a variation in the positioning of the plate heat exchangers mounted on the hot water cylinders located in the basement heat stations. Whilst some had the heat exchangers easily accessible and mounted on the front face of the hot water cylinders, others were located at the rear with no proper access. The revision of the access arrangements and locations of these items is being actively reviewed by Multiplex.	O	MULTIPLEX
				Multiplex replied stating they do not consider the installation to be non-compliant as agreed recently with BYES.		
				The IT refers - The PA requires best practice. The layout installed is not best practice and is therefore non-compliant and needs to be revised. The IT will now seek further clarification with Multiplex.		
179	1.6.4.13			Water penetration through the ground floor slab is evident around the lightning protection down tape at high level in the basement. Whilst the completion of the building envelope will prevent further water ingress issues the IT is concerned on the effect the water will have had on the reinforcing in this area. The revision of the access arrangements and locations of these items is being actively reviewed by Multiplex.	O	MULTIPLEX

Lothian NHS Board

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IHS Lothian Limited
Wallace Weir
c/o Christine Trusedale
Maclay Murray & Spens LLP
15 Lauriston Place
EDINBURGH.
EH3 9EP

Date 27 March 2017
Your Ref letter 23.03.17 IHSL
Our Ref JC/KAB

Enquiries to Jim Crombie
Extension [redacted]
Direct Line [redacted]
Email [redacted]
EA Karen.burnside[redacted]

Dear Sirs

Re-Provision of RHSC and DCN at Little France: Progress of the Works

I refer to our Board to Board meeting of the 20th March, 2017 and the issues discussed and actions agreed.

The opportunity to hear at first hand IHSL's view on progress of the works and the many influencing factors along with other topical issues was very welcome.

Your view that the anticipated actual completion date of 12th October of this year is secure, although challenging, was not conveyed with confidence and in my view you presented little in the way of evidence to support it. The Board's Project Director does not share your view, as do other stakeholders, particularly when a variety of indicators suggest otherwise. These are principally: lack of productivity at certain work faces (roof area in particular), rework necessary through non compliances and uncoordinated design, lack of assimilation of agreed change into the works, faltering start to "finished" room reviews, and little progress on preparation and communication with the Board on post FC Derogations and consideration of completion criteria set out by the Independent Tester.

With further consideration, you stated that at this point in the project's timeline (8 months to construction completion) you are unable, with any degree of certainty, to take a view on whether the actual completion may be in jeopardy but that by the end of April you would be able do to so.

On that basis, I requested that we reconvene on the afternoon of 2nd May, 2017.

You advised that you are equally as concerned that build quality may suffer through accelerated construction activity as your construction contractor seeks to mitigate delay. Steps have been taken to introduce additional inspections through an increase in management resource throughout your supply chain and additional regular site visits by experienced personnel from your SPV Management Company. However, you were unable to confirm if additional duties or an enhanced service offered by the Independent Tester, at your request, would be adopted. I would welcome confirmation of your final decision at your earliest opportunity.

NHS Lothian

A major factor in potential rework on site is the chronic problem of processing Board change timeously through what appears to be a single point of failure by your construction contractor. This is the issue of Mercury Engineering and their prevailing unhelpful attitude and apparent lack of participation. You did not refute the Board's Project Director's view that we seem to have reached a point where no more can be done. If this is indeed the case, the Board require your assurance that all Board change in process, whether fully signed off or not in commercial terms, will be implemented by actual completion, notwithstanding that some aspects of some changes were always programmed to be delivered in the Board's Commissioning phase.

We discussed at some length you approach to what will most likely be the first of many Supplemental Agreements to the Project Agreement required during the life of the concession. Not only are the legal costs you have advised prohibitively expensive but the legal and contractual approach you have taken to what is a simple adjustment to an area to undertake works where you have existing rights is disproportionate to the nature of the adjustment. You have undertaken to review your approach and to instruct your legal adviser accordingly working with the Board and our legal adviser to reach a sensible and practical solution.

Finally, I cannot stress too much the significant implications for the Board should the actual completion date change. Our commissioning and migration of service programme is set with key milestones agreed and commitments made from an array of stakeholders. Any change to this would have serious operational and reputational consequences.

[redacted]

JIM CROMBIE
Deputy Chief Executive

From: Bradbury, Nick
Sent: 18 July 2019 22:44
To: Margetson, Damien
Cc: Aitkenhead, Sandra; Nicklin, Helen; Barker, Annette; Smith, Lauren
Subject: RE: KPMG queries on Admin Control documents
Attachments: Note re critical care ventilation air change rates.DOCX; Appendix 1 Ventilation Derogations Timeline.XLSX; Appendix 2 - SA Timeline + Stakeholder Engagement.DOCX; 170719 RHSCYP DCN - Board Briefing.pptx; RHCYP/DCN Commissioning/ventilation; Decision Evidence Log Draft.xlsx; Appendix 1 - RHCYP Phase 1 Review Question Set.pdf

Damien,

Some additional information following our call this afternoon. I've attached:

- A note re critical care ventilation (prepared following our workshop on Monday and summarising the discussion we had yesterday afternoon
- Appendix 1 to that note, giving a short summary specifically of the timeline on ventilation derogations
- Appendix 2, a longer timeline of key events up to the Settlement Agreement signing
- Board Briefing presentation (this is the presentation Susan talked through yesterday, that you've got a paper copy of)
- RHCYPDCN commissioning ventilation email (this is the email from the Chief Executive to Scottish Government describing the options at that point – discussed by Tim yesterday)

All of these will go into Admin Control, but not until tomorrow now as I don't seem to be able to do it remotely at the moment.

I've also attached a log of documents that will go into Admin Control tomorrow (a lot of which you'll have already seen, but hopefully with a little more structure...). There's obviously a lot there (and more to come). As discussed today, proposal would be to use the documents attached to flesh out a timeline that makes sense to you, then we can cross reference specific documents from the files to the key points in the timeline. I'll work on this tomorrow, but have a look at the attached and see if this helps / raises further questions.

Finally, I've included the pbc list that HFS have sent for their parallel technical review. For information really, but it's quite extensive... there may be things on there that you'll be interested in seeing, so let me know.

Regards

Nick

[redacted]

From: Bradbury, Nick
Sent: 18 July 2019 18:55
To: 'Margetson, Damien'
Cc: Aitkenhead, Sandra; Nicklin, Helen; Barker, Annette; Smith, Lauren
Subject: RE: KPMG queries on Admin Control documents

Damien,

For Motts, I'd suggest Richard Cantlay - [redacted]. I understand from Brian that it may be possible to get some time with Graeme during his holiday in early August, but see how you get on with Richard first.

Nick

From: Margetson, Damien [redacted]
Sent: 18 July 2019 17:02
To: Bradbury, Nick
Cc: Aitkenhead, Sandra; Nicklin, Helen; Barker, Annette; Smith, Lauren
Subject: RE: KPMG queries on Admin Control documents

Thanks Nick

We have made contact with the PAs you provided earlier to start the scheduling of these meetings.

Can you also find out who else at Motts we can meet with if Graham is away until 12 August as this is a number of weeks away.

In terms of our scope it has not changed from what formed the statement of works that was issued, a copy of which Tim and Susan referred to yesterday. Once we have the dates sorted we will provide this to the individuals so that they understand the context of the meeting.

Regards

Damien Margetson
Forensic

KPMG LLP
One St Peter's Square Manchester M2 3AE
1 Sovereign Square, Sovereign Street Leeds LS1 4DA
Mobile: [redacted]

Executive Secretary:
Louise Taylor
[redacted]

From: Bradbury, Nick [redacted]
Sent: 18 July 2019 16:49
To: Margetson, Damien [redacted]
Cc: Aitkenhead, Sandra [redacted]; Nicklin, Helen [redacted]
Subject: [EXTERNAL] RE: KPMG queries on Admin Control documents

Hi Damien, good to talk through earlier.

Yes, Graeme Greer is off until 12th August. Suggest you look to speak

Brian Currie – Project Director – is a key contact but his himself on holiday from July 26th for 2 weeks, so hopefully you can prioritise that interview if possible.

I'll find out the contact details for the Arcadis representative and pass on, as well as the governance / timeline information we talked about earlier.

Did you get the final scope for the audit agreed? Are you happy to share it so I can pass on to people in advance?

Regards
Nick

From: Margetson, Damien [redacted]
Sent: 18 July 2019 15:32
To: Bradbury, Nick
Cc: Aitkenhead, Sandra; Nicklin, Helen
Subject: RE: KPMG queries on Admin Control documents

Hi Nick
Thanks for the call.
You mentioned a Motts person being on leave and back next week – is this Graeme Greer? Or someone else in their team.

Tim also mentioned that he was meeting with Arcadis on Monday , we would also like to meet with this individual – are you able to provide contact details so that we can make arrangements.

Regards

Damien Margetson
Forensic

KPMG LLP
One St Peter's Square Manchester M2 3AE
1 Sovereign Square, Sovereign Street Leeds LS1 4DA
Mobile: [redacted]

Executive Secretary:
Louise Taylor
[redacted]

From: Bradbury, Nick [redacted]
Sent: 18 July 2019 13:36
To: Margetson, Damien [redacted]
Cc: Aitkenhead, Sandra [redacted]; Nicklin, Helen [redacted]
Subject: [EXTERNAL] RE: KPMG queries on Admin Control documents

Damien – updates below on the PAs.

Totally understand on the meeting attendance point, sorry should have thought of that – was purely from the perspective of coordinating anything coming out of meetings, but I'm sure we can manage that.

I'll look into Admin Control access – should be possible.

Will give you a call shortly

Nick

From: Margetson, Damien [redacted]
Sent: 18 July 2019 13:16
To: Bradbury, Nick
Cc: Aitkenhead, Sandra; Nicklin, Helen
Subject: RE: KPMG queries on Admin Control documents

Thanks Nick

A couple of things:
On interviews, we were proposing to see the following individuals, can you help with names of other PA's for those not linked to Anna or Karen.

- Brian Currie (Project Director) - Karen

- Iain Graham (Director of Capital Planning and Projects) – Anna
- Janice Mackenzie (Clinical Director for the project) – Karen
- Fiona Mitchell (RHSC Director) for a service perspective - carol.notman [redacted]
- Tracey Gillies (Medical Director) – Audrey Trotter [redacted]
- Ronnie Henderson (NHS Lothian estates lead for the project team) – Karen
- Martin Hill (Chair of the Finance and Resources Board) would be contacted directly - [redacted]

I also appreciate the offer of you joining is in these meetings but having reflected on this, given that we are to conduct an independent review, I think it is important for us not to have someone else from NHSL present at the meeting, as this might be considered inappropriate.

Documents:
The access levels which we have currently for the Admin control system is read only. I am not sure if this is the default setting or whether we can be given the ability to download relevant documents. As part of our own risk management process we are required to retain documents to support our report. I am concerned that without being able to download the documents we reference in the report we will fail this requirement. Can you let me know if this is an issue?

May be easier to discuss over the phone, so please call the number below.

Regards

Damien Margetson
Forensic

KPMG LLP
One St Peter's Square Manchester M2 3AE
1 Sovereign Square, Sovereign Street Leeds LS1 4DA
Mobile: [redacted]

Executive Secretary:
Louise Taylor
[redacted]

From: Bradbury, Nick [redacted]
Sent: 18 July 2019 12:01
To: Margetson, Damien [redacted]>; Smith, Lauren [redacted]
Cc: Aitkenhead, Sandra [redacted]
Subject: [EXTERNAL] RE: KPMG queries on Admin Control documents

Damien,

Further to this from yesterday, I would suggest you go through Karen Haig – project support for the project team – if you're looking to coordinate interview times and meeting rooms etc with Brian, Janice or Ronnie Henderson (NHS Lothian estates lead for the project team):

Karen Haig [redacted]

- For Iain Graham, please contact his EA Anna Walker [redacted]

- Jennifer McKay from Macroberts is now on holiday for a couple of weeks but Lynn Pentland is around this week I believe and also up to speed with the project.

Admin Control updates to follow this afternoon, including the cover sheet we discussed yesterday that will hopefully make the fieldwork a little easier.

Regards

Nick

From: Bradbury, Nick
Sent: 17 July 2019 23:59
To: 'Margetson, Damien'; Smith, Lauren
Cc: Aitkenhead, Sandra
Subject: RE: KPMG queries on Admin Control documents

Hi Damien,

Thanks for making the trip to Waverley Gate earlier – hopefully you found it useful in summarising the position as we see it, and some of the broader context.

I'll start sending on some of the documentation discussed tomorrow (although with a better organised Admin Control folder), but for now I've attached a stakeholder contact list that one of my colleagues has pulled together. We'll likely need to add to this, so will keep it updated on Admin Control, but for now I would suggest targeting:

- Brian Currie (Project Director) and Iain Graham (Director of Capital Planning and Projects), for an overview of the NPD contract, the engagement with IHSL / Multiplex and the issues with the project
- Janice Mackenzie (Clinical Director for the project) and Fiona Mitchell (RHSC Director) for a service perspective
- Jennifer Mackay (Macroberts – legal advisors). [redacted]
- Graeme Greer has been the main Mott Macdonald contact but is off on holiday I believe, so I'd suggest going through Brian Currie to find out the best Motts contact in his absence

I'd be keen to come if possible so I can keep on top of extra information requests, coordinate efforts etc. I'm off on Monday but can make myself available pretty much any other time next week. Tuesday afternoon or Wednesday up at the site, so you can see the building?

Regards
Nick

From: Margetson, Damien [redacted]
Sent: 17 July 2019 18:16
To: Bradbury, Nick; Smith, Lauren
Cc: Aitkenhead, Sandra
Subject: RE: KPMG queries on Admin Control documents

Hi Nick
Can you also share the names of individuals which Tim referred to as being part of the key individuals involved in the management of the build.

We should include those senior individuals who would have provided input from a technical / operational / Clinical / professional advisors perspective to the key decisions relating to Ventilation.

We need to set up interviews for next week so getting these booked in the next 24 hours is important.

Regards

Damien Margetson
Forensic

KPMG LLP
One St Peter's Square Manchester M2 3AE
1 Sovereign Square, Sovereign Street Leeds LS1 4DA
Mobile: [redacted]

Executive Secretary:
Louise Taylor
[redacted]

From: Bradbury, Nick [redacted]
Sent: 17 July 2019 17:21
To: Smith, Lauren [redacted]
Cc: Margetson, Damien [redacted]; Aitkenhead, Sandra [redacted]
Subject: [EXTERNAL] RE: KPMG queries on Admin Control documents

Hi Lauren,

Thanks for sending the comments below. I'll work through the queries and get back to you ASAP.

I need to apologise as this is driven by the fact that you weren't supposed to see the files in that form – this is from a point in time and has been updated since (improving numbering etc, and file names – we probably wouldn't have sent it to you with 'Aidan and Shelley' as a folder name...). All the things in there have been prepared for you to look at, but I had intended to make it more user friendly before giving you access.

The questions are helpful in giving us a steer what might be useful, and reflect some of the conversation you'll have heard earlier (although not sure how easy it would have been to follow on a call...) – I'll update with a cover document tomorrow, and potentially just set up a new area within Admin Control that's a little more ordered.

Thanks
Nick

From: Smith, Lauren [redacted]
Sent: 17 July 2019 16:50
To: Bradbury, Nick
Cc: Margetson, Damien; Aitkenhead, Sandra
Subject: KPMG queries on Admin Control documents

Hi Nick,

Further to your meeting with Damien and Sandra, I have provided below a few specific queries I had following an initial review of the documents in the folder entitled 'Aiden & Shelley' on Admincontrol. Damien has mentioned you are in the process of pulling together a summary document which I think will be really helpful as some of my questions are in relation to the context of the documents currently provided. Hopefully the below is useful in the meantime:

1. The following documents appear to be missing (on the assumption there should be 28 sequentially numbered) – Documents 12, 14, 21, 22, 26 and 27
2. Document 1 – could you confirm what document this Appendix is from please
3. Documents 12,18, 20 and 23 – please could you confirm what these documents are, and the context please
4. Document 15 – could you explain what this document is in the context of the issues and how closely it is linked to the final issued identified in July
5. Document 24 – could you confirm which version of the EM this is please? Would you be able to share the other versions.
6. Document 28 – which version of the EM are these comments in relation to?

Many thanks,

Lauren

Lauren Smith
Senior Manager
KPMG LLP
Risk Consulting
One Sovereign Square
Sovereign Street
Leeds
LS1 4DA

Tel: [redacted]
Mobile: [redacted]
Email: [redacted]

Please note my working hours are 08:30 – 16:30 Tuesday, Wednesday and Friday.

Date/s	Topic	Comments	Evidence
22nd Feb 2016	Board Change 056 Install Hepa Filters in all Isolation Rooms	Following discussion and consultation with IPCT - change submitted	1. BCN 056 - Install Hepa Filters 2. Email chain from IPCT Sept 2015
Aug - Nov 16	Ventilation Meetings re Isolation Rooms	IPCN attended meetings held by MPX	1-4 Meeting Notes
01/09/16	Air Changes in CT Rooms	IPCN and HFS advice re the requirements for these rooms as MPX disputing	1-6 Emails between IPCN, HFS & Project Team
23/02/17	meeting between project team reps and lead Haem onc Consultant , Senior Charge Nurse, Consultant Microbiologist and IPCN to explore preferred ventilation settings in non-isolation rooms	no note of meeting taken but agreed position to support management of patients within inpatient and daycare unit	1. email confirming meeting arrangements
01/07/17	4 bedded ventilation risk assessment	risk assessment undertaken in consultation with CMT and IPCN in relation to the need to cohort patients	1. risk assessment 5/7/17 2. Wallace Whittle marked up schedule 2017 3. email confirming involvement of CMT (General Manager, Associate Medical Director, Associate Nurse Director, Deputy Associate Nurse Director, CNM) 4. email to IPCN
25-29th January 2018	4 bedded ventilation risk assessment	review of July 17 RA as part of ongoing discussions regarding proposed settlement agreement. Revised RA following agreement with CMT shared with IPCN	1. email of 25/1 to Children's CMT reps General Manager, Associate Medical Director, Associate Nurse Director, Deputy Associate Nurse Director) requesting meeting to review July 17 RA following another planned meeting 2. RA 30 Jan 2018

SA Timeline + Stakeholder Engagement (Brian Currie)

Programme Board 15th January, 2018 - [see notes and slides]

Compliance Workshops – 20th + 21st February, 2018 with IHSL – Sheraton Hotel, Edinburgh

Four Bed Vent Mtg – 27th Feb, 2018 – Project Team Attendees – B. Currie, J Sansbury, J Mackenzie, D Hanley, E Dhouieb, R Henderson

F+R Committee Mtg – 7th March, 2018 – The Edinburgh Training Ctre

Completion Criteria Mtg – 12th March, 2018 – B Currie, R Henderson with IHSL, Independent Tester, Mott MacD

Phone call with M+G – 2.00pm – Weds 14th March, 18 – B Currie, T Huband

Lenders Site Visit – 16th March, 2018 – S Goldsmith, I Graham, B Currie, M+G, EIB, LTA, IHSL Directors

Programme Board 19th March, 2018 – [see notes and slides]

Dispute Update Telecon – 20th March, 2018 J Crombie, S Goldsmith, I Graham, MacRoberts, L Cullen

Briefing to J Crombie + S Goldsmith – 22 March, 2018

Dispute Review Mtg – 23rd March, 2018 – Waverley Gate – Attendees?

Dispute Mtgs in Project Office – 26th March, 2018 – Attendees?

Performance Remedies Workshop – 28th March, 2018 – B Currie, J Sansbury, R Henderson, S Davidson, J Campbell, Mott Mac

Re programming meeting with IHSL – 29th March, 2018 – B Currie, J Sansbury, J Mackenzie, R Henderson, Mott Mac, IHSL

Cable Calc Mtg with IHSL – 5th April, 2018 – R Henderson, Mott Mac

Principals Mtg- 2nd May, 2018 – Attendees?

Programme Board – 21st May, 2018 – [see notes and slides]

F+R Mtg – Waverley Gate - 23rd May, 2018

Principals Mtg – Waverley gate – 14th June, 2018 – Attendees?

Tech Schedule Telecon – 19th June, 2018 – B Currie, Mott Mac, MacRoberts

Principals Mtg – Waverley Gate – 20th June, 2018 - Attendees?

Tech Schedule Telecon – 22nd June, 2018 – B Currie, Mott Mac, MacRoberts

Settlement Agreement Telecon – 28th June, 2018 – J Crombie, S Goldsmith, I Graham, M Pryor, MacRoberts

Call to discuss note to IHSL – 29th June, 2018 - J Crombie, S Goldsmith, I Graham, M Pryor, MacRoberts

Principals Mtg – Waverley Gate – 2nd July, 2018 - J Crombie, S Goldsmith, I Graham, M Pryor, MacRoberts, IHSL

Programme Review with IHSL – 3rd July, 2018 – B Currie. J Sansbury, R Henderson, C Gordon, IHSL, Mott Mac

Programme Review with IHSL – 10th July, 2018 – B Currie. J Sansbury, R Henderson, C Gordon, IHSL, Mott Mac

Programme Board – 16th July, 2018 – [see notes and slides]

Programme Review with IHSL – 17th July, 2018 – B Currie. J Sansbury, R Henderson, C Gordon, IHSL, Mott Mac

Settlement Agreement Mtg – 23rd July, 2018 - Waverley Gate – Attendees?

Settlement Agreement Mtg – 27th July, 2018 – MacRoberts Office – B Currie, I Graham, MacRoberts

Tech Schedule Mtg – 14th August, 2018 – MacRoberts Office – B Currie, R Henderson, Mott Mac, MacRoberts

Settlement Agreement Mtg – 17th August, 2018 – MacRoberts Office – B Currie, J Sansbury, R Henderson, Mott Mac, MacRoberts

Programme Review with IHSL – 21st August, 2018 – B Currie. J Sansbury, R Henderson, C Gordon, IHSL, Mott Mac

Tech Schedule Review Mtg with IHSL – 23rd August, 2018 – B Currie, R Henderson, Mott Mac

Settlement Agreement Mtg – 24th August, 2018 – MacRoberts Office – Attendees?

Technical Schedule Workshop with IHSL – 28th August, 2018 - B Currie, R Henderson, Mott Mac, IHSL

Motts Peer Review of Settlement Agreement – 29th August, 2018 – B Currie, Mott Mac

Review of Fire Fighting Stairwell – IHSL Site Office – 30th August, 2018 – B Currie, R Henderson, Mott Mac, IHSL

Programme Review with IHSL – 4th September, 2018 – B Currie. J Sansbury, R Henderson, C Gordon, IHSL, Mott Mac

Settlement Agreement Mtg – 6th September, 2018 – MacRoberts Office – Attendees?

Review of Fire Fighting Stairwell and Fire Detection – IHSL Site Office – 30th August, 2018 – B Currie, R Henderson, Mott Mac, IHSL

Void Detection Mtg with IHSL – 13th Sept, 2018 – Attendees

Settlement Agreement Mtg (Lock In) – 20th Sept, 2018 – S Goldsmith, J Crombie, I Graham, M Pryor, MacRoberts

Programme Board – 24th Sept, 2018 – [see notes and slides]

Drainage Review – 26th Sept, 2018 – Attendees

Draft SA Telecon – 28th Sept, 2018 - S Goldsmith, J Crombie, I Graham, M Pryor, MacRoberts

Drainage Review issued to IHSL – 5th October, 2018

Settlement Agreement (chaired by SFT) – 10th October, 2018 – Attendees?

Settlement Agreement – Commercial Mtg – 12th October, 2018 – Attendees?

Programme Review with IHSL – 30th October, 2018 – B Currie. J Sansbury, R Henderson, C Gordon, IHSL, Mott Mac

Meeting with SFT Chief Exec – 15th Nov, 2018 – S Goldsmith, I Graham, SFT

Basement Sump Meeting with IHSL – 21st Nov, 2018

Programme Board – 26th Nov, 2018 – [see notes and slides]

Lenders Tech Review Mtg – 6th Dec, 2018 – Attendees?

Review of Tech Issues with IHSL at Waverley Gate – 7th Dec, 2018 - B Currie, S Goldsmith, I Graham, R Henderson, Mott Mac

Fire Alarm Detection Review with IHSL – 13th Dec, 2018 – B Currie, J Gardner, R Henderson, J MacKenzie, Mott Mac

Next Steps Mtg – Waverley Gate – 9th Jan, 2019 - S Goldsmith, J Crombie, I Graham, M Pryor, MacRoberts

IHSL Meeting with Susan Goldsmith – Waverley Gate – 10th Jan, 2019 – Attendees?

IHSL Legal Meeting – Pinsents Office – 17th January, 2019 – Attendees?

SA Tech Schedules Review Mtg – Project Office – 22 Jan, 2019 – B Currie, R Henderson, Mott Mac, IHSL

Programme Board – 23rd Jan, 2019 – [see notes and slides]

SA Finalisation Mtg – Pinsents Office – 24th January, 2019 - S Goldsmith, J Crombie, I Graham, M Pryor, MacRoberts

IHSL Mtg – Waverley Gate – 29th Jan, 2019 - S Goldsmith, J Crombie, I Graham, M Pryor, MacRoberts

Follow Up call with IHSL – 30th Jan, 2019 - S Goldsmith, J Crombie, I Graham, M Pryor, MacRoberts

Programme Board – 6th Feb, 2019 [see notes and slides]

SA Mtg – Waverley Gate – 14th Feb, 2019 – Attendees?

SA Signing – Pinsents Office – 22nd Feb, 2019 – Attendees?

RHSCYP/ DCN Ventilation Update

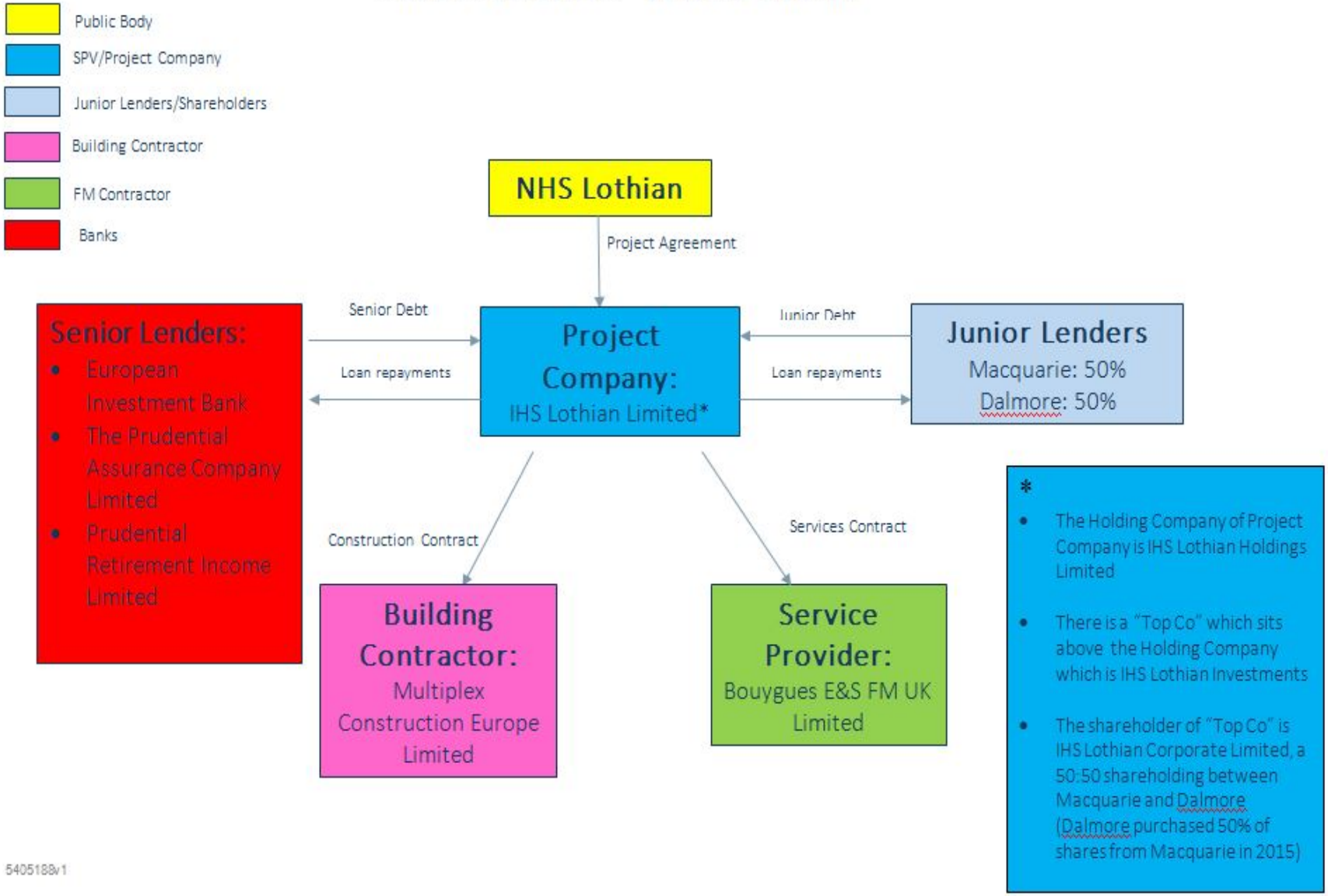
Board briefing

17 July 2019

History of the Project

2008	RHSC and DCN Business Case – Approved by Board DCN subsequently not agreed by Scottish Government
2010	Target price agreed with Principal Supply Chain Partner
Nov 2010	Announcement of NPD route for RHSC/DCN
Nov 2010-2012	Enabling Works and Land swap agreed with Consort
Nov 2012	ITPD OJEU notice issued for NPD (Specifications including SHTM 03-01)
Spring 2013	Competitive dialogue with 3 Bidders
Spring 2014	Preferred Bidder appointed (SHTM 03-01 included in Board Requirements)
Feb 2015	Financial Close (inclusion of SHTM 03-01)
July 2017	Anticipated Completion

RHSC & DCN Project - Structure Diagram



Prior to Financial close

- Technical advisers wrote to IHSL
- “The single room with ensuite ventilation design shall comply with the paramets set out in SHTM03 – 01
- “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”

Early problems

- Start on site Feb 2015
- During 2015 one of the piles did not pass test. Pile in middle of site
- Major supplier Dunnes went into liquidation 2016
- By early 2017 clear to team that completion of hospital by July 2017 not possible
- Denied by IHSL and MPX

Early Problems

- Early 2017 team actively engaged in discussions on Ventilation including workshops
- Key issue was concern about the pressure regime across the 4 bedded rooms and also single rooms
- Early Spring 2017 escalation to DoF and deputy CE, meetings with IHSL and MPX and SFT Public Interest Director
- Many meetings Spring/Summer to resolve
- Late Summer 2017 MPX refuse to engage further

Early Problems

JULY 2017

- Finance and Resources Committee briefed on 3 key areas of Design Dispute:
  - Design of HV resilience
  - Ventilation to some of the 4 bedded areas
  - One of MRI rooms
- Legal advice re Dispute Resolution
- July 2017– January 2018
  - Counsel opinion on dispute both by NHSL and MPX
  - Consideration of Court Action
  - Intervention by Lenders to try and resolve
  - But little Senior engagement from IHSL

Settlement Agreement Negotiations

- February 2018 start of Negotiated Settlement, completed February 2019.
- Settlement Agreement agrees Derogations with commercial value
- For Ventilation agreed solution was to provide the pressure regime that the Board require
- This required derogation from the standard

Final Sign off for Completion

Role of Independent Tester

- Joint appointment IHSL/NHSL
- Purpose to verify facility as per Project Agreement or any variance agreed to the PA

2 Independent Reviews

- NSS: Commission to assure key standards and specification compliance at RHSCYP
- KPMG: Independent Review of Governance Arrangements
- Timeline - NSS 6 months
  KPMG 4 weeks

From: Executive, Chief
Sent: 03 July 2019 16:36
To: DGHSC[redacted]; John.Connaghan[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 IHSL 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
Waverley Gate
2-4 Waterloo Place
Edinburgh EH1 3EG

[redacted]

Our Values Into Action

Quality | Dignity and Respect | Care and Compassion | Openness, Honesty and Responsibility | Teamwork

For more information visit: http://www.nhslothian.scot.nhs.uk/values

Programme Decision/Evidence Log

No.	Description of Evidence	Ventilation Discussed (Y/N)	Explanation	Evidence agreed by - name, designation	Date
1	**Meetings & Governance**				
1.1	**Programme Board**			Programme Board Sign off	
1.1.1	**Programme Board 2011**			Programme Board Sign off	
1.1.1.1	Programme Board March 2011			Programme Board Sign off	
1.1.1.2	Programme Board April 2011			Programme Board Sign off	
1.1.1.3	Programme Board May 2011			Programme Board Sign off	
1.1.1.4	Programme Board June 2011			Programme Board Sign off	
1.1.1.5	Programme Board July 2011			Programme Board Sign off	
1.1.1.6	Programme Board August 2011	Y	Ventilation in creche and retail units	Programme Board Sign off	
1.1.1.7	Programme Board September 2011			Programme Board Sign off	
1.1.1.8	Programme Board October 2011	Y	Ventilation in creche and retail units	Programme Board Sign off	
1.1.1.9	Programme Board November 2011			Programme Board Sign off	
1.1.1.10	Programme Board December 2011	Y	Project Co shall when carrying out Programmed Maintenance to radiators, lights and ventilation systems, clean the radiator covers and behind the covers, light covers and ventilator grills	Programme Board Sign off	
1.1.2	**Programme Board 2012**			Programme Board Sign off	
1.1.2.1	Programme Board January 2012			Programme Board Sign off	
1.1.2.2	Programme Board February 2012			Programme Board Sign off	
1.1.2.3	Programme Board March 2012			Programme Board Sign off	
1.1.2.4	Programme Board April 2012			Programme Board Sign off	
1.1.2.5	Programme Board May 2012			Programme Board Sign off	
1.1.2.6	Programme Board June 2012			Programme Board Sign off	
1.1.2.7	Programme Board July 2012			Programme Board Sign off	
1.1.2.8	Programme Board August 2012			Programme Board Sign off	
1.1.2.9	Programme Board September 2012			Programme Board Sign off	
1.1.2.10	Programme Board October 2012			Programme Board Sign off	
1.1.2.11	Programme Board November 2012			Programme Board Sign off	
1.1.2.12	Programme Board December 2012			Programme Board Sign off	
1.1.3	**Programme Board 2013**			Programme Board Sign off	
1.1.3.1	Programme Board January 2013			Programme Board Sign off	
1.1.3.2	Programme Board February 2013			Programme Board Sign off	
1.1.3.3	Programme Board March 2013			Programme Board Sign off	
1.1.3.4	Programme Board April 2013			Programme Board Sign off	
1.1.3.5	Programme Board May 2013			Programme Board Sign off	
1.1.3.6	Programme Board July 2013			Programme Board Sign off	
1.1.3.7	Programme Board September 2013			Programme Board Sign off	
1.1.3.8	Programme Board October 2013			Programme Board Sign off	
1.1.3.9	Programme Board November 2013			Programme Board Sign off	
1.1.3.10	Programme Board December 2013			Programme Board Sign off	
1.1.4	**Programme Board 2014**			Programme Board Sign off	
1.1.4.1	Programme Board January 2014			Programme Board Sign off	
1.1.4.2	Programme Board February 2014			Programme Board Sign off	
1.1.4.3	Programme Board March 2014			Programme Board Sign off	
1.1.4.4	Programme Board April 2014			Programme Board Sign off	
1.1.4.5	Programme Board May 2014			Programme Board Sign off	
1.1.4.6	Programme Board June 2014			Programme Board Sign off	
1.1.4.7	Programme Board July 2014			Programme Board Sign off	
1.1.4.8	Programme Board September 2014			Programme Board Sign off	
1.1.4.9	Programme Board October 2014			Programme Board Sign off	
1.1.4.10	Programme Board November 2014			Programme Board Sign off	
1.1.5	**Programme Board 2015**			Programme Board Sign off	
1.1.5.1	Programme Board January 2015 - subgroup only			Programme Board Sign off	
1.1.5.2	Programme Board January 2015			Programme Board Sign off	
1.1.5.3	Programme Board February 2015			Programme Board Sign off	
1.1.5.4	Programme Board March 2015			Programme Board Sign off	
1.1.5.5	Programme Board April 2015			Programme Board Sign off	
1.1.5.6	Programme Board May 2015			Programme Board Sign off	
1.1.5.7	Programme Board June 2015	Y	Equipment log	Programme Board Sign off	
1.1.5.8	Programme Board July 2015			Programme Board Sign off	
1.1.5.9	Programme Board August 2015	Y	An external ventilation riser needs to be created from plant room level to pharmacy level mitigating impact on the critical care wards	Programme Board Sign off	
1.1.5.10	Programme Board September 2015			Programme Board Sign off	

1.1.5.11	Programme Board November 2015	Y	Home Ventilator	Programme Board Sign off	
1.1.6	**Programme Board 2016**			Programme Board Sign off	
1.1.6.1	Programme Board January 2016			Programme Board Sign off	
1.1.6.2	Programme Board March 2016	Y	Home Ventilator	Programme Board Sign off	
1.1.6.3	Programme Board May 2016	Y		Programme Board Sign off	
1.1.6.4	Programme Board July 2016			Programme Board Sign off	
1.1.6.5	Programme Board September 2016	Y	Ct Scanner Ventilation	Programme Board Sign off	
1.1.6.6	Programme Board November 2016			Programme Board Sign off	
1.1.7	**Programme Board 2017**			Programme Board Sign off	
1.1.7.1	Programme Board January 2017	Y	Changes – ventilation, movement joints, turning circles etc.	Programme Board Sign off	
1.1.7.2	Programme Board March 2017	Y	Shelled space on opening – a paper proposing the approach to shelling space built as future proofing was agreed at the last meeting. This paper agreed to the shelling of the future expansion	Programme Board Sign off	
1.1.7.3	Programme Board May 2017	Y	Familiarisation programme is being further developed and super users identified. Their role will be to train staff in their own ward/area on infrastructure items such as the ventilation, nurse call	Programme Board Sign off	
1.1.7.4	Programme Board July 2017	Y	To agree to support the recommendation to proceed to Adjudication in respect of a dispute arising out of the Project Agreement (Dispute Resolution Procedure "DRP") in respect to three key	Programme Board Sign off	2.2
1.1.7.5	Programme Board September 2017	Y	Doing so will allow the programme board further assurance that the project could be delivered within the approved capital budget, whilst also allowing for additional flexibility with regards to	Programme Board Sign off	
1.1.7.6	Programme Board November 2017 - Extraordinary Meeting	Y	DRP (HV + 4 Bedroom ventilation – MRI resolved), At the last meeting the Board discussed the potential to progress to DRP over three significant issues, these being High Voltage, Ventilation and	Programme Board Sign off	
1.1.7.7	Programme Board November 2017	Y	This would also give the programme board assurance that the project would be better placed to deal with an adverse outcome in ongoing negotiations with IHSL and the building contractor.	Programme Board Sign off	
1.1.7.8	Programme Board December 2017 - Extraordinary Meeting	Y	Reports on HV and 4 Bed Ventilation.	Programme Board Sign off	
1.1.8	**Programme Board 2018**	Y	Correspondence Received from IHSL / MPX, Notice of Delay Event – 4 Bed Ventilation + Board Changes, Notice of Delay Event – Contractors Change	Programme Board Sign off	
1.1.8.1	Programme Board January 2018	Y	Multiplex have now issued a report from their independent Experts, DSSR Consulting Engineers, regarding High Voltage and Four Bed Ventilation. The project team is reviewing this report in	Programme Board Sign off	
1.1.8.2	Programme Board March 2018	Y	Potential accommodation in relation to issues discussed (not exhaustive) with actions arising for both parties with exception of 4 Bed Room Ventilation where MPX issued their QC's opinion	Programme Board Sign off	
1.1.8.3	Programme Board May 2018	Y	Risk Registers, to do with ventilation, The Compliance Workshop was held on 20.02.18 and 21.02.18 at the Sheritan Hotel in Edinburgh. It was agreed that technical non-compliances would	Programme Board Sign off	
1.1.8.4	Programme Board July 2018	Y	Risk Registers, to do with ventilation	Programme Board Sign off	
1.1.8.5	Programme Board September 2018			Programme Board Sign off	
1.1.8.6	Programme Board November 2018	Y	Changes	Programme Board Sign off	
1.1.9	**Programme Board 2019**			Programme Board Sign off	
1.1.9.1	Programme Board February 2018			Programme Board Sign off	
1.1.9.2	Programme Board May 2018	Y	Highlighted that ventilation may be in issue due to temperatures from machinery, BC confirmed relevant guidance has been chared with IHSL and that there was a meeting with NHSL Prevention	Programme Board Sign off	
1.1.9.3	Programme Board August 2018	Y	Heat stations were experiencing excessive temperatures – calorifiers were bing reinsulated and ventilation may be an issue	Programme Board Sign off	
1.1.9.4	Ad Hoc papers			Programme Board Sign off	
1.1.10	**Change to Programme Board Docs**			Programme Board Sign off	
1.2	**Technical Delivery Group**				
1.2.1	April 2018			Technical Delivery Group Sign Off	
1.2.2	May 2018			Technical Delivery Group Sign Off	
1.2.3	June 2018			Technical Delivery Group Sign Off	
1.2.4	July 2018			Technical Delivery Group Sign Off	
1.2.5	August 2018			Technical Delivery Group Sign Off	
1.2.6	September 2018			Technical Delivery Group Sign Off	
1.2.7	November 2018			Technical Delivery Group Sign Off	
1.2.8	October 2018			Technical Delivery Group Sign Off	
1.2.9	Emails			Technical Delivery Group Sign Off	
1.210	First negotiation meeting			Technical Delivery Group Sign Off	
1.1.11	Internal meetings			Technical Delivery Group Sign Off	
1.1.12	Joint Principlas Meeting 12.4.18			Technical Delivery Group Sign Off	
1.2.13	Papers - 4 bed Ventilation			Technical Delivery Group Sign Off	
1.3	**Legal Documents**				
1.4	**Technical Management**				
1.5	**Project Management Meetings**				
1.6	**Change**				
1.6.1	2015			NHS & IHSL	
1.6.2	2016			NHS & IHSL	
1.6.3	2017			NHS & IHSL	
1.6.4	2018			NHS & IHSL	
1.7	Construction Progress				
1.7.1	June 2015	N			
1.7.2	July 2015	N			
1.7.3	August 2015	N			
1.7.4	September 2015	Y	Monthly meetings going well with project team. Currently prioritising power-on, ventilation air balance	IHSL & MPX	
1.7.5		N			
1.7.6	November 2015	Y	Monthly meetings going well with project team. Currently prioritising power-on, ventilation air balance	IHSL & MPX	
1.7.7	December 2015	N			
1.7.8	January 2016	Y	Monthly meetings going well with project team. Currently prioritising power-on, ventilation air balance	IHSL & MPX	
1.7.9	February 2016	Y	Monthly meetings going well with project team. Currently prioritising power-on, ventilation air balance	IHSL & MPX	
1.7.10	March 2016	Y	Monthly meetings going well with project team. Currently prioritising power-on, ventilation air balance	IHSL & MPX	
1.7.11	April 2016	Y	Monthly meetings going well with project team. Currently prioritising power-on, ventilation air balance	IHSL & MPX	

1.7.12	August 2018	Y	The commissioning is now progressing as per the commissioning close out programme (issued June 2018) which includes WPW with the exception of the four bed ward ventilation works	IHSL & MPX	
1.8	**Finance and Resources Committee**				
2012	F+R 08-02-12 Minutes				
	F+R 20-02-12 RHSC DCN Resource Imp				
	F+R 08-02-12 RHSC + DCN Project Resources FPR 080212v2 (3)				
	F+R 18-04-12 Minutes				
	F+R 18-04-12 RHSC DCN Procurement FPR 180412 v3				
	F+R 10-10-12 Minutes				
	F+R 10-10-12 RHSC DCN to F and PR 101012 bc rev 031012				
	F+R 10-10-12 Presentation to F&PR 101012				
	F+R 12-12-12 Minutes				
	F+R 12-12-12- 7. RHSC DCN to F and R 121212				
2013	F+R 12-06-13 Minutes				
	F+R 12-06-13.3 Little France Campus				
	F+R 06-09-13 RHSC DCN Risk Register v14 6 Sept 13				
	F+R 09-10-13 Minutes				
	F+R 09-10-13 RHSC DCN to F and R Oct 2013 FINAL DRAFT				
2014	F+R 22-01-14 Minutes				
	F+R 21-01-14 3.1 RHSC DCN Programme to Financial Close				
	F+R 05-03-14 Minutes				
	F+R 05-03-14 RHSC + DCN Procurement report to 5 March 2014 F+R				
	F+R 09-07-14 Minutes				
	F+R 09-07-14 6.4 RHSC DCN FB				
	F+R 27-08-14 Minutes				
	F+R 27-08-14 3.3 RHSC & DCN Update				
	F+R 12-11-14 Minutes				
	F+R 12-11-14 5.1 RHSC DCN update v3				
2015	F+R 21-01-15 Minutes				
	F+R 11-03-15 Minutes				
	F+R 11-03-15 5.2 RHSC DCN FBC Addendum F&R March 2015				
2016	F+R 30-11-16 Minutes				
	F+R 30-11-16 8.5 RHSC DCN Anticipated Completion Date				
2017	F+R 10-05-17 Minutes Final				
	F+R 10-05-17 7.2 Disposal of RHSC FRC 100517				
	F+R 12-07-17 Minutes Final				
	F+R 20-09-17 Minutes Final				
2018	F+R 23-05--18 Minutes Draft (08-06--18) Final				
	F+R 23-05-18 4.1 RHSC_DCN commercial proposal_v3 140518				
	F+R 25-07-18 Minutes (130818) Final				
	F+R 25-07-18 4.1 Business Case RHSC and DCN				
	F+R 19-09-18 Minutes Draft (27-09-18) Final				
	F+R 19-09-18 RHSC-DCN position paper_2_-Tabled				
	F+R 21-11-18 Minutes Final				
	F+R 13-12-18 Extraordinary F+R 13-12-18 Minutes				
	F+R 13-12-18 FR_RHSC_DCN Settlement covering paper Dec 2018				
2019	F+R 23-01-19 Minutes Final				
	F+R 23-01-19 RHSC DCN update FRC 23012019 Final				
	F+R 20-03-19 Minutes Final				
1.9	**NHS Lothian Board**				
2012 Public	Board 28-03-12 Minutes				
	Board 23-05--12 Minutes				
	Board 23-05-12 RHSC + DCN Main Board Paper May 2012 Draft v3				
	Board 27-06-12 Minutes				
	Board 27-06-12RHSC + DCN Main Board Paper June 2012 DRAFT with CP changes				
	Board 25-07-12 Minutes				
	Board 26-09-12 Minutes				
	Board 28-11-12 Minutes				
2013 Public	Board 23-01-13 Minutes				
	Board 27-02-13 Minutes				
2014 Public	Board-06-08-14 Minutes				
	Board 06-08-14 2.1 RHSC & DCN private version				
	Board 06-08-14 2.1 RHSC & DCN public version				
	Board 06-08-14 2.1 RHSC DCN FBC restricted				
	Board 06-08-14 2.1 RHSC DCN FBC unrestricted				

	Board 06-08-14 2.1 RHSC DCN Full Business Case Background Papers				
	Board 01-10-14 Minutes				
2018 Public	Board 27-06-18 Minutes				
Others	Board Private 03-10-18 Minutes				
	Development Session 05-12-18 RHSC-DCN Board Update Dec 18				
	Private Board 01-02-17 7.23 Jan Board RIE Dom Service Transfer Feb 1 2017				
	Private Board 02-08-17 Minutes				
	Private Board 04-04-18 Minutes				
	Private Board 06-02-19 3. RHSC-DCN Progress Update				
	Private Board 06-12-17 Minutes				
	Private Board 26-09-12 3. RHSC and DCN Project Update				
	Private Board 27-06-18 Minutes				
2	**Design**				
2.1	RDD			Project lead	
2.1.1	RDD process				
3	**Implementation and Issues**				
3.1	B1 Critical Care Output spec	Y	SHTM 2025: Ventilation	NHSL	01/08/2014
3.2	Construction report		Reference to monthly meetings going well with project team - currently prioritising power-on, ventilation air balance	IHSL / MPX	02/09/2016
3.3	Disagreement about ventilation - email	Y	Recommendations for Ventilation in the CT rooms in the new DCN and RHSC	NHSL - From Jackie Sansbury to Ronnie Henderson and Ewan Olson.	30/09/2016
3.4	RHSC / DCN Programming				18/11/2016
3.5	Risk Assessment Bedroom Ventilation	Y	Critical Care Risk Assessment		05/07/2017
3.6	Macroberts Note For Board	Y	There are two issues which are the subject of the current dispute with IHSL: the HV cabling and ventilation system for multi bedrooms (4 beds)	MacRoberts	27/09/2017
3.7	Draft Board Approval	Y	Ventilation to 4 bedded rooms – Project Co 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	NHSL	27/09/2017
3.8	M&E Walk Around	Y	Ventilation fans not installed as detailed	Mott MacDonald	01/10/2017
3.9	RHSC / DCN Communication Issues	Y	The installation of the electrical and ventilation systems is being challenged by NHSL.	NHSL	04/01/2018
3.10	Record of Genral Risk Assessment Ventilation	Y	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.	NHSL - Janice Mackenzie and Fiona Halcrow	30/01/2018
3.11	PMG Update	Y	Independent Tester's email dated 23 January 2018 you have still not confirmed that you intend to revise the ventilation system to the four bedded rooms to meet the Board's Construction	NHSL to IHSL	07/02/2018
3.12	RHCYP Staff Message Legal				30/04/2018
3.13	Air Change Rates - Email	Y	I can confirm that as per SHTM 03 – 01 Table A1, Treatment Rooms are designed and commissioned to 10 Air Changes/hr	NHSL (Sarah-Jane Sutherland to Janice MacKenzie)	03/05/2019
3.14	Comments Table PCC 051 Single Bed Ventilation	Y	Project Co Change 051 Single Bed Ventilation	Unknown	23/05/2018
3.15	Single Bedroon Ventilation - Board Governance Submission	Y	CCP-051 Single Bedroom Ventilation - Board Governance Submission	Janice MacKenzie	29/05/2018
3.16	Risk Report	Y	Non Compliance of HV Network and 4 Bedded Room Ventilation	Unknown	22/11/2018
3.17	RHSC DCN Commercial Issues 2018				2018
3.18	RHSC DCN Commercial Issues 2019				2019
3.19	RHSC Ventilation Update	Y	RHSC / DCN – Ventilation for Critical Care	NHSL - Iain Graham, Brian Currie, Ronnie	08/07/2019
4	**Independent Tester**				
4.1	**Completion**				
4.1.1	RHSC DCN Completions Schedule				10/01/2016
4.1.2	BMCE Completion outwith contract				03/03/2016
4.1.3	Interface back line drawing				29/04/2016
4.1.4	Items that may not be completed on 3rd july 2017				29/04/2016
4.1.5	Edinburgh Compliance Tracker				30/08/2016
4.1.6	DM Completion criteria meeting notes				17/05/2017
4.2	**Independent Tester Procurement**				
4.2.1	ITT For Procurement July 2014				
4.2.1.1	ITT for IT Procurement				04/07/2014
Appendix A	Important Information				04/07/2014
Appendix B	Information Memorandum				04/07/2014
Appendix C	NPD Project Agreement (No Schedules)				04/07/2014
Appendix D	Schedule 13 independent tester appointment				04/07/2014

Appendix E	Schedule 10 Commissioning				04/07/2014
Appendix F	Schedule 22 Certificates				04/07/2014
Appendix G	Cost Proposal Template				04/07/2014
Appendix H	Organisational Diagrams				04/07/2014
Appendix I	Fee Drawdown				04/07/2014
Appendix J	Campus Site Location Plan				04/07/2014
Appendix K	Construction Programme Summary				04/07/2014
Appendix L	Confidentiality Agreement				04/07/2014
Appendix M	Technical Quality Matrix				04/07/2014
4.2.2	Aecom				25/07/2019
4.2.3	EC Harris				25/07/2019
4.2.4	IT ITT				25/07/2019
4.2.5	Mouchel				25/07/2019
4.2.6	Scoring Matrix				25/07/2019
4.3	**Independent Tester Reports**				
4.3.1	Royal Hospital for Sick Children - It report				01/06/2015
4.3.2	Royal Hospital for Sick Children - Key Issue Report				17/06/2015
4.3.3	Key Issue report NR 6				23/09/2015
4.3.4	Independent Tester Report Nr 8				01/11/2015
4.3.5	Independent Tester Report Nr 15 Final Combined				01/07/2016
4.3.6	Key Issue report NR 21				20/12/2016
4.3.7	Key Issue report NR 27				05/07/2017
4.3.8	Key Issue report NR 34				31/01/2018
4.3.9	Key Issue report NR 35				28/02/2018
4.4	**Medical Gas Reports**				
4.4.1	SIR 001 03-11-16				03/11/2016
4.4.2	SIR 002 20-01-17				20/01/2017
4.4.3	SIR 003 06-02-17				06/02/2017
4.4.4	SIR 004 13-02-17				13/02/2017
4.5	**Tracker Document**				
4.5.1	Edinburgh Compliance Tracker				06/07/2017
4.6	**Zutec**				
4.6.1	Revised Build Zones				16/09/2016
4.7	**Other**				
4.7.1	IT recommended areas for room desing v2				16/04/2011
4.7.2	Sample Room Inspection Findings - Draft				05/11/2015
4.7.3	IT recommended areas for room desing v5				10/11/2015
4.7.4	Zutec Access Spreadsheet				30/06/2016
5	**Scottish Government**				
5.1	Architechture and Design			Scottish gov	
6	**Procurement**				
6.1	**Independent Tester Procurement**			Procurement, IHSL, NHS, Gov.	
	(see information on Independent tester procurement in 4.2)				
6.2	**PPP Procurement**				
6.2.1	PPP Guide 1				17/12/2009
6.2.2	PPP Guide 2				17/12/2009
6.2.3	PPP Guide 3				17/12/2009
6.2.4	PPP Guide 4				17/12/2009

6.2.5	PPP NPD Articles Assoc				17/12/2009
6.2.6	PPP NPD Jnr Fund Agree				17/12/2009
6.2.7	PPP NPD MEM Assoc				17/12/2009
6.2.8	PPP NPD Schedule pt1				17/12/2009
6.2.9	PPP NPD Schedule pt2				17/12/2009
6.3	**Procurement**				
6.3.1	RHSC + DCN Little France - Project Procurement Session				06/02/2012
6.4	**Procurement 1**				
6.4.1	SPPN 5-17				21/12/2017
6.4.2	Scottish Procurement Policy note - Email			From - Catherine Bakkers. To - Project team	03/01/2018
7	**Supplementary Audit Information**				
7.1.1	Decision Evidence Log				
7.1.2	Project Overview		Produced by Macroberts post delay decision	From Macroberts to Board	
7.1.3	Note re critical change ventilation air change rates		Output from pre-audit workshop 15/07/2019		15/07/2019
7.1.4	Appendix 1 Ventilation Derogations timeline		Appendix to 7.1.3 providing Timeline of ventilation derogations	From Macroberts to Board	15/07/2019
7.1.5	Appendix 2 - SA Timeline + Stakeholder Engagement		Appendix to 7.1.3 providing detailed timeline to Settlement Agreement signing	From Macroberts to Board	15/07/2019
7.1.6	Email Chief Executive to Scottish Government outlining discussion on move options			From T Davison to Malcolm Wright	03/07/2019
7.1.7	170719 RHCYP DCN Board Briefing		Presentation prepared to brief Board members	Delivered by Susan Goldsmith	17/07/2019
7.1.8	RHSC Design Responsibility		Summarises contractual obligations / rights over design and compliance	From Macroberts to Board	18/07/2019

Health Facilities Scotland and Health Protection Scotland

Review

RHCYP Edinburgh

July 2019

Document required for review

NOTE: the focus of these initial questions are on water, ventilation, drainage and HAI.

Ref	Document	Date requested	Date received	Electronic or hard copy	Filed	Comments
1.	NHS Lothian ACR					
2.	Original contract					
3.	Any amendments to contract					
4.	Settlement agreement					
5.	HAI SCRIBE (all iterations)					
6.	Contractor MEP design proposal					
7.	Contractor M design specifications					
8.	Contractor E design specifications					
9.	Contractor P design specifications					
10.	Derogations schedule (and detail)					
11.	Contractor competency checks by NHS L					
12.	Sub-Contractor competency checks by Contractor					
13.	Design drawings (M)					
14.	Design drawings (E)					
15.	Design drawings (P)					
16.	RDD schedule					
17.	Contract instructions					
18.	Sub-contractor deviations from design (M)					

Ref	Document	Date requested	Date received	Electronic or hard copy	Filed	Comments
19.	Sub-contractor deviations from design (E)					
20.	Sub-contractor deviations from design (P)					
21.	Sub-contractor drawings (M)					
22.	Sub-contractor drawings (E)					
23.	Sub-contractor drawings (P)					
24.	Commissioning documentation (M)					
25.	Commissioning documentation (E)					
26.	Commissioning documentation (P)					
27.	Contract supervisor progress reports					
28.	Independent tester progress reports					
29.	Independent tester validation reports					
30.	Independent tester completion certificates					
31.	NHS L independent validation test certificates and supporting documentation					
32.	As installed drawings (M)					ZUTEC access?
33.	As installed drawings (E)					ZUTEC access?
34.	As installed drawings (P)					ZUTEC access?
35.	NHS L Project risk register					
36.	NHS L schedule of unresolved issues					
37.	NHS L technical advisors reports					
38.	NHS L IPC team records					
39.	Paymech (payment mechanism)					
40.	Confirmation that FM contractor has competent staff in place					
41.	Confirmation that FM contractor has AE/AP and CP in place					
42.	PPM schedules					
43.	Contractor critical care vent proposal					
44.	HAI SCRIBE associated with vent proposal					

Ref	Document	Date requested	Date received	Electronic or hard copy	Filed	Comments
45.	Unresolved snagging schedule					
46.	Schedule of known issues post completion					
47.	NHS L water management plan					
48.	Contractor water management plan					
49.	Provide comprehensive timeline of water system indicating when system was pressure tested, initially filled, dried and refilled, water treatment added, commissioning, handover and water management routines.					
50.	Test results and certificates for incoming water					
51.	Test results and certificates for water tanks					
52.	Test results and certificates for hot and cold pipe work					
53.	Test results and certificates for hot water system					
54.	Water treatment test results and certification					
55.	Contractors pre handover risk assessment					
56.	Water system handover documentation					
57.	Evidence of any issues with water system during construction or handover					
58.	Extent of flexible hose installations					
59.	Commissioning documentation for flexible hose installations					
60.	Pressure testing records					
61.	O&M instructions for water system including any recommendations for PPM					

Ref	Document	Date requested	Date received	Electronic or hard copy	Filed	Comments
62.	Specification for water services pipe work					
63.	Records of pipe work inspection during construction					
64.	NHS L initial water risk assessment					
65.	Authorising Engineer (water) initial audit with recommendations					
66.	Appointment letters for Competent Persons (water)					
67.	Appointment letters for Authorised Persons (water)					
68.	Appointment letters for Designated Person (water) Responsible Person (water) Deputy Responsible Persons (water)					
69.	Training records for all AP(W) and CP(W)					
70.	Minutes of all water safety group meetings					
71.	Results of any organisms found and water treatment to eradicate same					
72.	Cold water temperature records (system)					
73.	Hot water temperature records (system)					
74.	Tap temperature records (mixed, hot, cold)					
75.	Main filtration system PPM					
76.	Water storage tank turnover versus storage volume					
77.	Competency of company and individuals carrying out risk assessment					
78.	Details of PPM water systems					

Ref	Document	Date requested	Date received	Electronic or hard copy	Filed	Comments
79.	Details of chemical treatments on any part of the water system post hand over					
80.	Details of thermal treatments on any part of the water system post hand over					
81.	Details of testing regime (frequency, for which organisms, TVC results, organism results etc)					
82.	Details of company taking water samples, training records, methodology.					
83.	Provide details of all sanitary ware types (including taps, clinical wash hand basins and showers)					
84.	Children hospital commissioning results for taps					
85.	PPM records for taps					
86.	Drop tests for taps					
87.	Children hospital commissioning results for taps					
88.	PPM records for taps					
89.	Drop tests for taps					
90.	Children hospital commissioning results for showers					
91.	Confirm all shower hose lengths meet the requirements of SHTM 04-01 part A paragraph 9.54					
92.	PPM records for showers					
93.	Drop tests for showers					
94.	Details on all shower types					
95.	Records for shower hose and head replacements since handover					

Ref	Document	Date requested	Date received	Electronic or hard copy	Filed	Comments
96.	Design brief for requirements including dimensions					
97.	Details of what has been installed					
98.	Records of PPM					
99.	Records of any organisms found and treatment to eradicate.					
100.	Point of Use Filters Cleaning regime					
101.	Point of use Filters Replacement regime					
102.	Ventilation commissioning certification					
103.	Theatre ventilation validation certification					
104.	Details of control system and operational parameters for switching UCV theatre to conventional mode					
105.	Isolation room validation certification					
106.	AHU drawings and specifications					
107.	Air conditioning plant commissioning certification					
108.	BMS certification					
109.	Fire damper test certificates					
110.	Recent Calidus Health and Safety Report					
111.	Details of all water meters					
112.	Details of all water valves (all sizes)					
113.	Details of above ground drainage systems(s)					
114.	Details of below ground drainage system					
115.	Test certificates for above ground drainage system					
116.	Test certificates for below ground drainage					

Ref	Document	Date requested	Date received	Electronic or hard copy	Filed	Comments
117.	NHS L response to HFS “bird dropping “ Guidance					
118.	Details of vermin control measures					
119.	Operational protocol to protect vulnerable patients when a helicopter is landing/taking off.					
120.	Formal training records for all NHS L and FM Contractor staff.					
121.	CDM File					
122.	Can access be provided (read only) to ZUTEC for members of HFS/HPS team					
123.	Confirm the level of involvement of NHS L Infection Control at the following stages of the project: ACR Project Agreement Side Agreement Commissioning Handover					
124.	Confirm the derogation from 100% single side rooms and confirm how the decision was arrived at.					
125.	Confirm compliance with HPS SBAR regarding flooding issue.					

NHS LOTHIAN

FINANCE & PERFORMANCE REVIEW COMMITTEE

Minutes of the Meeting of the Finance & Performance Review Committee held at 9.00am on Wednesday, 18 April 2012 in Meeting Room 7, Waverley Gate, 2-4 Waterloo Place, Edinburgh.

Present: Mr G Walker (Chair); Mr R Y Anderson; Mr A Boyter; Dr M Bryce; Mr R Burley; Mr E Egan; Dr D Farquharson; Mrs S Goldsmith; Professor J Iredale; Mr P Johnston; Mrs J K Sansbury and Mr I Whyte.

In Attendance: Mr B Currie; Mr P Gabbitas; Mr I Graham; Mr A Notman; Mrs C Potter; Mr P Reith and Mr S Wilson.

Apologies for absence were received from Professor J J Barbour, Councillor P Edie, Mrs M Hornett, Dr A K McCallum and Dr C J Winstanley.

Declaration of Financial and Non-Financial Interest

The Chair reminded members they should declare any financial and non-financial interests they had in the items of business for consideration, identifying the relevant agenda item and the nature of their interest. There were no declarations of interest.

1. Minutes of the Previous Meeting

1.1 The previously circulated Minutes of the meeting held on 8 February 2012 were approved, subject to the following amendment:-

Minute 67.7 to read “Mr Whyte commented that an emergency team was now in place in East Lothian to work jointly with the Community Health Partnership and the local authority while going into people’s homes to enable them to be discharged at as early a stage as possible.”

2. Matters Arising

2.1 Relocation of the Psychiatry of Old Age Ward from the Royal Victoria Hospital to the Royal Edinburgh Hospital – Mrs Goldsmith advised the Committee that the report on whether the proposed solution fitted in with the Clinical Strategy, or whether the additional funding should be used to provide extra clinical capacity at the Royal Infirmary of Edinburgh, would be finalised after discussions being held at the start of May. **SG/JKS**

2.2 Shared Services – Mr Boyter spoke to a previously circulated report providing an update on all the known and emerging areas of work within the umbrella of "shared services", specifically focussed on the forward plan and recommendations for deploying resources to convert potential opportunities into gains during the fiscal year 2012/13. Mr Boyter advised the Committee that the scoping work had now been completed and work was progressing on the development of the workplan. Mr Aitken, formerly Acting General Manager of Edinburgh Community Health Partnership, had been appointed to take this work forward. The Committee agreed to note the position outlined in the circulated report.

2.3 Royal Hospital for Sick Children and Department of Clinical Neurosciences Project Update – the Committee received a previously circulated report giving an update on progress since the meeting on 8 February 2012. Mr Currie gave a presentation outlining the procurement process overview, the pre-qualification process, the invitation to participate in dialogue and the procurement resources and workload. Mr Currie explained that up to three parties deemed to be of sufficient technical and financial standing and best placed to deliver the requirements of the contract, would be shortlisted. Once these procedures had been gone through, the three bidders would enter the dialogue phase over an 8-month period, after which a final tender would be invited and submissions fully evaluated. The preferred bidder would be selected on the basis of this evaluation, which would not be solely about price as the Scottish Futures Trust had recommended that the evaluation be on the basis of 60% price and 40% quality. Mr Currie re-assured the Committee that the reference design would already have ensured that quality was built into the selection of parties shortlisted. Once the preferred bidder had been selected, the most economically advantageous tender would be selected at the final stage with the involvement of the core evaluation team, core evaluation advisers and evaluation support lead, including technical, financial and legal support. These would also be involved together with the bidder, the Scottish Futures Trust and the Scottish Government in the competitive dialogue engagement.

2.3.1 Mr Burley asked why the Scottish Futures Trust should determine the split between price and quality and Mr Currie advised that as the Scottish Futures Trust would be providing 85% of the revenue funding, they had a major interest in this and there was an expectation that ensuring that the correct quality criteria were used would ensure that the importance of quality was already built in. Mrs Sansbury reminded the Committee that as a reference design had already been produced, quality had been built into this which the winning bidder could not change.

2.3.2 Mr Egan questioned the source of the additional £1m funding required and Mrs Goldsmith advised that it would come from NHS Lothian's NHSScotland Resource Allocation Committee allocation. Mr Egan queried how price inflation had been captured and whether NHS Lothian would be liable for increased costs because of the 4-year delay brought about by changes in Government funding policy. Mrs Goldsmith advised that NHS Lothian would only be responsible for 15% of the cost; otherwise the additional funding would be obtained through the Scottish Futures Trust. Mrs Goldsmith reminded the Committee that the reference design was part of the capital costs and not

funded from revenue. Mr Egan commented that the delays to the new Royal Hospital for Sick Children and Department of Clinical Neurosciences had come about because of the Government imposed new funding model and NHS Lothian was not to blame for these delays.

2.3.3 The Committee agreed to note the position with the City of Edinburgh Council Planning Department approvals process and the Supplementary Agreements with Consort Healthcare; agreed the membership of the core evaluation team outlined in the paper; agreed the proposed scheme of delegation for the non-profit distribution procurement process outlined in the paper and agreed to note the budget position for the resources required for the delivery of the project.

2.4 Suicide, Attempted Suicide and Self-Harm – Dr Farquharson introduced a previously circulated report providing further information on figures in relation to the target for the reduction of suicides that had been considered as part of the performance report. Dr Farquharson advised that based on 3-year rolling averages between 2000-2002 and 2008-2010, there had been a 14% fall in suicide rates overall. The national target was to reduce the suicide rate in Scotland by 20% between 2000-2002 and 2011-13. The 2006-2010 5-year rates were for both genders and all Lothian local authority areas were lower than the Scottish average and lower than the previous 5-year rates, reflecting the national decline in the suicide rate. Dr Farquharson advised that the approach used in NHS Lothian was in line with that described by NICE which was mirrored in College advice from the Royal College of Psychiatrists and the British Association for Emergency Medicine.

2.4.1 Mr Whyte commented that the police had difficulties in confining a person in a cell who threatened self-harm and Mrs Sansbury commented that there were legal constraints on who the NHS could retain in secure units. Professor Iredale commented that this was likely to be a perpetual gray area. The Committee noted the position.

2.5 Development of a Surgical Assessment Unit at the Royal Infirmary of Edinburgh – Mrs Sansbury introduced a previously circulated report commending the approval of the change of use of the newly build observation ward into a surgical assessment unit within the emergency department at the Royal Infirmary of Edinburgh. Mrs Sansbury explained that the project had taken significantly longer because it had been one of the first supplementary agreements with Consort. The original Outline Business Case had been for an observation ward at a capital cost of £1.3m but with no revenue requirements. In March 2011, the Scottish Government Health Directorates Emergency Access Support Team had undertaken a diagnostic visit to NHS Lothian following an invitation from the Division to provide support and expertise to help NHS Lothian to achieve and maintain compliance with the 4-hour standard. The Emergency Access Support Team report had not supported the construction of an observation ward at the Royal Infirmary of Edinburgh site and, following their recommendations, the University Hospitals Division Senior Management Team took the view that whilst the project should be completed, the function of the facility should be reviewed in the light of these recommendations. The Senior Management Team subsequently recommended that the Division support a unit to enable increased streaming of

surgical assessment patients to relief capacity pressure within the emergency department and the combined assessment area.

2.5.1 Mrs Sansbury advised the change in function from observation unit to surgical assessment function had a revenue consequence of £283,000 associated with the additional staffing and £130,000 for non-pay revenue costs. These revenue costs would be covered on a non-recurring basis from the University Hospitals Division reserves until the Capita bed modelling work, which had been commissioned by the Improvement Care, Investing in Change Board, was completed, at which time a more sustainable solution to funding the shortfall would be introduced.

2.5.2 Mr Johnston commented that he was concerned about the process that had led to these changes and sought assurances that lessons had been learned from this exercise. Dr Bryce sought re-assurance on the quality of care of patients and Professor Iredale emphasised the importance of establishing an imaginative way of using the unit. Mrs Sansbury explained that the Division now had a much better understanding of the process of supplementary agreements with Consort.

2.5.3 The Committee agreed to support the development of a surgical assessment unit at the Royal Infirmary of Edinburgh and that the revenue consequences would be funded from University Hospitals Division non-recurring funds until the implementation of the Capita bed redesign. The Chair commented that the process issue of regular reporting on Business Cases would be dealt with at another point in the meeting.

3. Financial Plan 2012/13 to 2016/17

3.1 Mrs Goldsmith introduced a previously circulated report providing an update on the financial plan for 2012/13 and an overview on the plan for 2013/14 and beyond.

3.2 Mrs Goldsmith commented that the financial plan had been discussed in detail at the Executive Management Team and money had been set aside for rebalancing care between primary care and hospitals.

3.3 Mr Egan expressed concern about the impact of increasing Local Reinvestment Plan targets. Mrs Goldsmith explained that there was some slippage every year on allocations, Financial plan developments and in other areas. These could add up to 1% of the Board's budget and these were generally held to offset any slippage on LRP delivery In 2011/12 all targets had been delivered and an underspend had been banked with the Scottish Government.

3.4 Mr Egan queried whether there were any plans for Communications to capture ideas from staff on ways to achieve Local Reinvestment plan targets and publicise the importance of the Local Reinvestment Plans and the Chair commented on the opportunity cost of the underspend and the need to explain this to staff.

3.5 Mr Wilson advised that there was a plan being developed for increased communications with staff with internal publicity.

3.6 Mrs Potter reminded the Committee that the financial position reported was only to the end of February and undertook to liaise with Mr Wilson on providing simplified details of the financial position for staff.

3.7 Mr Whyte commented on the need for the future planning of community services and Mrs Goldsmith advised that Community Health (and Care) Partnerships needed to come forward with details of what required to be done, particularly in trying to support people coming out of hospital.

3.8 The Committee agreed to approve the financial plan for 2012/13 and submit the financial plan to the meeting of Lothian NHS Board on 23 May 2012 for formal approval. **SG**

4. NHS Lothian 2012/13 Local Re-Investment Plan

4.1 Mrs Goldsmith introduced a previously circulated report providing an overview of the 2012/13 Efficiency and Productivity Workstream Framework and the progress made to date in developing local re-investment plans to meet the 2012/13 target. Mrs Goldsmith advised the Committee had expressed concerns about the Local Reinvestment Plans for 2011/12 and she intended to take a more strategic approach to the Local Reinvestment Plan for 2012/13.

4.2 Mr Egan commented that whilst improvements were not yet being seen in acute flow and capacity management, the progress of the Local Reinvestment Plans itself was a good news story.

4.3 Mr Johnston welcomed the commitment to move away from a “salami slice” approach and suggested more detail would be required to demonstrate that the agreed strategic direction was being followed.

4.4 Professor Iredale advised that issues relating to the redesign of services would go through the Service Redesign Committee for scrutiny.

4.5 Mrs Sansbury assured the Committee that workstreams in NHS Lothian mirrored the rest of those in Scotland.

4.6 The Chair suggested that some of the areas of the Local Reinvestment Plan could be looked at in greater detail by the Committee once the critical work on the Royal Hospital for Sick Children and Department of Clinical Neurosciences development had been completed.

4.7 Dr Bryce queried whether there was any way of rewarding and incentivising staff and Mr Boyter advised that non-pay means of recognising the contribution made by staff were being examined. Pay constraints reduced the options for financial reward.

4.8 Mr Egan commented that there used to be a Local Reinvestment Plan scheme where those who made the greatest savings could re-invest some of those savings locally.

4.9 The Chair advised that a report outlining the options available should be brought back to the Committee and Mr Boyter undertook to bring such a report through the Finance & Performance Review Committee or the Staff Governance Committee and Mrs Goldsmith undertook to come back to the Committee with a timeframe. **AB/SG**

4.10 The Committee agreed to note the progress made in the implementation of a whole system workstream approach to the delivery of the local re-investment plan in 2012/13 and note the level of the local re-investment plan which had been identified to date.

5. Capital Investment Programme

5.1 Mrs Goldsmith introduced a previously circulated report providing the Committee with an overview of the draft 3-year capital plan for 2012/13 to 2014/15.

5.2 Mrs Goldsmith advised the Committee that the Scottish Government was pushing towards the use of Hubco as a source of revenue funded capital expenditure. Capital investment had been reduced this year as overall funding had been reduced.

5.3 Mr Egan asked what was being done about backlog maintenance, in particular with respect to statutory standards that NHS Lothian was not going to meet.

5.4 Mrs Goldsmith advised the Acting Director of Facilities was ensuring the funds available for maintenance were spent in the most critical areas.

5.5 The Chair queried whether information was provided by Consort on the amount spent on maintenance. Mrs Sansbury advised information was provided on how the money paid to Consort was spent. Mrs Sansbury undertook to provide a report to the Committee detailing maintenance expenditure on the Royal Infirmary of Edinburgh. **JKS**

5.6 Mr Anderson queried how the funding for the Hub South East Scotland enabling works was provided and Mr Graham advised that the Scottish Government made the funding available.

5.7 Mr Johnston commented that investment was required into ward 19 at the Royal Infirmary of Edinburgh but was not referred to in the paper. Mrs Goldsmith advised that this would be part of the base level of investment and was, therefore, already covered.

5.8 The Chair queried whether plans would be brought forward to ensure NHS Lothian obtained its share of investment from the Scottish Government and asked for clarification on what action was being taken and what re-assurance could be provided by the Scottish Government.

5.9 Mrs Goldsmith advised that the national allocation of capital would be concentrated for the next 3 years on the redevelopment of the Southern General Hospital in Glasgow and other NHS Boards would receive a smaller share of capital investment. Mrs Goldsmith undertook to bring back a report to the Committee with proposals on how NHS Lothian should deal with this and advised that she would be flagging up future Business Cases and investment required. **SG**

5.10 The Committee agreed the draft capital plan for 2012/13 to 2014/15, noting that the timing of capital projects not yet fully approved would require to be managed to ensure delivery of a balanced position in 2012/13; agreed that the risks set out were to be incorporated in the corporate risk register and agreed to submit the capital plan to Lothian NHS Board for approval on 23 May 2012, subject to changes reflecting concerns about the achievement of statutory standards and the inclusion of a section detailing works that would not be undertaken and how the project has been prioritised. **SG**

6. Labour Ward Update Project at St John's Hospital

6.1 Mrs Sansbury introduced a previously circulated report giving an update on the preferred approach to managing the project to upgrade the St John's labour ward, which would involve decanting this service into ward 20 (the Burns Unit) at St John's Hospital in order to sustain normal clinical service levels in the West Lothian maternity service throughout the project period.

6.2 Mrs Sansbury advised that the original plan to close half of the labour suite at a time, to carry out the upgrading works in two phases would take longer and be more disruptive, as well reducing the delivery service for West Lothian mothers for at least 9 months. In addition, the Healthcare Environment Inspectorate risks associated with trying to maintain half the service in the labour suite whilst building work was in progress would be very significant, as would the risks for the contractor in keeping the unit working in a safe environment.

6.3 The best decant options in St John's had been identified as ward 20, the Burns Unit, which had its own integral theatre and a direct lift which could be designated solely for the maternity service, as well an existing ward lay out and room size which would allow the maternity service to function at its current levels.

6.4 Mrs Sansbury advised the demand for the Burns Unit was significantly reduced as fewer burn cases were occurring nationally due to a number of factors. This meant that the Burns Unit could be moved to a currently vacant area in ward 19 and which was adjacent to the Plastic Surgery inpatient area. The move of the Burns Unit from ward 20 to ward 19 would free up ward 20 once the labour suite moved back out for alternative longer term use. Options could include turning it into the base for a regional hand trauma service.

6.5 Mr Egan advised the Committee that whilst he fully supported the upgrade of the labour ward, he was concerned that the specialist skills built up in the Burns Unit were retained, particularly as patients with significant burns were taken to the intensive treatment unit rather than the Burns Unit. He queried the "optimism bias" and asked about the reclamation of VAT.

6.6 Mrs Goldsmith advised that the "optimism bias" was undertaken in line with a specific formula agreed by the Scottish Government and indicated that the correct amount of VAT would be reclaimed.

6.7 Mr Gabbitas advised the Committee that ward 19 could be designed in such a way as to address any clinical concerns.

6.8 Mr Johnston advised the Committee that he fully supported the proposal which had also been supported by the St John's Hospital Stakeholder Group. He was anxious that the use of the existing theatre and ward 20 when the labour ward was finished should be maximised and noted that the proposals open up a range of options.

6.9 Mrs Sansbury advised that the process would be separated and details of the options considered when the Business Case was produced.

6.10 Mr Egan commented that the Burns Unit would require specialised air flow systems, which would be expensive. Dr Farquharson advised the Committee that this was a busy labour ward and the proposals would be better for patients and Professor Iredale commented that the proposal was eminently sensible.

6.11 The Chair advised that the Committee was very supportive of the proposals, although he felt it was unfortunate it had taken 2 years to get to this stage. He sought re-assurance that everything would be done to expedite the project.

6.12 Mrs Sansbury undertook to come back to the June meeting of the Finance & Performance Review Committee with costings and details of the options for the Burns Unit, as well as a revised timetable. **JKS**

6.13 The Committee agreed to note the proposed plans for decanting the labour ward so that upgrade of the unit could be completed in a single phase; to approve the development of a Business Case for the associated upgrade of ward 19 in order to move ward 20 into the facility before the labour suite was decanted into ward 20; to note the revised timelines for this two-stage project which would see the earliest completion date being c. 2013; to note that the Lothian capital investment group had approved the release of funds to carry out a feasibility study into the transfer to ward 20 and the required upgrade of ward 19 with the aim of confirming the plans and providing more accurate costs for that element allowing the overall costs to be identified and agreed that the upgrade should be expedited as much as possible. **JKS**

7. Financial Position to 20 February 2012

7.1 Mrs Goldsmith introduced a previously circulated report providing the Committee with an overview of the financial position of NHS Lothian to the end of February 2012.

7.2 The Committee noted that NHS Lothian was reporting an underspend of £0.1m for the 11 months to the end of February 2012 and a further favourable movement in the month of £0.23m. This reflected under-delivery of £1.569m against the local re-investment plan target off-set by a £1.671m underspend on other budgets.

7.3 Mrs Goldsmith advised that the Finance department was working on the year-end position and the underspend would be carried forward into the next financial year.

7.4 The Committee agreed to note the continued forecast of break-even for the financial year 2011/12 and the continuing actions to deliver an increased level of current savings from the 2011/12 targets and minimising the carry forward into 2012/13 financial plan.

8. Performance Management

8.1 Dr Farquharson introduced a previously circulated report giving an update on the most recently available NHS Lothian performance data as reported through local and national systems.

8.2 Dr Farquharson commented that a number of areas, such as suicide reduction used annual figures so no change was reflected in the report. Work had been undertaken to tackle delayed discharges and to address a failure to meet targets on stroke.

8.3 Mr Egan expressed his concern at the level of delayed discharges and asked if more detailed information could be included.

8.4 Dr Farquharson explained that the paper concentrated on patient flow but further details of long-term delayed discharges could be included in the next report. **DF**

8.5 Professor Iredale referred to data on obesity which showed that the largest number of obese females in the world were found in Lothian. Means of dealing with this situation were being examined.

8.6 Mr Gabbitas commented that there were some difficulties in the data relating to delayed discharges, particularly where the numbers on the database had not been validated. Whilst the numbers were challenging with 63 delayed against a target of 48, these levels were not particularly bad compared to earlier days. The City of Edinburgh Council had provided 3,000 extra hours per week at a cost of £3.6m to the change fund initiative and this would be in place shortly. Unfortunately, demand for such accommodation was continuing to increase.

8.7 Mr Egan commented that it was the City of Edinburgh Council's responsibility to provide these services and advised that West Lothian had reduced the delayed discharges to zero by building increased capacity. He commented that in England as soon as local authorities who failed to provide the necessary facilities were fined, the problem was resolved.

8.8 The Committee agreed to receive the update and note the actions being taken where performance was currently off trajectory. It was noted that responsible Directors identified within the paper had provided and agreed the information and the actions taken to address any shortfall against the agreed trajectories. It was noted that a separate report would be available regarding the position on waiting times and that, as previously reported, the Health Intelligence Unit was continuing to develop dashboards for Committee, and it was anticipated that this data would form part of a reporting suite. The Committee also noted that more data and a better understanding of delayed discharges was necessary. **DF**

9. Waiting Times Access Targets

9.1 Mrs Sansbury introduced a previously circulated report giving an update on the current position in relation to waiting times within NHS Lothian.

9.2 The Committee noted that as a combination of two factors namely the requirement to offer treatment to all those previously suspended because of unavailability to take up the offer of treatment in England and changing practice of suspension the direct result had been an immediate deterioration in the reported performance from October.

9.3 Mrs Sansbury indicated that there was likely to be a residual balance of backlog to be cleared beyond the end of June, largely in relation to the complex tail of patients waiting for specialist treatment. In addition, further inpatient/ day case treatment capacity would be required to deal with an estimated 800 patients converting from outpatient referrals from July onwards.

9.4 The Committee noted that work was being undertaken in partnership with the Scottish Government Health and Social Care Directorates' colleagues to develop sustainable local capacity plans, including evaluation of imbalance, and would form the basis for assessing any resource requirements for the second quarter and beyond.

9.5 Mrs Sansbury commented that the staff carrying out the recovery plan were those who were under investigation and were, therefore, under a huge amount of stress.

9.6 Professor Iredale commented that the change in the shape of the performance curve showing the number of cases outstanding was gratifying and he emphasised the need to ensure that the same problem did not recur through a comprehensive redesign of the service. Dr Bryce commented that service redesign would help but she appreciated that there was significant pressure on staff.

9.7 The Chair questioned whether any of the staff on redeployment would be able to assist with this work and Mr Egan advised that none of the staff on redeployment was suitably qualified.

9.8 Mrs Sansbury advised that the Director of Human Resources and Organisational Development had been helpful and some support had been arranged and the national team was also assisting. More detailed work had to be undertaken, as well as work on job planning.

9.9 The Chair commended the work currently being undertaken to resolve the situation.

9.10 Mr Boyter advised that the critical incident review had been kept to schedule and the final report would be produced on 20 April, at which point an appropriate way of dealing with the position would be agreed. He indicated that the Scottish Government had been fully briefed on the position.

9.11 Mrs Sansbury advised that two of the services, vascular surgery outpatients and general surgery outpatients were both already back in balance and work was ongoing to bring the other areas into balance.

9.12 The Committee agreed to note the position, as well as the actions and resource implications associated with the recovery of the position in quarter 1 and recognised that there was likely to be a requirement for further action beyond the end of June to support the ongoing delivery of targets.

10. Workforce Efficiencies within NHS Lothian

10.1 Mr Boyter introduced a previously circulated report outlining progress to date in regard to planning workforce reductions and efficiencies.

10.2 Mr Boyter advised that there had been a reduction of 556.8 whole time equivalent staff in posts since 1 April 2011 to 29 February 2012 against the annual target of 734 whole time equivalents securing 75.9% of the annual target. This was 116.2 whole time equivalents behind the projected target of 673 whole time equivalents (as at the end of February) as a consequence of the activity pressures caused by the extra beds opened and the resolution of the waiting times in the University Hospitals Division. However, in regard to the 2-year target of a reduction of 2,000 posts (1,468 whole time equivalents) 95% of this target had been secured with a cumulative reduction of 1,390 whole time equivalents at the end of February being 78 whole time equivalents (5%) from target with March still to be reported and so, over the 2-year period, NHS Lothian remained on target.

10.3 The Committee also noted that the sickness absence average position from 1 April 2011 to 29 February 2012 was 3.95% against 4.4% for the same period in the previous year equating to an annual saving of 83.2 whole time equivalents (£3.23m).

10.4 Mr Boyter commented that although NHS Lothian's performance in this area was better than all other NHS Boards in Scotland, there was still room for improvement.

10.5 Dr Bryce expressed an interest in the demographics of workforce reductions as problems could arise with particular staff groups if there were sizeable numbers of people likely to retire over a short period of time. Mr Boyter undertook to share the demographic statistics with Dr Bryce. **AB**

11. NHS Lothian Mid-Year Review 2011/12

11.1 Mrs Goldsmith introduced a previously circulated report presenting correspondence from John Connaghan, Director of Workforce and Performance at the Scottish Government Health and Social Care Directorates, recording the main points of discussion from his meeting at Waverley Gate on 27 January 2012 looking at performance progress in 2011/12 and at NHS Lothian preparation for 2012/13.

11.2 Mrs Goldsmith advised the Committee that the external review report by PricewaterhouseCoopers into aspects of NHS Lothian's waiting times management and practices had been commissioned by NHS Lothian and not the Scottish Government.

11.3 The Committee agreed to note the correspondence.

12. Disbandment of the Primary and Community Partnership Committee

12.1 Dr Farquharson introduced a previously circulated report providing the Committee with an opportunity to consider and agree its role with respect of dependent contractors following the removal of the Primary and Community Partnership Committee from the Board's governance architecture. It was noted that the Operational Audit Sub-Committee had referred this matter to the Committee.

12.2 Dr Farquharson advised that there were very few dispute resolutions with independent contractors and these usually averaged one or two a year. The Committee agreed to recommend to Lothian NHS Board that its terms of reference be amended with the inclusion of an additional paragraph in the Committee's remit

"On the Board's behalf to have overall responsibility for the governance of the discharge of disciplinary responsibilities regarding the independent contractors/ family health service practitioners." **DF**

13. Prison Healthcare Transfer – Traditional Finance and Accounting Arrangements

13.1 The Committee noted a previously circulated report clarifying the arrangements for service financing and the accounting for the impact of the healthcare service transfer, in respect of prison facilities within the geographic boundaries of NHS Lothian.

13.2 Mr Egan expressed some concerns about the governance arrangements and it was agreed to defer consideration of this report to the next meeting. **SG**

14. Date of Next Meeting

14.1 It was noted that the next meeting of the Committee would be held on Wednesday, 6 June 2012 from 9.00 a.m. to 11.30 a.m. in Meeting Room 7, Waverley Gate, Edinburgh.

NHS LOTHIAN

Finance & Resources Committee – PRIVATE SESSION
25 July 2018

Director of Finance

SUPPLEMENTARY BUSINESS CASE TO SUPPORT PROPOSED COMMERCIAL AGREEMENT FOR COMPLETION OF RHSC/DCN PROJECT

1 Purpose of the Report

1.1 The purpose of this report is to present to the Committee a update on the proposed Settlement Agreement for completion of the disputed capital works required for completion of the new Royal Hospital for Children and Young People/Department of Clinical Neuroscience/Child and Adolescent Mental Health Facility.

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

2 Recommendations

2.1 The Committee is recommended to:

- approve £10m capital contribution towards disputed works required for completion of the facility, subject to availability of funding from the Scottish Government Health and Social Care Division (SGHSCD);

- approve a £1.6m contribution towards the shortfall in funding available to IHSL, under the enhanced early access element of the agreement; and

- approve the Director of Finance and / or Interim Chief Executive to act as signatory to the Settlement Agreement.

3 Discussion of Key Issues

3.1 This business case is intended to be supplementary to the 'Financial Case' section of the original Full Business Case (FBC). It considers two potential approaches to deliver completion of the project, and compares estimated costs for both before assessing overall affordability. The document focuses on the Financial Case as there are no material changes in the Strategic Case, Economic Case, Management Case or Commercial Case as presented as part of the approved FBC.

3.2 Following a series of delays and disputes, IHSL and the Board team have negotiated a potential solution to provide certainty over programme and specification of the completed facility.

3.3 This solution covers the **capital cost of all outstanding works** (£17.61m) and **the project financing and additional contractor costs** (£5.77m).

3.4 The proposal is for the Board, funded by SGHSCD, to make a capital contribution of £10m towards the capital costs. Although this is the greater share of the £17.61m estimated cost, it is equivalent to the 'risk adjusted' cost of an alternative Dispute Resolution Process (DRP) but brings significant additional benefits.

3.5 Recognising that this remains a live construction site, as at the date of the agreement, the proposed capital contribution provides certainty on programme; certainty on specification of key areas of dispute; avoids a protracted and reputationally damaging DRP / court process; and represents value for money against the potential costs of an unfavourable DRP / court outcome.

3.6 The project financing and additional contractor costs were originally proposed to be funded through an 'Enhanced Early Access' Fee provided by the Board, to allow NHS Lothian to undertake additional commissioning activities in advance of formal handover. However the recent water damage throughout the lower half of the construction site, caused by a pipe breaking, is likely to limit the level of early commissioning that the Board could expect to undertake and this element of the proposal requires further negotiation. We have estimated that £1.6m would be an appropriate contribution towards the overall funding shortfall.

3.7 IHSL have indicated that they are able to cover the remaining shortfall via additional borrowing, although servicing such borrowing would reduce the level of surplus available to the public sector. As such, the value for money and affordability of such an approach requires further assessment.

3.8 Any NHS Lothian / SGHSCD funding for this would come from currently available budgets to cover the Annual Service Payment, which has not yet become payable, or from surpluses that would be returned to Scottish Government.

4 Key Risks

4.1 This is a complex and uncertain negotiation, and there are a number of risks with the proposal:

- the programme to completion to 31st October is challenging, particularly given additional work caused by water damage from the burst pipe;
- failure to agree the details of all outstanding works to be included in the Settlement Agreement may leave the project open to further dispute;
- any additional commissioning works may be difficult to manage while construction works are ongoing; and
- any requirement for additional borrowing by IHSL may result in reduced surpluses for the public sector, as anticipated through the NPD model;
- it is a live construction site with a high degree of works undertaken out of sequence to foreshorten the programme and sub contractors pressured. This may give rise to other problems in construction, new programme delay or operational deficiencies being identified post completion.

5 Risk Register

5.1 The project's existing risk register is kept updated and reported through the Programme Steering Board. The key deliverability risk has been escalated to the corporate risk register.

6 Impact on Inequality, Including Health Inequalities

6.1 An impact assessment was carried out as part of the business case for the project. No additional impact assessment has been completed.

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

7.1 No further engagement has been carried out for this supplemental business case, but publication of the outturn programme milestones (e.g. migration and operational start) will be undertaken.

8 Resource Implications

8.1 The resource implications are a £10m capital contribution, anticipated to be funded by SGHSCD, and a £1.6m contribution towards the shortfall in funding available to IHSL, under the enhanced early access element of the agreement.

Susan Goldsmith
Director of Finance
24 July 2018

[redacted]

List of Appendices

Appendix 1: Supplemental Business Case to Support Proposed Commercial Agreement for Completion of RHSC/DCN Project

RHSC & DCN

REPORT ON SETTLEMENT AGREEMENT, CONSTRUCTION SETTLEMENT AGREEMENT, SERVICES SETTLEMENT AGREEMENT AND THE AMENDED AND RESTATED SHAREHOLDER SUPPORT AGREEMENT

1. EXECUTIVE SUMMARY

1.1 This report details the legal agreements that the Board has entered into / approved, to give effect to the commercial settlement which was finalised via Heads of Terms agreed on 19 December 2018. A Settlement Agreement varying the terms of the Project Agreement and a Construction Settlement Agreement, varying the terms of the Construction Contract are being entered into at this stage. There are also associated Shareholder and finance documents dealing with the additional shareholder injection and waivers of certain rights by Funders. It is envisaged that a Services Settlement Agreement will be entered into in due course. We would summarise the position in relation to each agreement as follows.

1.2 Settlement Agreement

This implements the Heads of Terms and the key terms are as follows:-

- Project Co are obliged to procure the design, build, test and commissioning of the Post Completion Works including detailed technical specifications and operational procedures by agreed programme dates;
- a new Event of Default will be added to the Project Agreement entitling the Board to terminate pursuant to clause 40.3.1 of the Project Agreement (i.e. automatic termination) in the event that Final Certification of the Post Completion Works is not granted by the Independent Tester by 26 July 2019, subject to any Delay Events;
- Solutions to other disputed technical issues offered and now accepted by the Board form part of a Technical Schedule to the Settlement Agreement which Project Co are obliged to comply with;
- The Board will pay Project Co £6 Million on signature of the Settlement Agreement. The cash will be utilised to replenish the Debt Service Reserve Account held by the funders to 100% of contractual requirement;
- The Board will retain £5.6 Million to be paid as follows:
    - Certification by IT in relation to completion of the Drainage solution – £2 Million;
    - Certification by IT in relation to completion of Void Detection – £2 Million;
    - Certification by IT in relation to completion of Heater Batteries – £1.6 Million.
- The Board shall commence payment of the full Annual Service Payment on the Actual Completion Date, that is all other Works less the Post Completion Works and some other Outstanding Works which are key to completion of the Facilities. Accordingly, the Payment Mechanism shall apply to the Services (other than the Post Completion Works / Outstanding Works). In relation to the Post Completion Works and Outstanding Works once these works are completed Service provision commences (subject to our comments below about the Amended Services) and deductions can be applied for any failure to provide the Services from the relevant target dates for the Post Completion Works and Outstanding Works;
- The Service Provider commence provision of the Services (other than Services to the Post Completion Works, Outstanding Works and Amended Services) on the Actual Completion Date and the Board shall commence commissioning;
- Project Co will invest sub-debt and reinvest distributions. In addition to the reinvestment of distributions and injection of additional Sub-Debt, Project Co will also make a capital payment into the deal (see our comments in section 6 below).

1.3 Construction Settlement Agreement

The intention is that this "passes down" the construction obligations on Project Co pursuant to the Settlement Agreement to the Contractor. However, there are some notable exceptions and disparities between the Settlement Agreement and Construction Settlement Agreement which we would summarise as follows.

- Amended Services (as defined in paragraph 5 below) – while there is now a mechanism detailing what will happen in the event the 12 month period during which the Contractor has agreed to undertake Services (which are not being provided by the Service Provider) to the Agreed Resolution items and Post Completion Works, has expired and nothing is agreed with the Service Provider, there are some risks attached to the approach taken. This is dealt with in more detail in paragraph 1.4 below;
- As you are aware there remain some discrepancies between the Liquidated Damages calculations and what is being waived by IHSL and what is being paid by MPX which we have been advised related to "extraneous amounts" and which will not be capable of further interrogation by us.

1.4 Services Settlement Agreement

- There is no finalised Services Settlement Agreement at this stage. It will not be put in place at the same time as the Settlement Agreement and Construction Settlement Agreement are entered into.
- Accordingly, the Service Provider is only obliged to provide the Services pursuant to the original Services Contract and there are currently no provisions obliging the Service Provider to provide the Amended Services (i.e. the Services which are revised pursuant to the Agreed Resolutions and Post Completion Works as fully defined in paragraph 5 below).The Contractor has agreed to provide the Amended Services during the Temporary Services Period (defined in paragraph 5 below; a period of 12 months after Project Co serves notice on the Contractor to provide the Amended Services). While there is now a mechanism for detailing what will happen in the event that new commercial arrangements between Project Co, the Service Provider and the Contractor are not finalised before the Temporary Service Period comes to an end there are some risks attached to this mechanism as described in paragraph 5 below, although Project Co's legal advisers have advised that Project Co and the Funders are satisfied with how this mechanism is drafted in CC SA1 and do not propose further revisals. This mechanism involves the ***Contractor*** (not Project Co) having the option to continue to provide the Amended Services until the Construction Contract terminates (i.e. 12 years after the Actual Completion Date) on giving Project Co an indemnity to Project Co for the reasonable costs incurred by Project Co engaging a third party to carry out the Amended Services to the end of the concession after the Contractor's 12 year liability period has expired; OR the Contractor choosing not to continue the Amended Services and instead giving an indemnify to Project Co for the reasonable costs incurred by Project Co engaging a third party to carry out the Amended Services.
- The Board should note that there is a risk that the (a) the £1 Million (reducing to £500,000) is not sufficient and/or (b) that the indemnity does not keep Project Co whole (that would mainly arise where the performance security, Performance Bonds and/or Parent Company Guarantee cannot be enforced).
- Project Co's legal advisers have advised that Project Co and the Funders are satisfied that the £1 Million (reducing to £500,000 after 6 months) is considered sufficient because Project Co considers that the cost of these services is probably about £275,000 (presumably excluding VAT) for the whole concession. This figure does include the increased Deductions risk, but it seems to be enough to give comfort to Project Co that a £1 million / £500,000 retention is sufficient. Project Co's legal advisers have also advised that Project Co and the Funders are satisfied that this obligation (including the indemnity) is backed by the Parent Company Guarantee because while the Performance Bonds are being extended to the Certificate of Making Good Defects (which should be approximately 3 months after the Temporary Service Period comes to an end) there may not be sufficient time to determine any liability arising from the Contractor's default in which to make a claim on either of the Performance Bonds.

- So although the Settlement Agreement obliges Project Co to provide the Amended Services at no extra cost to the Board, if the Service Provider will not take over the provision of the Amended Services before the Temporary Service Period expires then either the Contractor continues to provide the Amended Services (but in the event of default Project Co has £500,000 and indemnity supported by the Parent Company Guarantee but depending on timing, it may or may not be supported by the Performance Bond(s)) or if the Contractor does not continue then Project has to find a third party to provide the Amended Services (with £500,000 and an indemnity for the third party costs, supported by the Parent Company Guarantee but depending on timing, it may or may not be supported by the Performance Bond(s)). Project Co however is now to manage the process of taking any dispute about liability for the Service Provider's costs to dispute resolution and that may be because the Funders have made it an Event of Default if the Service Resolution Date is not achieved within 6 months after the Actual Completion Date.

1.5 Finance and Shareholder Documentation

- It should be noted that rather than Project Co making a non-recoverable capital payment into the deal, their investment is being made via a waiver of fees (please refer to section 6 below). Otherwise, it is understood that the finance and shareholder documentation represents the position agreed between the parties, although this should be checked by the Board's financial advisers.

DETAILED REPORT

2. INTRODUCTION

2.1 The Board and IHS Lothian Limited (**"Project Co**") entered into a project agreement on 12th and 13th February 2015 for the re-provision of RHSC & DCN at Little France (the "**Project Agreement**"). The Board and IHSL entered into settlement discussions regarding various matters relating to the Project Agreement and shall be entering into a Settlement Agreement and Supplemental Agreement to vary the terms of the Project Agreement accordingly (the "**Settlement Agreement**").

2.2 The Settlement Agreement requires to be "passed down" to Multiplex Construction Europe Limited (the "**Contractor**") via an agreement between Project Co and the Contractor (the "**Construction Settlement Agreement**").

2.3 The Settlement Agreement also requires to be "passed down" to Bouygues E&S FM Limited (the "**Service Provider**") via an agreement between Project Co and the Service Provider (the "**Services Settlement Agreement**").

2.4 In order to finance its obligations under the Settlement Agreement the ultimate shareholders in Project Co are to invest an additional £5.4 million by way of subordinated debt under the terms of an amended and restated shareholder support agreement between Project Co, IHS Lothian Holdings Limited ("**Hold Co**"), IHS Lothian Investments Limited ("**Top Co**"), IHS Lothian Corporate Limited ("**Shareholder**") and Prudential Trustee Company Limited (the "**Security Trustee**") (the "**A&RSSA**").

2.5 This paper seeks to provide an overview and key issues arising in respect of each of the Settlement Agreement, Construction Settlement Agreement, Services Settlement Agreement and the A&RSSA.

3. SETTLEMENT AGREEMENT

3.1 Overview

3.1.1 The parties to the Settlement Agreement are the Board and Project Co. The purpose of the Settlement Agreement is to document the settlement which has been reached between the Board and Project Co which provides for staged payments totalling £11.6 million ("the **Settlement Sum**") to be paid in return for an agreed specification and programme of works to completion of the Facilities.

3.1.2 Three key technical items being Drainage Works, Void Detection Works and Heater Battery Works (referred to in the Settlement Agreement and in this report as "the **Post Completion Works**") are being carried out after an Actual Completion Date has been signed off by the Independent Tester. £6 Million of the Settlement Sum is payable when the Settlement Agreement is entered into. Payment of £5.6 Million of the Settlement Sum is split up into milestone payments, payable when each of the three Post Completion Works are completed and certified by the Independent Tester. If the Post Completion Works are not completed and certified by the targeted completion date for that milestone then deductions can be applied in relation to any Unavailability of Services from the targeted completion date until actual completion of the relevant Post Completion Works.

3.1.3 The Settlement Agreement also includes provision for a new Project Co Event of Default permitting the Board to terminate immediately (subject to the terms of the Funder's Direct Agreement) in the event that the Post Completion Works are not completed by the Post Completion Works Longstop Date (26 July 2019).

3.1.4 Payment of the Annual Service Payment and provision of the Services starts on the Actual Completion Date and the Operational Term commences. The Payment Mechanism provisions (entitling the Board to apply deductions in the event of Service Incidents which result in a failure to deliver the Services in accordance with the Availability Standards and Performance Standards set out in the Service Level Specification) apply from the Actual

Completion Date subject to the relief set out above in relation to the Post Completion Works and below in relation to the Outstanding Works.

3.1.5 As well as the Post Completion Works, the Settlement Agreement provides for certain other items of work (referred to in the Settlement Agreement and in this report as "the **Outstanding Works**") to be carried out after the Actual Completion Date. If the Outstanding Works are not completed and certified by the targeted completion date then deductions can be applied in relation to any failure to meet the Availability Standards / Performance Standards from the targeted completion date until actual completion of the Outstanding Works.

3.1.6 The Settlement Agreement also provides for Project Co to carry out certain additional obligations in relation to the water in light of certain results obtained from tests undertaken by BYES all as explained at paragraph 3.2.15 below.

3.2 Key issues

3.2.1 Works, Agreed Resolution and Actual Completion Date

(a) The Settlement Agreement was primarily entered into because Project Co and the Contractor required derogations to the Project Agreement to satisfy that the Works met the Completion Criteria. The Completion Criteria is criteria used by the Independent Tester to confirm whether the Works are complete. This is turn leads to the Independent Tester issuing a Certificate of Practical Completion which triggers the Actual Completion Date which in turns triggers the Payment Commencement Date and payment by the Board of the Annual Service Payment to Project Co.

(b) The Board and Project Co agreed an Agreed Resolution in respect of certain technical issues which did not meet the requirements of the Project Agreement. A Technical Schedule has been developed between the Board, the Contractor and Project Co setting out the dispute between the parties and the Agreed Resolution of that dispute in relation to each relevant technical issue.

(c) As negotiations progressed, it became apparent that design and construction of all of the works which were outstanding was going to take a considerable amount of time delaying yet further the hospital live date. Accordingly, it was agreed between the parties that the Post Completion Works could be done after the Actual Completion Date, i.e. during the Operational Term of the Project. It subsequently became apparent that Outstanding Works would also require to be constructed during the Operational Term (as more fully described in paragraph 3.2.6 below).

(d) Both the Agreed Resolution and Post Completion Works Agreed Resolution amend the original requirements of the Project Agreement and a bespoke set of Completion Criteria have been prepared for the Post Completion Works so that the Independent Tester can certify the Post Completion Works are satisfactorily complete in accordance with the relevant Agreed Resolution and other relevant terms of the Project Agreement.

(e) Similarly, the Completion Criteria for the items on the Technical Schedules which have Agreed Resolutions are deemed to be amended to reflect the Agreed Resolutions.

(f) There is also a bespoke set out Completion Criteria for the Outstanding Works which will be certified by the Independent Tester.

(g) Once the Works (excluding the Post Completion Works and Outstanding Works) meet the Completion Criteria and the Agreed Resolution, the Independent Tester shall be in a position to issue a Certificate of Practical Completion which shall trigger the Actual Completion Date and the Payment Commencement Date. The Board shall then pay the full Annual Service

Payment to Project Co and the Service Provider shall commence provision of the Services.

(h) The Post-Completion Works and Outstanding Works shall be completed during the Operational Term of the Project and be certified by the Independent Tester in accordance with their bespoke Completion Criteria. As set out above, if the Post Completion Works and Outstanding Works are not completed by the targeted completion dates for the Outstanding Works and Post Completion Works, the Board shall be entitled to apply Deductions for any failure by Project Co to provide the Services in accordance with the Service Level Specification.

3.2.2 Released Claims and Future Claims

(a) In order to create certainty and minimise future disputes, both parties agree to release their claims against the other in respect of:

(i) the original dispute and facts relating to that dispute regarding the technical items not complying with the requirements of the Project Agreement;

(ii) the Agreed Resolution and the Post Completion Works Agreed Resolution (subject to compliance by both parties of the respective obligations in relation to the Agreed Resolutions pursuant to the Settlement Agreement);

(iii) any additional relief and/or time associated with Delay Event claims and/or Relief Event claims known by the parties at the date of the Settlement Agreement (the "**Released Claims**").

(b) However, Released Claims will not affect any Future Claims (whether currently known about or not) which either party may have against the other. Future Claims include:

(i) An act or omission, breach , default or failure to comply with the Project Agreement (including rectification of Snagging Matters, rectification of Defects, remedies set out in the Payment Mechanism) as measured against the Agreed Resolution and/or Post Completion Works Agreement Resolution;

(ii) All rights and remedies available to the Board in respect of the Concrete Specification, De-Watering, Geotechnical Reports and Sub-mains Schedule (these being items which the Board was unable to satisfy itself in terms of the Review Procedure and therefore were awarded a status C only);

(iii) any additional relief and/or time associated with Delay Event claims and/or Relief Event claims not known by the parties at the date of the Settlement Agreement.

3.2.3 Post Completion Works

(a) The Post Completion Works which comprise the Drainage Works, the Heater Batteries Works and the Void Detection Works were originally a dispute between the Board and Project Co. In order to resolve these disputes, the parties have agreed a programme and specification for the Post Completion Works. In order to mitigate delays to the opening of the Facilities, it has been agreed that the Post-Completion Works will be completed after the Actual Completion Date. There are target dates for the for completion of the Post-Completion Works, these being:

(i) Drainage Works: 24 May 2019;

(ii) Void Detection Works: 13 June 2019; and

(i) Heater Battery Works: 27 May 2019.

(b) In the event that the target dates are not met by Project Co, the Board shall be entitled to levy Deductions against Project Co for failure to provide Services in respect of the Drainage Works, Void Detection Works and/or Heater Batteries Works. In addition, there is a Post Completion Works Longstop Date of (26 July 2019) which means that the Board has a right to terminate the Project Agreement in the event that the Post Completion Works are not completed by the Post Completion Works Longstop Date. However, Project Co shall have the benefit of Delay Events and Relief Events in relation to Post Completion Works where such relief or extension of time arises after the date of the Settlement Agreement.

3.2.4 Payment of Settlement Sum

(a) Once the Drainage Works, the Void Detection Works and the Heater Battery Works have been constructed in accordance with their bespoke completion criteria and certified by the Independent Tester, these works will have reached their individual milestone and a milestone payment shall be paid by the Board to Project Co as follows:

(i) Milestone 2: Drainage Works – £2 Million (plus VAT);

(ii) Milestone 3: Void Detection Works - £2 Million (plus VAT); and

(iii) Milestone 4: Heater battery Works - £1.6 Million (plus VAT).

(b) In addition to the above, the Board shall also pay Project Co £6 Million upon the Settlement Agreement being signed. It is understood that this money shall be used to replenish the Debt Service Reserve Account held by the funders.

(c) Therefore, in total, the Settlement Sum due by the Board to Project Co pursuant to the Settlement Agreement is £11.6 Million.

(d) In the event that the Board fails to pay any element of the Settlement Sum, Project Co can suspend its performance of its obligations under the Settlement Agreement and Project Co can claim a Delay Event, i.e. a time and money remedy for the Board's failure to pay.

3.2.5 Drainage Works

(a) The Drainage Works require particular mention. The Drainage Works proposed by Project Co has given rise to two elements of concern, namely the internal sump pump in the basement and the external sump pump in PARU garden.

(b) In terms of the internal sump pump in the basement, only one pump requires to be operational at any one time. In order to mitigate the risk of failure, the system is set up such that a second pump automatically comes into operation if the first pump fails. There are automatic alarm systems to trigger an early response to a pump failure and it is anticipated that a pump should be capable of replacement within four hours (possibly less). A spare pump is being kept on site to mitigate any time delays. In the event of both pumps failing, a third back up pump automatically becomes operational. In the event that pump fails, there will be a total failure of the basement drainage system until one of the pumps is replaced.

(c) In terms of the external sump pump in PARU gardens, only one pump requires to be operational at any one time. In order to mitigate the risk of failure, the system is set up such that a second pump automatically comes into operation if the first pump fails. There are automatic alarm systems to trigger an early

response to a pump failure and it is anticipated that a pump should be capable of replacement within four hours (and possibly less). A spare pump is being kept on site to mitigate any time delays. In the event of total external pump failure, although the main kitchen is unaffected the access routes for deliveries is and so this could still hamper ability to provide catering, deliveries of supplies, removal of waste, domestic services - clean linen etc.

(d) The Board has accepted a significant compromise to the drainage system which it was anticipated at Financial Close would be provided. As a result, there is considerable risk of failure of the basement and / or external sump pump during the operational phase of this project. For this reason the Settlement Agreement amends the Payment Mechanism so that in the event of total failure of the relevant pumps, the areas affected will be deemed to be Unavailable. We have agreed revisions to the Payment Mechanism to deem any Areas which will be affected by a failure of the drainage works (internal or external) Unavailable.

3.2.6 Outstanding Works

(a) The Outstanding Works are works set out in Schedule Part 6 of the Settlement Agreement which form part of the base build of the Facilities which Project Co has requested more time to complete after the Actual Completion Date.

(b) There is a target date for the completion of the Outstanding Works of 27 May 2019. In the event that the target date is not met by Project Co, the Board shall be entitled to levy Deductions against Project Co for failure to provide Services in respect of the Outstanding Works. There is no longstop date available to the Board for the Outstanding Works. However, Project Co shall have the benefit of Delay Events and Relief Events in relation to the Outstanding Works where such relief or extension of time arises after the date of the Settlement Agreement.

(c) It should be noted that certain works called “Outstanding Works Exclusions” do require to be carried out by a target date (detailed in Schedule Part 6) but they are not certified as complete by the Independent Tester.

3.2.7 Board Changes

(a) A number of Board Changes remain to be resolved at the date of the settlement Agreement. This was addressed by categorising certain Board Changes as follows:

(i) Board Changes which would require no further time to be granted by the Board to Project Co to complete the Board Change but which may require operational expenditure to be paid by the Board;

(ii) Board Changes which would require no further time to be granted by the Board to Project Co to complete the Board Change but which may require operational expenditure and capital expenditure to be paid by the Board;

(iii) Board Changes which may require further time to be granted by the Board to Project Co and which may require operational expenditure and capital expenditure to be paid by the Board.

(b) This approach sought to close down all issues in respect of Board Changes as far as possible so that a meaningful settlement could be reached in respect of Board Changes.

3.2.8 Project Co Changes

(a) The Board and Project Co agree that Project Co Changes are approved by the Board pursuant to Section 5 of Schedule Part 16 *(Change Protocol)* of the

Project Agreement and accepted by the Board as Approved RDD Item in accordance with Schedule Part 8 *(Review Procedure)* of the Project Agreement.

3.2.9 Compensation Events

(a) Compensation Events are a time and money remedy to be provided by the Board for the benefit of Project Co during the Construction Phase. As negotiations developed two further Compensation Events have been agreed by the Board to be added to the Settlement Agreement, these being:

(i) Clause 29.3.13: Project Co suspending performance if the Board has failed to pay an element of the Settlement Sum;

(ii) Clause 29.3.14: Project Co being impeded by the Board when carrying out the Post Completion Works or the Outstanding Works.

3.2.10 Independent Tester

(a) The Settlement Agreement includes a letter to the Independent Tester varying the services he is required to perform. Therefore, for Actual Completion Date to occur, the Independent Tester must certify as complete the Works (with exception of the Post Completion Works and Outstanding Works) as against the Completion Criteria as amended by the Agreed Resolution.

(b) In addition, the Independent Tester must subsequently certify as complete the Post Completion Works against the Post Completion Works Completion Criteria (at which point milestone payments shall be made by the Board to Project Co, see paragraph 2.2.3(c) above)) and the Outstanding Works against the Outstanding Works Completion Criteria.

3.2.11 Services

(a) Once the Actual Completion Date has been reached, the Payment Commencement Date is also reached and the project moves from the Construction Phase into the Operational Term. The Operational Term means that Services shall be provided to the Facilities by the Service Provider and the Board shall commence its commissioning activities. The Services to be performed by the Service Provider are set out in the Services Contract. The Services Contract shall be amended by the Services Settlement Agreement, please refer to paragraph 5 below.

(b) It should be noted that a commercial settlement has still not been agreed between the Service Provider, the Contractor and Project Co in relation to the additional costs that may be incurred by the Service Provider in providing the Services to (i) the Agreed Resolutions (technical solutions agreed to resolve the 81 items); and (ii) the Post Completion Works Agreed Resolutions (technical solutions to resolve the drainage, heater batteries and void detection) ("Amended Services").

(a) In the circumstances, as a temporary solution until the commercial agreement between Service Provider, the Contractor and Project Co is finalised provisions are being put in place in relation to the provision of the Amended Services by the Contractor on a temporary basis. We have commented on this highly unusual position which represents a key risk with the Settlement Agreement in more detail at paragraph 5 below.

3.2.12 Board Commissioning

(a) While the Post Completion Works are being undertaken, the Board will carry out their post-completion commissioning in order to mitigate the delays to the hospital live date for the Facilities.

(b) A detailed Joint Completion Programme has been agreed between the parties and the parties are obliged to comply with this pursuant to the Settlement Agreement.

(c) The Board are not entitled to carry out any work in the Facilities while the Post Completion Works are being completed except the works which are stated on the Joint Completion Programme.

(d) If the Board are prevented or impeded from carrying out their commissioning works in accordance with the Joint Completion Programme, the Project Co require to indemnify the Board for the Direct Losses incurred as a result of the prevention or impediment.

3.2.13 Deductions

(a) During the Operation Term, the Board shall be able to apply the Payment Mechanism to the Facilities which formed part of the Works.

(b) However, in respect of the Post Completion Works, the Board can only apply Deductions in respect of Performance Failures or Unavailability pursuant to the Payment Mechanism to such works after the relevant target dates for the Drainage Works, Heater Batteries Works and Void Detection Works have been missed.

(c) Similarly, in respect of the Outstanding Works, the Board can only apply Deductions in respect of Performance Failures or Unavailability pursuant to the Payment Mechanism to such works after the relevant target date for the Outstanding Works has been missed.

3.2.14 Compensation on Termination

(a) In relation to the Compensation on Termination drafting, the funders raised a point concerning the payment of the Settlement Sum. Their concern was that there was a requirement for the unpaid balance of any Settlement Sum to be made available to a new contractor who would be stepping into the shoes of Project Co, in order that this new contractor could complete the outstanding works.

(b) For this reason, the following amendments were proposed:

(i) The definitions of New Agreement and Deemed New Agreement were amended to reflect that such agreements would include the terms of the Settlement Agreement, i.e. the payment obligations would flow to the new contractor if the new contractor carried out the works associated with such payment;

(ii) The definition of Adjusted Highest Compliant Tender Price was amended to make clear that the rectification costs due to be incurred by the Board would include the outstanding “Element of the Settlement Sum” attributable to Milestone 2, Milestone 3 and Milestone 4. This amendment was to capture the value of the project in the event that the Board opted for a no retendering procedure when calculating compensation associated with Project Co Default.

3.2.15 Water testing and management

(a) The Settlement Agreement provides for Project Co to undertake additional water tests in compliance with the relevant SHTMs to satisfy the Independent Tester and the Board that the water quality complies with all relevant standards. If any non-compliances or potential non-compliances arise as a result of these tests then Project Co are obliged to remedy those urgently in accordance with their obligations under the Project Agreement, taking account of

representations from the Board. Project Co is also obliged to provide a water management regime and risk assessment to the Board for review pursuant to the Review Procedure. These obligations were added in to the Settlement Agreement at a late stage in light of the results obtained by the Service Provider from their pre-takeover testing. Whilst the results of those water tests were not non-compliant with the relevant standards, they raised some concerns. The approach set out in the Settlement Agreement is in line with some of the recommendations of the Independent Tester.

4. CONSTRUCTION SETTLEMENT AGREEMENT

4.1 Overview

4.1.1 The parties to the Construction Settlement Agreement are Project Co and the Contractor. The purpose of the Construction Settlement Agreement is to document the settlement which has been reached between Project Co and the Contractor. This provides for various staged payments to be made by Project Co to the Contractor, other payments to be made by the Contractor to Project Co and also various waivers of financial claims that Project Co would otherwise have against the Contractor. Together these are referred to as the "**Settlement Sums**" which are detailed in paragraph 4.2.4 below. The Settlement Sums are to be paid or waived in return for an agreed specification and programme of works to completion of the Facilities.

4.1.2 The Post Completion Works described in paragraph 3.2.3 of this report are generally being passed down into the Construction Settlement Agreement.

4.1.3 The Construction Settlement Agreement also includes provision for a new Contractor Event of Default permitting Project Co to terminate immediately (subject to the terms of the Funder's Direct Agreement) in the event that the Post Completion Works are not completed by the Post Completion Works Longstop Date in the Construction Contract which is 12 July 2019, two weeks earlier than the Post Completion Works Longstop Date in the Settlement Agreement, which gives IHSL two weeks to try and manage any Contractor default.

4.1.4 The Outstanding Works described in paragraph 3.2.6 of this report are also generally being passed down into the Construction Settlement Agreement however certain works called "Outstanding Works Exclusions" do require to be carried out by a target date but they are not certified as complete by the Independent Tester.

4.1.5 Amended Services – see our comments at paragraph 5 below.

4.2 Key issues

4.2.1 Works, Agreed Resolution and Actual Completion Date

(a) The Construction Settlement Agreement was primarily entered into to record in the Construction Contract for the Contractor, the equivalent derogations being given to Project Co under the Project Agreement in respect of the Works meeting the Completion Criteria. The Independent Tester confirmation of whether the Works are complete is also used in the Construction Settlement Agreement. The Independent Tester issuing a Certificate of Practical Completion under the Project Agreement which triggers the Actual Completion Date in the Project Agreement also triggers the same date in the Construction Contract.

(b) The Agreed Resolution identified in paragraph 3.2.1(b) of this report also sets out the dispute between Project Co and the Construction Contractor and the resolution of that dispute.

(c) As for paragraph 3.2.1(c) of this report, the Post Completion Works and Outstanding Works will be carried out by the Contractor after the Actual Completion Date and during the Operational Term of the Project and the matters identified at paragraph 3.2.1(d) and (e) of this report have been passed

down and apply in the Construction Settlement Agreement (with exception of the payment arrangements because there is no Annual Service Payment payable under the Construction Contract nor the Construction Settlement Agreement).

4.2.2 Released Claims and Future Claims

(a) Like the Settlement Agreement (as detailed in paragraph 3.2.2 of this report), in order to create certainty and minimise future disputes, Project Co and the Contractor agree to release their claims against each other in respect of:

(i) the original dispute and facts relating to that dispute relating to the technical items not complying with the requirements of the Construction Contract;

(ii) the Agreed Resolution and the Post Completion Works Agreed Resolution (subject to compliance by both parties of the respective obligations in relation to the Agreed Resolutions pursuant to the Construction Settlement Agreement);

(iii) any additional relief and/or time associated with Delay Event claims and/or Relief Event claims known by the parties at the Effective Date of the Construction Settlement Agreement (the "**Released Claims**").

(b) However, Released Claims will not affect any Future Claims (whether currently known about or not) which Project Co or Contractor may have against each other. Future Claims include:

(i) An act, omission, breach, default, negligence or failure to comply with the Construction Contract (including rectification of Snagging Matters, rectification of Defects) as measured against the Agreed Resolution and/or Post Completion Works Agreement Resolution and Outstanding Works Completion Criteria;

(ii) All rights and remedies available to Project Co in respect of the Concrete Specification, De-Watering, Geotechnical Reports and Sub-mains Schedule;

(iii) any additional relief and/or time associated with Delay Event claims and/or Relief Event claims not known by the parties at the Effective Date of the Construction Settlement Agreement.

(c) However it is worth noting that as currently drafted the Contractor is also having waivers given to it by Project Co as regards the Agreed Resolution.

4.2.3 Post Completion Works

(a) As for the Settlement Agreement (see paragraph 3.2.3 of this report) the Post Completion Works have been passed down to the Contractor and will be completed after the Actual Completion Date with the same target dates as the Settlement Agreement.

(b) In the event that the target dates are not met by the Contractor there are provisions for the application of Deductions applied under the Settlement Agreement to Project Co. In addition, there is expected to be a Post Completion Works Longstop Date of (12 July 2019) (two weeks earlier than the Project Agreement Post Completion Works Longstop Date) which means that Project Co has a right to terminate the Construction Contract in the event that the Post Completion Works are not completed by the Post Completion Works Longstop Date .However, as for the Settlement Agreement, the Contractor shall have the benefit of Delay Events and Relief Events in relation to Post Completion Works

where such relief or extension of time arises after the Effective Date of the Construction Settlement Agreement.

4.2.4 Payment of Settlement Sums and Waivers

(a) The same milestone payments will be made by Project Co to the Contractor as are made by the Board to Project as detailed in paragraph 3.2.4(a) of this report. Other than the milestone payments there is little synergy between the Payment Mechanism in the Settlement Agreement and the payment and waivers in the Construction Settlement Agreement. The following payments and waivers are provided for in the Construction Settlement Agreement:-

Payments or waivers given by Project Co to the Contractor	• Project Co has waived the right to charge the Contractor Liquidated Damages for the period from 20/4/18 to 16/1/19 – by our calculations this equates to 271 days @ £41,219 = £11,170,349; • Project Co waives the Contractor's obligation to pay £955,103 Liquidated Damages during the period 17/1/19 to the date of the Construction Supplemental Agreement; • Project Co has waived £30,000 as Project Co's contribution to the costs to the Contractor of extending the Performance Bond(s) (see comments below on the Performance Bonds); • Project Co pays the Contractor £3,012,983 plus VAT in respect of outstanding instalments of the original Construction Contract, Contract Sum; • Project Co pays the Contractor £2,318,742.69 plus VAT in respect of outstanding payments invoiced prior to the date of the Construction Supplemental Agreement relating to Project Co Changes; • Project Co pays the Contractor £3,760,000 plus VAT in respect of works completed by the Contractor in accordance with the Technical Schedule (i.e. Agreed Resolution) (subject to the £1 Million (or £500,000) being retained by Project Co, as detailed below); • Project Co pays the Contractor £5,600,000 plus VAT in respect of completed Milestone Works Payments (as referred to in paragraph 3.2.4 above and which reflect the Settlement Agreement milestone payments); • Project Co pays the Contractor £3 million in respect of insurance proceeds (i.e. for. reinstatement works). It is not clear whether this payment is also to attract VAT. • We are advised by Project Co's legal advisers that it is their understanding that Project Co is retaining 1.5% of the Contract Sum as retention which they state equates to approximately £2,256,000. The Board should note that the Construction Contract provides for 3% retention to be made until the

	Certificate of Practical Completion is issued, then 1.5% until the Certificate of Making Good Defects is issued. CC SA1 amends when the Certificate of Making Good Defects is issued which will now be 12 months after completion of the Post Completion Works. The amount - £2,256,000 equates to approximately 1.5% of the *initial Contract Sum* and Project Co does not seem to be adjusting the retention amount upwards to take account of the additional sums paid to the Contractor for Project Co Changes nor the Milestone Payments. <u>Summary</u> There are discrepancies in the LDs calculations because the amounts being paid by the Contractor or waived by Project Co do not seem to completely tally due to what has been explained by Project Co as some "extraneous amounts". In addition, the further amounts paid by Project Co to the Contractor are currently £14,721,725.69 (ignoring retention and amounts retained for Services resolution) but if the sums are added in for insurance proceeds then this amount becomes £17,721,725.69. It is worth noting that Project Co is in effect waiving more liability against the Contractor than is formally documented in the Construction Supplemental Agreement. For example there will be no pass down of Project Co's share of the Independent Tester's fees for Varied Services. Project Co's legal advisers have confirmed the Independent Tester's fees are being absorbed by Project Co. Further Project Co (not the Contractor) is bearing increased Funder, Funder advisor and insurance costs arising out of the entry into and implementation of the Construction Supplemental Agreement and the Supplemental Agreement. These costs are not passed down. We have no transparency as to what these costs amount to.
Payments by the Contractor to Project Co or retentions by Project Co	(1) The Contractor pays Project Co Liquidated Damages ("LDs") of £5,094,935 (within 5 BDs of the Effective Date of the Construction Supplemental Agreement for LDs or Relief Event LDs during the period 1/11/2017 to 19/4/2018; (2) The Contractor pays Project Co Liquidated Damages of £570,000 (within 5 BDs of the Effective Date of the Construction Supplemental Agreement during the period 17/1/19 to the Effective Date of the Construction Supplemental Agreement; There are discrepancies in the LDs calculations because the amounts being paid by the Contractor or waived by Project Co do not seem to completely tally due to what has been explained by Project Co as some "extraneous amounts".

	(3) Project Co can withhold £1,000,000 (which reduces to £500,000) (it is not clear whether this is plus VAT) from the £3,760,000 plus VAT payment detailed above, until the earlier of (a) the Service Resolution Date and (b) six (6) months after the Actual Completion Date at which point the amount reduces to £500,000 if the Services Resolution Date does not occur six (6) months after the Actual Completion Date. The amount must be released to the Contractor at the Services Resolution Date. Summary Total amounts paid by the Contractor to Project Co are £5,664,935 ignoring retention and amounts retained for services resolution). As to the breakdown of how the £1 Million (or £500,000) has been arrived at, Project Co's legal advisers have advised that the Funder's Technical Adviser has reported to the Funders that the costs of the Amended Services over the duration of the Project Term would probably be £250,000 (although this amount does not factor increased Deduction risk) and that is how the £1 Million (reducing to £500,000) has been arrived at. Project Co and the Funders are satisfied with the amount.

(b) As noted above we have been advised that 1.5% Retention is being held from the Contractor in respect of the ongoing liability of the Contractor (e.g. for Defects and Snagging Items) which will be due to be released to the Contractor at the issue of the Certificate of Making Good Defects which is 12 months after completion of the Post Completion Works.

(c) In the event that Project Co fails to pay any element of the Settlement Sum, there are no clear provisions entitling the Contractor to suspend its performance of its obligations under the Construction Settlement Agreement nor to claim a Delay Event, because clauses 4.3 and 4.3 of the Settlement Agreement have not been passed down to the Construction Settlement Agreement. We asked for clarification as to why that is the case because it would be undesirable for the dates for completion of Post Completion and Outstanding Works to be "at large" and result in a mismatch of the Supplemental Agreement and the Construction Supplemental Agreement. No satisfactory explanation has been offered. The only explanation given is that the Contractor has not requested these clauses be stepped down however we have pointed out that the drafting should be included to provide some protection for Project Co (not the Contractor) and Project Co's legal advisors advised that Project Co and the Funders are satisfied with the drafting of CC SA1 without these provisions.

4.2.5 Post Completion Works

(a) The Post Completion Works (identified at paragraph 3.2.3 of this report) are treated in the Construction Settlement Agreement in a similar manner to the Settlement Agreement with liability for Deductions being passed down (under Clause 6.26) but other payment remedies (such as warning notices) are not passed down. The Post Completion Works are also to be subject to Amended Services, described at paragraph 5. The Contractor will also have the benefit of Delay Events and Relief Events in relation to the Post Completion Works where such relief or extension of time arises after the Effective Date of the Construction Settlement Agreement.

4.2.6 Outstanding Works

(a) The Outstanding Works are treated in the Construction Settlement Agreement in a similar manner to the way they are dealt within the Settlement Agreement (as detailed at paragraph 3.2.6 of this report) and are to be completed after the Actual Completion Date with a target date of 27 May 2019 for the majority of those works and a target date set out in Part 6 of the Schedule for the Outstanding Works Exclusions. Liability for Deductions is passed down (under Clause 6.26) but other payment remedies (such as warning notices) are not passed down. The Contractor will also have the benefit of Delay Events and Relief Events in relation to the Outstanding Works where such relief or extension of time arises after the Effective Date of the Construction Settlement Agreement.

4.2.7 Board Changes

(a) The Board Changes and Project Co Changes which are detailed at paragraph 3.3.7 and 3.2.8 of this report are intended to be passed down and treated in the Construction Settlement Agreement in much the same way as the Settlement Agreement, except that there is no pass down of operational expenditure to the Contractor only capital expenditure.

4.2.8 Compensation Events

(a) The Compensation Events identified at paragraph 3.2.9 of this report have not been fully passed down:

(i) Clause 29.3.13 of the Settlement Agreement: Contractor suspending performance if Project Co has failed to pay an element of the Settlement Sum has not been passed down and we have sought clarification of why Clauses 4.2 and 4.3 of the Supplemental Agreement have not been included in the Construction Supplemental Agreement (with Project Co's legal advisors advising that Project Co and the Funders are satisfied with the drafting of CC SA1 without these provisions); and

(ii) Clause 29.3.14: Contractor being impeded by the Project Co when carrying out the Post Completion Works or the Outstanding Works has been passed down into the Construction Supplemental Agreement.

4.2.9 Independent Tester

The certificates issued by the Independent Tester as described in paragraph 3.2.10 of this report also apply to the Construction Settlement Agreement.

4.2.10 Amended Services

Once the Actual Completion Date has been reached, the project moves from the Construction Phase into the Operational Term. See our comments at paragraph 5 of this report as regards the Amended Services which are to be provided by the Contractor.

4.2.11 Board Commissioning

(a) Under the Construction Settlement Agreement the Contractor recognises and acknowledges that the Board's post-completion Commissioning as set out in the agreed Joint Completion Programme will be undertaken while the Post Completion Works (and also potentially the Outstanding Works) are being undertaken.

(b) If the Board is prevented or impeded from carrying out their commissioning works in accordance with the Joint Completion Programme the Contractor is required to indemnify Project Co for the Direct Losses incurred by the Board as a result of the prevention or impediment.

4.2.12 Deductions

During the Operational Term as noted above Deductions can be applied by Project Co against the Contractor in connection with the Post Completion Works, the Outstanding Works and the Amended Services to be provided by the Contractor. Other Deductions that may arise from the original Works (as amended by the Agreed Resolution) are dealt with in the original Interface Agreement arrangements between Project Co, the Contractor and the Service Provider.

4.2.13 Compensation on Termination

There is no pass down of compensation on termination drafting in the Settlement Agreement (see paragraph 3.2.14 of this report) in the Construction Settlement Agreement and although we requested clarification of how money will be accounted for in the construction contract should it be terminated, Project Co's legal advisers have advised that Project Co did not propose to make any amendments in this regard and that Project Co and the Funders were satisfied with the drafting of CC SA1 without further amendment in this regard.

4.2.14 Water Testing and Management

The matters in paragraph 3.2.15 of this report generally have been passed down into the Construction Settlement Agreement.

4.2.15 Other Construction Settlement Agreement matters

The following matters in the Construction Settlement Agreement are also worthy of note:-

(a) Revised GSU tables – in the Settlement Agreement are ***not*** being passed down to the Contractor in the Construction Supplemental Agreement. We would not normally expect amended GSUs to be applicable to the Contractor however in view of the Amended Services perhaps the GSU tables are applicable in this scenario?

(b) Parent Company Guarantee and Performance Bonds - the Construction Settlement Agreement provides for the original Parent Company Guarantee and one of the original Performance Bonds to be extended to cover the Contractor's obligations under the Construction Settlement Agreement. We have reviewed drafts which seem fine. We are advised that the Performance Bonds' "Expiry Date" will be the Certificate of Making Good Defects (which is 12 months after completion of the Post Completion Works). Both Performance Bonds are to be extended. However, because the Board would not have the benefit of Performance Bond(s) on exercising rights under the Construction Direct Agreement our comments on the Performance Bond(s) are somewhat academic.

(c) Contractor's Liability Cap - It seems to be the intention that the Contractor's general liability cap (55% of the original Construction Contract Sum) is not to be eroded by the liability of the Contractor and payments made to the Contractor under the Construction Supplemental Agreement. This is a beneficial position. The Board should note that Project Co's legal advisers have advised that the Funders and Project Co are satisfied that the cap is sufficient to absorb the costs of the Service Provider's increased liability in relation to the Amended Services described at paragraph 5 of this report.

(d) Contractor's Liquidated Damages Sub-cap – The Contractors sub-cap on liability for Liquidated Damages under the original Construction Contract will be eroded by the waiver of Liquidated Damages and payments of Liquidated Damages to the extent of £12,523,510. However since the purpose of the settlement is to move into the Operational Term of the project the liquidated damages are no longer being applied by Project Co against the Contractor in

respect of the delayed completion of the Post Completion Works, Outstanding Works or Amended Services.

4.3 Conclusion

There are a number of aspects of the Construction Settlement Agreement which have not been satisfactorily explained nor fully developed at this stage these are:-

(a) Amended Services – there is now a mechanism for what will happen in the event the 12 month period has expired and nothing is agreed with the Service Provider. Please see our comments at paragraph 5 of this report. In our view key elements of the drafting are unclear and therefore it is unclear what its legal effect would be, and if not void from uncertainty could potentially give rise to further disputes in the future which the Construction Settlement Agreement is intended to resolve. Project Co's legal advisers have accepted that the wording is not ideal but has advised that the Funders and Project Co are satisfied the drafting reflects the commercial agreement reached;

(b) Waivers – (Clauses 3.1.2 and 6.14A of the Construction Direct Agreement) – these are not a proper pass downs from the Settlement Agreement because there are no reciprocal waivers in the Settlement Agreement although we believe these will remain and Future Claims are preserved, and Project Co's legal advisers have advised that Project Co is not proposing to make any amendments in this regard and that Project Co and the Funders are satisfied with the reciprocal waivers being granted.

5. SERVICES SETTLEMENT AGREEMENT

5.1 Overview

5.1.1 The parties to the Services Settlement Agreement are Project Co and Service Co.

5.1.2 The draft Services Settlement Agreement which we have reviewed is dated 02.02.19 and is based upon the Settlement Agreement dated 25.01.19. It is therefore not fully reflective of the current positions agreed between the Board and Project Co.

5.1.3 The purpose of the Services Settlement Agreement will be to "pass down" from the Settlement Agreement the key provisions relating to the Operational Term to the Service Provider. Therefore, any obligations in relation to the carrying out of the Works shall not be relevant to the Services Settlement Agreement. However, any obligations in relation to carrying of the Services set out in the Settlement Agreement shall be relevant to the Services Settlement Agreement.

5.1.4 The Services Settlement Agreement is not required to form part of the completion documentation for the Settlement Agreement. It is understood that the Services Settlement Agreement shall be entered into by Project Co and the Service Provider after the Settlement Agreement. This is unusual. It would be typical for the Services Settlement Agreement to be entered into at the same time as the Settlement Agreement so that no residual risks and/or liabilities are left within Project Co.

5.2 Key issues

5.2.1 Until the Services Settlement Agreement has been (i) based upon the final draft of the Settlement Agreement; and (ii) fully developed to reflect a commercial deal between Project Co and the Service Provider, we require to reserve our position to re-visit and review the drafting in full. We shall produce a separate report on the Services Settlement Agreement in due course once the documentation has been advanced. Meantime, we would make the following observations in relation to service provision.

5.2.2 As you know, a commercial settlement has still not been agreed between the Service Provider, the Contractor and Project Co in relation to the additional costs and / or liabilities that may be incurred by the Service Provider in providing the Services to (i) the Agreed

Resolutions (technical solutions agreed to resolve the 81 items); and (ii) the Post Completion Works Agreed Resolutions (technical solutions to resolve the drainage, heater batteries and void detection).

5.2.3 In the circumstances, as a temporary solution until the commercial agreement between the Service Provider, the Contractor and Project Co is finalised the following provisions are to be put in place in relation to the provision of the Amended Services:

(a) The Service Provider will be providing all Services from Actual Completion Date in accordance with the original 2015 Services Contract to the Facility.

(b) From the Actual Completion Date, the Service Provider shall not provide Services to the Facilities directly affected by the Drainage Works.

(c) If given a notice by Project Co to provide the following services, the Contractor will provide the following services to the extent that the Service Provider is not already obliged to provide them pursuant to the original Service Contract, namely:

(i) any monitoring, maintenance and/or lifecycle services as set out in the Technical Schedule;

(ii) the monitoring, maintenance and lifecycle of gas suppression units in SS2A and SS2B;

(iii) the monitoring, maintenance and lifecycle of the heater batteries, and void detectors installed as part of the Post Completion Works; and

(iv) the monitoring, maintenance and lifecycle of drainage installed as part of the Post Completion Works, including the drainage sump and infrastructure associated with the outgoing waste from basement and external drainage sumps and emergency pump up to where they reach the first manhole ("Drainage Amended Services")

from the date specified in the notice until the earlier of (i) when a commercial settlement has been agreed with the Service Provider; and (ii) the date 12 months after the Actual Completion Date ("Temporary Service Period"). The Drainage Amended Services and other services detailed in paragraph 5.2.3 (c)(i) to (iv) inclusive are referred to together in this report as the "Amended Services". The Amended Services will transfer to the Service Provider as soon as the Services Settlement Agreement is entered into. However, the Technical Schedule as currently drafted may not detail any Services.

(d) It should be noted that the Settlement Agreement provides that Project Co are obliged to provide the Services (including the Amended Services) without any additional payment from the Board. However because the Services Settlement Agreement has not yet been entered into there is no clear pass down of that obligation.

(e) As explained above, the Contractor is providing the Amended Services during the Temporary Services Period. However, as explained above, the Temporary Services Period will be a maximum of 12 months after the Actual Completion Date. It is therefore of vital importance that the position is regulated with the Service Provider taking over the provision of all the Services (including the Amended Services) as soon as practicable.

(f) Whilst this is a Project Co risk, given that Project Co is an SPV it is of vital importance to the Board that there are appropriate provisions in place to provide for the transfer of the Amended Services to the Service Provider as soon as possible.

(g) The way in which it is proposed this is addressed in the current settlement is that the Contractor (not Project Co) has the option at the end of the Temporary Service Period either to continue to provide the Amended Services until the Construction Contract expiry date (which is 12 years after the Actual Completion Date) and indemnify Project Co for the reasonable costs incurred in engaging a third party to provide the Amended Services to the end of the concession (ie the period after the initial 12 years); OR to indemnify Project Co against the reasonable costs incurred by Project Co engaging a third party to carry out the Amended Services beyond the Temporary Service Period. This indemnity is separate from and additional to an indemnity for any claims from the Service Provider for increased costs that Project Co may incur as a result of the Post Completion Works, increased liability that the Service Provider or Project Co has as a result of these Amended Service arrangements. In addition, £1 Million is being retained from the Contractor by Project Co (which sum reduces to £500,000 after six months) as security for this indemnity. In other words Project Co has passed on the risk of additional costs to the Contractor. We have been advised that the Funder's technical adviser has reported to the Funders that the costs of providing the Amended Services is probably £250,000 over the Project Term. Project Co will in addition have the construction retention detailed at paragraph 4.2.4 above and this and other financial liability (such as the indemnity) will be backed by the Parent Company Guarantee and Performance Bonds (until the Performance Bond Expiry Dates).

(h) Separately and importantly pursuant to the Services Contract provisions, Project Co are obliged to provide any amendment to the Services notified by Project Co in return for additional payment (which payment is agreed or determined pursuant to the change process under the Services Contract). In other words, the existing Services Contract obliges the Service Provider to provide the Amended Services (albeit the cost of providing those Amended Services needs to be agreed or determined). As explained above, those additional costs are being indemnified by the Contractor.

(i) Accordingly, what we have been advised by Project Co's legal advisers is that in the next couple of months the Service Provider, the Contractor and Project Co will agree commercial terms for the Service Provider to take over the Amended Services and this will all be documented in the final version of the Services Settlement Agreement and (possible) an amended interface agreement.

5.2.4 The Board should note that because these commercial terms have not yet been finalised there is a risk that the Service Provider will not take over the provision of the Amended Services in which case Project Co will have no Subcontractor to pass that obligation on to, albeit they will retain the £500,000 (and have the indemnities described above from the Contractor supported by Parent Company Guarantee and Performance Bonds (until the Performance Bond Expiry Dates). This represents a key risk of entering into the settlement with Project Co and the Contractor before the Services Settlement Agreement is agreed.

6. SUB-DEBT INJECTION INTO PROJECT CO

6.1 Overview

6.1.1 The corporate structure of Project Co is as follows:

(a) IHS Lothian Limited (Company No. SC493676): This is the company which contracts with the Board ("**Project Co**");

(b) IHS Lothian (Holdings) Limited (Company No. 09360660) : This is a holding company of Project Co, the company which holds shares in Project Co ("**Hold Co"**);

(c) IHS Lothian Investment Limited (Company No. 9359641): This is the company which sits above Hold Co ("**Top Co**");

(d) IHS Lothian Corporate Limited (Company No. 9359625): This is the ultimate shareholder in Project Co, Hold Co and Top Co (the "**Shareholder**").

6.2 Key Issue

6.2.1 As per the draft Project Co board minutes which we have reviewed, it is understood that an additional £5.4 million of sub-debt will be invested in Project Co, indirectly, by the Shareholder. It is unclear what the reference to "indirectly" is referring to as the Amended and Restated Shareholder Support Agreement provides for a £5.4 million addition Sub-debt injection. It is also understood that the Shareholder will waive the right to receive £1.4 million of construction phase fees from Project Co, as set out in the "Construction Fee waiver letter" which is a letter from the Shareholder to Project Co. These "construction fees" are presumably a type of "bonus" payment from Project Co to the Shareholder for completion of the Construction Phase. It is also understood that from a review of Project Co's board minutes that the £1.4 million of fees waived by the Shareholder represents Project Co's share of void detection costs based on the void detection solution and a significant proportion of the Unitary Charge.

6.2.2 In addition, it is also understood from Project Co's board minutes that the payment of £1.7 million of accrued interest by Project Co to the Shareholder in relation to existing subordinated debt of Project Co will be delayed as a result of restrictions in the Common Terms Agreement and will be available to meet project costs.

6.2.3 It is also understood from Project Co's board minutes that the new subordinated debt will be invested within three business days after entry into the Settlement Agreement and the contemporaneous delivery of the Certificate of Practical Completion and will rank *pari passu* with the existing subordinated debt (including compensation on termination liabilities).

6.2.4 The new sub-debt shall be, indirectly, injected into Top Co by the Shareholder. Top Co shall then indirectly inject the new sub-debt into Holdco. Hold Co shall then indirectly inject the new sub-debt into Project Co.

7. AMENDED AND RESTATED SHARHOLDER SUPPORT AGREEMENT ("A&RSSA")

7.1 Overview

7.1.1 The parties to the A&RSSA are Project Co, Hold Co, Top Co, Shareholder and the Security Trustee.

7.1.2 The draft A&RSSA which we initially reviewed was dated 26.01.19 and was only forwarded to us on 11.02.19. We have reviewed a further updated draft received by us on 13.02.19 and the final form, which was issued on 22.2.19. The A&RSSA is structured as a short amendment and restatement agreement, to which the amended and restated shareholder support agreement itself is appended as a schedule. This scheduled form of the amended and restated shareholder support agreement is heavily based on the form of shareholder support agreement agreed and signed at financial close of the project in 2015.

7.1.3 The purpose of the A&RSSA is to record the terms of the investment by way of additional subordinated debt of £5.4 million at 8% in the project and to constitute the loan notes that evidence that subordinated debt.

7.1.4 The A&RSSA provides for a "cascaded" investment of additional subordinated debt from Shareholder to Top Co, from Top Co to Hold Co and from Hold Co to Project Co. This is the same process that was followed for the subscription for the original amount of subordinated debt in the project. Such additional subscription must be made within 3 days of the date of the A&RSSA.

7.1.5 The loan notes evidencing the additional subordinated debt are repaid (by way of capital and interest repayments) at the same time and in the same way as the loan notes evidencing the original investment of subordinated debt in the project.

7.2 Key issue

7.2.1 We were advised by the Board that Project Co had agreed that the additional subordinated debt now being subscribed for would bear interest at 8% per annum. The original subordinated debt bears interest at 9.47% per annum.

7.2.2 The initial draft of the A&RSSA that we received showed the additional subordinated debt bearing interest at 9.47% per annum. We have raised this with Pinsent Masons (on behalf of Project Co) who have confirmed that the rate of interest for the additional subordinated debt only should be 8% per annum. The updated draft of the A&RSSA has been amended to refer to a rate of 8% per annum for the additional subordinated debt only, and appropriate and acceptable consequent amendments have also been made to the A&RSSA to accommodate these changes.

8. SENIOR FUNDER CONSENT AND WAIVER LETTER

8.1 We were provided with a draft execution version of a senior funder consent and waiver letter (the "**Consent and Waiver Letter**") only on 22 February 2019. We have not yet seen the final form and this report is based on the draft execution version issued to us on 22 February 2019.

8.2 The Consent and Waiver Letter:

8.2.1 grants Intercreditor Agent consent to Project Co entering into the Settlement Agreement, the Construction Settlement Agreement, the Services Settlement Agreement and ancillary documentation;

8.2.2 grants Intercreditor Agent consent to the transfer of £3m from the Insurance Proceeds Account maintained by Project Co;

8.2.3 grants Intercreditor Agent waivers of certain Events of Default that have continued under the Finance Documents; and

8.2.4 makes certain consequential amendments to the Finance Documents.

8.3 The Consent and Waiver Letter also provides that Project Co must utilise funds that it is due to receive from the Board as part of the Settlement Agreement in topping up:

8.3.1 the Senior Debt Service Reserve Account – as to no less than £4,916,949.26; and

8.3.2 the Senior Subordinated Debt Service Reserve Account – as to no less than £819,491.54.

We consider that the Board's financial advisors should confirm these amounts against the amounts stated in the Financial Model as being required to be reserved to such accounts and be asked to advise on the sufficiency of such amounts to meet the next scheduled repayments due from Project Co.

8.4 Within the amendments to the Finance Documents contained in the Consent and Waiver Letter, the Funders have included, and Project Co has accepted, a new Event of Default such that Project Co is obliged to attain the Post Completion Works Completion Date by the Senior Lenders' Longstop Date. This mirrors the position in the Settlement Agreement as to the completion dates for the Post Completion Works, with the Senior Lenders' Longstop Date being 26 July 2019.

8.5 There is also a new Event of Default such that Project Co is obliged to enter into the new Service Contract (dealing with the Amended Services) within six months of the Actual Completion Date.

9. SCOPE OF REPORT

9.1 This report shall exclude:

9.1.1 any and all advice in relation to tax (including without limitation VAT), insurance, employment, pensions or property advice;

9.1.2 any and all advice in relation to the financial aspects of the settlement, including (without limitation) how Project Co has financed its contributions, any new financial model, calibration of the Payment Mechanism, the financial strength of Project Co nor the Contractor (or any other parties) and the impact of the new financial arrangements on compensation in termination;

9.1.3 In carrying out this review we have not reviewed any technical documentation including (without limitation) in relation to the Agreed Resolution, Post Completion Works Agreed Resolution or Outstanding Works.

MacRoberts LLP

28 February 2019

Multi Bed – Ventilation Amendment Proposal to Achieve Room Balance
WW-SZ-XX-DC-XXX-010

Proposed Solution to Rooms Identified as Being of Concern

Room Reference Location	Ventilation Layout Drawing Number	Room Number	Room Description	Proposed Solution	Severity of Works			Ductwork Fabricated
					Local	Medium	Major	Yes/No
A	WW-Z4-00-PL-524-001K	G-A2-054	Multi Bed (4) Room Occupancy 10 People	Retain the supply ventilation at 4ac/hr and the en-suite ventilation at 10ac/hr. Ducts servicing en-suite & toilets to be retained at their original sizes. Introduce new general extract ductwork and grille into the room to provide 4ac/hr overall. This will achieve a balanced room pressure. Branch ducts to be connected locally into the existing general extract ductwork main. Supply & Extract Duty 174l/s. (Equates to 17 people).		✓		Yes
B	WW-Z4-00-PL-524-001K	G-A2-046	Multi Bed (4) Room Occupancy 10 People	Retain the supply ventilation at 4ac/hr and the en-suite ventilation at 10ac/hr. Ducts servicing en-suite & toilets to be retained at their original sizes. Introduce new general extract ductwork and grille into the room to provide 4ac/hr overall. This will achieve a balanced room pressure. Branch ducts to be connected locally into the existing general extract ductwork main. Supply & Extract Duty 174l/s. (Equates to 17 people).		✓		Yes
C	WW-Z4-00-PL-524-002L	G-A2-028	Multi Bed (4) Room Occupancy 10 People	Retain the supply ventilation at 4ac/hr and the en-suite ventilation at 10ac/hr. Ducts servicing en-suite & toilets to be retained at their original sizes. Introduce new general extract ductwork and grille into the room to provide 4ac/hr overall. This will achieve a balanced room pressure. Branch ducts to be connected locally into the existing general extract ductwork main. The main itself will be increased in size over a defined length. Supply & Extract Duty 174l/s. (Equates to 17 people).		✓		Yes
D	WW-Z4-01-PL-524-001J	1-B1-063	Multi Bed (4) Room Occupancy 15 People	Retain the supply ventilation at 4ac/hr. Introduce new general extract ductwork and grille into the room to provide 4ac/hr overall. The existing general extract ductwork currently serving the room has been increased in size and another grille added to it to serve the room. This will achieve a balanced room pressure. New branch duct to be connected locally into the existing general extract ductwork main. Supply & Extract Duty 312l/s. (Equates to 31 people).		✓		Yes
E	WW-Z4-01-PL-524-001J	1-B1-031	Multi Bed (4) Room Occupancy 15 People	Retain the supply ventilation at 4ac/hr. Introduce new general extract ductwork and grille into the room to provide 4ac/hr overall. The existing general extract ductwork currently serving the room has been increased in size and another grille added to it to serve the room. This will achieve a balanced room pressure. New branch duct to be connected locally into the existing general extract ductwork main. Supply & Extract Duty 332l/s. (Equates to 33 people).		✓		Yes
F	WW-Z4-01-PL-524-001J	1-B1-009	Multi Bed (4) Room Occupancy 15 People	Retain the supply ventilation at 4ac/hr. Introduce new general extract ductwork and grille into the room to provide 4ac/hr overall. The existing general extract ductwork currently serving the room has been increased in size and another grille added to it to serve the room. This will achieve a balanced room pressure. New branch duct to be connected locally into the existing general extract ductwork main. The main itself will be increased in size over a defined length. Supply & Extract Duty 348l/s. (Equates to 34 people).		✓		Yes

Issue	Date	By	Checked
1	08.02.17	BR	SMcK
2	14.02.17	BR	SMcK
3	22.02.17	BR	SMcK
4	11.05.17	BR	SMcK
5	23.05.17	BR	SMcK
6	14.06.18	BR	SMcK
7	06.04.18	BR	SMcK

Multi Bed – Ventilation Amendment Proposal to Achieve Room Balance
WW-SZ-XX-DC-XXX-010

Room Reference Location	Ventilation Layout Drawing Number	Room Number	Room Description	Proposed Solution	Severity of Works			Ductwork Fabricated
					Local	Medium	Major	Yes/No
G	WW-Z3-03-PL-524-001G	3-C1.3-011	Multi Bed (4) Room Occupancy 14 People	Retain the supply ventilation at 4ac/hr and the en-suite and shared wet room ventilation at 10ac/hr. Introduce new general extract ductwork and grille into the room to provide 4ac/hr overall. This will achieve a balanced room pressure. Branch ducts to be connected locally into the existing general extract ductwork main. The main itself will be increased in size over a defined length. Supply & Extract Duty 176l/s. (Equates to 17 people).		✓		Yes
H	WW-Z3-03-PL-524-001G	3-C1.3-013	Multi Bed (4) Room Occupancy 14 People	Retain the supply ventilation at 4ac/hr and the en-suite and the shared wet room ventilation at 10ac/hr. Introduce new general extract ductwork and grille into the room to provide 4ac/hr overall. This will achieve a balanced room pressure. Branch ducts to be connected locally into the existing general extract ductwork main. The main itself will be increased in size over a defined length. Supply & Extract Duty 174l/s. (Equates to 17 people).		✓		Yes
I	WW-Z4-03-PL-524-001G	3-C1.2-026	Multi Bed (4) Room Occupancy 14 People	Retain the supply ventilation at 4ac/hr. Bay 1 toilets, ventilation is 10ac/hr and shared en-suite ventilation is 17ac/hr. Introduce a new general extract and dirty extract ductwork and grilles into the respective rooms to provide 4ac/hr overall. This will achieve a balanced room pressure. Branch ducts to be connected locally into the existing general and dirty extract ductwork mains. Door grilles will be provided within the shared en-suite, shared en-suite ventilation will be 17ac/hr. Supply & Extract Duty 176l/s. (Equates to 17 people).		✓		Yes
J	WW-Z4-03-PL-524-001G	3-C1.2-023	Multi Bed (4) Room Occupancy 14 People	Retain the supply ventilation at 4ac/hr. Bay 1 toilets, ventilation is 10ac/rd and shared en-suite ventilation is 17ac/hr. Introduce a new general extract and dirty extract ductwork and grilles into the respective rooms to provide 4ac/hr overall. This will achieve a balanced room pressure. Branch ducts to be connected locally into the existing general and dirty extract ductwork mains. Door grilles will be provided within the shared en-suite, shared en-suite ventilation will be 17ac/hr. Supply & Extract Duty 176l/s. (Equates to 17 people).		✓		Yes
K	WW-Z4-03-PL-524-002G	3-C1.1-018	Multi Bed (4) Room Occupancy 15 People	Retain the supply ventilation at 4ac/hr and the en-suite ventilation at 17ac/hr. Ducts serving the en-suites and toilets to be increased in size. Introduce new general extract ductwork and grille into the room to provide 4ac/hr overall. This will achieve a balanced room pressure. Branch duct to be connected locally into the existing general extract ductwork main. Door grilles will be provided within the en-suite and toilets. Supply & Extract Duty 184l/s. (Equates to 18 people).		✓		Yes
L	WW-Z4-03-PL-524-002G	3-C1.1-046	Multi Bed (4) Room Occupancy 15 People	Retain the supply ventilation at 4ac/hr and the en-suite ventilation at 17ac/hr. Ducts serving the en-suites and toilets to be increased in size. Introduce new general extract ductwork and grille into the room to provide 4ac/hr overall. This will achieve a balanced room pressure. Branch duct to be connected locally into the existing general extract ductwork main. Door grilles will be provided within the en-suite and toilets. Supply & Extract Duty 186l/s. (Equates to 18 people).		✓		Yes

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1	08.02.17	BR	SMcK
2	14.02.17	BR	SMcK
3	22.02.17	BR	SMcK
4	11.05.17	BR	SMcK
5	23.05.17	BR	SMcK
6	14.06.18	BR	SMcK
7	06.06.18	BR	SMcK

Multi Bed – Ventilation Amendment Proposal to Achieve Room Balance
WW-SZ-XX-DC-XXX-010

Room Reference Location	Ventilation Layout Drawing Number	Room Number	Room Description	Proposed Solution	Severity of Works			Ductwork Fabricated
					Local	Medium	Major	Yes/No
M	WW-Z4-01-PL-524-001J	1-B1-065	Multi Cot (3) Room Occupancy 9 People	Retain the supply ventilation at 4ac/hr. Introduce new general extract ductwork and grilles into the room to provide 4ac/hr. Branch duct to be connected locally into the existing general extract ductwork. The existing general extract ductwork currently serving this area has been increased in size. This will achieve a balanced room pressure. Supply & Extract Duty 144l/s. (Equates to 14 people).		✓		Yes
N	WW-Z4-01-PL-524-002F	1-L1-100	Multi Bed (4)	No change to the existing room ventilation provision and ductwork design, room is currently positive to corridor.	N/A	N/A	N/A	N/A
O	WW-Z4-01-PL-524-002F	1-L1-097	Multi Bed (4)	No change to the existing room ventilation provision and ductwork design, room is currently positive to corridor.	N/A	N/A	N/A	N/A
P	WW-Z4-03-PL-524-001F	3-C1.8-027	Multi Bed (4)	No change to the existing room ventilation provision and ductwork design, room is currently positive to corridor.	N/A	N/A	N/A	N/A
Q	WW-Z4-03-PL-524-001F	3-C1.8-016	Multi Bed (4)	No change to the existing room ventilation provision and ductwork design, room is currently positive to corridor.	N/A	N/A	N/A	N/A
R	WW-Z3-03-PL-524-002G	3-C1.4-084	Multi Bed (4)	No change to the existing room ventilation provision and ductwork design, room is currently positive to corridor.	N/A	N/A	N/A	N/A
S	WW-Z3-03-PL-524-002G	3-C1.4-061	Multi Bed (6)	No change to the existing room ventilation provision and ductwork design, room is currently positive to corridor.	N/A	N/A	N/A	N/A
T	WW-Z4-03-PL-524-002G	3-D9-022	Multi Bed (3) Room Occupancy 11 People	Retain the supply ventilation at 4ac/hr and the en-suite ventilation at 10ac/hr. Introduce new general extract ductwork and grilles into the room to provide 4ac/hr overall. This will achieve a balanced room pressure. Branch ducts to be connected locally into the existing general extract ductwork mains. One of the mains itself will be increased in size over a defined length. Supply & Extract Duty 122l/s. (Equates to 12 people)		✓		Yes

Notes :-

1) Room occupancy is taken from the Clinical Output Based Specifications.
2) Bedroom ventilation is based on a fresh air rate allowance of 10l/s per person in line with SHTM 03-01.

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7	06.06.18	BR	SMcK

RDD	
Reviewable Design Data : Section 5 of Schedule Part 6	
	Board
Name	J. MACKENZIE
Date	26/7/18
Sign	[redacted]
Level	A
Comment:	

In accordance with the Levels as set out in Clause 4 Effect of Review and Schedule Part 8 (Review Procedure);

- Level A : No Comment
- Level B : Proceed subject to Amendment as noted
- Level C : Subject to amendment as noted
- Level D : Rejected

Brookfield MULTIPLEX BM
Built to outperform.

Contractor Document Review
RMSC & BCH Edinburgh

A ☑ No Comment
B ☐ Noted subject to comments
revise and resubmit within 7 business days
C ☐ Rejected - revise and resubmit within 7 business days

[redacted]
Date: 27/7/18

[redacted]

THE SCOTTISH HOSPITALS INQUIRY

Interim Written Submissions

on behalf of

Multiplex Construction (Europe) Limited ("Multiplex")

relative to the Royal Hospital for Children and Young People and Department of Clinical Neurosciences in Edinburgh

1. Introduction

1.1 These submissions supplement Multiplex's responses to the Inquiry's Provisional Position Papers 1, 2, 3 and 4. Those responses (including the schedules to the responses to PPPs 1, 2 and 3, which are marked-up versions of the relevant PPPs) are referred to and their terms are incorporated herein for the sake of brevity. They are to be found in Bundle 12, pages 8 – 366. On that basis, these submissions do not seek to address general matters of background and chronology. Instead, they seek to focus primarily on particular matters canvassed in the evidential hearings before the Inquiry.

1.2 The submissions are presented in the following chapters:

- Executive Summary
- Preliminary Matters
- SHTM-03-01
- The evidence of Stewart McKechnie
- The period up to Submission of Final Tenders on 13 January 2014
- Assessment of tenders and identification of Preferred Bidder

- Preferred Bidder Stage: 5 March 2014 to 12/13 February 2015
- Financial Close
- Comment on the draft submissions of Counsel to the Inquiry
- Comment on the draft closing statement of Mott MacDonald
- Provisional Conclusions

1.3 In these submissions, references to the transcripts of evidence are given in the following format: TD1,C45,p. 25 = Transcript Day 1, Column 45, pdf page 25. All such references are to the transcripts of the hearings commencing on 25 April 2023, unless expressly stated otherwise.

1.4 In these submissions, 4AC means 4 air changes per hour, 10AC means 10 air changes per hour, and so on.

2. Executive Summary

Multiplex's position can be summarised as follows:

2.1 SHTM 03-01 is guidance. A requirement to comply with SHTM 03-01 can, however, be contractually imposed.

2.2 In the present case, bidders were advised in both the draft Project Agreement and the Board's Construction Requirements in the ITPD that the works were to comply with SHTM 03-01, except to the extent the Board had stated otherwise.

2.3 The documents provided to bidders also included an Environmental Matrix which was defined as being: "*the Environmental Matrix, which details the room environmental condition requirements of the Board required within each department / unit / space / area"* and were advised that the Works were to *"comply with the*

Environmental Matrix". Bidders were told that changes to this Environmental Matrix were only to be proposed on an exception basis.

2.4 The Environmental Matrix provided was also expressly defined as being part of the "*Room Information*" to be used to produce Room Data Sheets, with the Environmental Matrix being identified on its face as replacing the ADB RDS M&E Sheets for the Environmental Criteria.

2.5 Multiplex's understanding was accordingly that the Environmental Matrix contained the Board's desired environmental requirements. This understanding accords with the wider desire by NHSL not to waste the c£2mill of public funds and extensive clinical time which had been spent developing the design prior to the change to the funding model. Multiplex's understanding of what was required was confirmed in the response received to the IHSL tender. IHSL had not provided their own Environmental Matrix but had instead advised that: "*The mechanical and electrical services shall be provided in accordance with the reference design environmental matrix…"* to which they received the response: "*Good Response"* and the IHSL bid was said to be "*in full accordance with the requirements".*

2.6 In contrast, one of the other bidders, Mosaic (Bidder C), proposed to change the number of air changes in the single bedrooms and multi-bed wards in Critical Care from 4AC to 10AC, but their bid was unsuccessful.

2.7 During the preferred bidder period the Environmental Matrix was then reviewed and discussed in detail with NHSL and their technical advisors Mott MacDonald. Despite Bidder C having highlighted what is now being referred to as an "error" in the AC rate for Critical Care to Mott MacDonald (and other detailed comments being received from Mott MacDonald in relation to the

ventilation requirements), the provision of 4AC in critical care areas was not questioned.

2.8 If there was an 'error' in the EM in relation to air change rates in Critical Care bedrooms such that the EM did not reflect NHSL's intentions, it is difficult to understand why it was not identified by NHSL or its advisers during the Preferred Bidder period. Instead, Multiplex's design team were permitted to produced designs and RDS sheets for Financial Close which proceeded on their understanding that the Board's requirements for the environmental conditions were those set out in the Environmental Matrix, and so that 4AC was required in the multi-bed and single bedrooms in Critical Care.

2.9 As had been foreshadowed in the ITPD documentation, the parties then entered into the Project Agreement which again (together with the Board's Construction Requirements at Financial Close) advised that the works were to comply with SHTM 03-01, except to the extent the Board had stated otherwise. The Project Agreement and Board's Construction Requirements then again included and referenced an Environmental Matrix, was which defined as being: *"the Environmental Matrix, which details the room environmental condition requirements of the Board required within each department / unit / space / area"* and contained express provisions requiring the works to comply, and be built and commissioned in accordance with, the Environmental Matrix which was incorporated as part of the Board's Construction Requirements and Project Agreement at Financial Close.

2.10 At no point was IHSL or Multiplex advised that the Environmental Matrix provided by NHSL could not be relied upon or contained an "error".

2.11 Indeed, is not clear from the evidence currently available to the Inquiry how the position now advanced by NHSL and Mott MacDonald could have been the intention at the time. In particular, if the Environmental Matrix was not to be intended to provide the NHSL's environmental briefing requirements, what document did?

2.12 The Board had taken the decision not to produce Room Data Sheets for the project and so, if the Environmental Matrix was not the alternative tool being used by Board for briefing purposes, then the logical conclusion of NHSL and Mott MacDonald's position is that there was no environmental briefing information provided to bidders. Such an approach goes against CEL 19(2010) and does not accord with the known desire on the part of NHSL to use the design information which had already been produced, nor the shortened tender and preferred bidder period where access to clinicians was limited. If bidders could not rely on the Environmental Matrix and were to design the environmental requirements for the hospital, extensive time and clinical input would have been required – neither were afforded to bidders, because this was not what was expected of them. Instead, NHSL had already spent £2mill and extensive clinical time developing the design and IHSL were awarded preferred bidder, and Financial Close was reached, on the basis the Environmental Matrix reflected NHSL's environmental requirements for each space.

3. Preliminary Matters

Interim nature of submissions

3.1 The Inquiry has not yet exhausted its Remit and Terms of Reference in so far as they relate to the Royal Hospital for Children and Young People and Department of Clinical Neurosciences in Edinburgh. It would be premature for any firm conclusions to be drawn, at least in relation to certain matters, on the basis of the evidence heard by the Inquiry thus far. That is because evidence yet to be heard by the Inquiry, in relation to later stages of the project, may impact (materially) on the matters in respect of which evidence has been heard thus far and cast new light upon them. For that reason, these submissions are interim in nature and Multiplex reserves the right to revisit them in future.

3.2 By way of example, Multiplex anticipates that at future hearings, the Inquiry will hear evidence to the effect that, after Financial Close:

(a) Ken Hall and Graeme Greer corresponded by email on 26 May, 15 June and 22 July 2015 in terms indicating that both parties (through Multiplex and Mott MacDonald) were proceeding on the understanding that the EM was only RDD to the extent of NHSL's 7 comments from the meeting of 11 November 2014, which were subsequently included in section 5 of Schedule Part 6 to the Project Agreement (Bundle 6, pdf page 80).

(b) the design of the ventilation system (including not only the number of AC but also the ductwork, air handling units and plant space necessary to supply the number of AC) was reviewed by NHSL and Mott MacDonald, including (i) during the RDD process, where NHSL's requirement for 4AC in Critical Care bedrooms was confirmed; (ii) during discussions in relation

to the pressure regime for the multi bed wards, where in an email of 18 April 2018 NHSL stated that they were "*seeking a design for 4AC for all 14 rooms"* – which included the multi-bed wards in Critical Care, and (iii) in the Settlement Agreement between NHSL and IHSL dated 22 February 2019;

(c) after the agreed approach to the number of air changes per hour in Critical Care (HDUs) was questioned by IOM in IOM's first issues log, circulated by email by Brian Currie on 25 June 2019, NHSL approached IHSL to undertake additional work to achieve 10AC in Critical Care on the basis that this would be a Change in accordance with Schedule Part 16 (Change Protocol) to the Project Agreement; and

(d) Multiplex did not undertake the additional works mentioned above, but understands that they were undertaken by IHSL and were the subject of Supplemental Agreement 2 dated 5 August 2020, the purpose of which appears to have been to amend and supplement the original Project Agreement: reference is made to paragraphs 95-109 of the Inquiry's PPP4.

3.3 All of the foregoing is inconsistent with the notion that NHSL and/or Mott MacDonald ever understood or believed or expected that 10AC would be provided in Critical Care.

3.4 Furthermore, Stewart McKechnie of TUV-SUD/Wallace Whittle referred in his evidence to having clarified that the rooms treated with 10AC and 10 pascals of pressure was a correct interpretation, albeit this was a "wee bit away" from the Inquiry's timeline (TD7,C33,pdf p. 19). It is anticipated that the Inquiry will wish to hear further detailed evidence in relation to that matter in due course.

3.5 It is also anticipated that the Inquiry may wish to hear evidence relating to the post Financial Close documents which Mott MacDonald sought (unsuccessfully) to be allowed to put to witnesses at the hearings in May 2023. Despite that, in its draft closing statement Mott MacDonald seeks to rely on such documents. It is submitted that the Inquiry should disregard such documents unless and until they are the subject of evidence at a future hearing and submissions dealing with the post Financial Close period. Only then can the documents be considered in their proper contexts and with the benefit of witness evidence relating to them.

Hindsight

3.6 In its response to the Inquiry's Provisional Position Papers, NHSL makes a number of observations in relation to the approach taken by the Inquiry and the use of hindsight, which Multiplex is content to adopt for present purposes. The relevant passages are paragraphs 2.1 – 2.3 (Bundle 12, volume 1, pdf pages 8-9):

"*2.1. Each PPP views the Project through a particular lens, be it Reference Design, the Environmental Matrix or the Procurement Process. There is a risk, however, that, in viewing the Project through distinct lenses, the overall context in which decisions were made may not be fully appreciated. This possibility becomes more acute when the Inquiry is reviewing how various issues developed with the full benefit of hindsight.*

2.2. In fulfilling the Terms of Reference, the Inquiry will scrutinise actions, events and decisions in order to have a full understanding of what occurred. In doing so, the Inquiry will have two overarching tasks: (i) to identify why certain things went wrong and how such mistakes can be avoided in the future, and (ii) to make comment, possibly adverse, on the conduct of the individuals or organisations involved. In undertaking

these two very different tasks, there is a danger, faced by all public inquiries, of assessing "real time" decisions with the benefit of hindsight rather than in the context in which they were made. This can lead to a misinterpretation of cause-effect relations and an underestimation of the difficulty of taking decisions during periods of uncertainty or where there is pressure to act.

2.3. Hindsight obviously has an important role to play as the Inquiry traces back events from a known endpoint. However, when it comes to ascribing responsibility to individuals or organisations, it is submitted that the Inquiry's role should be different. For that task, the Inquiry should consider the factual and commercial context in which decisions were made in order to fully understand why they were made and whether or not, in the circumstances, they were reasonable. Part of that context is the scale of the Project. The procurement and construction of the RYCYP/DCN, through its various phases, was an enormous job. A focus exclusively on one aspect, e.g. ventilation, may mean that decisions that were taken are not seen in their proper context."

3.7 For present purposes, another part of the context is that up until the Project Agreement was actually entered into at Financial Close, NHSL and IHSL were not bound by the contractual obligations of the Project Agreement. Up to Financial Close, NHSL and IHSL were still in a period of negotiation.

4. **SHTM-03-01**

4.1 SHTM-03-01 is guidance. SHTM-03-01 comes with a 'disclaimer' in red text near the beginning of each version (see Bundle 1, pages 6, 106, 153 and 337). Amongst other things, the disclaimer states: "*The contents of this document are provided by way of general guidance only at the time of its publication.*" SHTM-03-01 does not have the force of law. Compliance with it is not mandatory in that sense.

4.2 In the early stages of procurement of the Project, SHTM-03-01 was a new standard, first published in 2011. Version 1 (October 2011) posed the question *"Who should use this guidance?"* and stated, in answer to that question, that it was aimed at healthcare management, estates managers and operations managers: see Bundle 1, pdf page 111. Notably, by the time of the Project Agreement, the Clinical Output Specification for Critical Care still referred to SHTM-2025 in relation to ventilation, not to SHTM-03-01 (see Bundle 5, pdf page 390). SHTM-2025 does not, however, provide air change rates for various room types in healthcare facilities other than operating space (see the evidence of Mr O'Donnell of Hulley & Kirkwood at TD1, C32,p. 18).

4.3 It is acknowledged that, on any particular project, a requirement to comply with SHTM-03-01 may be imposed contractually. In the present case, however, the situation was that bidders were advised through the ITPD that the design for the ventilation system was required to comply with SHTM-03-01 – but only to the extent that NHSL had not stated an express contrary requirement. Bidders were required to confirm acceptance of the Reference Design EM, and were free to highlight proposed changes, but only on an exception basis. This remained the position in the Project Agreement and the Board's Construction Requirements (BCRs) which formed part of the Project Agreement. Reference is made to Multiplex's responses to the PPPs and, in particular, section 3 of Multiplex's response to PPP 1.

4.4 Without prejudice to the generality of the foregoing, clause 5.2.4 of the Project Agreement provided as follows (See Bundle 5, page 11 – emphasis in bold added):

"5.2 Project Co shall at its own cost be solely responsible for procuring that the Project Operations are at all times performed:

…

5.2.4 ***except to the extent expressly stated to the contrary in the Board's Construction Requirements*** *or the Service Level Specification, in compliance with all applicable NHS Requirements.*

…"

4.5 Clause 5.2.4 has its genesis in the Scottish Futures Trust's standard form of NPD Contract. The purpose of the clause is to enable a procuring authority, here an NHS Board, to take a different approach from the approach set out in NHS Requirements in order to suit the particular needs of a particular project: see the evidence of Peter Reekie of Scottish Futures Trust: TD8,C36-39,pdf pp. 20-22.

4.6 This indicates that, at the time, it was not considered inherently 'wrong' for an NHS Board to have a different approach from the approach set out in NHS Requirements such as SHTM-03-01.

4.7 For completeness, paragraph 2.3 of the BCRs is to the same effect (emphasis in bold added): "***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 as the same may be amended from time to time: … (h) HTM and SHTM …*" (Bundle 5, pdf page 212/3.)

5. **The evidence of Stewart McKechnie in relation to SHTM-03-01**

5.1 Mr McKechnie is plainly a very experienced mechanical engineer, with significant experience as the designer of healthcare ventilation systems and familiarity with SHTM-03-01: see his evidence at TD7,C3-5,pdf p.4-5.

5.2 In his evidence, Mr McKechnie explained his understanding of the requirements of Appendix 1 of SHTM-03-01 and the reasons for his understanding, from an engineering perspective. He explained that 10AC and 10 pascals of positive pressure are only required in relation to isolation rooms within Critical Care areas, and not to other areas within Critical Care (including other patient areas as well as nurse spaces, interview rooms and so on). See TD7,C23-34,pdf p. 14-19. He went on to explain how that understanding informed his approach to the EM. In particular, he explained that he saw no conflict between what was said in the EM and the statement that *"the ventilation systems to the Hospital are designed in accordance with SHTM-03-01"*.

5.3 On the face of it, Mr McKechnie's understanding of SHTM-03-01 is impossible to reconcile with the evidence of Mr O'Donnell of Hulley & Kirkwood, who expressed the view that a multi-bed ward within a Critical Care area should have 10AC rather than 4AC, and said that including 4AC in the EM in respect of multi-bed wards within Critical Care was an error: (TD1,C76-77, pdf p. 40-41).

5.4 If Mr McKechnie's understanding of the requirements of Appendix 1 of SHTM-03-01 is accepted as being correct, then there was never any 'error' as between the EM and the requirements of SHTM-03-01 as regards Critical Care areas.

5.5 If Mr McKechnie's understanding of the requirements of Appendix 1 of SHTM-03-01 is not accepted as being correct, the Inquiry may wish to focus on what part Mr McKechnie's understanding may have played in why an 'error' as between the EM and the requirements of SHTM-03-01 in relation to Critical Care bedrooms was not identified until long after Financial Close. In that regard, however, as noted in paragraph 2.4 above, Mr McKechnie referred in his evidence to having clarified that the rooms treated with 10AC and 10 pascals of pressure [i.e. the isolation rooms] was a correct interpretation, albeit this was a "wee bit away" from the Inquiry's timeline (TD7,C33,pdf p. 19).

6. The period up to Submission of Final Tenders on 13 January 2014

6.1 As initially conceived, the project to design and construct a new Royal Hospital for Sick Children in Edinburgh was to be capital funded and was to be delivered using the Framework Scotland procurement programme and the NEC standard form contract. A great deal of time, in particular clinical time, and money was spent preparing a design on that basis.

6.2 In around December 2009, a decision was taken that Hulley & Kirkwood would develop a bespoke Environmental Matrix, to take over from the (generic) environmental information contained in ADB files from NHSL: see the witness statement of Mr O'Donnell of Hulley & Kirkwood at Bundle 13, page 275, and the evidence of Mr O'Donnell at TD1,C16-17,pdf pp. 10-11.

6.3 In an email from Michael O'Donnell to David Muir of BAM Construction dated 15 February 2010, Mr O'Donnell sought to formalise that instruction:

"… With regards to environmental issues, rather than employ ADB M&E sheets, HK will produce Environmental Spreadsheet for each room type for easy reference as a user sign off tool. …"

6.4 By "user sign off tool", what Mr O'Donnell envisaged was ultimately getting to a point where the client, NHSL, would have gone through an engagement process and be in agreement that the environmental approaches in the matrix did represent what they needed. The aim was to get to a point wherever there were discrepancies or misunderstandings or misinterpretations in relation to room types, the room functions or the air change treatment, these would go through a discussion, review, purification process to get to the point where everyone agrees it is correct and is what should be provided. See the evidence of Mr O'Donnell: TD1,C19-22,pdf p. 12-13 and TD1,C24-25, pdf p. 14-15.

6.5 In the meantime, the use and proper utilisation of the ADB database "*as an appropriate tool for briefing, design and commissioning*" was mandated for all NHS Scotland Bodies by the Scottish Government via CEL 19 (2010) dated 2 June 2010: see Annex A, Mandatory Point 7 (Bundle 1, pdf page 567). CEL 19 (2010) allowed for the use of an alternative tool or approach to be used if the use of ADB was deemed inappropriate for a particular project, in which case the NHS Scotland Body had a responsibility to demonstrate that the alternative was of equal quality and value in its application.

6.6 Hulley & Kirkwood produced the first version of their EM in September 2010: Mr O'Donnell at TD1,C17,pdf p.11; TD1,C28, pdf p. 16. Guidance Note 1 at the front of the EM stated: "*This workbook is to promote discussion and feedback to develop an Agreed Workbook by FBC sign off date and is intended as an easier reference tool to replace ADB RDS M&E Sheets for elements described on these sheets.*" (Bundle 4, page 43.) SHTM-03-01 had not yet been published, so Hulley & Kirkwood

had regard to the English HTM-03-01 in compiling this version of the EM (as identified in Guidance Note 14).

6.7 In November 2010 the funding structure for the project changed to a non-profit distributing (NPD) model. It was also decided that the project would be expanded to include the Department of Clinical Neurosciences.

6.8 Version 2 of Hulley & Kirkwood's EM was issued on 22 December 2010: Bundle 4, page 60. It contained the same text at Guidance Note 1 as the September 2010 version. Again, Guidance Note 14 identified that the design criteria for Critical Care Areas were HTM-03-01.

6.9 Following the decision to change to an NPD model, a key consideration for NHSL was the desire not to lose all of the work that had gone into preparation of the design up to that point, which included a lot of valuable clinical time. Approximately £2million had been spent on developing the capital project at that point, which NHSL did not want to see go to waste. See the evidence of Susan Goldsmith TD9,C16-19,pdf pp. 10-12.

6.10 NHSL and its advisers spent a long time, perhaps as much as a year, in dealing with the change to an NPD project. One of the issues considered at length in that time was the use of a Reference Design, as a means of utilising the design work which had already been undertaken, so that it would not go to waste.

6.11 During this time Mott MacDonald produced a paper entitled "*Approach to Reference Design*" to assist the Board in its deliberations. The final version, revision J, was dated 28 August 2012 (Bundle 2, pdf page 605). Section 4 (Bundle 2 page 620 at page 622) outlined that the Reference Design would include 1:50 layout drawings for Generic and Key Rooms and that the "*requirements*" for the remaining room would be detailed in a combination of

documents, including *"The Environmental Matrix (appendix B to the BCRs)"*. Likewise, paragraph 4.3 (Bundle 2, pdf page 625), outlined the specific room requirements ("Room Information"), as including the Environmental Matrix and then stated (Bundle 2, pdf page 626 – emphasis in bold added):

"*The Room Information provided to bidders is generally a mix of specific and generic information for instance architectural requirements are specified in terms of compliance with particularly NHS Guidance such as Health Technical Memorandum with Bidders ultimately being required to specify compliant material/components.* ***Similarly, the Environmental Matrix specifies parameters and criteria which need to be met and for which bidders will be required to advice the levels that will be achieved in their particular design****. … Previously in PFI and PPP projects, draft or indicative Room Data Sheets could be issued with an Invitation to Negotiate (ITN) with the responsibility for completion resting with the Preferred Bidder to be carried out in conjunction with the NHS Board. In NPD projects with a Reference Design there is a requirement for a more complete set of Room Information to be available to Bidders*."

6.12 Appendix B to the Approach to Reference Design, August 2012 paper is titled *"Matrix of Reference Design Deliverables*". In relation to "*Room Data Sheets*" the Status describes Sheet 3 for all rooms (environmental parameters) as being mandatory (Bundle 2, page 642).

6.13 The main driver for the decision to provide the EM to bidders was *"there had already been extensive work on the design, and so the Board did not want that work and that input, which was time-heavy, of our clinical teams, and also resource-heavy, to be lost"*. See the evidence of Susan Goldsmith at TD9,C16-17, pdf p. 10.

6.14 The impression created was that NHSL did not want to consider changes; they had done the design and they just wanted it delivered: see the

evidence of Paul Serkis TD6,C22-23,pdf pp13-14. The Reference Design and EM was also seen as a way for NHSL to retain control through the brief, in contrast to a previous project where the Board had not got what they wanted: see the evidence of John Ballantyne TD6,C25-26,pdf p. 15. The existence of a Reference Design was a method of allowing or ensuring that certain quality standards could be achieved: see the evidence of Peter Reekie TD8,C13,pdf p. 9.

6.15 The Reference Design EM was developed by Hulley & Kirkwood in conjunction with NHSL and Mott Macdonald. As can be seen from the front sheet of the Third Issue dated 19 September 2012 (the "Reference Design EM"[1]) (Bundle 4, page 131) the Second Issue dated 13 March 2012 had been revised to suit NHSL comments. Mr O'Donnell notes at paragraph 27 of his witness statement that the First Issue was also reviewed by NHSL with comments being received via email on 7 March 2012 (Bundle 13, pdf page 285). This, then, was a document that had not been prepared by Hulley & Kirkwood in isolation.

6.16 Guidance Note 1 to the Reference Design EM states: "*This workbook is prepared for the Reference Design as an easier reference tool to replace ADB RDS M&E Sheets for the Environmental Criteria elements described on these sheets.*" (Bundle 4, pdf page 132.)

6.17 As already noted, CEL 19 (2010) required NHSL to use either ADB or an alternative tool of equal quality and value in its application in order to brief bidders (see para 5.5 above). Plainly bidders could not brief themselves. NHSL had, however, taken a decision in July 2012 not to produce ADB Room Data Sheets to bidders. That decision appears to have been taken on grounds of cost: the cost of the necessary subscription to gain the requisite access to the

[1] The Third Issue EM is described on Page 1 as: "*Reference Design Envisaged Solution – RHSC/DCN RDS Environmental Matrix*".

database. Mr Stillie's understanding of matters was that it was intended that the EM would be a brief, in place of the environmental pages of the room data sheets. Had NHSL provided ADB RDSs to bidders it would not have been necessary to provide the Reference Design EM to bidders. On these matters, see the evidence of David Stillie at TD3,C10-16,pdf pp.7-9 under reference to his email to Neil McLennan of NHSL dated 15 August 2012 in relation to Room Data Sheets (Bundle 10, Volume 2, page 944) and at TD3,C17-18,pdf p. 11.

6.18 Against that clear background, the approach taken in the ITPD documents to the Reference Design EM is both logical and readily understandable. That approach is captured in the following excerpts:

- The Environmental Matrix was defined as follows in the Board's Construction Requirements (Bundle 2, pdf page 781 - emphasis in bold added):

  "*Means the Environmental Matrix, **which details the room environmental condition requirements of the Board required within each department/unit/space/area**. The title is Reference Design Envisaged Solution – RHSC/DCN Environmental Matrix version third issue as set out in Appendix C of this Section 3 (Board's Construction Requirements) of Schedule Part 6 (Construction Matters) (as varied, amended, or supplemented from time to time in accordance with the Project Agreement."*

- ITPD Volume 3, section 8 of the Board's Construction Requirements (Bundle 2, pdf page 873) required that:

  "*Project Co shall provide the Works to comply with the Environmental Matrix."*

- Bid submission requirement C8.3 of the ITPD Volume 1 (see Bundle 2, pdf page 1054 – emphasis in bold added) 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****."*

- ITPD Volume 1, paragraph 2.5.3 (Bundle 2, pdf page 965) explained to bidders that standard Room Data Sheets had not been prepared by the Board for the Project and that the specific room requirements (the "Room Information") was detailed in a number of documents, including the Environmental Matrix. It also explained that during dialogue, bidders would be required to develop Room Data Sheets "**incorporating the Room Information**" for certain rooms, including all Key Rooms and Generic Rooms. That was a clear instruction to bidders to use the Environmental Matrix (as defined) to develop the Room Data Sheets. This approach had its genesis in the "*Approach to Reference Design"* paper, as described above in paragraphs 5.11-5.12.

6.19 As can be seen from the foregoing, the ITPD proceeded on the basis that bidders should use the Reference Design Environmental Matrix as the basis for their bids. The Reference Design Environmental Matrix formed Appendix C to the BCRs (see Bundle 2, pdf page 774 at page 931). In that way, NHSL was able to avoid the time, including valuable clinical time, and money spent in preparing the Reference Design – including the Environmental Matrix – going to waste. Bidders were, however, free to **propose** changes to the Environmental Matrix, but only on an exception basis.

6.20 In the draft closing statement for Mott MacDonald it is observed that clause 2.6 of Volume 1 of the ITPD (Bundle 2, page 965) expressly stated that *"Building services engineering solutions"* were included as part of the "*Indicative Elements of the Reference Design"*. It is asserted in the Mott MacDonald closing statement that "*Building services engineering solutions*" would include the EM. However, clause 2.6 reads as follows (emphasis in bold added):

"*During the preparation of the Mandatory Reference Design Requirements,* ***other information*** *has been generated both as a by-product of preparing the Reference Design itself and as a general Project requirement as follows:*

…
(iii) Building services engineering solutions;
…"

The words "other information" in clause 2.6 serve to draw a distinction between the specific room requirements (the "Room Information") in the immediately preceding clause 2.5.3 which, as noted above, includes the Environmental Matrix. Given that the EM is one of the documents which details the Room Information for the purposes of clause 2.5.3, it can hardly fall within the clause 2.6 description of being "*other information*" generated as a "*by-product*" of preparing the Reference Design itself or as a "*general Project requirement*".

6.21 If the Reference Design EM was, in effect, to be ignored by bidders, how would that prevent the time and money invested in it from being wasted? That problem formed the basis of a question put to Iain Graham in his evidence: TD1,C19-20,pdf p. 12. His answer was revealing (emphasis in bold added):

*"**Yeah, very good point.** I think that earlier section that you highlighted was "These are the areas that we will expect to see the bidders coming back with to respond to explain what their proposals are for the various departments and the various engineering criteria on that basis.""*

The latter part of the answer was a reference back to the Mott MacDonald Approach to Reference Design Paper and the passage highlighted in bold at paragraph 5.11 above (see TD1,C18,pdf p. 11). As that passage made clear, however, "… ***the Environmental Matrix specifies parameters and criteria that need to be met*** …".

6.22 Unsurprisingly, there was a considerable body of evidence to the effect that the Reference Design EM was understood to be NHSL's briefing document for environmental parameters. Reference is made to the following:

- Evidence of David Stillie, TD3 C29,pdf p. 17 – the EM from NHSL had their design intent.

- Evidence of David Stillie, TD3,C19,pdf p.12 – NHSL were satisfied the suite of documents provided (including the EM) were equivalent to RDS for briefing purposes.

- Evidence of Stewart McKechnie, TD7,C55,pdf p. 30 – the EM was provided and defined as being the alternative to ADB.

- Evidence of Stewart McKechnie, TD7, C56, pdf p.30 – his understanding was that the EM contained the Board's mandated requirements as part of the BCRs.

- Evidence of Richard Cantlay, TD9,C44, pdf p. 24-25 – they have captured the data you would put in a RDS in the EM.

- Evidence of Stewart McKechnie, TD7,C14 and C70, pdf p. 37 – the matrix was taken as the client's brief.

- Evidence of Ken Hall, TD4,C39 – the EM gave the M&E information required.

- Evidence of Ken Hall, TD4,C91,pdf p.48 – his understanding was that the EM was the client briefing document and SHTM were to be complied with unless the Board had specified something different.

- Evidence of Ken Hall, TD4,C136/137,pdf p.70-71 – where the client [NHSL] was telling you they wanted something different to SHTM that's what was provided because that was what they wanted.

- Evidence of Paul Serkis, TD6,C24,pdf p. 14 – the EM set the parameters of what the brief was, it was what the Board were looking to be delivered.

- Evidence of Paul Serkis, TD6,C23,pdf p. 14 – there was a fixed brief.

- Evidence of John Ballantyne, TD6,C12-13,pdf p.8-9 – there wasn't debate about the EM, it was just *"this is what we want and that's the definition of it"*.

- Evidence of John Ballantyne, TD6,C19,pdf p. 12 – his impression was that if they were to move away from the EM, then they would need express approval.

- Evidence of Paul Cooper, TD7,C4-5,pdf p. 4-5 – EM was a client briefing document.

- Evidence of Willie Stevenson (MM) – TD2,C17-18,pdf p. 11 – in his experience the initial EM is produced by the procuring authority for the purpose of briefing the bidders, "*to give them an indication of what the Health Board is after and then give them a start to go off…".*

6.23 As identified at paragraphs 126 and 181 of the submissions of Counsel to the Inquiry, if NHSL's position that the EM was not to be relied upon and so cannot be taken as a brief is correct, what was the brief? It is difficult to understand how a tenderer could be expected to know, or create, the "requirements of the Board".

6.24 It is submitted on the basis of all of the foregoing that there is little (if any) room for doubt about the status of the Reference Design EM at least at bid stage, as contemporaneously intended by NHSL and Mott MacDonald and as contemporaneously understood by Multiplex and TuvSud/Wallace Whittle. The Reference Design EM was NHSL's briefing document in respect of environmental room criteria. Bidders were required to comply with it, but could propose changes on an exception basis.

6.25 That is the proper starting point for consideration of matters at Preferred Bidder stage and subsequently.

6.26 When considering these matters, the Inquiry is invited to bear in mind the commercial context in which they sit. The difference between providing for 4AC in critical care areas and 10AC in critical care areas involved much more than simply changing a number on a spreadsheet.

6.27 The AC rate determines the design for many other critical aspects of the ventilation system, including the duct sizing, the number and/or sizing of air handling units and plant room sizing. Any post-bid increase from 4AC to 10AC in critical care areas would have given rise to increased construction and increased maintenance costs.

6.28 Further, any post-bid increase in the number of air changes per hour would increase energy consumption and, therefore, energy costs. It would also impact the BREEAM scoring/rating, which was linked to the funding criteria.

6.29 In relation to the foregoing matters, see the witness statement of Colin Macrae at paragraph 113 (Bundle 13, pdf page 52) and the evidence of Colin Macrae at TD5,C39,pdf p.22; the witness statement of Stewart McKechnie at paragraph 26 (Bundle 13, page 420-421); paragraph 17 of Paul Cooper's witness statement (Bundle 13, pdf page 317); paragraphs 40 and 43-48 of Michael O'Donnell's witness statement (Bundle 13, pdf pages 291-294); the witness statement of Ken Hall at paragraphs 44-47 (Bundle 13, pdf pages 248-249) and the evidence of Ken Hall at TD4,C69-70,pdf p. 37; and the evidence of Peter Reekie at TD8,C39-40, pdf p. 22.

6.30 If, as NHSL and Mott MacDonald appear to suggest, bidders were not supposed to regard the EM as mandatory for the purposes of their bids, on the basis that it was being provided for information only, then (as well as not preventing waste of all of the time and money that had gone into preparing it) the practical implications for procurement of the Project would have been profound.

6.31 IHSL would have had to prepare its own version of an Environmental Matrix, or equivalent, from scratch. This would have required access to the clinicians, in order to understand the use and briefing of each room. It would

also have required a considerable period of time. Neither was available. Reference is made to the following summaries of passages in the evidence:

- Evidence of Iain Graham (NHSL) – TD1,C12,pdf p. 8 Day 1: EM was a "*starting place*", the "*plus point for us was to save engaging with a lot of clinical time, reviewing lots of information. It gave us something to work from*".

- Ken Hall, TD4,C24,pdf p.14 – application of SHTM to any particular healthcare project requires a process of discussion, judgement and decision making: it is not just a matter for engineers but requires clinical involvement.

- Ken Hall, TD4,C76-77,pdf p. 40-41: To unravel the EM you would need to go through all the user groups, the medical review, the clinical review. There wasn't the time to do that. This was a period of six months, and my experience of trying to get clinical people together and Estates and Infection Control, there just wasn't the time.

- Michael O'Donnell – TD1,C34,pdf p.19 – producing the matrix requires clinical input.

- Ken Hall, TD4,C39,pdf p.22: the EM gave the M&E information required, if he had not had it, then there would have required to be a process in place to achieve this but it appeared the work had already been done.

- Ken Hall, TD4,C139-140,pdf p.72: if the EM was Disclosable Data, it would not have been possible for IHSL to carry out a review of the EM to confirm its accuracy and fitness for purpose, as IHSL were not party to the people who

created it and the decisions and reasons for what is contained in it, it would have involved clinicians, user groups, Estates etc.

- Liane Edwards, TD5,C20-21,pdf p. 12-13: if the brief is clear, then there is no need for direct contact with clinicians.

- Paul Serkis, TD6,C22,pdf p.13: little clinical input, got the impression *"Just go and build what we have designed and move on"*

6.32 On the basis of the foregoing, bidders would simply have been unable to put together a meaningful Environmental Matrix of their own (or equivalent) for the purposes of their bids (never mind during Preferred Bidder stage). This point supports Multiplex's understanding of the clear terms of the ITPD documents.

6.33 If NHSL and Mott MacDonald are to be understood as suggesting that bidders were supposed to accept the EM as mandatory for the purposes of their bids, but not supposed to regard the EM as mandatory during the Preferred Bidder stage, that makes even less sense. It would be bizarre to expect bidders to bid on a particular basis, only for that basis to change as soon as a Preferred Bidder was appointed. It might, for example, significantly undermine the integrity of the procurement process.

6.34 For each and all of the foregoing reasons, the Inquiry is invited to find that, contemporaneously, the intention of NHSL and its advisers at bid stage was the same as IHSL and Multiplex's understanding at bid stage: compliance with the Reference Design EM was intended to be mandatory, although bidders were free to propose changes to the EM on an exception basis.

7. Assessment of tenders and identification of Preferred Bidder

7.1 IHSL's understanding in relation to the EM was reflected in their tender. In their response to bid submission C8.3 (see Bundle 6, page 305) they stated:

"*As indicated above no changes proposed at this time nor envisaged in the future but we will continue to review and advise back. …"*

7.2 The reference '*as indicated above'* in that response was to IHSL's response to bid submission 8.2(x), which stated:

"*The mechanical and electrical services shall be provided in accordance with the reference design environmental matrix and we shall provide an addendum matrix for any rooms on any exception basis highlighting any changes at preferred bid stage."*

7.3 The comment back from the bid reviewer in relation to the response to bid submission C8.3 was "*Good response*" (see Bundle 8, page 93).

7.4 Moreover, the technical assessment of IHSL's tender confirmed, and the Finance and Resource committee were advised that, "… *the preferred bidder was in full accordance with the requirements."* (Bundle 10, Volume 1, page 7, item 61.20).

7.5 In contrast, one of the other bidders, Mosaic (Bidder C), proposed to change the number of air changes in the single bedrooms and multi-bed wards in Critical Care from 4AC to 10AC (see Mosaic's altered version of the EM at Bundle 7, page 56 with the proposed changes in red). There is no evidence before the Inquiry as to precisely why Mosaic proposed this particular change. Mosaic explained the basis of some of its proposed changes to the reference design, for

example the proposed use of chilled beams combined with fresh supply rates based on occupancy (see Bundle 7, page 88 and also 158), but not this one.

7.6 Against that background, we may turn to Mr Macrae's explanation in his oral evidence that the fact that Bidder C (Mosaic) had marked up the EM did not ring any alarm bells. The reason being that he considered that Bidder C was being proactive and carrying out work in advance of anyone being identified as Preferred Bidder. It was, he suggested, something that the other bidders would have to do later on. See TD2,C20-22,pdf pp12-13.

7.7 The implication is that, at bid stage, Mosaic went beyond what they were required to do in terms of developing the ventilation design whereas IHSL simply did what they were required to do. That is consistent with bidders being required to confirm acceptance of the EM, and to propose any changes on an exception basis. It is not consistent with the view that it was incumbent on bidders to form their own view on air change rates in Critical Care bedrooms, notwithstanding the rates set out in the EM.

7.8 In any event, Mosaic's change from 4AC to 10AC in Critical Care bedrooms did not ring any alarm bells with NHSL's technical advisers, Mott MacDonald. If the change involved the correction of an 'error' in the EM, namely a discrepancy between the EM and SHTM-03-01, it is very difficult to understand why it did not ring alarm bells with Mott MacDonald and why this error was not identified to NHSL and/or other bidders.

7.9 Mott MacDonald did not, however, raise with IHSL any concern about the number of air changes in Critical Care bedrooms at any point prior to IHSL being appointed Preferred Bidder, or at any point after that. It was raised for the first time by IOM after Practical Completion.

8. Preferred Bidder Stage: 5 March 2014 to 12/13 February 2015

8.1 The purpose of the Preferred Bidder period was to enable IHSL to spend time understanding NHSL's requirements and NHSL to spend time understanding the IHSL's proposals for meeting those requirements, with a view to getting to a point where agreement was reached and a Project Agreement could be entered into. During that period, however, the obligations of the Project Agreement were not in place. There is no sense in which, during that period, IHSL became contractually responsible for the EM and its contents. Responsibility for the EM and its contents still lay with NHSL, just as it had at bid stage.

8.2 Against that background, Mr Hall and Mr McKechnie were clear that they would not have wished to propose changes to the parameters set out in the EM (as opposed to making changes needed to reflect changes to the Schedule of Accommodation: See Mr Hall at TD4,C76-77,pdf p.40-41; TD4,C103-104,pdf p.54 and Mr McKechnie at TD7,C66,pdf p.35; TD7,C109,pdf p.57).

8.3 During this period, the EM was updated by Wallace Whittle on 29 September 2014 and 31 October 2014 in response to comments from NHSL/Mott MacDonald. It was then incorporated into the Project Agreement, as discussed further below.

8.4 NHSL, through Mott MacDonald, engaged in close collaboration in relation to both the production of RDS and also in relation to the EM during this period. Reference is made to section 4 of Multiplex's response to PPP2 (beginning at Bundle 12, page 8) and section 6 of Multiplex's response to PPP 2 (beginning at Bundle 12, page 83), which detail numerous examples of this.

8.5 The following summaries of passages in the evidence illustrate the same point:

- Graeme Greer, Day 8 Column 36 PDF 20 – the RDD process began informally during PB and they reviewed the EM with NHSL and provided comment and feedback on it

- Ken Hall, Day 4, Column 109 PDF 57 – there was no indication that the review of the EM being carried out by and on behalf of the Board was a sample review and did not extend to all elements of the EM.

- Ken Hall, Day 4, Column 110 PDF 57 and 58 – explanation of MM role, they had senior people in each discipline reviewing and inputting to the work done.

- Liane Edwards, Day 5 Column 22, 23 and 24 PDF 13 and 14 – comments received via Motts were very detailed and documents re-drafted several times. It was not a light touch from MM. MM had a representative for every discipline.

- Paul Serkis, Day 6 Column 42 PDF 23 – MM involvement was more intense than used to on other projects.

8.6 Despite all of this scrutiny by Mott MacDonald, no comments were raised in relation to 4AC rather than 10AC in bedrooms in Critical Care (notwithstanding that Mosaic had proposed this change in its bid).

8.7 Mott MacDonald did undertake a review of the EM in early October 2014. It was discussed internally whether any "non-compliances" identified by Mott MacDonald might previously have been agreed by NHS Lothian directly in the reference design or competitive dialogue phase. Mott MacDonald decided to raise any concerns with NHSL and, if NHSL agreed, flag the concerns to IHSL.

That is what they proceeded to do. (See paragraph 84 of the witness statement of Graeme Greer, Bundle 13, pdf page 158.)

8.8 NHSL's comments were provided, in a table of 12 points, dated 13 October 2014 (see Bundle 4, page 218). The comments are detailed, in relation to aspects of AC/ventilation, at points 7, 8, 9 and 10. None of the comments relate to 4AC rather than 10AC being used in respect of Critical Care bedrooms.

8.9 The first item of point 7 (Bundle 4, page 219) is however "*Bedrooms 4ac/hr, SHTM says 6 ac/hr*". That item was resolved at a meeting at the end of October, on the basis that the 4AC reflected the Reference Design and NHSL's requirements. The EM was, accordingly, not updated in relation to this point. (See the evidence of Ken Hall, TD4,C119-122,pdf pp. 62-63.) In that context, NHSL's/Mott MacDonald's failure to make a similar observation in relation to the difference between 4AC and 10AC in Critical Care, if it was their intention that bedrooms in Critical Care areas would have 10AC as per SHTM-03-01, is extremely difficult to understand.

8.10 The main issue was the issue of the pressure regime in single bedrooms, which was also raised in point 7 of the 13 October 2014 comments. The Reference Design EM indicated the pressure should be positive, whereas in the comments a desire to change the pressure to balanced or negative was being indicated. According to Mr McKechnie, this issue related to all single bedrooms in the hospital, including those in Critical Care (TD7,C122,pdf p. 63).

8.11 The change having been required, the EM was updated on 31 October 2014 by Wallace Whittle (see Bundle 4, page 220 at page 226). The pressure in all single bedrooms was changed from 'positive' to 'balanced'.

8.12 A specific meeting was then held with NHSL and its advisers to discuss the EM on 11 November 2014. The output from that meeting was a list of 7 bullet points which eventually were included in Section 5 of Schedule Part 6 of the Project Agreement (Bundle 4, page 245 at 247). One of these was "*Detailed proposal awaited on bedroom ventilation to achieve balanced/negative pressure relative to corridor.*" On 12 November 2014 Mott MacDonald prepared a summary of Project Co's ventilation strategy for a single bedroom (Bundle 8, pdf page 71). This stated the concern that the room would be at a slight positive pressure relative to the corridor which would allow infection such as MRSA or Norovirus to spread. On 13 November 2014 a copy of that summary was forwarded by Graeme Greer to Brian Currie (Bundle 8, pdf page 69). The email stated that at the Environmental Matrix meeting on 11 November 2014, the following comment on the EM had been added: "*Detailed proposal awaited on bedroom ventilation to achieve balanced/negative pressure relative to corridor.*" It went on to say:

"*However this may come down to an [sic] dispute over the SHTM requirement/Infection Control requirements. Might be worth raising this again at the RDD meeting?"*

8.13 The foregoing is the background to a HAI-SCRIBE meeting that took place on 19 November 2014.

8.14 At the HAI-SCRIBE meeting on 19 November 2014 NHSL was **not** told that the ventilation system design was not fit for purpose (see section 2.2 of the risk assessment form at Bundle 10, page 286). Rather, what the meeting was told was that a concern had been raised in relation to a "*potential*" issue with regard to negative/balanced pressure in single bedrooms, and that drawings and further information were awaited in order to fully understand if there was

a risk. In those circumstances, NHSL took the view that the 'yes' box could not be ticked, because they could not be sure that the concern had been addressed, and so the 'no' box had to be ticked. See the evidence of Liane Edwards at TD5, C42-43,pdf p. 23-24; and see also the evidence of Susan Goldsmith, who confirmed that she would not have expected this type of issue to be escalated to her as Senior Responsible Officer before signing the contract unless it was a very significant concern. As she put it *"… it looks as if they're still trying to resolve the issue, and so I would expect the project team to attempt to resolve the issue first."* See Susan Goldsmith at TD9, C84-85,pdf p.44-45.

8.15 This is far removed from NHSL being told that the ventilation design was not fit for purpose, not least because at this stage of the project the design was not finalised.

8.16 Ultimately, NHSL's requirement for the pressure regime in single bedrooms to be balanced rather than positive was confirmed. Reference is made to section 5 of Multiplex's responses to PPP1 (Bundle 12, beginning at pdf page 12) and PPP2 (Bundle 12, beginning at pdf page 81).

8.17 The key point here is that the change to the EM on 31 October 2014 and the continued scrutiny thereafter was brought about by NHSL/Mott MacDonald identifying a change they wished to make to the EM, not by IHSL/Multiplex/Wallace Whittle's development of the design.

8.18 If there was an 'error' in the EM in relation to air change rates in Critical Care bedrooms such that the EM did not reflect NHSL's intentions, it is difficult to understand why it was not identified by NHSL or its advisers during the Preferred Bidder period.

9. Financial Close

9.1 As noted above (see paragraphs 3.4 – 3.8), the obligation to comply with NHS Requirements is qualified in the final Project Agreement and the final BCRs. For the reasons set out herein, Multiplex's position is that the EM stated a specific and different requirement of the Board in relation to the number of air changes per hour in Critical Care bedrooms. IHSL's obligation was to comply with the EM in that regard.

RDS Sheets

9.2 In relation to the requirement to produce RDS sheets, IHSL produced RDS sheets for 100% of room types prior to Financial Close, albeit there was not time for 100% of RDS sheets for all rooms to be produced (see Liane Edwards at TD5,C27,pdf p.16). The RDS sheets that were produced showed 4AC would be provided in Critical Care rooms (see Bundle 5, pages 1010, 1030 and 1004 and the evidence of Janice Mackenzie at TD2,C37-40,pdf p. 21-22).

9.3 The RDS sheets for Financial Close were provided to Mott MacDonald for review, including on 19 September 2014 – 5 months prior to Financial Close (see Bundle 12 page 1856).

9.4 Janice Mackenzie thought that Mott MacDonald would be reviewing the RDS sheets (TD2,C36,pdf p.20) but Colin Macrae could not recall RDS sheets being made available for him to review prior to Financial Close and was surprised to be told that such sheets, including for Critical Care, had been produced prior to Financial Close (TD5,C41-42,pdf p. 23).

9.5 It may be that if the RDS sheets had been reviewed by Mott MacDonald prior to Financial Close, that would have been an opportunity for the alleged 'error' to be spotted.

RDD

9.6 One issue which was explored at the Inquiry hearings was how the EM could be mandatory, and yet also be RDD and therefore subject to change. Multiplex's position is that it was not the whole EM that was subject to RDD, but only the 7 points which had been identified at the meeting on 11 November 2014 and which were included in Section 5 of Schedule Part 6 of the Project Agreement (Bundle 5, pdf page 80). It is important to bear in mind the commercial implications if indeed the whole of the EM was RDD and subject to change. As mentioned above, the parameters in the EM affect air handling units, ductwork, plant room sizing etc. If all of those parameters were RDD there could be no certainty of price at Financial Close. It is inherently unlikely that that would be acceptable, especially given the competitive procurement process involved. As Mr O'Donnell explained in his evidence, the AC rates in the environmental matrix inform other aspects of the design and so the aim by Financial Close is to get to an agreed position. By Financial Close the environmental matrix should be 80-90% complete and it would be unusual for a full matrix to be reviewable design data (TD1,C24-27,pdf p.14-15).

9.7 The EM forms a separate part of the Project Agreement, sitting outside the PCPs. "Room Data Sheets" are defined in the Project Agreement as having "the meaning given in Section 6 (Room Data Sheets) of Schedule Part 6 (Construction Matters)". Section 6 then states:

"*The Room Data Sheets are the Room Data Sheets as set out on the disc in the Agreed Form identified and executed as Appendix 1 (RDS Pack) and Appendix 2 (Environmental Matrix) of Section 6 (Room Data Sheets) of Schedule Part 6 (Construction Matters) of this Agreement referred to in and forming part of this Agreement.*"

9.8 The Room Data Sheets are accordingly formed of two parts: (1) the Room Data Sheets themselves, which are provided as Appendix 1 to Section 6, which we will refer to as "RDS"; and (2) the Environmental Matrix which is Appendix 2.

9.9 Appendix 2, is titled "Environmental Matrix" and states:

"*The Environmental Matrix is the Environmental Matrix as set out on the disc in the Agreed Form identified and executed as Appendix 1 (RDS Pack) and Appendix 2 (Environmental Matrix) of Section 6 (Room Data Sheet) of Schedule Part 6 (Construction Matters) of this Agreement, referred to in and forming part of this Agreement.*"

9.10 The reference to "Agreed Form" is reference to a defined term in the interpretation section of the Project Agreement:

"*Reference to a document being in the Agreed Form is a reference to the form of the relevant document (or where appropriate, the form of relevant document on disc) agreed between the parties and for the purpose of identification initialled by each of them or on their behalf.*"

9.11 Environmental Matrix is then also defined in the Project Agreement BCRs (see Bundle 5, pdf page 194 at page 199) as being:

"*Means the Environmental Matrix, which details the room environmental condition requirements of the Board required within each department / unit / space / area as set out in Section 6 (Room Data Sheets) of Schedule Part 6 (Construction Matters) (**as varied, amended or supplemented from time to time in accordance with the Project Agreement**)*"

9.12 There would be no need for the wording in bold, if the EM was not fixed at FC, subject to the 7 points in the RDD Schedule.

9.13 The EM had been moved from section 3 of Schedule Part 6 to the Project Agreement (where, in the ITPD documents, it was to be found as Appendix C) to section 6 of Schedule Part 6 (Room Data Sheets). But Section 3 of Schedule Part 6 to the Project Agreement (the BCRs) required IHSL to provide Facilities that met all the requirements specified in the Room Data Sheets. As noted, the EM formed part of the "Room Data Sheets" as defined. The BCRs at Financial Close (as they had at ITPD stage) also continued to require that: " *Project Co shall provide the Works to comply with the Environmental Matrix"* and (as above) the BCRS at Financial Close continued to define the EM as being: " *the Environmental Matrix, which details the room environmental condition requirements of the Board required within each department / unit / space / area"*.

9.14 In relation to these matters, see the evidence of Iain Graham at TD1,C31-32,pdf p.18 – in reference to Section 8 of the BCRS, "*Project Co shall comply with the EM"*, the intention is that it would be the EM at FC which has been "*signed off by us at that point".*

9.15 See also the evidence of Graeme Greer at TD8,C29,pdf p.17 and TD8,C78,pdf p.78: the EM had been part of the BCRs at bid stage, but by

Financial Close it was part of the Project Agreement Schedule Part 6 because from a contractual perspective that was where it was appropriate.

9.16 Finally, for completeness it should be noted that Schedule Part 10, Appendix B – Completion Criteria of the Project Agreement requires commissioning to demonstrate compliance with the Environmental Matrix (see Bundle 5, pdf page 1512):

"*2.1.32. Project Co shall provide Environmental Matrix including Commissioning data test sheets as commissioned in accordance with CIBSE Commissioning Code C and demonstrating compliance with the Environmental Matrix*."

10. <u>Comment on the submissions of Counsel to the Inquiry</u>

10.1 At paragraph 2 of the submissions of Counsel to the Inquiry the Chair is invited, subject to the issues set out in Appendix 1 to the submissions, to make the findings set out in the provisional conclusions sections of the PPPs. Multiplex respectfully submits that the provisional conclusions of the PPPs ought to be qualified as indicated in Multiplex's responses to the PPPs, including as indicated in the marked-up versions of PPP1, PPP2 and PPP3 which are appended to Multiplex's responses.

10.2 At paragraphs 205-206 of the submissions, it is suggested that the contractual provisions on "Hierarchy of Standards" in Volume 1, paragraph 2.5 (see Bundle 5, pdf page 216) may be relevant in two ways.

10.3 First, it is said that if there was a disconnect between the EM and SHTMs, with the latter setting a more onerous standard, the values in the SHTM's should 'arguably' take precedence. Multiplex submits that in truth no such argument can arise, because the obligation to comply with NHS Requirements

(including SHTMs) is qualified in the manner outlined above. On that basis, there is no inconsistency or contradiction which falls to be resolved by the "Hierarchy of Standards" provision.

10.4 Second, it is said that the "Hierarchy of Standards" provision may apply to internal inconsistencies in the EM itself e.g. as between the Guidance Notes and the individual values within Critical Care areas. Multiplex submits that the language of the "Hierarchy of Standards" provision is simply not apt to apply to any such internal inconsistency. Any such internal inconsistency does not arise from contradictory standards or advice within the terms of the Board's Construction Requirements and the Appendices. Any such internal inconsistency (which is of course controversial as between Mr O'Donnell and Mr McKechnie) arises in the interpretation and application of a single standard, namely SHTM-03-01. The standards and advice referred to in paragraph 2.5 of Volume 1 are those referred to in paragraphs 2.3 and 2.4 of Volume 1.

10.5 At paragraph 20 of the submissions, it is stated that "*there was no derogation from NHSL's requirement for compliance with SHTMs*". It is not clear precisely what is meant by a 'derogation' in this context. In any event, Multiplex's position, as outlined above, is that IHSL's obligation to comply with NHS Requirements (which includes SHTM-03-01) was qualified, because through the EM, the Board expressly stated a specific and different requirement in relation to the number of air changes per hour in Critical Care bedrooms.

10.6 At paragraph 253 of the submissions, it is said that IHSL's obligation to comply with the EM was the subject of an express derogation. A similar point is made in Mott MacDonald's draft closing statement. This matter was not covered in the oral evidence to the Inquiry, although Liane Edwards gave evidence and, as the author of the document concerned (Bundle 5, Paper Apart

pdf page 3861), could have been asked about it. It is understood that the document was drafted precisely **because** the EM was NHSL's brief, but NHSL had outstanding comments (the 7 comments from the 11 November 2014 meeting) which were RDD and, from a contractual perspective, required to be dealt with in the context of the obligation to comply with the EM.

10.7 It is to be noted, however, that the underlying premise in relation to the 'derogation', whatever its scope, is that IHSL was obliged to comply with the EM. If the EM was not mandatory, as NHSL and Mott MacDonald now suggest, there would have been no need for this derogation.

10.8 Further, if the 'derogation' had released IHSL from the obligation to comply with the EM entirely, that would have been a hugely significant change to the risk profile of the project from both parties' perspectives. There is no evidence before the Inquiry that that was what was intended, or what was brought about. Such an interpretation would also be entirely inconsistent with the parties' decision to include and reference the EM in the Project Agreement and BCRS at Financial Close.

11. **Comment on the draft Closing Statement by Mott MacDonald**

11.1 The draft closing statement by Mott MacDonald contains what is plainly an unwarranted attack on the evidence of Multiplex and Wallace Whittle witnesses in relation to the status of the Reference Design EM at bid stage: "*The approach taken by these witnesses relied on erroneous assumptions about the terms of the documentation and wishful thinking.*" For all the reasons set out in Counsel to the Inquiry's draft closing submissions, and for the reasons discussed herein, there is more than ample scope in the documents before the Inquiry to support the evidence they gave as to their understanding of the status of the EM at bid

stage. Insofar as their evidence is attacked on the basis of lack of precision on matters of recollection, it is hardly surprising if recollections of interactions with other people which took place a decade ago were not crystal clear. Furthermore, when one properly takes account of context, namely the background to the ITPD and the commercial implications of Mott MacDonald's interpretation, all as discussed above, it is clear that the position argued for by Mott MacDonald as to the status of the EM at bid stage (i.e., that it was not mandatory) is simply an unrealistic *ex post facto* analysis of the situation.

11.2 It is, however, not surprising that Mott MacDonald advances the line it does, given that Mott MacDonald was responsible for the preparation of the ITPD documentation, including preparing the Reference Design documentation, as appropriate, for inclusion in the ITPD. It should be noted that Mott MacDonald was also responsible for (i) checking the Reference Design (which includes the Reference Design EM) for compliance with all appropriate NHSL and legislative guidelines and requirements and identifying any 'derogations', and (ii) evaluation of all design & construction and facilities management elements of Final Tenders, in particular for compliance with bid documents. Reference is made to Mott MacDonald's appointment, Bundle 2 page 28 at page 86, and the evidence of Mr Cantlay at TD9,C52-56,pdf p. 28-30. Mr Cantlay attempted to play down the content of those obligations, but NHSL's Janice MacKenzie was clear in her understanding that Mott MacDonald were advising the Board on all technical issues, by which she meant that, in relation to anything related to mechanical engineering or architectural matters, Mott MacDonald were providing advice to NHSL around whether or not drawings or proposals were meeting NHSL's brief (see the evidence of Janice MacKenzie, TD2,C18-19,pdf pp.11-12).

11.3 A further difficulty for Mott MacDonald is that Mott MacDonald was proceeding on the basis that the Reference Design EM complied with SHTM-03-01. Hulley & Kirkwood had provided confirmation to that effect in relation to an earlier version of the EM in March 2012 (Bundle 4, pdf page 324 at page 325 and the evidence of Mr Cantlay at TD9,C56-59, pdf pp.30 – 32) and, while Hulley & Kirkwood had not been asked to refresh that confirmation for the Reference Design EM, Mott MacDonald assumed no refresh was required because there had been no changes to Mott MacDonald's derogation paper. In these circumstances, any change to the environmental parameters in the Reference Design EM proposed by the bidders ought to have been flagged by Mott MacDonald as - potentially at least - involving a departure from the parameters set out in SHTM-03-01 ***whether or not Mott MacDonald understood the Reference Design EM to be mandatory***. This begs the question why Bidder C's changes to the Reference Design EM in relation to critical care areas in its bid was not queried by Mott MacDonald during its evaluation of the bids. In this regard, it is also to be noted that because Bidder C's changes related to the environmental **parameters** to be applied to particular room types, Mr Macrae's purported explanation (see TD5,C19-22,pdf p. 12-13) that Bidder C's changes to the Reference Design EM could be put down to proactive design development work by Bidder C, which other bidders would have to do later on, does not hold water. No amount of design development could or would affect the applicable parameters set out in Appendix 1 to SHTM-03-01: design development work will certainly determine how in practice those parameters are to be satisfied and implemented, but the parameters themselves remain the same. Moreover, involving as they did an increase in the number of air changes per hour in Critical Care areas, Bidder C's changes to the Reference Design EM would have involved increased construction and ongoing maintenance costs, as well as increased energy consumption and energy costs: all of this would have been unnecessary if the number of air changes in the Reference Design

EM complied with SHTM-03-01, as Mott MacDonald say they understood to be the case.

11.4 NHSL's Susan Goldsmith was clear that the assurances provided by Mott MacDonald in relation to the technical assessment of the bids were "*incredibly important*" to the Board, and that Mott MacDonald had not highlighted any risks or problems that had been encountered in relation to the bids, and the bid of IHSL in particular (see the evidence of Susan Goldsmith TD9,C50-51,pdf pp.28 -29).

11.5 Mott MacDonald's draft closing statement also contains an assertion that a review carried out by IHSL, or one of its contractors, of the EM, which identified certain 'discrepancies' within the EM, is inconsistent with Multiplex's position that the EM was a fixed, mandatory document. It was, however, precisely ***because*** the EM was a mandatory document that the discrepancies were noticed. Because of its mandatory nature, the EM was being used by the architect, HLM, to populate the environmental criteria in the Room Data Sheets and it was in the course of that process that certain internal inconsistencies were noted. See the witness statement of Liane Edwards (Bundle 13, pdf pages 270-272) and the evidence of Liane Edwards (TD5,C28-33,pdf pp.16-19).

11.6 In Mott MacDonald's draft closing statement it is said that, as Graeme Greer explained in evidence, the first RDS were produced eight weeks from the projected Financial Close date and that, given the time involved, they were not reviewed prior to Financial Close. The RDS were produced to Mott MacDonald for review on 19 September 2014 (see Bundle 12, page 1856). Financial Close did not in fact occur until 12/13 February 2015, almost five months later. It is

unclear why Mott MacDonald did not review them at any point in that five-month period.

12. Provisional Conclusions

12.1 On the evidence presently before the Inquiry, it is submitted the following provisional conclusions may properly be drawn:

(i) the Reference Design EM was NHSL's briefing document to bidders, setting out room environmental parameters;

(ii) bidders were required to accept the EM, but were free to propose changes to it on an exception basis;

(iii) providing the EM to bidders "for information only" would have made no sense in the context of NHSL's desire not to see the time, including clinical time, and money spent in preparing the Reference Design go to waste;

(iv) IHSL was entitled to - and did - bid on the basis that compliance with the Reference Design EM was mandatory: that is the proper contextual starting point for consideration of everything that followed;

(v) Mr McKechnie's approach to the EM throughout was that Critical Care Areas in Appendix 1 to SHTM-03-01 referred to isolation rooms within Critical Care only;

(vi) if the use of 4AC rather than 10AC in respect of Critical Care bedrooms in the Reference Design EM was an 'error', the difference between

Mosaic's bid and IHSL's bid provided an opportunity for that error to be detected, but it was not;

(vii) at no point, until long after practical completion, did NHSL or its advisers identify an issue as regards the compliance of the ventilation design with Appendix 1 of SHTM-03-01 as regards the number of air changes in Critical Care bedrooms;

(viii) changes to the EM in relation to ventilation were however made at Mott MacDonald's instigation, during the Preferred Bidder period;

(ix) the Preferred Bidder period provided another opportunity for the alleged 'error' to be detected, but it was not;

(x) the EM did not form part of Project Co's Proposals in the Project Agreement: it formed part of the Room Data Sheets;

(xi) the EM did not become Reviewable Design Data in its entirety: it was only Reviewable Design Data to the extent of the 7 bullet point comments included in Section 5 of Schedule Part 6 of the Project Agreement.

Alasdair McKenzie KC, Senior Counsel for Multiplex

30 June 2023

CLOSING STATEMENT BY MOTT MACDONALD LIMITED

in relation to

SCOTTISH HOSPITALS INQUIRY EVIDENTIAL HEARINGS

IN MAY 2022 AND APRIL/MAY 2023

1. In the following statement, Mott MacDonald Limited ("MML") sets out its position in relation to those issues covered in the evidential hearings in May 2022 and April/May 2023. The statement does not cover all of the issues addressed at those hearings, only those issues that are directly relevant to MML. The statement attempts to follow, so far as possible, the headings adopted in the Closing Submission by Counsel to the Inquiry ("CTI's submission").

2. Any references to paragraph numbers in witness statements refer to statements prepared for the hearing in April/May 2023 unless otherwise stated. Any references to bundles of documents are to those prepared for the hearing in April/May 2023 unless otherwise stated.

Ventilation requirements in hospitals

3. MML's position is as set out in its position paper dated April 2022 that was produced in advance of the May 2022 hearing (bundle 8 for the May 2022 hearing, page 3). MML does not take issue with the summary provided in section 2 of the CTI's submission.

The Activity Database System, Room Data Sheets and Environmental Matrices

4. MML was not involved in the decision to use an Environmental Matrix ("EM"). MML understands that the decision to use an EM had been taken during the capital funded stage of the project. Michael O'Donnell of Hulley & Kirkwood ("H&K") speaks (at para 6) to a design team meeting on 14 December 2009 at which H&K were instructed to develop an EM to take over from Activity Database ("ADB") sheets.

5. There is no evidence that MML provided any advice to NHSL regarding its compliance with CEL 19 (2010). It was not, and would not have been, apparent to MML from the

fact that an EM was being used that the guidance in CEL 19 (2010) regarding the use of the ADB had not been complied with. Richard Cantlay (at para 35) noted that the existence of an EM is not inconsistent with ADB having been used as a briefing/design tool as the ADB could have been used to generate data in the EM: it is just a different way of presenting the same information. Graeme Greer (at para 44) also stated that the use of an EM and the use of ADB are not mutually exclusive: ADB could be used to populate the services in the EM. This view was shared by Susan Grant of HFS (at para 66 as subsequently clarified in email correspondence with the Inquiry) who stated that the use of an EM would not necessarily be incompatible with CEL 19 (2010): the EM would typically be a logical export following production of initial data from ADB.

6. In any event, the use of an EM ought not to have affected the quality of the design. There are potential benefits in using EMs instead of Room Data Sheet ("RDS") produced using ADB. Although there may be scope for errors to be made when using an EM, the use of RDS produced using ADB does not remove the risk of errors.

7. In MML's experience, EMs are commonly used in NPD healthcare projects. In his evidence in May 2022, Richard Cantlay explained that he has seen them being used on "numerous projects." In his statement (at para 53) he described them as a "commonly used tool". Graeme Greer stated (at para 44) that EMs had been used on every NPD project he had worked on. Willie Stevenson (at para 9) confirmed that the use of EMs was not unusual on healthcare projects and that they had been used in most healthcare projects in which he had been involved. In his evidence, Colin MacRae stated that every PFI project that he had worked on had used an EM, which he described as the "standard way" (page 6 of transcript).

8. MML's view regarding the ubiquity of EMs seems to be shared by other parties with experience of designing M&E for similar projects. Michael O'Donnell of H&K (at para 11) described an EM as a standard reference briefing document in most healthcare projects H&K had been involved in. Indeed, he noted (at para 12) that SHTN 02-01 from October 2021 now requires the use of an EM. The common use of an EM also seems to have been the experience of Ken Hall (at para 8) and John Ballantyne of Multiplex (at para 8).

9. Those witnesses with experience of using EMs in practice generally seemed to view them as offering significant benefits when compared to RDS produced using ADB. Willie Stevenson (at para 9) noted EMs to be more user-friendly than working with thousands of pages of RDS. In his evidence, Colin MacRae stated that an EM allowed M&E designers to start work quicker and in a more efficient manner (page 7 of transcript). Michael O'Donnell considered an EM to be a more manageable tool (at para 13); more consolidated and easier to control and review (at para 24). He considered (at paras 21 and 24) that lots of different parties reviewing ADB RDS sheets in a coordinated fashion would be very difficult and impractical as it could involve thousands of pages. In his evidence, he described the process of reviewing thousands of pages of RDS as being very difficult (page 28 of transcript[1]). John Ballantyne (at para 8) described EMs as very useful for capturing all data in one place rather than a library of RDS. Stewart McKechnie of Wallace Whittle ("WW") (at para 4) considered that the idea of all building services engineering information being in one document made sense from a practical point of view. HFS do not appear to have been opposed to the use of EMs, with Susan Grant (at para 66) suggesting that an EM would better enable stakeholder communication. Although Stephen Maddocks expressed concerns regarding the use of an EM, this must be viewed in the context of the fact that, in his oral evidence, Mr Maddocks could not recall having used an EM in practice. He was therefore not speaking from experience of encountering any difficulties in practice.

10. CEL 19 (2010) states that "Spaces designed using ADB data automatically comply with English planning guidance". However, the evidence suggests that it is an oversimplification to conclude that spaces designed using ADB automatically comply with applicable guidance and legislation. Graeme Greer (at para 60) set out his understanding that ADB cannot always be relied on for accuracy. He noted that it could be out of date. He provided a specific example, related to multi-bed rooms in critical care, in which there are apparently contradictory sheets in ADB. Stewart McKechnie (at para 13) stated that ADB was not necessarily up to date. Michael O'Donnell (at para 24) noted H&K's experience that outputs from ADB sheets regarding environmental criteria were often inaccurate or incomplete. In his evidence, he stated

[1] MML noted him as saying "difficult" rather than "different"

that, if the ADB sheets that had originally been produced by NHSL for this project had been used to populate the EM, much of the information in the EM would have been missing or incorrect (page 11 of transcript). He gave a particular example of the ADB sheets for treatment rooms which had 6ac/hr for ventilation, rather the 10ac/hr that was required by the guidance (page 29 of transcript). In his experience, where RDS were used instead of an EM, the environmental data would either not be populated or would need to go through a process of review. In his opinion, the EM produced by H&K was "far superior" to ADB sheets as it was "almost 100% correct", which was "an excellent starting point" (page 29 of transcript). Indeed, he considered that the error in critical care ventilation would have been harder to spot had it been in a RDS than it was in the EM (page 30 of transcript). In his view, the EM was of higher value than ADB sheets (page 35 of transcript). David Stillie's evidence was that the documents used in the present case, including the EM, were of equal quality and value to ADB as those documents contained all of the information that would have been in ADB sheets (page 13 of transcript). Peter Henderson of HFS (at para 58) noted that ADB being moved to the private sector could have caused designers to question its reliability and perhaps use other equivalent tools. Susan Grant (at para 34) stated that ADB has "many limitations". In any event, the ADB incorporates data from HTMs, not from SHTMs, which may be different. A design engineer using the ADB in Scotland would therefore use the initial template document from the ADB but then manually enter project-specific environmental requirements with reference to the SHTMs. As Stephen Maddocks noted in his report, ABD sheets are a "starter for ten". There remains scope for error while using them.

11. In light of the foregoing considerations, it would be reasonable to conclude that the approach taken in the present project was of "equal quality and value" to the use of ADB as a tool for briefing and design, and therefore potentially in compliance with CEL 19 (2010).

12. In any event, the use of an EM on this project did not mean that RDS would not ultimately be produced. The original intention was that a full suite of RDS would be produced by IHSL prior to Financial Close (FC). Although IHSL failed to produce all of the RDS prior to FC, they nevertheless remained under an obligation to produce a full suite of RDS before constructing the hospital (see Richard Cantlay at para 56). As

Michael O'Donnell noted (at para 13), once the EM had been concluded, ADB RDS could be produced to align with it.

The Reference Design

13. MML's involvement in the decision to use a reference design is described in the statement provided by Richard Cantlay for the hearing in May 2022 and in the evidence given by Mr Cantlay at that hearing. The reference design approach was new in Scotland. The use of a reference design was a requirement of SFT as part of the NPD funding model, however the ultimate decision to utilise a reference design for the project was made by NHSL. As Mr Cantlay explained, the main driving factor behind the decision to adopt a reference design approach was to shorten the procurement process and reduce the amount of money spent on having three bidders developing a different design.

14. Following NHSL's decision to use a reference design, MML provided technical advice regarding the use of the reference design. This included MML's Approach to Reference Design paper which evolved through several iterations. The aims of this paper included setting out the reasons for preparing a reference design; outlining the level of detail required for a reference design; outlining the distinctions between mandatory and non-mandatory elements of the reference design; outlining the application of the reference design during competitive dialogue; and outlining the development of the reference design. MML worked collaboratively in identifying how to use the reference design as a procurement tool and present it in a way that would not cut across the NPD procurement processes and risk profile.

15. Para 126 of CTI's submission questions whether, by the conclusion of the Project Agreement, NHSL had provided adequate briefing of the requirements for environmental parameters. MML understand this observation to have been made on the basis that (i) there was no full suite of RDS; and (ii) NHSL contends that the EM could not be taken as a brief. CTI's position appears to be that, in the absence of fully developed RDSs or a fixed EM, IHSL had not been provided with an adequate brief in relation to environmental parameters. However, this position seems to conflate the concept of a design brief with that of a fully developed design. The design brief was

provided through, amongst other things, the mandatory elements of the reference design (which are discussed further, below), the schedule of accommodation, the Clinical Output Based Specification and the list of guidance documents and standards with which the design required to comply. This ought to have been a sufficient design brief to have allowed IHSL to prepare its design, including producing RDS and developing the draft EM. The provision of a full suite of RDS or a fixed EM by NHSL would go beyond simply providing a design brief.

Errors in the Environmental Matrix

16. It is significant that Stewart McKechnie of WW believes that the EM did comply with the guidance. His rationale is that the guidance for Critical Care Areas in Table A1 of SHTM 03-01 related only to isolation rooms. His position is set out in a report dated 15 July 2019 (see para 24 of his statement). This interpretation is said to be based on the "Comments" in Table A1 of SHTM 03-01 regarding "Critical Care Areas" which state "Isolation Rooms may be -ve press". This rationale is not convincing: if the entry for "Critical Care Areas" in the table was supposed to relate only to isolation rooms, it is surprising that it was not headed something like "Isolation Rooms in Critical Care". The use of the plural "Areas" suggests that the entry relates to all areas in critical care, not simply isolation rooms. If the entry related only to isolation rooms, the comment specific to pressure in isolation rooms could have been made in the "Pressure" column as it would apply to the entire entry: it would be strange to include it as a separate comment. If the entry related only to isolation rooms, there would be a gap in the guidance in relation critical care areas other than isolation rooms. Para 163 of CTI's submission identifies a number of other provisions within SHTM 03-01 which cast considerable doubt on Mr McKechnie's claimed interpretation.

17. In his evidence Mr McKechnie sought to justify his interpretation by placing emphasis on the importance of the pressure regime when compared to air change rates. He suggested that the purpose of the provisions in Table A1 in SHTM 03-01 was to prevent contaminated air from coming into a space: and that pressurisation was more important in achieving that than the air change rate (page 16 of transcript). He seemed to dispute the suggestion that air change rates could help dilute contaminants in a room but conceded that he was not an expert on that. He also sought to justify his interpretation

by stating that he did not see 10ac/hr and 10 Pascals of pressure as being a practical solution for all rooms in Critical Care (page 18 of transcript). Although these matters could support an argument that the guidance in SHTM 03-01 is incorrect, they do not undermine the clear terms of Table A1 in SHTM 03-01.

18. Guidance Note 15 in the EM issued with the Invitation to Participate in Dialogue ("ITPD") was accurate in requiring 10 ac/hr in critical care in accordance with SHTM 03-01. MML accepts that there was an anomaly in the EM issued at ITPD stage in relation to some entries in the cells of the EM which were inconsistent with Guidance Note 15 and SHTM 03-01. This matter is discussed in more detail below, in the context of the status of the EM.

19. The subsequent change made to Guidance Note 15 by IHSL (as discussed in paragraph 55.5.7), considered alongside Mr McKechnie's understanding of the guidance, will no doubt be considered at later hearings.

20. MML accepts the terms of the PPP2 which stated "The environmental matrix provided with the ITPD contained environmental information that was inconsistent with the guidance set out in SHTM 03-01. In particular, values inserted in the environmental matrix for certain critical care areas did not comply with the guidance in SHTM 03-01." MML did not understand any of the other Core Participants to dispute this finding in their responses to PPP2.

The Procurement Exercise

The Role of Advisers

21. MML's role in the project up to procurement is described in the statement provided by Richard Cantlay for the hearing in May 2022 and in the evidence given by Mr Cantlay at that hearing. In summary, MML's involvement during this phase was as follows:

22. The project was initially approved as a capital funded project. On 4 February 2010, MML was appointed as NEC Supervisor. Capital funding was withdrawn in 2011 and the project migrated to an NPD procurement model.

23. MML entered into a contract with Lothian Health Board dated 22 March 2011 which appointed MML as Technical Advisor (TA). MML entered into a sub-contract with Davis Langdon (DL) in terms of which DL became Project Managers. DL was also responsible for the reference design management and coordination. DL entered into sub-contracts with the reference design team. The reference design team included H&K as Services Engineer. The reference design team was appointed by means of Contract Control Order 2 dated 11 July 2011.

24. During the pre-procurement phase, MML's role involved facilitating production of the reference design by the reference design team; developing technical components of the OJEU Notice and Pre-Qualification Questionnaire Evaluation; developing the technical components of the ITPD; and participating in the Competitive Dialogue process. MML's role did not involve undertaking any design or assuming any design responsibility.

25. MML did at times carry out a limited review of elements of the design as and when required. However, MML was not the project designer, nor did MML provide any design audit service. MML did not undertake a shadow design or validate or approve the design by others. Such a level of review is not a feature of the PPP/NPD model as the whole point of this model is the transfer of design responsibility and risk to the private sector through the Project Agreement. MML's role in reviewing the design is considered in more detail below in the "Governance" section.

26. MML provided technical advice regarding the use of the reference design. This is described in more detail above.

27. MML did not draft or review the business cases, but in the course of fulfilling its contractual obligations, MML provided technical input which might ultimately have been used in the Outline Business Case (OBC) and Final Business Case (FBC).

The clarity of the procurement documentation including the mandatory requirements

28. MML submits that, when the provisions are viewed as a whole, it is clear that the EM was not intended to be mandatory. With respect to the invitation made to the Chair at

paragraphs 172 and 223 of the CTI's submission, MML accepts that the procurement documentation did contain some potential ambiguities. However this does not detract from the overall position that the procurement documents, viewed as a whole, made the status of the EM clear. In any event, the subsequent actions of the parties (as discussed later in this Closing Statement) make it clear that there was no real confusion.

29. The following section considers the status of the reference design EM that was provided to bidders at ITPD stage. The status of the EM at FC will be considered below in the context of the Project Agreement.

30. During the period leading up to the procurement exercise, internal consideration was given by NHSL and MML to the reference design EM being mandatory for bidders. This is evidenced by Revision J of the "Approach to Reference Design" paper (bundle 2, page 605 at page 622). However, the "Approach to Reference Design" paper was an internal document that was not issued to bidders. There were a number of iterations of the document, reflecting the evolution of the plan for the procurement process. Making the EM mandatory for bidders was not the final position, nor was it the position that was communicated to bidders. That position is to be found in the ITPD documentation itself.

31. Richard Cantlay (at para 8 and in his oral evidence) explained the status of Volume 1 and Volume 3 of the ITPD. As he stated, volume 1 of the ITPD (bundle 2, page 942) was a procurement document which explained the procurement process (e.g. what bidders are required to do in terms of submitting a bid, arrangements during the bid period, how bids will be evaluated etc) and became redundant at FC. Volume 3 (bundle 2, page 773) was the Board's Construction Requirements ("BCRs") (the output specification for the design and build of the project) and would form part of the Project Agreement at FC. This is apparent from the fact that it is headed "Schedule to the Project Agreement…" As Richard Cantlay went on to explain, at the start of the procurement process, Volume 3 was drafted (as much as it could be at that stage) in the form it was intended to be when included in the Project Agreement at FC, with the appreciation that it would have clauses amended and sections added to it (such as the final agreed EM) as developed and agreed through the procurement process to reflect the agreement reached between NHSL and the preferred bidder.

32. The difference in status between Volume 1 and Volume 3 does not seem to be recognised in CTI's submission: although it is fundamental to a proper understanding of the procurement documents, it is not mentioned at all. Provisions in Volume 1 and Volume 3 are referred to interchangeably as if they were of equal status. For example, at paragraph 185 of CTI's submission, when construing clause 2.6 of ITPD Volume 1, reference is made to the definition of EM in the draft BCRs at Volume 3. Given that Volume 1 and Volume 3 serve different purposes, provisions in Volume 3 do not assist in interpreting the provisions in Volume 1. Similarly, paragraph 214 of CTI's submission refers to paragraph 8 of the draft BCRs at Volume 3 as being "a direct instruction to tenderers". This is plainly incorrect. The instructions to tenderers are to be found at Volume 1, not Volume 3. Accordingly, the following submissions will focus primarily on the provisions in Volume 1. The finalised BCRs, as found in the Project Agreement, are considered in the section on the Contract, below.

33. Clause 2.5 of ITPD volume 1 (bundle 2, page 963) clearly set out the mandatory elements of the reference design under reference to Appendix E (bundle 2, page 1156): the EM was not included in the mandatory elements in either clause 2.5 or Appendix E. As Richard Cantlay stated (at para 9), this was entirely intentional and reflected the fact that, with the exception of matters related to Operational Functionality, the design risk was to sit with Project Co. Further provisions in ITPD volume 1 are to the same effect. Clause 2.6 (bundle 2, page 965) expressly stated that "Building services engineering solutions" were included as part of the "Indicative Elements of the Reference Design". "Building services engineering solutions" would include the EM. Clause 2.6 continued "Such information is issued to the Bidders for "information only" so that they may understand the intent of the Reference Design."

34. Section C8.2x of the Submission Requirements at Appendix A(ii) of ITPD Volume 1 (bundle 2, page 1052) required bidders to provide "An environmental conditions/room provisions matrix for both mechanical and electrical services for each room in the Facilities…" This clearly placed the onus on bidders to provide their own EM. Such a requirement is impossible to reconcile with the notion that the draft EM provided by NHSL was a mandatory part of the brief.

35. Section C8.3 of the Submission Requirements at Appendix A(ii) of ITPD Volume 1 (bundle 2, page 1054) 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." It was therefore made clear, under specific reference to the EM, that (i) bidders were to undertake their own design; (ii) the EM provided in the ITPD documentation was a "draft"; and (iii) it was anticipated that bidders could propose changes to the draft EM. In his evidence Richard Cantlay explained the rationale for requiring bidders to highlight proposed changes on the Board's EM (page 22 of transcript). He stated that it was a very detailed document containing a huge amount of data and that marking changes on this draft would give a good indication of where a bidder's proposals varied from the baseline. This provision was accordingly not about restricting a bidder's ability to make changes, but rather requiring those changes to be highlighted so that there was clarity about what was being proposed in comparison with the EM produced at reference design stage. In this context it is worth noting that, in its draft Closing Submission, Multiplex suggests a choice between (i) the reference design EM being mandatory; or (ii) the reference design EM being a document that tenderers should ignore because they had to prepare their own EM from scratch. This is false dichotomy. MML's position is not that the reference design EM should be ignored by tenderers, nor that tenderers were required to prepare their own EM from scratch. It was envisaged that tenderers would use the reference EM as a starting point to develop their own designs, as is clear from section C8.3. A tenderer could choose to ignore the reference design EM and start from scratch if that was their preference, but they need not do so. Should they choose to do so, they had been provided with a suite of other documentation to assist in that task, including the schedule of accommodation, the Clinical Output Based Specification and the list of guidance documents and standards with which the design required to comply.

36. The status of the EM provided to bidders at ITPD stage is also apparent from the document itself which stated, at Guidance Note 1 (bundle 4, page 132), "This workbook is prepared for the Reference Design Stage…" It continued, at Guidance Note 5, "Ventilation air change rates… in Patient Areas shall be reviewed throughout the detail design process…" This wording is inconsistent with the notion that the provisions in EM were mandatory: on the contrary they were to be subject to ongoing review.

37. Providing the EM to bidders on the basis that it was not mandatory was consistent with the overall decision to make use of the design work that had already been undertaken. The EM would provide information which the bidders could use but which they were not bound to follow. It would also assist in providing clarity about the extent to which the tenderer's proposals varied from the "baseline" EM produced by H&K.

38. Clause 2.5 of volume 1 of the ITPD (bundle 2, page 963) also stated "Bidders will be fully responsible for all elements of the design and construction of the facilities including being responsible for verifying and satisfying themselves that the Mandatory Reference Design Requirements can be designed, built and operated to meet the Board's Construction Requirements". The draft BCRs were included in ITPD Volume 3. The key relevant provisions in the final BCRs are considered in more detail, below, in the context of the Project Agreement.

39. Paragraph 8 of the draft BCRs contained in ITPD Volume 3 (bundle 2, page 873) stated that "Project Co shall provide the Works to comply with the Environmental Matrix." Volume 3 defined the "Environmental Matrix" as "the Environmental Matrix, which details the room environmental condition requirements of the Board required within each department / unit / space / area. The title is Reference Design Envisaged Solution – RHSC / DCN Environmental Matrix version third issue as set out in Appendix C of this Section 3 *(Board's Construction Requirements)* of Schedule Part 6 *(Construction Matters)* (as varied, amended or supplemented from time to time in accordance with the Project Agreement)". As Richard Cantlay explained (at para 13), given that this version of the EM is described at Section C8.3 of Volume 1 as being a "draft", it was anticipated that the final version of the BCRs for inclusion in the Project Agreement at FC would have the EM reflecting the preferred bidder's design included in it and that this definition would be amended accordingly. The definition of EM did indeed change between the ITPD documentation and the Project Agreement. The EM itself appeared as an appendix to the draft BCRs in ITPD Volume 3: however, in the Project Agreement it was moved to schedule part 6 together with the RDS, reflecting its status as one of IHSL's documents.

40. MML would invite the Chair to conclude that it is was made clear to bidders that the EM provided to bidders at ITPD stage was not mandatory. Such a conclusion would be consistent with the provisions in the ITPD documentation set out above and with the key principle described by Richard Cantlay (at para 8) that the design risk on a PPP contract sits with the private sector (with the exception of operational functionality).

41. This view is shared by NHSL. Susan Goldsmith confirmed (at para 10) that the EM was provided for information as disclosed data. Its provision did not mean that bidders need not refer to SHTMs or use the ADB (at para 19). She considered (at para 20) that the provision of the EM to bidders ought not to have contributed to the delay in opening the hospital because IHSL required to comply with SHTM 03-01. In her evidence, she noted her sense that Multiplex did not fully understand the contractual responsibilities under an NPD contract. Brian Currie, in a statement provided for the hearing in May 2022, stated (at para 24) that it was always clear that the reference design would be replaced by the preferred bidder's full design solution and (at para 48) that this was a fundamental point that was communicated to bidders. He noted (at para 35) that the only element of design retained by the Board was operational functionality, which did not encompass matters such as ventilation. He stated that the EM was a non-mandatory element that had been developed to verify the feasibility of the reference design. Bidders were to develop their design in compliance with mandatory guidance such as SHTM 03-01 (at para 41). Although the information in the EM was not warranted by the Board and should not be relied on for accuracy (clause 7.2), it was thought that it may prove useful to engineers (at para 45). This understanding of the documentation was also expressed by Iain Graham (at para 15).

42. This understanding of the status of the EM is also supported by the fact that both IHSL and Bidder C made changes to the EM. The significance of these changes is discussed further below.

43. This understanding of the status of the EM appears to be disputed by witnesses from Multiplex and WW. The approach taken by these witnesses is perhaps best exemplified by the evidence of John Ballantyne when challenged on his interpretation of one of the provisions in the ITPD documentation (paragraph 5.2(f) of the BCRs at bundle 2, page 839). When it was put to him that his interpretation was not what the provision said, he referred to "the unwritten word" and "implied compliance" (page 28 of transcript).

The approach taken by these witnesses relied on erroneous assumptions about the terms of the documentation and wishful thinking. It perhaps reflected Susan Goldsmith's sense (page 32 of transcript) that Multiplex did not fully understand the contractual responsibilities under an NPD contract. The witness statements provided by these witnesses are lacking in explanation for the basis of their interpretation of the status of the EM. They largely proceed by way of assertions that the EM "encapsulating the Board's requirements" (Ken Hall at para 13); that the EM was "what the Board wanted" (Paul Serkis at para 28); that the EM was a "line in the sand" regarding the technical requirements IHSL was expected to deliver (John Ballantyne at para 10); that "it was seen as the Bible" and "Validation and certification were to be done against the Environmental Matrix" (John Ballantyne at para 12); that it was mandated conditions the client was providing and formed part of their brief (Stewart McKechnie at para 4) and that it was assumed to be "the key document" (Paul Cooper at para 6).

44. Ken Hall went so far as to say that NHSL was "responsible for interpreting the guidance and then producing their requirements" and seemed to say (at para 23) that there was accordingly no need for Multiplex/WW to check the EM for compliance with SHTMs. He continued (at para 33) that, in the event of a conflict between the EM and the guidance "the matrix would prevail because the interpretation of the guidance had already been done which then produced the matrix". His attitude when giving evidence and asked about other parts of the BCRs that he had not considered was that "we had the EM" that "effectively gave the MEP answers that we needed" (page 22 of transcript). He considered that the existence of the EM meant that the process of going through other documents in more detail had already been done. He claimed that "because it all tied up, then it seemed straightforward" (page 24 of transcript) that the EM was what they were to use.

45. Ken Hall's stated interpretation was that the provision for 4ac/hr for Critical Care bedrooms was a conscious and deliberate choice made by the Board. He claimed that this was supported by H&K's Thermal Comfort Analysis, the output from which was 4 mechanical air changes per hour. However, when taken to this document (bundle 4, p184) during his evidence he immediately conceded that he had not looked at it in any great detail and that he "skimmed through" it (page 35 of transcript). In fact, the document offers no support for his interpretation: at section 2.6 (bundle 4, page 194), it

states "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." Had Mr Hall read the document properly, it would have been apparent to him that the document offers strong support for the requirement of 10ac/hr in Critical Care. In his evidence, he was unable to provide any satisfactory explanation for his attempt to rely on this document as supporting his interpretation. Mr Hall also sought to rely on inputs that had apparently been used for energy calculations but was not able to identify any particular document that supported this claim. In his evidence, Stewart McKechnie recalled that the energy calculations were not based on an assumption of 4ac/hr for single bed rooms. There is accordingly no compelling evidence before the Inquiry supporting Mr Hall's suggestion that the provision of 4ac/hr for Critical Care bedrooms (in direct contradiction to the clear provisions in SHTM 03-01) was a conscious and deliberate choice.

46. Ken Hall (at para 34) and Stewart McKechnie (at para 28) sought to justify their interpretation by reference to the inclusion of the EM in the BCRs. In his evidence Mr Hall stated that the BCRs were "our key document" (page 11 of transcript) that he used throughout the Preferred Bidder stage. He claimed to have a good insight and understanding of the BCRs and stated that he had read the BCRs. He continued that section 8 of the BCRs was the "key document for me" (page 11 of transcript). However, as his evidence developed, it became apparent that he was not familiar with the totality of the BCRs, at one stage stating that he did not go through the BCRs line by line (page 23 of transcript). He claimed that he was aware of the Clinical Output Based Specifications and had a copy of them, but when asked specific questions about them he stated that he had not read them and that it was "more a secondary type document" (page 20 of transcript) for him: despite the fact that it formed part of the BCRs and contained elements concerning the services provision for each department. In any event the reliance placed by witnesses on the opening sentence of paragraph 8 of the BCRs involves taking one sentence of the ITPD documentation out of context and ignoring the other provisions, discussed elsewhere in this statement, which clearly demonstrate that the EM was not a mandatory document. It also involves ignoring the totality of paragraph 8 of the BCRs which state, not just that the Works ought to comply with the EM, but also that the works comply with mechanical requirements including SHTM 03-01 and, for the avoidance of doubt, that the hierarchy of standards provision applies.

These provisions are considered in more detail, below, in the context of the Project Agreement. In any event, it ought to have been plain from a complete reading of the BCRs, particularly the very paragraph in which compliance with the EM is mentioned, that this did not mean that IHSL could simply ignore SHTM 03-01.

47. Multiplex's approach to the ITPD documentation is perhaps illustrated by its attitude to the requirement to produce RDS. Paul Serkis (at para 35) considered that it was not normal for a client to seek to have 100% RDS in place at FC: however, that is exactly what the ITPD documentation required (see para 2.5.3 of ITPD Volume 1 (bundle 2, page 965)). Similarly, in her evidence Liane Edwards stated that preparation of the RDS was a time-consuming activity and that it "didn't seem reasonable" (page 16 of transcript) to prepare 100% of the RDS, notwithstanding the requirement in the ITPD. As CTI's submission notes (at paragraph 245), despite complaints by IHSL about NHSL changing what was required, no witness was able to provide any example of a radical change by NHSL to the stated requirements that increased the requirements placed on IHSL. As with the issue regarding the EM, any claimed misunderstanding could have been avoided had the key personnel within IHSL, Multiplex and WW read all of the applicable documentation rather than focusing on those isolated passages that supported their preconceived assumptions about what might be required.

48. Ken Hall (at para 34) also sought to place reliance on the wording of paragraph 2.3 of the BCRs (which stipulates compliance with standards including SHTMs) as supporting his interpretation. In particular, he placed reliance on the words "unless the Board has expressed elsewhere in the Board's Construction Requirements, a specific and different requirement", claiming that the EM was such a "specific and different requirement" such that compliance with SHTMs was not required. The merits of this argument are considered further, below, in the context of the Project Agreement.

49. Ken Hall also sought to place reliance on section C8.3 of the evaluation criteria. However, when asked about this in evidence his position seemed to be that he did not pay any attention to what the full provision meant and appeared to accept that the wording was at least ambiguous (page 40 of transcript).

50. In addition to some of the Multiplex and WW witnesses placing reliance on an incomplete reading of the BCRs, others placed reliance on their recollections of what

they claim to have been told by NHSL and/or MML. Paul Serkis claimed (at para 28) that Multiplex were told by NHSL and MML that there was a reference design and "Don't change any of it… just deliver what we want." However, when asked during his evidence who had told him this, he could not remember exactly, but that it was a "feeling" he had from the various meetings (page 17 of transcript). In any event, he did not recall any specific conversations regarding the EM. It therefore seemed that his "feeling" that IHSL were not to make changes related to the project more generally, not to the specifics of the EM. Taking his recollection as a whole, there was no compelling evidence that IHSL had ever been told that the EM was a mandatory document that could not be changed.

51. John Ballantyne (para 13) claimed that Multiplex were told "at the competitive dialogue meetings that the Environmental Matrix was mandatory and that there was to be no deviation. It was absolute." However, his position in evidence was not so definitive. When asked what he was told during competitive dialogue about the EM he said that it was just another document of the reference design that were all to be read in conjunction with one another. When specifically asked who had told him that the EM was mandatory, he gave a vague response and could not "single out" an individual (page 16 of transcript). More generally, he described it has being his "understanding" that the EM was the expectations of the Board (page 8 of transcript). When expressly asked if there was any discussion about the status of the EM at the bidder's day, he did not recall there being any. Although he then went on to state that he was surprised during the process to understand the "elevated importance" of the EM as it was not a document that "jumps off the page" as being one of "great debate and gnashing of teeth" it is not at all clear what he meant by this (page 8 of transcript). He then suggested that the EM was "effectively the board's expectations" that would then be developed by the three bidding entities (page 10 of transcript). Any such development would tend to suggest that the EM could not have been a fixed, mandatory document. In any event, his evidence fell a long way short of a clear articulation of having been told directly by NHSL or MML at any stage that the EM was a mandatory document. The impression left by his evidence was that he was recalling general statements by NHSL regarding the reference design as a whole, rather than specific comments related to the EM.

52. Neither of these witnesses referred to any documentation supporting their recollections, nor did they identify any particular person who is said to have made these statements. Their recollection is refuted by witnesses from MML and NHSL. Richard Cantlay (at para 15) stated that he did not recall any statements from the Board or any of their advisors to the effect that bidders were not to innovate in developing the EM. Although he did not participate in all of the competitive dialogue meetings, he considered it to be unlikely that such a statement would have been made given the terms of the ITPD documentation. Graeme Greer (at para 75) stated that he was confident that IHSL was reminded at a number of points that it had responsibility for design, including the EM; and that the EM had to be compliant with the BCRs. Iain Graham (at para 19) noted that the intention that the EM would be redundant at FC as the PB's proposals would contain all the necessary information was "extensively communicated" to bidders in the ITPD and throughout the Competitive Dialogue process. In his evidence he stated that, during Competitive Dialogue, NHSL was asking for updates of the EM in line with bidders' design development on the architectural side of things and engineering developments (page 23 of transcript). He had no recollection of bidders being told that they must comply with the EM as a mandatory requirement (page 24 of transcript). Stewart McKechnie's evidence was that he was present at the competitive dialogue meeting where engineering matters were discussed (page 41 of transcript). He did not suggest that anything was said by NHSL at these meetings to the effect that the EM was mandatory. When he was specifically asked if the EM was discussed at competitive dialogue meetings, his answer was that there was discussion between Multiplex and Wallace Whittle (page 42 of transcript): there was no suggestion of any comments being made by NHSL or MML about the status of the EM. Insofar as he claims (at para 9) that he was asked not to "revamp" the EM, he explained in his evidence that this instruction had come from Multiplex, not NHSL or MML (page 66 of transcript). When he was asked to explain how he came to the view that the EM was mandatory, he relied entirely on what was stated in documents (such as the BCRs) not on anything that was said at competitive dialogue meetings. If something had indeed been said at those meetings to the effect that the EM was mandatory, it is surprising that this did not form part of the basis for Mr McKechnie's understanding of the status of the EM.

53. Given the clear intention on the part of NHSL and MML that the EM was not to be a mandatory document, it is inherently implausible that any representative of either

organisation would have told IHSL during competitive dialogue that the EM was mandatory.

54. Regardless of what was said at any meetings between the parties, the status of the EM is clearly set out in the documentation. Even if Multiplex's understanding from competitive dialogue meetings was that the EM was a mandatory document, that is not reflected in the documentation that it was bound to comply with.

55. In any event, Multiplex's claim that the EM was a mandatory document, and that it did not require to comply with SHTM 03-01 insofar as it was inconsistent with the EM, is in direct contradiction to the actions of the parties before and after IHSL was appointed as preferred bidder. It is apparent from these actions that there was no real confusion about the status of the EM and, in particular, about the requirement that the design comply with SHTM 03-01:

55.1. IHSL's Specification for Ventilation System dated 13 January 2014 (bundle 6, page 3) was signed off by Stewart McKechnie and submitted as part of its final tender. John Ballantyne's evidence was that Ken Hall sat on top of a triangle of organisations (including WW and Mercury) with responsibility for this document (page 20 of transcript). However, Mr Hall's evidence was that he had not read the parts of IHSL's tender related to M&E "in any great detail to be honest" (page 13 of transcript). Mr Hall's lack of familiarity with these documents perhaps explains his erroneous understanding regarding the status of the EM. The Specification clearly demonstrates IHSL's understanding of the applicable standards at the relevant time. At para 5.0 it states "All elements of the works shall be in accordance with the requirements of current legislation, regulations and industry standards unless otherwise stated. The Ventilation System shall accord with all appropriate Hospital Technical Memoranda, Codes of Practices and relevant British and European Standards and Appendix A." John Ballantyne attempted to explain this statement by focusing on the words "unless otherwise stated" as meaning that the bid need not comply with all guidance (page 19 of transcript). However, this does not provide a convincing explanation. The words relied on by Mr Ballantyne appear in the paragraph before the reference to HTMs: the reference to the ventilation system according

with HTMs is completely unqualified. In any event, there is no statement anywhere else in the tender submitted by IHSL that qualifies its stated intention to comply with all applicable guidance. The document continues (at section U10) "The hospital ventilation systems shall be in accordance with SHTM 03-01…" The document does not make any reference to the EM. Stewart McKechnie explained that this document appeared to be the specification that was part of the package to be passed to sub-contractors and related to no more than the build quality, rather than the design itself (page 47 of transcript). However, the general statements concerning compliance with SHTM 03-01 are not framed as being limited in this way. It is accordingly quite clear that, when IHSL submitted its final tender, its position was that the ventilation system required to comply with industry standards. If IHSL considered the EM to be a mandatory document specifying the ventilation parameters, it is surprising that this is not mentioned in IHSL's Specification for Ventilation System.

55.2. IHSL's document entitled Tender Package Deliverables – Building Services Deliverables Appendix 1.1.5/FT – Mechanical and Electrical Services dated 13 January 2014 (bundle 6, page 323), submitted as part of its final tender, stated (at para 5.9.7) "The ventilation systems to the Hospital are designed in accordance with Scottish Health Technical Memorandum SHTM 03-01. Ventilation shall be provided to suit both the operational and statutory requirements of the development." Again, this confirms that IHSL's tender proceeded on the basis that the design of the ventilation system required to comply with SHTM 03-01, without any suggestion that parameters in the EM were considered to be mandatory. John Ballantyne conceded in evidence that this provision could be understood as meaning definitively that the ventilation system complied with all aspects of SHTM 03-01. Tellingly, he then continued that if the word "generally" had been inserted before the word "designed", "it might have read better from IHSL's point of view" (page 23 of transcript). He then went on to say that, elsewhere in the documents, there may be specific pointer that SHTM had not been complied with, but he did not identify any such reference.

55.3. IHSL's final tender in relation to C8 "Clarity, Robustness and Quality of M&E Engineering Design Proposals" (bundle 3, page 252) also made it clear that it did not consider the EM to be mandatory. At section C8.1 (page 264) it stated that "These outline designs have been reviewed for compliance with SHTM's etc…" At C8.2(x) (page 303) IHSL noted that it "shall provide an addendum matrix for any rooms on an exception basis highlighting any changes at preferred bid stage". The document then went on to note (at page 304) that "The room temperature set points, air change rate and ands [sic] shall be in accordance with SHTM-03 [sic]." This passage was followed by a table which included an entry for "HDU" with a supply ventilation of 10Ac/hr. IHSL's tender accordingly made it clear that it understood that the ventilation required to comply with SHTM03-01, that IHSL was responsible for reviewing the design to ensure compliance with SHTMs and that IHSL envisaged making changes to the EM at preferred bidder stage. Although CTI's submission makes reference to some passages from IHSL's tender documents (from paragraphs 225 to 228) it does not refer to these passages from the final tender in relation to C8. It is submitted that these passages are important when considering IHSL's understanding of what was required of it by the ITPD documentation.

55.4. On 3 July 2014, Ken Hall of IHSL emailed MML (bundle 10, volume 2, page 1300) seeking an Excel (rather than pdf) version of the EM "to allow to populate [sic] the schedule with any changes." The Excel version was sent to IHSL on 11 July 2014. This followed on from discussions spoken to by Graeme Greer (at para 79). Stewart McKechnie confirmed in evidence that, although he was uncomfortable about taking ownership of the EM as his own document (page 42 of transcript), and had told Multiplex so, he reluctantly did so (page 43 of transcript). The EM was then reformatted and rebadged as an IHSL document. In his evidence, Mr McKechnie agreed that this involved taking something that he saw as a client brief and converting it into a contractor proposal, and that this meant that the contractor took responsibility for the contents of it (page 43 of transcript). He confirmed that he understood that if there were ambiguities between the EM and SHTMs, one of WW's responsibilities was to detect that and bring it to the attention of the Board. In this context he also confirmed that WW had checked "what were seen as the key parameters" (page 40 of

transcript). Paul Cooper also conceded that, once ownership had been taken of the EM by Wallace Whittle, it did form part of the contractor's proposals. This body of evidence makes it plain that the EM was not a mandatory fixed brief. It dispels any notion that there was any confusion about the status of the EM.

55.5. Having taken ownership of the EM, Graeme Greer (at para 74) noted that IHSL produced at least 11 different iterations of the EM. The changes made by IHSL were not simply to augment the EM as rooms were added (as suggested by some Multiplex witnesses), nor were all the changes prompted by comments from NHSL: they included substantive changes to existing provisions. The changes made by IHSL included:

55.5.1. Removing the H&K logo (bundle 4, page 220) and eventually giving the document a WW reference number.

55.5.2. Removing the entry for HDU from the RFRS in the EM prepared by IHSL for Financial Close (bundle 4, page 222). Stewart McKechnie described this as tidying up as WW were "taking ownership" of the EM (page 72 of transcript). This change was not in response to a comment from NHSL, nor was it highlighted to NHSL.

55.5.3. According to Stewart McKechnie's evidence, correcting "some obvious issues" (although he did not explain what those issues were) (page 59 of transcript). He continued "we might have tidied up a wee bit".

55.5.4. Adding Guidance Note 26 (bundle 4, page 221).

55.5.5. Changing all single bedrooms, including those in Critical Care, from positive pressure to balanced (bundle 4, page 226), despite this being in response to a comment made (bundle 4, page 219) concerning standard bedrooms, not those in the Critical Care.

55.5.6. Changing the humidification provisions in Guidance Note 15 (bundle 4, page 221). Stewart McKechnie explained in his evidence (page 54 of transcript) that this change was prompted by one of WW's engineers reviewing the requirements in the EM, particularly guidance note 15 (bundle 4, page 132) and seeking clarification (bundle 10, volume 2, page 1,302).

55.5.7. Altering guidance note 15 so that it related only to isolation rooms in Critical Care. This change came after Financial Close and so will no doubt be explored in more detail at later hearings. However, at face value, it was a critical change to the EM, which went far beyond merely a change, for example, in the number of rooms covered by the EM. It is a direct change which involved the apparently erroneous interpretation and application of SHTM 03-01. It is a change which appears to have been consistent with Stewart McKechnie's erroneous understanding of the guidance. Indeed, in its draft Closing Submission, WW concedes that it made this change because it was "uncomfortable" with the text of the Guidance Notes and wanted to bring them in line with the entries in the matrix. It will likely be MML's position that it is a change which was made without being intimated to NHSL or MML. WW claim, under reference to paragraph 83 of Graeme Greer's witness statement, that the change was noted by others "at the time". That involves a misunderstanding of Mr Greer's position and a misreading of paragraph 83 of his statement. MML understands Mr Greer's position to be that he was not aware of the change at the time. Indeed Mr Greer expressly notes in paragraph 83 of his statement that WW had not highlighted the change, and as such it would not have been obvious to reviewers. MML suggests that this matter is explored with him at the next set of hearings. In any event, for all of these reasons, while this change to the EM relates to the period post-Financial Close, consideration of it will likely assist the Inquiry in reaching its conclusions regarding events prior to Financial Close.

55.6. In around August 2014, IHSL (or one of its contractors) conducted a review of the EM (bundle 8, page 55 at para 2.8) which uncovered "a number of discrepancies". It was minuted that IHSL was going to raise a Request for Information (RFI) with NHSL. Liane Edwards' position in evidence was that this was not a review for compliance but rather a review for consistency (page 18 of transcript). Regardless of whether the review related to compliance or consistency, the conduct of such a review is inconsistent with the claim that the EM was a fixed, mandatory document with which IHSL was required to comply.

MML has conducted a check of the RFI register and has been unable to locate any RFI raised by IHSL concerning this issue. Accordingly, it would seem that IHSL was content to address the discrepancies it had identified in the EM without any recourse to NHSL. That again suggests that IHSL was acting on the basis that it was responsible for the content of the EM.

55.7. NHSL made multiple comments on the EMs produced by IHSL (see for example Bundle 4, page 218). These comments included issues where NHSL was concerned that the provisions in the EM did not comply with SHTM 03-01 (such as the single bedroom pressure issue, which is considered in more detail, below). Such comments are inconsistent with the suggestion that the EM was mandatory or that it in some way took precedence over compliance with SHTM 03-01. John Ballantyne attempted to address this point in his evidence by suggesting that NHSL may allow changes to the "line in the sand" and would "sign off on all changes" (page 13 of transcript). That involves a misunderstanding of the process that was followed. Although NHSL made comments on the EM, it did not "sign off" on any changes that were subsequently made other than in relation to Operational Functionality. This will no doubt be addressed in more detail as the Inquiry considers matters after Financial Close. Stewart McKechnie's attitude to these comments in his evidence seemed to be that he was happy that they were being made as it would reduce the need for WW to identify those issues (page 61 of transcript).

55.8. Stewart McKechnie (at para 8) expressed his surprise by the level of queries that arose on the EM: it seemed to him that it was odd to be answering questions on the "client's brief". The obvious explanation for this was, of course, that the EM was not the client's fixed brief but rather a document that WW (through IHSL) had taken ownership of. Indeed, he conceded that WW had taken ownership of the EM (para 9).

55.9. Similarly, Paul Cooper (at para 15) was surprised by omissions in the EM. Again, the obvious explanation for this is that the document had not been finalised and required to be developed by WW for IHSL.

55.10. In his evidence, Paul Serkis stated that WW would have been asked to review the EM for compliance with design guidance, whether that was at competitive dialogue stage, or from preferred bidder to FC (page 16 of transcript). In his own evidence, Stewart McKechnie stated that, on any healthcare project, any designer would be using SHTM 03-01 as the basis for their design (page 13 of transcript). He confirmed that WW would review the EM against guidance documentation to see that it aligned, and if they were uncomfortable with it, or needed clarification, they would push it up the line to Multiplex (page 11 of transcript). His evidence appeared to be that this review came later on in the project than Mr Serkis has suggested. Paul Cooper, who was involved in the electrical side with WW, also confirmed that they would review the EM for compliance with guidance (page 7 of transcript). In any event, this review of the EM for compliance with guidance, whenever it occurred, is entirely at odds with the suggestion that the EM was a fixed client brief which effectively superseded SHTM 03-01.

55.11. A derogation was ultimately granted in relation to the provision in paragraph 8 of the BCRs requiring that the works comply with the EM (bundle 5, paper apart volume 1, page 3,861). The derogation was granted because of "anomalies" within the EM. It was noted that "This shall be further developed…" This is inconsistent with the EM being a fixed client brief.

55.12. At Financial Close, the EM was included as part of the Reviewable Design Data ("RDD"). If the EM was a mandatory document, as Multiplex claim, it is inconceivable that it could have been included as RDD. Its inclusion as RDD appears to have confused Stewart McKechnie as he thought it was the "client's brief" (at para 22) and it "surprised" Paul Cooper (at para 9). On the other hand, John Ballantyne seemed to have misunderstood the position regarding the inclusion of the EM in the RDD. He claimed (at para 36) that the RDD process was "there to check that the IHSL design was delivering what had been asked for by the Board, including for example what was in the Environmental Matrix." Far from the RDD process being there to confirm compliance with the EM, the inclusion of the EM in the RDD process confirms that the EM itself had not been finalised by that stage. During his evidence, Mr Ballantyne did not know

whether the EM had been included as RDD (page 14 of transcript). When he was shown documentation confirming that the EM was included as RDD, his position became that this was solely in relation to new rooms being added to it (page 15 of transcript). However, the comments on the EM that were to be addressed during the RDD process went beyond simply adding new rooms. In his evidence, Paul Serkis attempted to rationalise the inclusion of the EM as RDD as being part of a process by which the contract permitted changes, which would then be agreed between the parties (page 20 of transcript). However, this seems to conflate the Change Protocol (at clause 33 and Schedule Part 16 of the Project Agreement) with the RDD process. However, later in his evidence (page 30 of transcript) he contradicted this by accepting the validity of Stewart McKechnie's comments to the effect that including the EM in RDD was commercially dangerous for IHSL (which would not be the case if it was part of an agreed change protocol).

55.13. On 17 October 2016, MML emailed IHSL (bundle 14, page 339) following a review of the most recent draft EM provided by IHSL, stating that the Board "still has significant concerns on the items that do not appear to comply with the BCR's." General comment 6 noted that "Some ventilation rates don't appear to comply with BCRs." The email concluded "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 [sic] etc, and the Board not commenting, does not remove that obligation on Project Co." A further email dated 7 November 2016 (bundle 14, page 338), upgrading the EM to status B for RDD purposes, noted that "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… the Board believes would result in a non-compliant Facility." IHSL was invited to "resolve non-compliant and other issues as matter of urgency". It is clear from this correspondence that parties were proceeding on the basis that (i) compliance with BCRs required more than simply complying with the EM; (ii) there was an overarching requirement to comply with SHTMs; and (iii) the onus to develop the EM and provide a

compliant Facility rested with IHSL regardless of any comments made by NHSL and/or MML on the EM.

55.14. As Susan Goldsmith (at para 20) and Graeme Greer (at para 75) explained, IHSL were asked to confirm compliance with SHTM 03-01. IHSL provided this confirmation in a letter dated 31 January 2019 (bundle 14, page 97) that stated: "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." No doubt this will be explored at a later hearing. It is plain from this confirmation that IHSL took responsibility for the compliance of the ventilation design (as set out in the EM) with the applicable standards. It also completely undermines Ken Hall's claim that SHTM 03-01 had in some way been superseded by the EM for the purposes of the project. While this letter was issued post-Financial Close and will presumably be considered in more detail at a future hearing, its terms are also plainly relevant to the conclusions which the Inquiry might reach in relation to the period prior to Financial Close.

55.15. The suggestion that the draft of the EM that was developed at reference design stage should remain a mandatory requirement throughout the project is inherently unlikely given that the applicable standards and guidance might change over the lengthy period that the project would inevitably take. It is unrealistic that the expectation would be that values were set in stone at reference design stage.

55.16. The suggestion that the EM developed at reference design stage was a mandatory requirement is inconsistent with the key principle described by Richard Cantlay (at para 8) that the design risk on a PPP contract sits with the private sector (with the exception of operational functionality).

56. Having regard to the foregoing considerations, it is apparent that, regardless of the claims made by various witnesses to contrary, all parties, including IHSL, acted on the clear understanding that the EM produced in the ITPD was not a mandatory document and that compliance with SHTM 03-01 was required.

57. Even if, contrary to the actions of the parties, there was some misunderstanding about the status of the EM in the ITPD, the effect of the hierarchy of standards provisions at paragraph 2.5 of the BCRs (which is considered in more detail, below, in the context of the Project Agreement) made it plain that IHSL's design required to comply with SHTM 03-01 regardless of the terms of the reference design EM.

58. In any event, even if the foregoing is not accepted, and one were to proceed on the basis that EM was a mandatory document and that there was no specific requirement to comply with SHTM 03-01, that would not alter the requirement that IHSL proceed on the basis of 10ac/hr for Critical Care. Although the individual entries in the matrix for bedrooms in Critical Care stated 4 ac/hr, Guidance Note 15 made it clear that, for HDU Bed Areas and Critical Care Areas, SHTM 03-01 applied and supply ventilation should be 10ac/hr. As Michael O'Donnell noted in his evidence, the Guidance Notes pull together what is important, the key notes, from the current guidance. These were put up front as "important watch points" (page 19 of transcript). He was clear that the guidance notes take precedence over the values in the matrix. His evidence on this point is consistent with the entry in the "Notes" column of the relevant entries in the matrix stating "See Guidance Notes". In any event, as an engineer, he considered that if there was any doubt, he would "sit on the side of caution" and go with the more onerous provision until it was clarified (page 46 of transcript). Such an approach is consistent with the terms of paragraph 2.5 of the BCRs, which would apply to any discrepancies within the terms of the EM.

59. Willie Stevenson's evidence was also that the Guidance Notes take precedence as they give instructions on how to deal with the matrix and highlight up front the specific requirements (page 12 of transcript). In the event of a major conflict between the Guidance Notes and the entries in the matrix, he would expect someone to raise a query or derogation, although he agreed with Mr O'Donnell's view that the more onerous would take precedence.

60. Stewart McKechnie's evidence was that Guidance Note 15's reference to "10ac/hr" related only to isolation rooms (page 70 of transcript). On a reasonable reading of Guidance Note 15, this interpretation is untenable. It did not seem to be shared by any

other witness who was asked to comment on the EM. It is based on Mr McKechnie's own interpretation of Table A1 of SHTM 03-01, which seems to be erroneous for the reasons set out below. In any event, there is no express mention in Guidance Note 15 of the entry being limited to isolation rooms. The fact that the requirement for "10ac/hr" is included, not just for "Critical Care Areas" but also for "HDU bed areas" suggests that all bed areas in HDU or Critical Care, not just those in isolation rooms, were supposed to have this provision. Such an interpretation is supported by the RFRS which also made provision for 10ac/hr supply in HDU.

61. Whether one approaches matters on the basis that (i) Guidance Notes take precedence over the entries in the matrix; or (ii) the more onerous provision takes precedence, it is apparent that the EM, when properly interpreted, mandated 10ac/hr for Critical Care. Similarly, when one considers the entry for HDU in the Room Function Reference Sheet, being more onerous than the individual bedroom entries for Critical Care, the provision for 10ac/hr ought to take precedence.

62. Given the clear importance of the Guidance Notes, it is surprising, and perhaps rather alarming, that Ken Hall's stated interpretation of the Guidance Notes was that they were effectively working notes from the designer that he was "not that… interested in going through" (page 33 of transcript). On that basis, his view seemed to be that they could be ignored. It is plain from even a cursory review of the Guidance Notes that they could not reasonably be described as working notes and that it would be unwise to disregard them.

63. Similarly, Ken Hall's view of the Room Function Reference Sheet was that it was "not something [he] had any knowledge of" (page 29 of transcript). He agreed to the proposition that he did not think that it was necessary to read or understand this part of the EM. Again, this is rather alarming given that it was an integral part of the document. Michael O'Donnell described it as attempting to summarise all of the repeatable room types in order to make the review process easier (page 38 of transcript).

64. In any event, the whole question of the status of the EM is academic: Stewart McKechnie (at para 24) is of the view that "the EM did accord with SHTM 03-01" and (at para 26) that 4ac/hr in Critical Care "did not appear to be a mistake". Accordingly, it would not have mattered whether the reference design EM was mandatory or not:

IHSL/WW would not have made any changes to the relevant entries because they considered them to be correct. It follows that any ambiguity or uncertainty regarding the procurement documents was of no causative significance in relation to the problems that ultimately developed.

The tender submitted by Bidder C

65. Bidder C (Mosaic) included a revised EM in its tender submission (bundle 7, page 52). Amongst many revisions marked in red, supply ventilation for single bed cubicles and open plan bays in PICU/HDU was changed to 10ac/hr. However, the tender documents did not suggest that this change had been made because the reference design EM was non-compliant with SHTM 03-01. Bidder C's final tender submission in relation C8 (Approach to design and construction – M&E engineering design proposals) stated at section C8.2x (bundle 7, page 156) "Mosaic environmental matrices have been produced to reflect the design criteria used as the basis of the Mosaic proposals… The matrices have been derived from the reference design environmental matrices in order to show where the design criteria have been modified to reflect the Mosaic engineering strategy." The tender submission continued at section C8.3 (bundle 7, page 158) "It is Mosaic's intent to generally follow the reference design environmental matrices except where the criteria are modified by the different engineering strategies proposed, for example the proposed use of chilled beams combined with fresh supply rates based on occupancy… Some other criteria have been modified to enhance the proposed design criteria or adjust values based on the intended room use…" Although certain "key adjustments" were identified, these did not include the entries related to bedrooms in PICU/HDU.

66. Accordingly, the impression given by the tender documentation was that any revisions made by Bidder C to the reference design EM were "to reflect the design criteria used as the basis of the Mosaic proposals" or "to reflect the Mosaic engineering strategy." The documentation would not have put the reader on notice that Bidder C had identified entries in the reference design EM that were not in compliance with SHTM 03-01.

67. Willie Stevenson explained (at para 16) that it would not be a cause for concern if one bidder produced a marked up EM and others did not. He noted that H&K had certified

that its design complied with SHTMs, so there was no reason to suspect that the reference design EM did not comply with SHTMs. In any event, the important thing was not whether EMs produced by bidders matched each other or the reference design EM: the important thing was that they complied with the guidance (at para 17).

68. Richard Cantlay noted (at paras 14 and 66) that bidders required to confirm that their proposals complied with the BCRs (as set out in C21 of the Bid Submission Requirements). Bidders could present different solutions provided each confirmed that the bid, when developed, would comply with the BCRs. In his evidence, he noted that changes being made to the EM would not be a red flag: rather it would make it clear how the bidder's proposal varied from the baseline EM provided to tenderers (page 22 of transcript).

69. Graeme Greer (at para 40) did not consider that bidders producing two different solutions would necessarily have rung any alarm bells: it would not necessarily mean that one had complied with the guidance and the other had not. In evidence he noted that each bidder likely had a different architectural solution, so would have a different matrix for that reason (page 34 of transcript).

70. Colin Macrae also confirmed (at para 10) that different solutions submitted by IHSL and Bidder C was not a cause for concern as the design development had not started – he would have thought Bidder C was being proactive in making a start on developing their design. He noted (at para 14) that the review of the tender did not involve a side-by-side comparison.

71. Paragraph 224 of CTI's submission seeks to ascribe significance to the changes made by Bidder C which is not supported by the available evidence. It is suggested that "the differing tenders submitted by IHSL and Bidder C exemplify the problems with the drafting of the tender documents". CTI's statement goes on to note that both IHSL and Bidder "offered to comply with" the BCRs but that Bidder C had "required to make changes" to the EM, while IHSL "did not offer to change any values" in the EM. CTI then state "It is not clear why one tender was not rejected as a variant bid."

72. It is not at all clear what is meant by a "variant bid". There is no express suggestion that any of the bids failed to comply with the evaluation criteria: they were accordingly

not variant in that sense. The fact that the bids varied from each other is entirely normal: given the volume and complexity of the tender documentation, it would be remarkable if the tenders were identical. The fact that Bidder C made changes to the EM does not mean that the EM had to be changed in order to be compliant with SHTM 03-01: the reasons that Bidder C provided for its changes are set out above: it was to reflect Bidder C's design criteria and engineering strategy. These important passages from Bidder C's tender, which are essential to placing Bidder C's changes in context, are not mentioned in CTI's submission. The suggestion in paragraph 224 of CTI's submission that Bidder C "required to make changes" in order to comply with the BCRs is not borne out by what is stated in Bidder C's tender documentation. The fact that IHSL submitted a different EM would be readily explicable on the basis that it had different design criteria and engineering strategy from Bidder C. In any event, IHSL did indicate that it also intended to make changes to the EM: at C8.2(x) (bundle 3, page 303) IHSL noted that it "shall provide an addendum matrix for any rooms on an exception basis highlighting any changes at preferred bid stage".

73. A proper analysis of the tenders submitted by IHSL and Bidder C does not support the contention that they "exemplify the problems" with the ITPD documentation. Both bidders confirmed that their design would comply with SHTM 03-01. Both bidders indicated that they understood that changes could be made to the EM. Far from exemplifying problems with the ITPD documentation, this passage of evidence supports the contention that there was in fact no real confusion about what was required of bidders.

74. The Chair is invited to conclude that the fact that Bidder C and IHSL submitted different bids should not have alerted MML to any possible issue with the EM.

The intensity of review of tenders

75. Richard Cantlay explained (at para 65) that the bids were reviewed in accordance with an agreed evaluation methodology set out in the Final Tender Evaluation Manual and Supplementary Guide to Final Tender Evaluation. As Iain Graham noted (at para 10) in relation to the tender scoring criteria, a minimum pass/fail threshold was put forward in some areas (such as compliance with basic BCRs) to the make best of quality scores.

He considered (at para 14) that M&E was not given a lower weighting than other elements as M&E installations have an extensive underpinning of technical standards and all criteria in the BCRs had to be passed or the bid would be deemed non-compliant. Richard Cantlay noted (at para 20) that M&E was not a standalone item that was assessed only in relation to section C8: it was also taken into account in other criteria such as C4, C5, C9, C10, C15, C18 and C19.

76. Richard Cantlay explained (at para 65) that, when evaluating the tenders, it was not MML's role to check the design on a line-by-line basis but rather to review the bids in accordance with the agreed evaluation methodology. In his evidence he explained that the tenderers were bidding to design and construct the hospital (page 35 of transcript). They were presenting their approach to how they would do the design rather than presenting a full design. In relation to criteria such as C21 (compliance with the BCRs, which was assessed on a pass/fail basis), the final design could not be considered as it did not exist. Rather the tenderer would be confirming that, when doing the design, they would comply with the BCRs. That statement would be taken at face value. Graeme Greer also confirmed (at para 22) that tender evaluation would not involve a line-by-line check of each bid for compliance with all the guidance in the BCRs. In his evidence he described how each assessment team would perhaps have two to three hours to review the response to each question: "not a massive amount of time" (page 13 of transcript). He noted that this was not a design check, rather it was a review of submissions. So far as compliance with the BCRs was concerned, he explained that the onus was on bidders to confirm that they were complying rather than on NHSL reviewing the submissions to confirm compliance (page 25 of transcript). The rationale for this approach lay in the risk allocation in an NPD contract. In any event, reviewing each submission to ensure compliance with the BCRs would have been a huge task which would not have been possible in the time available. Mr Greer considered that checking each tender to ensure compliance with the BCRs would have taken months (page 27 of transcript). Willie Stevenson explained (at para 14) that tender evaluation would be a sample review with a few spot checks: not a line-by-line review. In any event, he noted (at para 15) that the tenders were not the bidder's final design: what was being looking for at final tender stage was an indication that bidders were in agreement that what they were going to design would be compliant with the BCRs. Colin Macrae, who reviewed technical submissions from an M&E perspective including ventilation

and many other elements, confirmed (at para 8) that when assessing tenders, he would not be looking at compliance with SHTMs as the design had not been developed at that stage.

77. Graeme Greer noted in evidence that those RDS that were submitted at tender stage, may have been included as an appendix to the architectural submission as opposed to being part of the M&E submission (page 32 of transcript). In any event he doubted that they would be reviewed as part of the tender evaluation process.

78. Paragraph 234 of CTI's submission states that "the evidence indicates that there was a low intensity review of tenders". It is unclear whether this is intended as a criticism of those conducting the tender evaluation process. It is unclear whether it is being suggested that the tender evaluation process deviated in any way from the agreed methodologist set out in the Final Tender Evaluation Manual and Supplementary Guide to Final Tender Evaluation. It is unclear whether any criticism is being made of the Final Tender Evaluation Manual and Supplementary Guide to Final Tender Evaluation. Reference is made by CTI to two aspects of the task undertaken as part of the tender evaluation exercise: accepting a statement of compliance with the BCRs at face value; and conducting some sample reviews. The sample review itself is described at paragraph 23 of CTI's submission as a "very low intensity 'sample' review". It is then suggested at paragraph 234 that the characterisation of the tender evaluation process as a "low intensity review" is "exemplified" by the lack of a review of the RDS.

79. It is submitted that the evidence does not support CTI's characterisation of the tender evaluation process as being a "low intensity review". The full work involved in evaluating the tenders was touched on very briefly in evidence. It is submitted that the Inquiry would be unable to reach any conclusions regarding the intensity of the evaluation process from the limited examples mentioned by CTI. The full evaluation criteria are set out in the ISFT documentation (bundle 3 from page 71 to 153). Each of the three tenders had to be evaluated against that full set of criteria. Bundle 6 comprises no more than the "key sections" of IHSL's tender. The bundle runs to 1,203 pages and touches upon a very small proportion of the evaluation criteria. Insofar as any criticism is made of a "sample review" exercise, it is unclear what practical alternative is being suggested. The Inquiry heard evidence (discussed below in the Governance section)

from a number of witnesses regarding the scope of the task in conducting a full review of the EM (which formed one relatively small element of the tender documentation). A full review of each of the three tenders, including checking for compliance with all of the BCRs, is likely to have taken several months. Given that, at tender evaluation stage, the design had yet to be developed by the successful bidder, any detailed review would have been wholly disproportionate and prohibitively expensive. This must also be considered against the background that NHSL had received confirmation from H&K that the reference design EM complied with applicable guidance.

80. Insofar as it is suggested that the sample review itself was of "very low intensity" there was simply no evidence about the level of intensity with which the sample review was conducted to enable any view to be formed about its level of intensity. In short, the evidence did not suggest that a sample review exercise was inappropriate, nor that any valid criticism could be made of the manner in which that sample review exercise was carried out.

81. In its draft Closing Submission, WW invite the Inquiry to consider whether IHSL may have been left with a misplaced confidence that its tender had been assessed as being fully compliant with the BCRs. WW does not point to any evidence to support the suggestion that IHSL had any such confidence. MML is not aware of any such evidence. Given the evidence (discussed below in the Governance section) regarding the scope of the task in conducting a full review of the EM, it seems highly unlikely that any tenderer could have entertained any genuine understanding that the tender evaluation process included a detailed review of every tender to ensure full compliance with the BCRs.

The period to Financial Close

82. The problems and difficulties described in CTI's submission (from paragraph 241) were primarily the result of IHSL failing to deliver on its requirements. As CTI note (at paragraph 245), despite IHSL's complaints to the contrary, no witness was able to provide any example of a radical change by NHSL to the stated requirements that increased the requirements placed on IHSL.

83. As Graeme Greer stated (at para 65), by Financial Close there was not a complete set of RDS from IHSL. This resulted in RDS being included as RDD. Susan Goldsmith stated (at para 41) that Multiplex did not make the design progress that it was expected to make prior to Financial Close. She continued (at para 43) that, in order to reach Financial Close, a pragmatic way forward was agreed. She considered that Multiplex used commercial leverage knowing NHSL had limited options (para 45). In her evidence, she explained that NHSL were comfortable waiving the requirement for a full set of RDS by Financial Close because contractual responsibility for producing them would lie with IHSL after Financial Close. Iain Graham noted (at para 36) the pressures from various parties to get to Financial Close, and that the reduction in the number of RDS for inclusion in the Project Agreement was one of many compromises, although this was mitigated by the provision of RDS for key and generic rooms. He noted (para 46) that Multiplex strongly resisted completing 100% RDS as it would require too much time and cost prior to Financial Close. This resulted in RDD being more extensive than expected (para 50). In her evidence, Janice MacKenzie described this as a pragmatic decision as they had got so far as needed to get on and build the hospital (page 19 of transcript). Richard Cantlay noted that the bidder had put forward a fixed price, so the risk to the Board would be the same whether design issues were finalised pre or post Financial Close (page 41 of transcript).

84. As Graeme Greer explained in evidence, the first RDS were produced eight weeks out from the projected Financial Close date (page 31 of transcript). Given the timescales involved, they were not reviewed prior to FC.

85. Colin Macrae described his involvement in highlighting discrepancies in relation to single bedrooms. His concern was that the bedroom ventilation was described in the IHSL EM as being positive. He considered this to be an infection control risk. This issue was noted during the preferred bidder stage (see bundle 4, page 275). In his evidence he suggested that during this period his reviews got "more focussed" (page 14 of transcript), although still at a "fairly high level" (page 15 of transcript). It is apparent from the comment raised on this issue, when compared with the requirements of SHTM 03-01, that the issue related to standard single bedrooms, not to those in Critical Care. This was one of the outstanding issues that led to the EM being RDD (bundle 5, p880). It was not resolved at FC.

86. Graeme Greer's position in evidence was that this was one of many issues that they were working through at that point (page 45 of transcript). It did not jump out as being a higher priority than anything else that was being worked on. He noted that there was no indication that IHSL would not address it so that the design was compliant with SHTM 03-01 (page 46 of transcript). Richard Cantlay was not surprised that an issue such as this would arise at this stage as the preferred bidder would be developing its design which would be reviewed in more detail (page 43 of transcript). The understanding that this issue was not sufficiently serious to prompt a wholesale review of the EM is supported by Paul Serkis's evidence that this was not something that had been raised as a red flag to him or John Ballantyne and that he could not recall any major conversations about it (page 27 of transcript). On reviewing the documents now, he considered that this was something being raised for review: it was not unusual, just another item to be dealt with as part of design development (page 28 of transcript). Susan Goldsmith considered that this was one of several issues that needed to be resolved, and that she was reassured by the fact that the risk had been identified and was being addressed (page 40 of transcript).

87. Paragraph 248 of CTI's submission suggests that this issue highlighted that H&K's confirmation that the EM complied with SHTMs was not accurate, and that a failure to "re-visit" the EM was a missed opportunity. It is unclear what is meant by "re-visit". As is readily apparent from the fact that the issue came to light during a review of the EM, the EM was being subjected to review by MML and NHSL. In that sense it was being revisited. However, for the reasons discussed elsewhere in this submission, any full review of the EM would have taken months. Given the time and costs involved, the pressure to achieve FC, the lack of any obvious reason to suppose there were any other significant errors in the EM, and the fact that design risk ultimately sat with IHSL, any such review would not have been a reasonable option.

The Contract

88. MML recognises that it is not the role of the Inquiry to determine the correct interpretation of the contract. It is readily apparent that there are competing interpretations amongst the various Core Participants. In this part of the submission

MML sets out what it contends to be the correct interpretation of the Project Agreement and to highlight all of the relevant provisions.

89. MML accepts the observation made at paragraph 258 of CTI's submission that the wording of the Project Agreement did contain some potential ambiguities about the status of the EM. However, MML submits that, when the Project Agreement is viewed as a whole, the status of the EM is clear. In particular, it is clear that the provisions in SHTM 03-01 took precedence over the EM. That understanding is clear not just from consideration of the provisions identified in the following paragraphs: it is also apparent from the actions of the parties (discussed above at paragraph 55), all of whom proceeded on a clear understanding that compliance with SHTM 03-01 was required. The summary of the position adopted by IHSL/Multiplex/WW in the last sentence of paragraph 258 of CTI's submission is not borne out by the evidence regarding their actions.

90. Clause 12.1.1 of the Project Agreement (bundle 5, page 24) provides that "Project Co shall carry out the Works… so as to procure satisfaction of the Board's Construction Requirements…" Paragraph 8 of the BCRs (bundle 5, page 289) provides, *inter alia*, that "Project Co shall provide the Works to comply with the Environmental Matrix."

91. Paragraph 2.3 of the BCRs (bundle 5, page 211) provides that "In addition to the standards listed in paragraph 2.4 of this Sub-Section C, 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 as the same may be amended from time to time." The list of NHS Requirements included "h) HTM and SHTM". Paragraph 2.3v (bundle 5, page 213) continued: "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."

92. IHSL argues that the EM is a "specific and different requirement" covered by the qualification to paragraph 2.3 such that there is no requirement for it to comply with the SHTMs. It contends that the EM accordingly took precedence over the SHTMs. However, on a complete understanding of the provisions of the Project Agreement, this argument is incorrect for the following reasons:

92.1. A derogation was ultimately granted in relation to the provision in paragraph 8 of the BCRs requiring that the works comply with the EM (bundle 5, paper apart volume 1, page 3,861). The derogation was granted because of "anomalies" within the EM. It was noted that "This shall be further developed…" Accordingly, at the time the Project Agreement was finalised, the requirement that the works comply with the EM was the subject of a derogation and therefore did not form part of the BCRs. It could not have been a "specific and different requirement".

92.2. Similarly, the EM was included in RDD (bundle 5, p880). It had accordingly not been finalised and signed off for construction. Compliance with it could not have been compulsory. In any event, it was not a "specific and different requirement" as it had not yet been finalised.

92.3. The wording "specific and different requirement" in paragraph 2.3 is not apt to describe the Environmental Matrix, even once finalised. It was a wide-ranging summary of environmental parameters. It was described, in Guidance Note 1 as no more than a "reference tool". It does not specifically state that it is to take precedence over SHTMs. There is no specific statement anywhere in the Project Agreement that there did not require to be compliance with SHTM 03-01.

92.4. The EM was not a "different requirement" to the SHTMs. On the contrary the Guidance Notes, particularly Guidance Note 15 (bundle 4, page 160), make express reference to SHTM 03-01. Indeed, Guidance Note 15 specifically states that SHTM 03-01, requiring 10 air changes, are the applicable "design criteria". On a fair reading of the EM, it is plainly intended to reflect the SHTMs rather than acting as a specific and different requirement to them.

92.5. In any event, the requirement in the BCRs to comply with SHTMs did not come solely from paragraph 2.3. After making reference to the EM, Paragraph 8 (bundle 5, page 289) continued "Project Co shall in carrying out the Works comply with the following non-exhaustive list of mechanical and electrical requirements…" Paragraph 8.1 Minimum Engineering Standards included "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." This express reference to SHTM 03-01 is not subject to the qualification in paragraph 2.3 concerning any "specific and different requirement". Accordingly, even if IHSL is correct in its argument that the EM was a specific and different requirement such that the references to SHTMs in clause 2.3 were of no effect, that has no bearing on the clear provisions in paragraph 8 mandating compliance with SHTM 03-01. On a proper understanding of the BCRs, there is no doubt that IHSL's design required to comply with SHTM 03-01. At paragraph 198 of CTI's submission, it is suggested that the language used in paragraph 2.3 contributed to confusion and ambiguity as to the ventilation requirements. Even if that were correct when viewing paragraph 2.3 in isolation, it ignores other provisions such as paragraph 8.1 which made it clear that compliance with SHTM 03-01 was required. Similarly, the second last sentence of paragraph 253 of CTI's submission implies that paragraph 2.3 is the only paragraph of the BCRs requiring compliance with SHTMs. That is plainly incorrect having regard to the full terms of paragraph 8 and the provisions identified in the following sub-paragraphs (many of which are mentioned in CTI's submission).

92.6. Paragraph 2 of the BCRs (bundle 5, page 209) provided that "Project Co shall ensure the design complies with the general ethos detailed here… Project Co shall ensure that the design of the Facilities draws upon and endeavours to further develop, improve and exceed current best practice (and Good Industry Practice) standards achieved in other similar schemes…" This provision required IHSL's design to comply with SHTM 03-01.

92.7. Paragraph 3.6.3 of the BCRs (bundle 5, page 232) stated "For the avoidance of doubt, Project Co shall provide mechanical ventilation, comfort cooling and air

conditioning to suit the functional requirements of each of the rooms in the Facilities. Irrespective of the ventilation requirements in the Room Data Sheets, where rooms are clearly intended to be occupied and/or become internal spaces during design development and natural ventilation is not possible, mechanical ventilation and/or extract ventilation shall be provided as appropriate to suit the function of the space." This provision required IHSL's design to comply with SHTM 03-01.

92.8. Paragraph 5.2 of the BCRs (bundle 5, page 255) made provision in relation to Infection Prevention and Control. It stated that "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)". This is a further provision requiring IHSL to comply with SHTM 03-01 which is not subject to the qualification in paragraph 2.3 concerning any "specific and different requirement". John Ballantyne commented specifically on this provision during his evidence. He claimed that NHSL had satisfied themselves that the EM complied, without providing any explanation for this claim. When it was put to him that this was not what the provision said, he referred to "the unwritten word" and "implied compliance" (page 28 of transcript).

92.9. Paragraph 8.7 of the BCRs (bundle 5, page 294) provided that "Systems shall be design [sic], supplied, installed, tested, commissioned, operated and maintained all in accordance with the regulations and standards." This provision required IHSL's design to comply with SHTM 03-01.

92.10. Paragraph 8.7.8 of the BCRs (bundle 5, page 304) stated "Project Co shall demonstrate how the proposals facilitate the control and management of an outbreak and spread of infectious diseases in accordance with SHTM 03-01…" This provision required IHSL's design to comply with SHTM 03-01. Other provisions to similar effect include paragraphs 4.5.17 (bundle 5, page 253) and 8.5.3 (bundle 5, page 292).

92.11. The Clinical Output Based Specification ("COBS") formed sub-section D of the BCRs (Specific Clinical Requirements), the most relevant part of which was B1

Critical Care (bundle 5, page 376). At 1.8, Environmental and Services Requirements it states (at bundle 5, page 389) "Flexibility in use of the Critical Care beds for both High Dependency and Intensive Care is key to maintaining efficient use of high specification beds… All PICU and HDU bed spaces are required to be of the same specification to allow greatest flexibility of use". At 1.9 "Attention is drawn to the design guidance contained in the following documents: … SHTM 2025: Ventilation". By the time the contract was finalised, SHTM 2025 had been superseded by SHTM 03-01. Notwithstanding the reference to SHTM 2025, it ought to have been readily apparent to IHSL that it required to comply with the current guidance in SHTM 03-01. Taken as a whole, the COBS for Critical Care, which formed part of the BCRs, required compliance with the applicable SHTM and mandated that all bed spaces in PICU and HDU be of the same specification. Stewart McKechnie claimed that the provisions regarding the specification being the same was not an engineering requirement: his interpretation was that this related to layouts, fittings and furniture, not to environmental conditions (page 24 of transcript). The relevant provision does not contain any qualification suggesting that it did not apply to environmental conditions. Indeed, given that the provision comes under the hearing "Environmental and Services Requirements" the most natural meaning of the provision is that it clearly relates to environmental conditions.

92.12. Paragraph 2.5 of the BCRs, Hierarchy of Standards (bundle 5, page 216) stated "Where contradictory standards / advice are apparent within the terms of the Board's Construction Requirements and the Appendices then subject to the foregoing paragraph then (1) the most onerous standard / advice shall take precedence and (2) the most recent standard / advice shall take precedence. When the more onerous requirement is to be used the Board will have the right to decide what constitutes the more onerous requirement." Insofar as there was any inconsistency between the EM and SHTM 03-01, the more onerous provision would take precedence.

92.13. The existence of paragraph 2.5 addresses the concern articulated at paragraph 201 of CTI's submission concerning what "compliance" means when guidance is open to different interpretations. In any event, that concern is said to be

exemplified by the difference in views between Stewart McKechnie and Michael O'Donnell regarding the correct interpretation of the guidance in SHTM 03-01. For the reasons set out above, Stewart's McKechnie's claimed interpretation of SHTM 03-01 is not a tenable interpretation. Indeed, the fact that CTI's submission (at paragraph 306) invites a finding that there was indeed an error in the EM supports the conclusion that there is no real doubt about the correct interpretation of SHTM 03-01.

92.14. Paragraph 8 of the BCRs (bundle 5, page 289) stated "For the avoidance of doubt the hierarchy of standards and advice detailed in paragraph 2.5 (Hierarchy of Standards) of Sub-section C of the Board's Construction requirements shall apply to this paragraph 8." It is therefore clear that paragraph 2.5 applies in determining the hierarchy as between provisions in the EM and provisions in guidance including SHTM 03-01.

92.15. Even if all of that was wrong, and the EM was mandatory and compliance with SHTMs was not required, that does not mean that IHSL's design was compelled to follow the individual cells concerning bedrooms in PICU/HDU/Critical Care. All of the individual entries for rooms in PICU/HDU/Critical Care include "See Guidance Notes" in the "Notes" column. This makes it plain that all of the individual entries are subject to the Guidance Notes. Guidance Note 15 expressly states "Critical Care areas – Design Criteria – SHTM 03-01 – esp Appendix 1 for air change rates – 10ac/hr Supply…" Notwithstanding any individual entries, the reader was accordingly directly back to this provision. To the extent there was any conflict in the EM, paragraph 8 of the BCRs made it plain that "for the avoidance of doubt" paragraph 2.5 applies, which requires the more onerous provision to apply. Even if paragraph 2.5 does not apply as between the EM and guidance, there is no obvious reason why it would not apply as between inconsistent entries in the EM. Accordingly, even if IHSL's interpretation of the contract is correct, regarding the precedence taken by the EM, that has no practical effect in relation to the ventilation issues under consideration by the Inquiry because it was nevertheless compelled to comply with SHTM 03-01 in Critical Care in accordance with Guidance Note 15.

Governance

93. The terms of MML's appointment included, amongst the Technical Advisor Scope, (Bundle 2, page 86) an entry to "Check Reference Design for compliance with all appropriate NHSL and legislative guidelines and requirements (list as pre-agreed with NHSL) and identify any derogations". It should be noted that, contrary to the wording at paragraph 269 of CTI's submission, MML's obligations was not to "ensure" compliance. The agreed estimate was that MML would allocate 5 man days for this task with a total value of £2,605. Comparison with other elements that fell under MML's area of responsibility shows that this was a very modest sum, suggesting that this was envisaged to be a relatively small task.

94. Richard Cantlay explained that this task involved obtaining confirmation that the reference design had been developed in accordance with the applicable guidance and an understanding of any non-compliances or derogations. He described the task as a process of getting to the point of obtaining the written confirmation from the reference design team (page 30 of transcript). That process is evidenced by the email sent by MML dated 28 February 2012 requesting the compliance statement (bundle 4, page 322). The email attached a "Reference Design Compliance Statement Requirements Schedule" which had presumably been prepared by MML as part of the process described by Richard Cantlay. The design compliance statement and derogations list dated 16 March 2012 (bundle 4, page 324) contained comments on multiple pieces of guidance. Although the one concerning SHTMs was a simple statement of confirmation, some of the other entries made reference to derogations from the guidance. These derogations would have required to be considered by MML. It would accordingly be wrong to view the process as no more than MML asking for confirmation of compliance and the reference design team confirming that there had been compliance: the task involved an understanding of multiple different guidance documents and the extent to which they had been derogated from.

95. Richard Cantlay's evidence was that the task mentioned in the Technical Advisor Scope was not to be an independent check of the reference design by MML (page 30 of transcript). Such a detailed review would not be required because a competent design team had been appointed to do the design work. To put this explanation in context, it

is relevant to note that the total fee to the reference design team was £1,715,000 (Bundle 2, p177). H&K's fee alone was £300,000. As Stewart McKechnie noted, the EM itself (which represented only one part of the reference design) contained 50,000 boxes and would have required months to check for compliance (page 40 of transcript). Given the time and cost allocated to MML's check of the reference design, it is apparent that the Technical Advisor Scope did not contemplate a full design audit.

96. It may be relevant to note that the Technical Advisor Scope formed part of a contract entered into in March 2011, before the formal appointment of the reference design team by Contract Control Order No 290961/02 (bundle 2, page 174) dated 11 July 2011. The Technical Advisor Scope was accordingly a prospective assessment of the work that, it was anticipated, would be performed. The final box under the heading "Procurement of NPD Co including Competitive Dialogue" (of which the entry "Check Reference Design" formed a part), states "All items above assume contract to be based on Standard PPP Form Contract." The contract was not a standard form PPP contract. In her evidence, Susan Goldsmith stated that the inclusion of a reference design was a departure from a normal PPP (page 11 of transcript). It is therefore unclear to what extent this provision regarding checking the reference design remained relevant given the form of contract that was ultimately entered into.

97. In any event, the reference design team had an obligation to check the reference design against the applicable guidance. The reference design team, including H&K, produced a reference design compliance statement and derogations list dated 16 March 2012 (bundle 4, page 324). This stated, amongst many other entries, "We have followed SHTMs and also HTMs when there is no Scottish equivalent." Although Michael O'Donnell noted (at para 30) that a further updated EM was subsequently produced in September 2012, he did not suggest that this would have affected the previous confirmation that SHTMs had been followed. He did not suggest that the EM had been revised after March 2012 in a manner that was inconsistent with SHTMs. Insofar as the EM potentially failed to comply with SHTM 03-01 in relation to rooms in Critical Care, H&K was unaware of that issue. In any event, in his evidence, he stated that in order to make the compliance statement, checks were made in relation to the guidance notes (page 45 of transcript). Given that these guidance notes did not change between March 2012 and September 2012, the results of any checks would have been the same.

He went on to state that he did not think any design work had taken place between February 2012 and September 2012 (page 45 of transcript). Accordingly, had H&K been asked to provide a further design compliance statement and derogations list after producing the revised EM in September 2012, it is a reasonable assumption that it would have been in the same terms as the document provided in March 2012.

98. In light of the design compliance statement and derogations list provided by the reference design team, MML proceeded on the basis that the EM prepared by H&K had been checked to ensure that it complied with the applicable guidance including SHTM 03-01. As CTI's submission suggests at paragraph 269, there was little more MML could, or should, have done.

99. Notwithstanding this compliance statement, IHSL became responsible for ensuring that the final design complied with the applicable guidance. As noted above, in January 2019 IHSL confirmed that the ventilation systems had been designed, installed and commissioned in line with SHTM 03-01. MML according proceeded on the basis that the final ventilation system design, including the EM, had been checked to ensure that it complied with the SHTM 03-01.

100. Throughout the project, MML's role did not involve conducting a line-by-line check to ensure compliance with the guidance. Graeme Greer (at para 8) explained that MML undertook sample reviews of aspects of the design but that IHSL was responsible for the design of the project. He noted in his evidence that this was due to the risk allocation in an NDP project; it came back to who was best placed to take the risk in such a project (page 13 of transcript). However, it was beneficial to NHSL for MML to do some level of review to assist in IHSL developing their proposals (page 15 of transcript). He noted that the level of review was consistent with that done by MML on other NPD projects. He also noted that this was in keeping with discussions that he had had with Brian Currie of NHSL, who had asked why they would employ MML to do the design if someone else had already been employed to do it (page 16 of transcript). Mr Greer confirmed that NHSL was aware that MML was doing a sampling exercise rather than an audit. Willie Stevenson (at paras 14 and 23) spoke to the reviews he conducted on the drafts of the EM produced by IHSL. He described this as a "sample review or spot check" not a "line-by-line check or audit". He noted that it would not have been

practical to conduct such a detailed check given the timescales involved. He stated that they would take care not to make suggestions that might lead to MML becoming designer by default as that was not MML's role. In evidence he noted that there were over 1,100 lines in the EM and that a full line-by-line review of just the electrical information would take 2.5 days if he was uninterrupted and everything went smoothly: however, on the mechanical side there would be a lot more information to check (page 14 of transcript). After the Preferred Bidder was appointed, he noted that they will still perform sample checks which was because design responsibility lay with IHSL (page 14 of transcript). Colin Macrae also stated (at para 18) that it was not MML's role as Technical Advisor to do a line-by-line check of the EM – it was IHSL's responsibility to produce a compliant design. He would undertake "sample reviews" of each version of the EM produced by IHSL. The spot checks were aimed at ascertaining that the design development was progressing. He noted (at para 58) that the level of review he undertook on this project was in line with the reviews he used to undertake on other projects. He stated (at para 19) that he would be careful to avoid offering design solutions as MML was not the designer. In his evidence he suggested that, after the preferred bidder was appointed, his reviews got "more focussed" (page 14 of transcript). He described this as looking for anomalies, although it was done at a "fairly high level" (page 15 of transcript). He noted that a line-by-line review would be time consuming and very onerous. In any event, as he would not have expected the EM to be finalised until after FC, he did not consider there to be any need for a detailed review of the EM at that stage. David Stillie advised that doing a full check of the design from the architectural perspective would have been a huge job: once the design was developed there was a huge volume of information which would make it "well nigh impossible" to do a line by line check (page 23 of transcript). To adopt the words at paragraph 320 of CTI's submission to detect the sort of issue which arose with the EM would require a disproportionate duplication of technical expertise at undue cost.

101. MML's position regarding the level of checking of the EM that would have been feasible was supported by the evidence of Stewart McKechnie, who is arguably best placed to comment on the matter. His evidence that was that there were 50,000 entries on the EM so there was a limit on what could be done by way of reviewing the matrix: he would only look at the "key parameters" (page 40 of transcript). He stated that, to check every single parameter in the EM for compliance with guidance would have taken

"months of work" and it would be almost like reinventing the EM (page 41 of transcript). He described the task as "impossible" (page 44 of transcript). Similarly, when it was suggested to Ken Hall that IHSL ought to have carried out a detailed review of the EM he considered that this would "not have been possible", a "very difficult job" and a "highly unreasonable request" (page 72 of transcript).

102. This understanding of MML's role is consistent with the evidence of Peter Henderson from HFS who stated (at para 45) "For an external body to carry out a full check for compliance with all relevant guidance it would require the employment of a full shadow design team. (This level of involvement could potentially diminish the level of liability of the original designer)." MML was not employed to be a full shadow design team. Although Ken Hall's statement (at para 43) suggests that MML were "resourced almost like" a shadow design team, that does not mean that they were one. In her evidence Janice MacKenzie of NHSL stated that she would not agree with the suggestion that MML was a shadow design team as she did not think they were there to design (page 12 of transcript). Willie Stevenson expressed the view that MML was definitely not a shadow design team and had no design responsibility whatsoever on the project (page 9 of transcript). David Stillie stated that he did not at any time consider that MML were anything like a shadow design team (page 23 of transcript). Graeme Greer explained that MML definitely did not have a design team working on the project (page 14 of transcript). He noted that this was due to the risk allocation in an NDP project; it came back to who was best placed to take the risk in such a project. Richard Cantlay explained that the term "shadow design team" is not terminology that he would associate with a revenue funded project due to the arrangements concerning where design risk sits (page 28 of transcript).

103. MML's position regarding the nature of the checks conducted by it appeared to be disputed by Liane Edwards who spoke to very detailed comments coming back regularly (page 14 of transcript). She did not consider MML to be conducting light touch, sample reviews. However, Ms Edward's role related to architectural matters, not to M&E. The specific examples provided by her (such as the size and number of screws or the colour of cladding) had no bearing in M&E matters. The evidence from MML witnesses regarding conducting sample reviews related primarily to M&E matters, particularly the EM, not to architectural matters. Accordingly, Ms Edwards'

recollections regarding the detailed nature of MML's review of matters that she was involved in have no obvious bearing on the extent of MML's reviews of the EM. Similarly, although Paul Serkis commented on the level of detail in MML's review of documents submitted by IHSL, this related specifically to the PCPs, not to the EM. Although he claimed (at para 46 of this statement) that NHSL/MML were "changing the fundamentals… altering the basis of the bid which they had accepted", in his evidence he could not provide any examples (page 24 of transcript): in any event, this comment did not seem to relate specifically to M&E aspects and/or to the EM. For what it is worth, this issue was not explored with Ken Hall, who would be better placed to comment on the extent of the comments provided by MML on the EM. Further, there is no documentation before the Inquiry vouching the proposition that MML provided sufficiently detailed and voluminous comments so as to undermine the clear evidence of those involved for MML that these were not the product a line-by-line review. The one set of comments that has featured in evidence (found at bundle 4, page 275) does not offer much insight into the extent of review that led to its creation.

104. In his evidence, John Ballantyne asserted that he saw MML as checking PCPs to ensure compliance with the BCRs (page 30 of transcript) but did not provide any explanation of the basis upon which MML would be undertaking such a task. He claimed that MML was reviewing submissions line-by-line, but it is unclear how he would be in a position to comment on what MML were doing as he was not part of MML's team.

105. The issue with the ventilation in Critical Care was not readily apparent from a review of the EM. Michael O'Donnell did not spot the error when he signed off on the EM. He stated (at para 29) that "the cover guidance notes and room function reference sheet probably gave a reassurance to anyone upon initial view that important parts of the guidance are captured, resulting in no actual digging into the individual cells…" In his evidence he noted on reflection that the RFRS may have "blinded him" from seeing the entry in the department sheets (page 42 of transcript). In his view, someone reviewing the EM would probably have looked at the RFRS and "gone with that". Indeed, Stewart McKechnie claimed (at para 24) that the EM "did accord with SHTM 03-01" and (at para 26) that "it did not appear to be a mistake". Having regard to these considerations, it is understandable that somebody conducting a sample review or spot check of the EM would not notice the error.

Findings and Potential Recommendations

106. The Chair is invited not to make the finding suggested at paragraph 304 of CTI's submission. For the reasons set out above, on a proper reading of the Project Agreement, there was no ambiguity in relation to whether the ventilation system required to fully comply with SHTM 03-01. It is plain from numerous provisions, not just paragraph 2.3 of the BCRs, that compliance with SHTM 03-01 was required. In particular, on a full reading of paragraph 8 and 8.1 (which were not subject to the qualification in paragraph 2.3 concerning any "specific and different requirement"), compliance with SHTM 03-01 was mandatory. The Chair is invited to make a finding to that effect.

107. The Chair is invited not to make the finding suggested at paragraph 305 of CTI's submission. MML accepts that the procurement documentation did contain some potential ambiguities and inconsistences. However, when the provisions are viewed as a whole, it is clear that the EM was not intended to be mandatory. In any event, the subsequent actions of the parties make it clear that there was no real confusion. The Chair is invited to make a finding to that effect.

108. The Chair is invited not to make the finding suggested at paragraph 307 of CTI's submission. Although the reference design team was ring fenced from the procurement exercise, there was no evidence to suggest that this meant that "the problem was exacerbated". There was no evidence that any of the bidders wanted to "discuss matters with the engineers that produced the Environmental Matrix". Had they been able to do so, there was no evidence that they would have discussed any of the matters mentioned towards the end of paragraph 307. Any supposed effect of the reference design team being ring fenced is purely hypothetical. In any event, had bidders wished to clarify the matters mentioned towards the end of paragraph 307, they could have done so by asking NHSL or MML.

109. The Chair is invited not to make the finding suggested in the third and fourth sentences of paragraph 310 of CTI's submission. MML accepts that the procurement documentation did contain some potential ambiguities and inconsistences. However,

when the provisions are viewed as a whole, it is clear that the EM was not intended to be mandatory. In any event, the subsequent actions of the parties make it clear that there was no real confusion.

110. The Chair is invited not to make the finding suggested in the final sentence of paragraph 310 of CTI's submission. The available evidence directly contradicts this suggested finding. Any supposed confusion regarding the status of the EM had no causative effect in relation to the problems that arose with the ventilation system. Stewart McKechnie's position (at para 24) is that "the EM did accord with SHTM 03-01" and (at para 26) that 4ac/hr in Critical Care "did not appear to be a mistake". Accordingly, it would not have mattered whether the reference design EM was mandatory or not: IHSL/WW would not have made any changes to the relevant entries because they considered them to be correct. To adapt the language of the proposed finding, had the status of the document been made clearer, the problems would have occurred in any event due to Mr McKechnie's interpretation of SHTM 03-01.

111. The Chair is invited not to make the finding suggested at paragraph 311 of CTI's submission. The wording of the opening sentence is potentially misleading and does not accurately reflect the evidence. Although a "more intense review" could potentially have identified the issues, the available evidence suggests that a review of sufficient intensity to have identified the issues would not have been practical. The Chair is accordingly invited to make a finding that "The tenderers' confirmation that their design complied with the BCRs for the purposes of evaluation criterion C21 was taken as face value. The tender evaluation process was carried out in accordance with the agreed methodologist set out in the Final Tender Evaluation Manual and Supplementary Guide. It would have been wholly disproportionate and prohibitively expensive to conduct a review of the tender submissions that would have been of sufficient intensity to have identified the issues with the EM."

112. The Chair is invited not to make the finding suggested in the first sentence of paragraph 312 of CTI's submission. MML was not appointed to "design" the ITPD; nor was it appointed to "confirm" the reference design complied with published guidance. A more accurate wording would be "At the procurement stage, NHSL appointed technical advisers whose responsibilities included developing the technical components of the

ITPD and checking the reference design for compliance with all appropriate NHSL and legislative guidelines and requirements."

113. In relation to the matters raised in paragraph 313 of CTI's submission, the Chair is invited to conclude that conducting a detailed review of the EM would not have been a reasonable option for the reasons set out above.

114. The matters raised in paragraph 313 of CTI's submission are reflected to some degree in the Executive Summary at paragraph 9. However, paragraph 9 goes on to suggest that, had H&K "been asked to refresh the statement of compliance, there is a possibility that the errors could have been spotted." For the reasons set out above, there is no evidential basis to support the contention that the outcome would have been any different had a further statement of compliance been sought in September 2012.

115. MML accepts the position set out in paragraph 315 of CTI's submission. However, the manner in which this matter is set out in the Executive Summary at paragraph 8 of CTI's submission is ambiguous. For the avoidance of doubt MML submits that the error in the cells of the EM was a genuine mistake. However, the fact that this was not detected by NHSL or MML before the contract was signed could not properly be considered to be a mistake because neither NHSL nor MML could reasonably have been expected to have detected the error.

116. Finally, it is understood that the Inquiry is, at this stage, concerned only with events up to the stage of Financial Close. Nevertheless, it is likely that there will be documents and oral evidence relating to the period post-dating Financial Close which will have a bearing on the issues currently under consideration. For example, at paragraphs 55.5.7 and 55.14 above, reference is made to documents which may shed light on the position prior to Financial Close. In short, the Inquiry may wish to explore why, if IHSL believed the EM to be mandatory, they changed it in material respects, and why they certified compliance with SHTM 03-01. It will be recalled that MML made an application to explore these issues in cross-examination. While the reasons why that application was refused are readily understood, it is respectfully suggested that the Inquiry may wish to consider whether it is safe to make factual findings on certain issues at this stage, without yet having had the chance to consider later events, which might impact upon the understanding of the period currently under consideration.

Clyde & Co (Scotland) LLP

30 June 2023

Health Finance Directorate
Capital Planning and Asset Management Division

The Scottish Government

CEL 19 (2010)

2 June 2010

Dear Colleague

A POLICY ON DESIGN QUALITY FOR NHSSCOTLAND: 2010 REVISION

Summary

1. This letter provides colleagues of a revised statement of the Scottish Government's Policy on Design Quality for NHSScotland (Annex A). This policy articulates the Scottish Government Health Directorates ambition for NHSScotland's asset base and to embed the need for well-designed, sustainable healthcare environments as an integral part of high quality service delivery.

2. The Policy also sets out the principles which a NHSScotland Body's strategic Design Action Plan and the supporting project-specific Design Statement should address (Annex B). Two further annexes provide reference to relevant Scottish Government Health Directorates asset-related policies and supporting guidance (Annex C) and, useful references and web links (Annex D).

3. This CEL and the attached policy statement supersedes NHS HDL(2006)58. This CEL also provides information on Design Assessment within the SGHD CIG Business Case process.

Action

4. **Addressees should ensure that a copy of this CEL with Annexes is cascaded to all appropriate staff within their area of responsibility.**

5. **The revised Policy on Design Quality for NHSScotland and associated Mandatory Requirements take immediate effect.**

Background

6. HDL(2006)58, issued in 2006, announced the first publication of a Policy on Design Quality for NHSScotland which provided a policy framework to implement the aims of the then Scottish Executive Health Department, supported by a 3-year Framework Agreement with Architecture and Design Scotland. This Framework Agreement has now ended and therefore a revised policy statement is required to ensure that

Addresses

For action
Chief Executives, NHS Boards.
Chief Executives, Special Health Boards.

For information
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Chief Executive, Architecture and Design Scotland.
Chief Architect, SG Architecture and Place.
Head of Building Standards.
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the outcomes of development projects meet the Scottish Government's objectives and expectations for public investment. Support for the implementation of the design agenda will be provided by means of a coordinated, tripartite working arrangement between Scottish Government Health Directorates (SGHD), Health Facilities Scotland (HFS) and Architecture and Design Scotland (A+DS) to facilitate the procurement of well-designed, sustainable, healing environments which support the policies and objectives of NHS Boards and the Scottish Government Health Directorates.

7. The attached policy statement reflects consultation with stakeholders in the Scottish Government, Architecture and Design Scotland and Health Facilities Scotland. It provides a concise definition of policy along with details of Mandatory Requirements which must be complied with by NHSScotland Bodies. For those Special Health Boards (and Operating Divisions within) which are not actively engaged in the procurement of new healthcare premises and refurbishment of existing health care premises for the purpose of service provision, the general principles of the attached policy should be applied, such as when considering premises for lease or occupation.

8. The principle upon which this policy is founded builds upon the core principle of the 2006 policy statement - to ensure that all NHSScotland bodies fully integrate design quality and sustainable development principles throughout all stages of the healthcare building procurement process as an integral part of the commitment to deliver a high quality, safe, sustainable environment for patient care.

Implementation

9. SGHD, A+DS and HFS have developed a range of initiatives to assist NHSScotland in addressing design quality issues in the procurement of healthcare building projects, the summary objectives of which are to:

   - raise the level of design quality achieved through infrastructure investment;
   - increase the capacity of health boards and central agencies in respect of the above; and
   - assist in sharing good practices.

10. In order to meet the above objectives, A+DS will deliver 3 main activities on behalf of SGHD.

    Activity 1
    Engaging with partner organisations and central procurement agencies in order to assist them in their work and in raising design awareness of 'external' parties involved in delivery.

    Activity 2
    Providing, in partnership with HFS, a co-ordinated assessment of the potential quality of proposed projects to support those responsible for decision making within the business case process.

    This will involve contributing particular expertise on the aspects of design relating to Government policy on design and place making to a process administered and led by HFS who will, in addition to the administrative elements, provide particular expertise

on the aspects of design relating to functionality, particularly technical and sustainability standards developed by HFS and the Department of Health in England.

Activity 3
Assisting in building a body of knowledge and evidence of good practice in both process and product across NHSScotland.

A strand of this activity is the development and management of a website, '**Healthier Places**', which has been designed to house information on good healthcare design to assist NHS Boards in the development of the project brief and to raise awareness of the good practice being developed and delivered across NHSScotland and elsewhere. In addition to providing guidance on the development of 'Design Statements' and, articles on healthcare design topics, the website holds a project resource - '**Pulse**' - a database of projects and examples of good practice.
http://www.healthierplaces.org/

Design Assessment and the Business Case process

11. An assessment of design quality is now part of the SGHD Business Case process. All projects submitted to the SGHD Capital Investment Group for approval are now subject to an assessment of design quality and functionality, including technical and sustainability standards. This Design Assessment will take place at the Initial Agreement, Outline Business Case and Full Business Case stages of approval.

12. The Scottish Government Health Directorates' purpose in developing and implementing this process is to ensure that the outcomes of development projects meet the Government's objectives and expectations for public investment. The aim of mapping design into the Business Case process is to support the implementation of this Policy by improving the level of design quality achieved across NHSScotland and, ultimately, the outcomes achieved by doing so.

13. To assist NHS Boards in utilising good design to achieve the best outcomes from their development projects, Boards are required to develop and produce a Design Statement prior to the submission of their Initial Agreement. The Design Statement is the first control document produced for a project and should be consistent with the Board's overall vision contained within the strategic Design Action Plan.

14. Additional guidance on Design Assessment and the Business Case process has been added to the Scottish Capital Investment Manual. The guidance also includes advice on the preparation of the Design Statement.

Yours sincerely,

[redacted]

Mike Baxter
Deputy Director, Capital Planning and Asset Management

A Policy on Design Quality for NHSScotland

Scottish Government
Health Finance Directorate
Capital Planning and Asset Management

2010

A POLICY ON DESIGN QUALITY FOR NHSSCOTLAND

Purpose

The purpose of this document is to provide NHSScotland Bodies[1] with a clear statement of policy on design quality. It also provides guidance on how NHSScotland Bodies can ensure that design quality is embedded within the healthcare building procurement process.

Context

In recent years the value of good design has been increasingly recognised and a wealth of evidence based findings has demonstrated that good design adds value, not only from an economic perspective but also in terms of a range of social and environmental benefits. This capacity to add value is particularly important for healthcare environments, where the physical and psychological well-being of patients, staff and visitors is of paramount consideration.

In October 2000, the Prime Minister established a UK-wide 'Better Public Buildings' initiative to achieve a step change in the design quality of publicly procured buildings. Over the last decade, Scottish Ministers have in parallel, through their policies, sought to achieve a culture of quality in the procurement of publicly-funded buildings that embraces good design as a means of achieving value for money and sustainable development.

The Scottish Government has five strategic objectives; it is committed to creating a Scotland that is:

- wealthier and fairer;
- stronger and safer;
- healthier;
- greener; and
- smarter.

It is clear that the design quality of our built environment must, by necessity, play a vital part in our ability to meet all of these strategic objectives. Government, thus, continues to promote and to encourage investment in well-designed buildings and places in both the public and private sectors.

This document responds to Government's quality objectives within guidance and initiatives particular to NHSScotland.

Design quality is especially important in the context of healthcare building, where well-designed health buildings can help patients recover their spirits and their health and have a positive effect on staff performance and retention, as well as improving the efficiency of operational relationships and providing better value for money in the context of whole-life costs. The Scottish Government therefore recognises the importance of good building design as the physical means of delivery for a range of wider policy objectives.

The Scottish Government's Architecture and Place Division which was established to implement policy commitments, can offer advice on design and acts as the sponsor body for Architecture and Design Scotland, an Executive Non Departmental Public Body established as the national champion for good architecture, design and planning in the built environment.

Health buildings can often be the places in which we may feel at our most vulnerable, whether as a patient, relative or friend. The quality of the building environment that we experience can provide us with calming reassurance or, conversely, it can accentuate our feeling of stress and unease.

Many factors can contribute to engendering a sense of ease, for instance: the first impression of the facility from the public realm, the entrance experience, the degree of natural light, brightness and airiness, colour and texture, an easily understood layout with clearly defined focal points, uncluttered signage and a clear distinction between the realms of public and private space, maintaining patient dignity.

In most health buildings, external public spaces are vitally important in that they can also provide the opportunity for positive respite for patients, visitors and staff in periods of stress. Sensitive landscaping and well-defined public space in a healthcare environment can provide far more than simply an attractive setting. Through careful design social or intimate, tranquil spaces can be created, providing an environment where people might want to sit or meet, even spaces for physical therapy and play and which further contribute to the healing process.

Scottish Ministers believe that a concern for the quality of Scotland's architecture must go far beyond the design of individual buildings. Distinctive, high quality places as well as high quality buildings are vitally important to the social, environmental and economic success of our cities, towns and rural communities.

The Scottish Government's National Outcomes set out what Scottish Ministers aim to achieve in the next ten years, and a key objective for the built environment is that “we live in well-designed, sustainable places where we are able to access the amenities and services we need”.

A sustainable community is one which not only makes a positive contribution to mitigating the effects of climate change; a sustainable community is a place which is successful in the way that it continues to flourish socially and economically over time. The quality of healthcare facilities along with other public buildings and places can be a significant factor in making communities successful, because they can offer a great deal to the creation of a wider, attractive environment which people would wish to inhabit.

The overarching Purpose of the Scottish Government is to increase sustainable economic growth, and good place-making supports this Purpose in the following ways:

Good place-making can influence the economy of an area by making it an appealing place to live, to work, and to visit - It can provide environments and infrastructure which function well; link well with surrounding settlements; which attract business; and in which business can flourish;

- Good place-making can provide communities with an important cultural context, a sense of pride and belonging and, a sense of local and national identity;
- Through good design, safe, welcoming places can be created to which people would wish to return frequently, and which would have a greater chance of longevity;

- Good place-making can promote active, healthy, inclusive lifestyles by providing attractive and accessible green spaces, and through layouts which discourage car usage and which provide the right facilities within reasonable walking and cycling distance;

- Good place-making can embed community facilities into our communities in ways which are accessible and which provide a richness of opportunity for social interaction; and

- Good place-making can have a profound effect on the sustainability of our lifestyles, in respect of the impact that we have on the land and other scarce resources; how much energy we use; and, again, through reductions in car usage.

The Planning etc. (Scotland) Act 2006 requires Local Authorities to develop dynamic plans which describe a vision for the local community; establishing 'what goes where and why' in order to develop a community structure that supports strategic objectives. Health Boards are encouraged to be active participants in the development of these local development plans in order to:

- embed the principles of healthy urban development into the plan – those aspects needed to support local health promotion and help people make healthier lifestyle choices;

- embed the principle needs for the physical infrastructure needed to deliver on 'shifting the balance of care' such as the potential location of new healthcare facilities;

- establish major infrastructure strategies needed to support the delivery of the Single Outcome Agreement; and

- link the board's strategic asset management plan into the local development plan to consider both the beneficial use of public land assets and the transport implications of major changes in estate strategy.

The creation of a new or refurbished facility can bring with it the opportunity to show a positive civic presence, and the development of a high quality public building can do much to help the creation or regeneration of communities. It is thus also a matter of considerable importance that health buildings respond to the urban or rural contexts in which they sit. This includes considerations such as how they fit within historic contexts, how the approach and entrance act to welcome concerned families and friends, and how they contribute to the quality of their neighbourhoods, both in terms of the buildings themselves and the places they create around them. In considering the provision of healthcare facilities, it is important to also give careful thought to the opportunities for good 'place-making'.

Healthcare buildings play a significant part in the environment and, increasingly, patients are becoming "empowered" to demand better environments in which they receive healthcare. It is appropriate that we embrace such matters and introduce appropriate policies and initiatives in Scotland.

At the heart of this policy is the recognition that strong client commitment is required to deliver facilities that provide the high quality and sustainable caring environments we desire. We now expect NHSScotland bodies to develop their individual visions for the kind of places in which patients, staff and visitors would wish care to be provided:

- for patients - a welcoming, healing and reassuring place that supports life;

- for staff – a place that supports staff in their work and that will not constrain future work;

- for visitors – a place to meet and discuss, a place that I can leave loved ones.

These environments must be able to support the high quality healthcare services which are to be delivered within.

This aligns with the aims of the **Scottish Healthcare Quality Strategy**. The Strategy reflects the shared ambitions of everyone in Scotland whether a patient, a carer, or whether working for NHSScotland in a community, primary or acute care setting, to create high quality person-centred, clinically effective and safe healthcare services and to be recognised as being world-leading in our approach.

The aim is for everyone in Scotland to work together to ensure better health and higher quality healthcare services which are flexible and reactive to each individual circumstance. These principles are consistent with the aims of this policy, to embed the need for well designed, sustainable and safe healthcare environments as an integral part of service delivery.

The term 'good design' is not merely a question of style or taste but describes what arises from the intelligent and creative synthesis of many interrelated factors such as: strategic planning of healthcare provision; social and physical regeneration; the local urban (or rural) context and forms; links to infrastructure and transport; sustainability agendas; the building's sense of welcome; intelligibility of layout; security; unobtrusive supervision; ease of use and maintenance; efficiency; and, promotion of human dignity. It covers the way in which buildings sit within and, contribute to, their community as well as how they work and look. Successful healthcare design resolves a wide range of functional requirements efficiently whilst, at the same time, exploring the opportunities to provide an uplifting environment for patients, visitors and staff.

Design, therefore, is just as much about process of change management as it is about what the final product looks like. Design is present in all projects - first you imagine what you are looking to achieve and test that this is possible. You then move on to sketching a limited number of possible worlds that, to varying degrees, will house and support your needs. By analysing these and making choices you narrow the options down to the world that you will build. You get the best result by using skill and a spark of creativity to make every element work hard to deliver more than one part of your vision. Therefore good design need not cost more and the difference between achieving good or poor quality outcomes is more often the result of having the right knowledge or advice, understanding, care and commitment.
Good Design is the intelligent application of a scarce resource

Good design can therefore be seen as largely objective. A design proposal can be evaluated through the use of appropriate tools such a Design Quality Indicators (DQIs) to assess whether the proposed building will function efficiently and effectively; whether there is clear evidence of thoughtful, imaginative and even inspirational proposals that will not only work, but will help the people within them to work and feel better; whether the proposed building will integrate with its surroundings in an appropriate manner and create a sense of place and; whether the materials, construction methods and the proposed layout will enhance long-term value for money. Indeed, Scotland's Infrastructure Investment Plan 2008 establishes that good design is key to achieving best value from all public sector investment.

> ***"In developing Scotland's infrastructure, the Scottish Government recognises that good building design should be responsive to its social, environmental and physical context. It should add value and reduce whole life costs. Good building design should be flexible, durable, easy to maintain, sustainable, attractive and***

healthy for users and the public; and it should provide functional efficient adaptable spaces ... Equally important to the design of individual buildings is the design of sustainable places. Well-designed buildings and places can revitalise neighbourhoods and cities; reduce crime, illness and truancy; and help public services perform better".

Design evaluation, in particular Post Project Evaluation and Post Occupancy Evaluation, can contribute to the emerging field of "evidence-based design" which is proving a valuable tool in the design process towards both reducing costs and improving outcomes. Research has shown that evidence-based design methods, introduced early in the process of facility programming and design can improve the experience of patients who will be treated within the healthcare facility and assist in health recovery which results in improving medical outcomes, shorter bed stays, greater throughput and a reduction in patient and staff stress.

The Way Forward

The Scottish Government has set out an ambitious agenda to modernise NHSScotland and its infrastructure. This agenda challenges NHSScotland Bodies to modernise the way in which healthcare is delivered to patients and challenges them to ensure that the infrastructure developed, deployed and maintained is capable of supporting high quality, modern patient care.

The NHS in Scotland has a vision for:

'an estate designed with "a level of care and thought that conveys respect"; buildings that grow from the local history and landscape, that are developed in partnership with the local community. A work of joint learning and jopint responsibility that is particular to that community and that place; "not off-the-shelf show boxes".' [A]

The **Better Health, Better Care Action Plan**, published in 2007, affirms the Scottish Government's commitment to improving the physical and mental wellbeing of the people of Scotland through supporting the provision of well designed, sustainable places. The Action Plan also articulates the Scottish Government's vision of a mutual National Health Service, a shift to a new ethos for health in Scotland that sees the Scottish people and the staff of the NHS as partners, or co-owners, in the NHS.

These policy changes place health and wellbeing and the over-arching issue of sustainability at the centre of the lives of the people of Scotland as the NHS strives to become more accountable and patient-focused. If the commitment to create a healthier, wealthier, fairer, safer and stronger Scotland is to be realised, NHS Boards must ensure that in the context of designing new facilities, they deliver not only high quality solutions but also realise benefits for community development and the wider environment.

(Ref [A]: From an interview with Dr Harry Burns, Chief Medical Officer - *A Vision of Health: NHSScotland's agenda for realising value in the developing healthcare estate*, Architecture and Design Scotland 2009)

Frameworks Scotland

Evidence exists that the traditional approach to construction procurement fails to satisfy clients and does not generate the efficiency improvements delivered in most other industries. With regard to NHSScotland, this means available capital and revenue resources must be used more effectively, to deliver better outcomes and make the best use of 'client-side' skills and capacity.

Health Facilities Scotland has, on behalf of the Scottish Government and NHSScotland, led the development of a collaborative construction procurement initiative. **Frameworks Scotland – Excellence in Healthcare Construction** is a strategic and flexible partnering approach to the procurement of publicly funded construction work and complements other procurement initiatives for the delivery of health facilities in Scotland.

This partnering approach reduces the adversarial attitudes which can make it more difficult to deliver successful project outcomes. Partnering arrangements reduce waste in both the process and product streams, promote quality and also facilitate the sharing of best practice and lessons learned from one project to another.

It should be recognised by anyone involved in planning, designing and delivering NHSScotland's healthcare estate that there is currently an unprecedented opportunity and a need both to ensure and to demand well-designed, sustainable healthcare buildings. Framework Scotland therefore is and, should be, one of the primary vehicles for delivering sustainability in the construction, management and maintenance of the healthcare estate. Delivering design quality and sustainability through the Framework will require a consistent approach with the Scottish Capital Investment Manual guidance, alongside the application of and, proper attention to, AEDET and BREEAM Healthcare requirements at the appropriate stages of a project.

Further information on the Frameworks Scotland initiative can be found on the Health Facilities Scotland website.

The 'hub' Programme

The **'hub' Initiative** is a major programme of the Scottish Futures Trust.

'hub' is a procurement vehicle supporting a long term programme of investment in community infrastructure for local authorities, NHS Boards and other public sector bodies across Scotland. It will provide a mechanism for delivering assets more effectively through a single partner, with continuous improvement leading to better value for money. The opportunity for a private sector delivery partner is to be part of a systemic approach to infrastructure planning and delivery in a territory over an extended time period.

'hub' will deliver projects from a core identified scope and, in future, from wider service development business cases, in particular those projects that promote joint working amongst community planning partners. Projects will focus on new build but could also include the refurbishment and asset management services of existing infrastructure.

The overarching objective of 'hub' is to improve the efficiency of community infrastructure delivery – with a particular emphasis on supporting the provision of more joint services across local authorities, health boards and other community partners. In Scotland there are good examples of joint premises development, but these tend to be one-offs and do not offer a model for the long term strategic planning of joint premises development and joint services delivery. 'hub' should provide a systematic approach to service delivery, from a model predicated on continuous improvement in both cost and quality. This can be achieved by the public sector by working in close partnership with a private sector partner, where both the public and private sector stakeholders have a financial interest in a successful outcome.

The first two Pathfinder Territories are the South East and North. More details can be found at http://www.hubscotland.org.uk/

It is critical that design issues are addressed regardless of the procurement method used to deliver healthcare buildings and, that the outcomes specified for these buildings in terms of the care environment are reflected in their design. However, the implementation of design quality and the procurement route used have a particular relationship and therefore the procurement method used can have a significant bearing on the development of design quality during the process. Although it can be argued that good design is independent of cost, its relationship with design management and procurement in practice needs careful examination. The National Audit Office report "Improving Public Services Through Better Construction" (March 2005) supports this view and advocates that all key stakeholders should be involved and all proposals subjected to independent challenge before key design decisions are made and that design and decision-making be based on "whole-life value".

The concept of 'evidence-based design' has already been mentioned in the context of Post Project Evaluations. There has been a historical assumption that each healthcare building has to be unique in order to fulfil the vision and aspirations of the brief which can, unfortunately, result in the repetition of mistakes, albeit perhaps unintentionally. The starting point for any new healthcare building should, logically, be the successes of one or a number of existing buildings based on a careful analysis of what constitutes the 'good' and what constitutes the 'bad'.

Also of importance is the emerging field of 'supportive healthcare design'[B]. Traditionally, there has been an assumption that the main requirement placed upon a healthcare facility should be the mitigation of infection or the risk of exposure to disease. Additionally, through decades of advances in medical science and technology, many healthcare designers and technicians have been conditioned to create buildings that are successful delivery platforms for new technology. By concentrating on the need for functional efficiency and the pathogenic concept of disease and health, healthcare facilities have been procured which contain environments which can be considered stark, institutional, stressful to their occupants and thus detrimental to the quality of care they are intended to provide. In spite of evidence of the major stress caused by illness and the subsequent traumatic experience of hospitalisation, there has, historically, been comparatively little emphasis on the creation of surroundings which can calm patients, reinforce their ability to cope in such environments and generally address their social and psychological needs.

The process of 'supportive design' begins by eliminating the environmental characteristics which are known to contribute to stress or can have negative impacts on outcomes and, importantly, continues by emphasising the inclusion of characteristics in the healthcare environment which research has indicated have the ability to calm patients, reduce stress and strengthen their ability to cope and promote healthy, healing processes.

(Ref [B]: Ulrich R S, 2000 - 'Effects of Healthcare Environmental Design on Medical Outcomes'
Ulrich R S, 2000 - 'Evidence based environmental design for improving medical outcomes. Proceedings of the conference: *Healing By Design: Building for Healthcare in the 21st Century*', McGill University Health Centre, Montreal)

Due to the length of time that healthcare buildings may be in use, there is potential to constrain changes in delivery practices. It is therefore vitally important that design processes are an integral part of a robust procurement mechanism in order to ensure that buildings are not only functional when constructed but are flexible and adaptable over their entire lifetime.

SGHD will continue to play its part in supporting and implementing wider Scottish Government procurement strategies and policies by setting these within a healthcare-specific context.

Policy Aims

- The purpose of this policy is to articulate the Scottish Government Health Directorates ambition for NHSScotland's asset base and to embed the need for well-designed, sustainable healthcare environments as an integral part of high quality service delivery. It also provides guiding principles which a NHSScotland Body's strategic Design Action Plan and the supporting project-specific Design Statement should address (Annex B) and two further annexes providing reference to relevant Scottish Government Health Directorates asset-related policies and supporting guidance (Annex C) and, useful references and web links (Annex D).

- The Scottish Government is committed through its stated Purpose to encouraging sustainability by the development of infrastructure and place: "providing sustainable, integrated and cost-effective public transport alternatives to the car as well as a planning and development regime which is joined up and geared towards achieving sustainable places and sustainable economic growth". The Government recognises that the Scottish planning and building standards mechanisms have a role in the delivery of a high quality, sustainable physical infrastructure. However, the Government also recognises that everyone connected with the delivery of this infrastructure has a role to play in driving up standards for the planning, design and maintenance of the built and natural environment. The Scottish Government Health Directorates believe that improving the quality of our caring environments is crucial to delivering this commitment and to achieving the Government's National Outcome of ensuring that 'we live in well-designed sustainable places where we are able to access the amenities and services we need'. Improved caring environments also act in support of the 'Healthier' Strategic Objective to help people to sustain and improve their health, especially in disadvantaged communities, ensuring better, local and faster access to health care.

- **Therefore this policy statement requires that all NHSScotland Bodies, as an integral part of the commitment to deliver the highest quality of environment for patient care, ensure that design quality is fully integrated into the healthcare building procurement process and is apportioned appropriate emphasis throughout all stages of this process.**

Scope

This policy must be considered alongside other Scottish Government Health Directorates policies and supporting guidance bearing upon NHSScotland assets including those for capital procurement, asset management, sustainable development, environmental management, fire safety, and, property transactions. Such central policy statements and supporting guidance are intended to inform the formulation and updating of an NHSScotland Body's operational policies and of supporting guidance. Such operational policies and asset strategies are important corporate expressions of a NHSScotland Body's intensions and as such should be a manifestation of integrated service planning and the appropriate involvement of all relevant interests.

This policy must also be considered alongside other relevant Health Directorates, Scottish Government and UK Government policies and commitments.

Policy Statements

Statement 1 All NHSScotland Bodies[1], as clients, must commit to the integration of design quality in the procurement of healthcare building throughout all stages of the process, regardless of procurement route used.

Statement 2 All NHSScotland Bodies must have a strategy for design quality – a Design Action Plan - consistent with and supportive of the Health Directorates and wider Scottish Government asset-related policy and supporting guidance (listed at Annex C) and, with the policy guidance contained within Annex B of this document.

Statement 3 The SGHD must provide guidance on compliance with those aspects of statutory and mandatory requirements which are particular to the procurement, design and delivery of healthcare buildings and guidance on best practice. This will be effected through the support to be provided by Health Facilities Scotland and Architecture and Design Scotland under the tripartite working partnership with SGHD.

Mandatory Requirements

1. Each NHSScotland Board must have a clear, articulated vision for its estate and strategy for using good design to deliver that vision – a Design Action Plan – consistent with Health Directorates and wider Scottish Government policy. The Design Action Plan must be appended to a Board's Property and Asset Management Strategy (PAMS) and reviewed annually as part of the PAMS review process.

2. Each NHSScotland Board must appoint a member of the NHS Board to act as Design Champion at a strategic level to assist in articulating and promoting the Board's design vision and, where not impractical, also a Senior Officer to act as supporting Design Champion at a technical level with knowledge and experience in capital investment procedures and expertise in technical matters.

3. All NHSScotland Bodies engaged in the procurement of both new build and refurbishment of healthcare buildings must do so in compliance with EU, UK and Scottish Government procurement policy and guidance.

4. All NHSScotland Bodies engaged in the procurement of both new-build and refurbishment of healthcare buildings must, prior to the submission to SGHD of the Initial Agreement, develop a Design Statement for each project as a means of establishing the design standards for which the project and how these will be assessed by the Board within the Business Case approvals process. The Design Statement must be consistent with the strategic Design Action Plan.

5. All NHSScotland Bodies, as clients, must ensure the development of a clear project brief which should not only describe the physical requirements of the building but should also articulate the Board's vision and aspiration consistent with the strategic Design Action Plan. The 'Design Statement' may be used or developed for to this purpose, and should be included in briefing and in the HLIP issued to prospective PSCPs

6. All NHSScotland Bodies engaged in the procurement of both new-build and refurbishment of healthcare buildings must carry out independent environmental accreditation for projects. The Scottish Capital Invesment Manual requires that all new builds above £2m obtain a BREEAM Healthcare (or equivalent) 'Excellent' rating and all

refurbishments above £2m obtain a 'Very Good' rating. If the capital costs are less than £2m, projects should undertake a BREEAM pre-assessment to establish whether BREEAM Healthcare is a viable option.

7. All NHSScotland Bodies engaged in the procurement of both new-build and refurbishment of healthcare buildings must use and properly utilise the English Department of Health's Activity DataBase (ADB) as an appropriate tool for briefing, design and commissioning.
[If deemed inappropriate for a particular project and an alternative tool or approach is used, the responsibility is placed upon the NHSScotland Body to demonstrate that the alternative is of equal quality and value in its application.]

8. All NHSScotland Bodies must use Design Quality Indicator (DQI) tools as appropriate to manage their design requirements through the life of a project. The English Department of Health's Achieving Excellence in Design Evaluation Toolkit (AEDET Evolution) and associated supplementary tools such as ASPECT are recognised as the exemplars towards achieving the appropriate level of project design management.

Monitoring

9. SGHD will monitor the integration of design quality into healthcare building procurement through the Business Case approvals process which will be facilitated through a coordinated assessment of the potential quality of proposed projects to support those responsible for decision making within the Business Case process.

This assessment will involve the contribution of particular expertise on the aspects of design relating to government policy on design and place-making from Architecture and Design Scotland and, of particular expertise on the aspects of design relating to functionality, particularly technical and sustainability standards, from Health Facilities Scotland.

10. All NHSScotland Bodies engaged in the procurement of both new-build and refurbishment of healthcare buildings must conduct thorough and, independent, Post Project Evaluations (PPEs) and Post-Occupancy Evaluations (POEs) and make available to SGHD any resulting evaluation data which will be used in the formulation of generic reports to inform future policy and disseminate nationally the lessons learned.

The planning of Post Project Evaluations and Post Occupancy Evaluations is a mandatory requirement of the Scottish Capital Investment Manual for all projects in excess of £1.5 million and should be considered best practice for all projects.

For projects between £1.5m and £5m, the NHSScotland body's internal governance arrangements should ensure the production and reporting of PPEs and POEs. An annual summary report in respect of such projects should be submitted to the Scottish Government Capital Planning and Asset Management Division.

For projects in excess of £5m, PPE and POE Reports must be submitted to the Scottish Government Capital Planning and Asset Management Division. Timescales for the production and delivery of such reports will be monitored by SGHD in common with other key milestones in the project lifecycle.

Full Business Cases for capital projects will not be approved unless Post Project Evaluation and Post Occupancy Evaluation has been properly planned in advance and suitably incorporated into the Full Business Case.

Support

11. Support for the implementation of the design agenda will be provided by means of a coordinated, tripartite working arrangement between SGHD, Health Facilities Scotland and Architecture and Design Scotland to facilitate the procurement of well-designed, sustainable, healing environments which support the policies and objectives of NHS Boards and the Scottish Government Health Directorates.

[1] NHSScotland Bodies in the context of this document means all Health Boards, Special Health Boards and the Common Services Agency performing functions on behalf of Scottish Ministers

Policy Guidance

A NHSScotland Body's **Design Action Plan** and supporting project-specific **Design Statement** should be consistent with and supportive of the guidance contained within this Annex and the policy and guidance documents listed at Annex C.

[The following guidance aligns in part with the Scottish Government "*Construction Procurement Manual: Section 6 – Design quality in building procurement*" but with appropriate additions and amendments in order to apply to the healthcare context.]

Contents:

Design Quality

Establishing and evaluating design quality

General

Boards are required to establish design quality criteria (non-negotiable project aims and benchmarks) for all development projects in the form of a project 'design statement'. As we use buildings, for the most part, to house and support human activity, these criteria are to be built around the needs of the people who the facility will directly impact upon and further expanded to include the elements needed to deliver on the broader responsibilities of using public money – that of addressing local and national needs. The Design Statement then includes the board's proposals for self assessment of the project as it progresses, describing the key stages at which the decisions will be checked against the established design quality criteria, how this will be done and what skills and information will be needed.

Assessing design quality is not a wholey subjective activity. Many other design issues can be assessed objectively - whether a building will function efficiently and effectively; whether there is clear evidence of thoughtful, imaginative and even inspirational proposals that will not only work, but support people to feel and work better; whether it responds positively to its surroundings; whether it provides well-defined and meaningful public spaces for patients and the community; and whether the materials, construction methods and the proposed layout will enhance long-term value for money. The Scottish Government Construction Procurement Manual: Section 6 – Design quality in building procurement lists a number of key issues to be considered in evaluating a design.

General guidance on achieving value for money (VFM) in works procurement, based on seeking to achieve an optimum combination of whole life cost and quality, is set out in Section 2 of the Scottish Executive Construction Procurement Manual. Evaluating and achieving consensus on quality can be facilitated through the use of formal techniques and there are a number of tools which can help. The Construction Industry Council (CIC), for example, has developed its Design Quality Indicator (DQI) to evaluate the design quality of buildings throughout the development and life cycle of a project.

Healthier Places Website

This website has been designed to house information on good healthcare design to assist boards in brief development and to raise awareness of the good practice being developed and delivered across NHSScotland and elsewhere. In addition to providing guidance on the development of 'design statements' and, articles on healthcare design topics, the website holds a project resource - '**Pulse'** - a database of projects and examples of good practice that can be used in two main ways:

- **Search by project type** : to find out about recent and current developments in NHSScotland, and elsewhere, that are of a similar type to the one being considered by the client team. This will provide basic details on the project, the key team members involved and images where available. Key design documents, such as the 'Design Statement' and Post Occupancy Evaluations will be included once they are in the public realm to allow greater learning from what has gone before. It is envisaged client teams will use this search primariliy at the outset of a project to

    - Establish similar works by colleagues in other boards
    - Facilitiate contact to allow shared learning

- Establish possible visit lists for the client team and key stakeholders to raise awareness and understanding.

- **Search by area** : to find photographs of different areas of the healthcare estate (such as entrance areas and consulting rooms) to raise awareness of what has been achieved elsewhere. It is envisaged client teams will use this search primariliy to assist benchmarking within the 'design statement' being developed for projects.

The '**Pulse**' resource will be maintained by A+DS using project information submitted to the NHSScotland Design Assessment Process (once the Business Case is in the public realm), case studies of completed developments, and suplimented by images submitted by users of the site. NHS Boards are encouraged to upload photographs taken during visits to inspirational developments (especially those outwith Scotland) to assist knowledge transfer between project teams.

Achieving Excellence Design Evaluation Toolkit (AEDET Evolution)

However, healthcare building design frequently involves complex concepts which are more difficult to measure and evaluate. In order to address these specifics in a DQI context the Department of Health (England) Estates and Facilities Directorate has developed the **Achieving Excellence Design Evaluation Toolkit (AEDET Evolution)**, the latest version of which is AEDET Evolution and is a tool specifically directed towards achieving excellence in design rather than ensuring compliance with legislation, regulation and guidance. High scores in AEDET do not therefore necessarily guarantee compliance with statute.

The AEDET Evolution toolkit assists NHS Bodies in managing their design requirements from initial proposals through to post-project evaluation. It is a benchmarking tool and forms part of the guidance for PPP, joint ventures including ''hub'' and, conventionally funded schemes. AEDET Evolution contains evaluation criteria which ensure that design takes place within a common, industry wide framework. The toolkit enables the user to evaluate a healthcare building design in a non-technical way that covers the three key areas of **impact**, **build quality** and **functionality**. AEDET Evolution tool is complemented by A Staff and Patient Environment Calibration Tool (ASPECT).

Unpublished research into the use of AEDET Evolution and ASPECT suggests these tools are reliable, presenting high correlations between different judges using them to evaluate healthcare design. More recent independent, unpublished research into the experience of collaboration between designers and clinicians using AEDET Evolution indicates that the tool facilitates improved design quality. It achieves this by further facilitating a recursive discovery and a mutual utilisation of the considerable skills and factual knowledge of the designers and clinicians thus serving to improve their skilled performance.

AEDET Evolution uses ten key criteria that have evolved from sources including the Commission for Architecture and the Built Environment (CABE) and the Construction Industry Council (CIC) to establish an industry-wide framework for assessing design. The ten key criteria are:

Uses
Service philosophy, functional requirements and relationships, workflow, logistics, layout, human dignity, flexibility, adaptability and security.

Access
Vehicles, parking, pedestrians, disabled people, wayfinding, fire and security.

Spaces
Space standards, guidance and efficient floor layouts.

Character and innovation
Excellence, vision, stimulation, innovation, quality and value.

Citizen satisfaction
External materials, colour, texture, composition, scale, proportion, harmony and, aesthetic qualities.

Internal environment
Patient environment, light, views, social spaces, internal layout and wayfinding.

Urban and social integration
Sense of place, siting, neighbourliness, town planning, community integration and landscaping.

Performance
Daylight, heating, ventilation, air conditioning, acoustics, passive thermal comfort.

Engineering
Emergency systems, fire safety, engineering standardisation and prefabrication.

Construction
Maintenance, robustness, integration, standardisation, prefabrication, health and safety.

Using AEDET Evolution

AEDET Evolution is a tool for evaluating the quality of design in healthcare buildings. It delivers a profile that indicates the strengths and weaknesses of a design or an existing building. It is not meant to produce a simplistic single overall score. Because of the nature of design, which inevitably involves trade-offs, it may not be possible to produce a building which would have the maximum score for all the sections. Indeed it may quite often be the case that a high score for one statement reflects a design which inevitably may be scored low on another statement. A single overall score would thus be misleading and uninformative.

AEDET Evolution can either be used by individuals or in workshops by groups. In the latter case it is probably desirable that an independent experienced user of AEDET Evolution should facilitate the group to avoid excessively lengthy debate. AEDET Evolution can be a helpful tool in enabling a group to come to a common understanding with the help of a facilitator who can moderate group discussions.

AEDET Evolution can be used at different ‘scales’ in evaluating the design of a healthcare building, e.g. at a building scale, a department scale or a complete site scale. The level of detailed information available may dictate the scale of the evaluation.

AEDET Evolution is designed to be used by those involved in the commissioning, production and use of healthcare buildings. In particular public and private sector commissioning clients, developers, design teams, project managers, estates/facilities managers and design champions may find AEDET Evolution a helpful and useful tool. User clients such as patient representatives and members of the general public should also be able to use AEDET albeit within a workshop environment alongside other more experienced professionals.

When to use AEDET Evolution

AEDET Evolution can be used to evaluate existing buildings in order to compare them or understand their strengths and weaknesses.

AEDET Evolution can be used on the plans for new buildings in order to evaluate and compare designs.

AEDET Evolution can be used on “imaginary” buildings in order to set standards for preparation of a brief.

AEDET can be used at various stages during the design of healthcare buildings – as the level of detail of the information available increases it should be possible to respond to more of the statements in the tool.

A Staff and Patient Environment Calibration Tool (ASPECT)

To complement AEDET Evolution, the Department of Health (England) Estates and Facilities Directorate has developed the ASPECT toolkit. ASPECT stands for A Staff and Patient Environment Calibration Tool and is based on a database of over 600 pieces of research. That research deals with the way the healthcare environment can impact on the levels of satisfaction shown by staff and patients and on the health outcomes of patients and the performance of staff.

This research and the ASPECT toolkit itself are set out under 8 headings. ASPECT can be used as a stand alone tool, or it can be used to support AEDET Evolution to provide a more comprehensive evaluation of the design of healthcare environments.

When used to support AEDET Evolution it enables the user to score the Staff and Patient Environment Heading of AEDET Evolution in a more detailed, accurate way.

The toolkit has 3 layers which allow users to create a design evaluation profile:

- the SCORING layer on which you score;
- the GUIDANCE layer that gives more detailed help;
- the EVIDENCE layer that points to available research evidence.

Inspiring Design Excellence and Achievements

Inspiring Design Excellence and Achievements (IDEAs) is another useful design tool published by Department of Health (England) Estates and Facilities Directorate to assist in the generation of design briefs, proposals and schemes

IDEAs was conceived and developed by the University of Sheffield as a way of utilising the latest research evidence. IDEAs starts the design of healthcare places with people – patients, staff and visitors – and responds to the emotional and functional requirements of healthcare delivery.

IDEAs deals with activities rather than individual spaces or rooms. Examples of activities that occur in healthcare places include:

- arrival
- bathing

- bed / rest
- circulating
- consulting
- shopping
- sanctuary
- socialising
- waiting

IDEAs can be used either as a standalone tool within a workshop context or as a web-enabled integrated tool by individuals.

Role of Health Facilities Scotland

Health Facilities Scotland (HFS) is a division of National Services Scotland and provides operational guidance to NHSScotland Bodies on non-clinical topics such as:

- estates engineering;
- building and architecture;
- procurement;
- fire safety;
- environment;
- energy;
- property management;
- clinical waste management;
- decontamination
- legionella and other estates related pathogenics;
- hazards and safety action notices.

This assists NHSScotland in meeting the Government's policy and strategic aims and the establishment of professional/technical standards and best practices, including the promotion of new initiatives in the field of healthcare practice and management. Clearly HFS can have a pivotal role to play in generally supporting the implementation of this Policy, through the provision of supporting guidance and through their Continuous Professional Development (CPD) programme which provides essential training to NHSScotland personnel on operational issues as impacted by national policies and objectives.

With particular regard to the objectives of this Policy, HFS will lead the agenda through the central operation of Frameworks Scotland and through the administration of the Design Assessment process now mapped into the Business Case process. HFS will provide technical expertise including those aspects of design which relate to functionality and, particularly, technical and sustainability standards. This will underpin the strands of work identified to support the design agenda in NHSScotland through the coordinated tripartite working relationship between HFS, SGHD and A+DS and with NHSScotland stakeholders.

Role of Architecture and Design Scotland (A+DS)

Architecture and Design Scotland has been established by Scottish Ministers as the National Champion for Good Architecture, Design and Planning in the built environment. Its aim is to operate within the Scottish Government's policy framework on architecture and design, as well as in partnership with a range of bodies in the private and public sector to help turn the aspirations of policy into reality.

The aim is to raise the quality of new development, so that high standards of layout and design are the rule, not the exception. Overall, the development of well designed and

attractive cities, towns and villages will support the Scottish Government's National Outcomes for the built environment.

These Outcomes are designed to ensure that Scotland has the infrastructure, the physical services, the economic ability, the healthy environment, the cultural references and the social networks that allow our current and future generations to achieve their potential in a balanced manner.

SGHD and A+DS have developed a range of initiatives to assist NHSScotland in addressing design quality issues in the procurement of healthcare building projects, the summary objectives of which are to:

- raise the level of design quality achieved through infrastructure investment;
- increase the capacity of health boards and central agencies in respect of the above; and
- assist in sharing good practices.

In order to meet the above objectives, Architecture and Design Scotland will deliver 3 main activities on behalf of the Scottish Government Health Directorates.

Activity 1
Engaging with partner organisations and central procurement agencies in order to assist them in their work and in raising design awareness of 'external' parties involved in delivery. This will be done through actions such as:

- assisting in the development of policy and guidance relating to the procurement of, and design quality in, the built estate;
- participation in steering groups such as those developed for Frameworks Scotland and in the development of strategies and processes (such as team selection and KPIs) for central procurement agencies. Also assisting, as requested by such central teams, in providing advice to client teams on matters effecting design quality, particularly pertaining to preparation for the assessment described in 2 below; and
- assisting Health Facilities Scotland (HFS) and others in the development of training and awareness sessions.

Activity 2
Providing, in partnership with HFS, a co-ordinated assessment of the potential quality of proposed projects to support those responsible for decision making within the Business Case process.

This will involve contributing particular expertise on the aspects of design relating to government policy on design and place making to a process administered and led by Health Facilities Scotland who will, in addition to the administrative elements, provide particular expertise on the aspects of design relating to functionality, particularly technical and sustainability standards developed by HFS and the Department of Health in England.

Activity 3
Assisting in building a body of knowledge and evidence of good practice in both process and product across NHSScotland, through:

- the development and management of the web-based project resource, '**Pulse**';

- the development of case studies of projects on the ground;
- providing dedicated support to 'demonstration projects' where ambitious parties are taking on particular aspects of work, particularly around cross-sectoral working; and
- identifying and commissioning targeted pieces of work by relevant specialists to inform, test, and develop concepts and tools to support Health Boards and their stakeholders in their delivery of good design.

Role of the Scottish Futures Trust

The Scottish Futures Trust is an independent company, established by the Scottish Government with a responsibility to deliver value for money across all public sector investment. SFT operates at arms length from the Government but works closely with the public sector to seek and deliver improved value for tax payers.

Currently the Scottish Government and other public sector bodies in Scotland invest some £5billion annually on infrastructure. By any measure this is a substantial amount of money and spend on investment is recognised to be a strong contributor to economic growth. In today's tight financial environment, improving the value for money of this spend, and finding innovative ways to finance infrastructure investment to enhance economic growth are imperative and are SFT's primary functions.

Recommendations from Audit Scotland, the National Audit Office and others have included the requirement for many of the services that SFT is now providing. The company brings focused commercial and financial skills in infrastructure financing, procurement and delivery into the public sector. SFT retains and grows this knowledge within infrastructure-investing organisations across the public sector.

SFT is leading the £1.25 Schools Investment Programme and has developed a National Housing Trust to deliver an initial £130million of housing. SFT is also involved in a wide range of major transport and accommodation infrastructure projects and by the end of 2010/11 SFT's portfolio of projects are expected to be valued at more than £7billion.

In relation to this policy SFT is responsible for managing the 'hub' programme. Their remit includes:

- Enabling the establishment and development of hub groups
- Help motivate change
- Help promote the strategy and disseminate best practice
- Steer the implementation of the procurements
- Develop processes, procedures, supporting documentation and guidance
- Support the drive for continuous improvement
- Manage the administration of the enabling fund
- Develop and implement methodology for benefits evaluation

SFT may also get involved in an advisory or validation role on other projects, and therefore has an interest across all healthcare work.

NHSScotland Design Champions

The Scottish Government Health Directorates requires that NHS Board Chairs are responsible for nominating a member of the NHS Board and a Senior Officer to take on the roles of Design Champions for the Board. The Senior Officer should have knowledge and experience in capital investment procedures and expertise in technical matters. Both must be in a position to influence the overarching policies, procedures and ethos of the organisation, albeit in their own manner.

A Design Champion should be:

- well respected and an excellent communicator who is able to promote the need for good design to a wide variety of audiences, both within the Health Board and externally. Both appointees should be able to persuade colleagues and the wider community of the benefits of well designed healthcare buildings;
- a consensus builder, able to bring together the various stakeholders both within the local authority and the wider community; and
- able to see the 'bigger picture' and help develop a 'vision'.

The Design Champions, ideally, are in a position to influence the work undertaken by the Health Board but it is important that the roles are not created for status but, for action.

- The role of the Design Champion is not project specific but is to advocate design quality and to ensure that mechanisms are in place within the NHS Board to deliver the design agenda. NHS Design Champions will be supported, where possible, by Architecture and Design Scotland through ad hoc requests for assistance.

Design Champions will be expected to work with all the necessary disciplines. The role of the Design Champion is expected to include a responsibility to ensure that:

- the building promotes civic pride;
- patients and staff are consulted and their views addressed;
- the building fits into the local surroundings and settings;
- the building is fit for purpose;
- the building takes on board modern technology;
- the design considers sustainability issues;
- quality is questioned throughout the process; and
- there is support for resisting change which reduces quality and VFM.

The Design Champion should ensure that:

- aspirations for design quality underpin all projects undertaken across the NHS Board;
- a Board Design Action Plan is produced and delivered;

- a Design Statement is produced for all development projects establishing the design quality criteria for that project, the key points which these criteria must be given value and profile and, the process by which the board shall assess the developing project against those criteria. **The Design Champions must ensure that appropriate skills are utilised in the self assessment. Depending on their own background and role, this may be either by their own personal actions and involvement or through the appointment of others with appropriate skills**;

- an assessment is made of the current environment for patients, staff and visitors;

- the Achieving Design Excellence Evaluation Toolkit (AEDET) is used throughout a project where appropriate;

- the evaluation of tenders is based on VFM and not lowest cost;

- budgets and timetables are realistic;

- the Board has the correct skill mix to deliver the design agenda; and

- the scheme includes the full involvement of the local community and the support of clinical and other staff.

The Design Champion will raise the profile of design excellence by:

- encouraging the selection of designers with a proven track record of good design or design awards;

- promoting awareness of national and international best practice in healthcare design;

- encouraging schemes, either refurbishments or new build, to be put forward for local and national competitions and awards;

- maintaining a forum for regular review and feedback to the Board; and

- recognising the support, guidance and initiatives available.

It is important that NHS Boards acknowledge the fact that the role of Design Champion is one that requires a considerable amount of time. Design Champions are required to understand what constitutes good design across a range of different and, sometimes very technical, disciplines and the amount of time required to do so can easily be underestimated.

Maintaining design quality on site

There is a risk that, once a project moves on to site, the client may underestimate the effort which will continue to be required to maintain design quality. Any shortcuts taken at this stage can put the overall design quality of the project at risk. The client's design advisers must be retained throughout the construction process in order to monitor the quality of design and finishes.

These advisers should also ensure that design aims are not sacrificed in the management of change during the running of the project. If design standards and quality thresholds are clearly defined, then the review process throughout the delivery stage should provide sufficient safeguards against quality dilution. A structured process of quality checks during construction is important to ensure that what has been agreed is actually being provided. All partners should be involved in these checks as the risks of unsupervised changes on site

can affect a wide range of matters, such as the provision of resource areas necessary for facilities management and the quality of finishes, which in turn may affect both cleaning and maintenance.

Public Space

It is important that public space is not considered as an afterthought. New public buildings need to be responsive to their contexts, both in terms of their scale and form, and in the materials they use. It is not enough to simply respond to the appearance of surrounding buildings; it is important to also think in terms of the integrity of surrounding public spaces. In the creation of new public buildings, it is important that the design team is perceptive of the buildings' relationships to the maintenance or improvement of existing public spaces or the potential for new public spaces.

The creation of public buildings can also give something positive to the public realm rather than simply create residual areas around them, and clients may wish to consider whether the location of a building is sufficiently sensitive to merit the inclusion of an urban design specialist on the team. An approach is required which gives due consideration to the way in which the spaces created by buildings will be used, and to the needs of users in terms of accessibility, safety, lighting, shading, shelter, orientation, views, surfaces, seating, planting, and maintenance.

Transport and car-parking

NHSScotland Bodies are required by Scottish Government policy to co-operate with local authorities, regional transport partnerships and other stakeholders in the planning and implementation of local and regional transport strategies towards ensuring that through integrated transport policies NHSScotland facilities, in particular new developments, are accessible to all by public transport, walking and cycling. NHSScotland Bodies operational policies should take into account the strategy for internal NHSScotland systems and car parking. The organisation's Travel Plan is the integral document to addressing these goals.

Detailed guidance can be obtained from Health Facilities Scotland.

It is important to realise the need to adopt a robust design strategy for on-site car parking and people movement which is consistent with the NHS Body's Travel Plan. The design strategy should address:

- space utilisation;
- traffic and pedestrian flow;
- access for short-stay visitors, mobility-impaired persons and late night/shift workers;
- wayfinding and markings;
- landscaping;
- security, technology and lighting.

The availability of parking for both cars and cycles can influence transport choices for those using a facility. All new and re-development proposals should be designed for safety and the

convenience of all users. Good design and layout of a development can significantly improve the ease of access by non-car modes, for example:

- entrances to be as close as possible to pedestrian routes and bus stops; and
- links to cycle networks, with secure parking near the main entrance.

Proposals should be specifically tailored to local circumstances, aspirations and priorities, for example speed management strategies, attractive green space and landscaping, in order to bring a wide range of social and community benefits and improve quality of life. Design of public transport facilities should be user friendly and attractive as well as functional to encourage and retain modal shift.

Use of the arts in healthcare

There may be scope for the involvement of artists or craftsmen in a project. When successfully implemented, artworks can help to create more distinctive and attractive buildings and urban spaces and enhance the public's experience of an architectural space. In a healthcare perspective, artwork can have an even more positive effect. NHSScotland can benefit in many ways from the adoption of the arts in healthcare programmes including better patient environments and an improvement in staff morale. It is recognised that art in healthcare can benefit the NHS through the promotion of user and staff involvement in the design of the healthcare environment and can subsequently have an impact on health outcomes. There is growing evidence that patient recovery rates and stress levels are improved by the adoption of appropriately selected art in healthcare programmes. The integration of art can also assist in improving the communication of health information and the redesign of services. The involvement of staff, patients, artists and local communities at the earliest stages of the design process for new buildings and refurbishments can result in innovative, creative solutions.

It is important to also realise that a person’s perception of environmental stimuli is influenced by their feelings or emotional state. Although scientific research has produced evidence that emotionally appropriate art can improve certain patient outcomes, there is also evidence that inappropriate styles and subject matter can have an opposite effect. This is especially pertinent to psychiatric patients, who, by nature of their illness can be vulnerable to disturbing interpretations of visual arts, thus exacerbating their condition.

The use of art in a healthcare setting need not be restricted to the visual arts. Other arts activities which involve music, performing arts, storytelling and patient workshops can have therapeutic benefits and can have great value in certain healthcare environments. Art-related therapy, e.g. dance, music, drama or art creation, is recognised as an integral psychological and creative tool for the improvement of physical and mental well-being.

Some NHS Boards retain the services of “artists in residence”. However, Boards may also wish to seek specialist advice from public art agencies with regard to including artwork within a project.

Boards may wish to consider allocating a specific budget for the inclusion of artwork as an integral element of a project. However, care should be taken to ensure that any resulting expenditure is proportionate to the benefits and is appropriate to the building's status and function, in order to avoiding subsequent criticism of the project for inappropriate use of public funds.

Traditional building procurement allows for a detailed design to be developed prior to building contracts being issued. However, under Public Private Partnerships (PPP) projects contractual commitments are made with the private sector partner before the detailed design is complete and thus once contractual agreements are in place any additions or changes to them will incur significant additional costs. The requirements of the design are defined in advance by identifying the outputs required which in turn set the framework for the design, within which more detailed specifications for the services to be provided can be accommodated. **To ensure that the arts are incorporated into both the building and maintenance contracts they must be part of the output specifications.**

Design quality in building procurement

Key issues

- Good design is not an alternative to value for money (VFM), but is integral to its achievement. A good building project must also contribute to the environment in which it is located, deliver a wider range of social and economic benefits and be adaptable to accommodate the needs of future users. An enhanced built environment which incorporates principles of good design can improve the quality of life of those who use and work in public buildings. Throughout the life of a building, design excellence can improve the standard of public service delivery, make it more efficient and contribute to staff recruitment and retention. Good design can ensure that capital costs are competitive and that savings can be achieved on running costs through reduced maintenance, energy and operating costs without compromising the attractiveness and quality of the building. **Therefore investing in good design can make the most beneficial and effective use of resources, can add value and represents a sound investment in the future. High quality building design is therefore a key mechanism in providing VFM in the provision of healthcare services.**

- As the aim of any procurement exercise should be to achieve Value for Money, it is recommended that the "most economically advantageous" evaluation be employed. Value for Money is defined as the optimum combination of whole life costs and quality (or fitness for purpose) to meet the customer's requirements and can be taken to be largely analogous with "most economically advantageous".

- Using an evaluation based on the "most economically advantageous" offer gives the procuring organisation the opportunity to take factors other than price into account when awarding contracts.

- **Good design is not merely a question of visual style or personal perception but arises from the careful synthesis of many interrelated factors including architectural vision, functionality and efficiency, structural integrity and build quality, accessibility, security, sustainability, lifetime costing, flexibility in use and a sense of space in the community.**

- Clients must be clear about the level of funds available for a project from the outset and ensure that their aspirations for quality are underpinned by realistic and affordable assumptions.

- Clients must carefully assess and define their priorities before appointing design consultants.

- The process must allow for effective consultation with all stakeholders to establish a clear, well-defined brief.

- Sufficient time and resources should be allocated towards establishing the client's design quality aspirations.

- Post Project and Post Occupancy Evaluations of building programmes are mandatory for major projects and any lessons learned must be shared with the Scottish Government and other NHSScotland bodies.

- Quality Based Selection (QBS) is a structured procedure for selecting a design team and professional advisers. Design competitions are a means to primarily select specific design ideas or outline design ideas for a project, rather than the design team personnel.

- All public sector appointments, irrespective of the client's preferred nature of competition or reference to any other guidance on design competitions, must be consistent with EU procurement rules in terms of process and outcome. Generally, public sector clients must ensure that design team appointments follow the procedures described in *Section 3* of the works procurement guidance part of the Scottish Government Construction Procurement Manual. **However, in the NHSScotland context, detailed guidance on the appointment of consultants, conditions of contract and contract guidance in should be sought from Health Facilities Scotland.**

- The role of an informed client is vital in ensuring the successful delivery of the project within the agreed timescale and budget and to the required standards and requirements of all users.

Achieving good design

From the outset, clients must be clear about the level of funds available for a project and ensure that their aspirations for quality are underpinned by realistic and affordable assumptions through establishing the right budget. These quality matters and functional requirements must then be set out in a clear and thorough project brief. In order to monitor and control the procurement, design and construction processes, procedures and responsibilities should be clearly defined (and assigned). Ideally, designers should engage in challenging and constructive dialogue with the client, building users and those involved in supplying and manufacturing materials, goods and services. All concerned should work to a realistic and robust timetable, which gives the design team enough time to develop and achieve a good solution.

An informed, demanding and committed client is vital in ensuring that aspirations for quality are maintained throughout the procurement, design and construction processes.

By nature of their complexity, healthcare buildings can be expensive to manage and maintain due the imposition of build cost constraints during the procurement process in order to adhere to a short-term financial hurdle. The influence of design is fundamental to the successful outcome of a project not only in terms of how the building will deliver its intended functions but also its long-term operational efficiency. An appropriate level of investment in the design stage early in the process incurs a comparatively small capital outlay but ultimately influences the revenue streams associated with the operation of the facility and also influences the successful provision of the services to be delivered. **It is therefore imperative that the process recognises the need to address the whole-life cycle of the building and the integral part that good design can play in mitigating potential future financial and operational penalties imposed by the adoption of short-term vision. Whole-life costing must be the standard for investment decisions. Those involved in the making of such decisions will be ultimately judged on the lifetime VFM of their decisions rather than whether they managed to get a project past the initial financial hurdle.**

Healthcare facilities and the associated equipment used therein must be designed to support all the people who are likely to use them in order to operate effectively. It is therefore vital that all potential users of a proposed facility – staff, public and patients – are involved early in the design process and throughout its progress. Additionally, stakeholders such as regulators, professional bodies, community bodies, etc, should also be engaged throughout the process as this has the potential to provide a valuable source regarding the projected use of the facility, the processes which will be undertaken therein and how the facility's users will work or interact with it. Early user involvement in the design process can help ensure that a planned facility will support the people who are to use it.

The standardisation of systems and processes to be carried out within a proposed facility, layouts, room orientation, human interfaces, wayfinding and even storage can provide many benefits for patients, staff and visitors. Standardisation can help reduce mental workload and thus reduce errors, can make errors and departures from normal working easier to detect and can allow the transfer of skills and staff between departments with reduced training needs. Thus standardisation in conjunction with a wider engagement with users and stakeholders can also enhance safety.

The Scottish Government Health Directorates requires that NHS Boards appoint Design Champions at Board and Senior Officer level to consolidate a commitment to the championing of good design.

Evaluating good design

Design evaluation can be structured around a number of key design issues. To support the continual improvement of the construction and procurement process, Post Project Evaluations (PPEs) and Post Occupancy Evaluations (POEs) of building programmes are mandatory for major projects with a cost in excess of the delegated limits and are an integral requirement of the Scottish Capital Investment Manual. However, it is recognised that all projects would benefit from such evaluation and any lessons learned should be shared with the Scottish Government and other NHSScotland bodies in order to inform best practice and future policies. Independent PPEs should be carried out before the break up of the design team to review the success of the project against its original objectives, its performance in terms of time, cost and quality outcomes and whether it has delivered value for money.

Guidance on Post Project Evaluations and Post Occupancy Evaluations can be found within the Scottish Capital Investment Manual.

Post-Occupancy Evaluations have a significant role. The key advantage of POEs is the opportunity to achieve improvements in the ways future buildings will support operational objectives. Participants often identify areas where design improvements could be made and ways in which buildings and equipment could be used more cost effectively. These may only be minor, but they could produce significant benefits to future designs. The process of evaluation can provide important feedback on whether resources are being targeted at the most important areas. This can also enable poorly functioning or seldom used features to be eliminated from future designs and the repetition of mistakes to be avoided.

The nature of PPE and POE reports must be set out and agreed at the start, and project sponsors must ensure that provision is made for the independent preparation of both when setting budgets and timetables.

PPEs and POEs can be valuable in the formulation of “evidence based design” methodology. As has been stated in the preambles to this policy document, the field of “evidence-based design” is proving a valuable tool in the design process towards both reducing costs and improving outcomes. Research has shown that evidence-based supportive design methods, introduced early in the process of facility programming and design can have significant impact on the design of physical environments which can affect patient medical outcomes and care quality. An important impetus for the growing international awareness of healthcare facility design has been mounting scientific evidence that certain environmental design strategies can promote improved outcomes whereas other approaches can worsen patient health.

The Business Case

The Business Case process must include statements of expectation for design quality. Discussions with professional advisers at the earliest stage will assist in determining and defining design priorities and setting project objectives. Consideration of the design issues must continue throughout the entire process.

Detailed mandated guidance on the preparation of the business case is contained within the Scottish Capital Investment Manual.

Design Assessment

An assessment of design quality is now part of the SGHD Business Case process. All projects submitted to the SGHD Capital Investment Group for approval are now subject to an assessment of design quality and functionality, including technical and sustainability standards. This **Design Assessment** will take place at the **Initial Agreement**, **Outline Business Case** and **Full Business Case** stages of approval.

There are two complimentary areas of consideration in the design of healthcare buildings. These can broadly be described as healthcare specific design aspects – the areas generally covered by guidance issued by Health Facilities Scotland - and general good practice in design considering the human experience of being in and around buildings. These are brought together in this process and in the collaboration between Health Facilities Scotland and Architecture and Design Scotland in the NHSScotland Design Assessment Group which reports to the SGHD Capital Investment Group. This process forms part of the coordinated tripartite working relationship with SGHD and A+DS.

The Scottish Government Health Directorates' purpose in developing and implementing this process is to ensure that the outcomes of development projects meet the Government's objectives and expectations for public investment. The aim of mapping design into the Business Case process is to improve the level of design quality achieved across NHSScotland and, ultimately, the outcomes achieved by doing so.

CEL 19 (2010) which announces this Policy also announces commencement of this requirement and its incorporation into the Scottish Capital Investment Manual. The SCIM also addresses the Scottish Government's sustainability objectives in the context of the Business Case Guide.

The Design Statement

To assist NHS Boards in utilising good design to achieve the best outcomes from their development projects, Boards are required to develop and produce a Design Statement prior to the submission of their Initial Agreement. The Design Statement is the first control document produced for a project and should be consistent with the Board's overall vision contained within the strategic Design Action Plan.

The design statement is a means of setting out a Board's objectives in a series of agreed statements of intent and subsequently then describing a benchmark for how the physical result of the project will help deliver those investment objectives but not by giving a pre-determined design outcome, rather a view of what "success" might look like.

NHS Boards should also use the completed Design Statement as:

- a **briefing tool** to describe the design intention, or design vision, supplemented by more detailed briefing materials such as schedules of accommodation, key adjacencies and room data sheets as and when prepared;

- a **communication tool** to communicate the direction of the project to stakeholders and allow some early view of the benefits to assist both in building momentum/obtaining buy-in and in allaying the concerns that often accompany the commissioning of a new facility;

- an **advertising tool** to build confidence in the market in the direction and, by showing preparedness, viability of the project; and to motivate the market to bring its best and most appropriate skills to the table (in terms of the vision described).

Further guidance on the development and use of Design Statements can be found within the **Scottish Capital Investment Manual** and on the **Healthier Places website**.

Fire safety

Fire safety legislation and standards generally state that all people should be evacuated from a building in the event of fire. In terms of healthcare premises, this is not the case due to certain circumstances. Fire in a hospital or other healthcare building can be especially serious because of the difficulties and dangers associated with the emergency evacuation of patients, many of whom will be highly dependent. Therefore in such buildings the concept of progressive horizontal evacuation is the norm and is cited as so within the Technical Handbooks to the Building (Scotland) Regulations 2004. However, because of other special requirements particular to fire safety in healthcare buildings, guidance and recommendations contained in NHSScotland Fire Safety Management guidance, including NHSScotland Firecode, which is additional to the mandatory requirements set out in the Technical Handbooks to the Building (Scotland) Regulations 2004, must be adhered to. This additional guidance is ratified by the Scottish Government Health Directorates' Fire Safety Policy. The requirements of NHSScotland Firecode must be considered throughout the design process in addition to the requirements of the Building (Scotland) Regulations 2004. NHSScotland Firecode is published by Health Facilities Scotland.

Clients must ensure that there is close collaboration between all those who have an interest in the fire safety provisions of the proposed premises at the earliest stage in the design and, be satisfied that all such premises comply with all statutes bearing upon fire safety.

Designing for equality

NHSScotland, as a provider of services, is subject to equality legislation which requires the provision of services which are accessible to everyone. In a healthcare environment, it is important to recognise the complexity and the number of difficulties with which patients, staff and visitors may have to cope on a day-to-day basis. Sensory impairments, perceptual problems, reduced mobility, chronic pain, communication barriers, are but a few. Informed planning and design plays an important role in enabling people of all abilities access to services and facilities. It is therefore essential that the concept of "access and egress for all" is incorporated early in the design process and throughout its progress and that best practice guidelines are followed. By considering equality issues early in the design process, costs associated with addressing equality issues can be minimised which would inevitably prove more onerous if addressed retrospectively.

Egress for all in the case of an emergency must also be considered during the design process. Everyone rightly expects that if they are in a public building when an emergency occurs they should be subject to evacuation procedures which come into force to ensure their safety. However, in healthcare buildings there may be many persons who, by nature of their presence there or otherwise, may be particularly vulnerable. In particular, in larger healthcare buildings such as hospitals it will not be possible to ascertain the number of people who may have an impairment, let alone the type of impairment, or the number of people who may have cognitive or communication or language difficulties. Addressing the needs of all in the context of emergency egress early and throughout the design process will have significant benefit towards the procurement of a facility which ensures the safety of patients, staff and the general public.

To assist NHSScotland bodies in complying with the current equality and diversity legislative framework, the Scottish Government has produced an Equality and Diversity Impact Assessment Toolkit which was issued under cover of NHS HDL (2005)9.

Designing for dementia

There are over 65,000 people living in Scotland who have dementia and they, in common with other people with cognitive impairment, are users of healthcare facilities on a day to day basis across the country. Most people with dementia (60-80%) live in the community, and many of them have multiple health centre and hospital appointments and admissions in any year. As with designing for equality, designing for people with dementia embraces the concept of 'inclusive' design which tries to ensure that the built environment does not present insurmountable barriers to those who use it. Users will include people with physical, sensory and cognitive impairments, which may be progressive, intermittent or permanent and may also include people who may have temporary disabilities

Considering equality issues and the needs of those with dementia throughout the design process will benefit everyone, including people who use wheelchairs and walking aids, have other types of impairment, older people and families.

The University of Stirling Dementia Services Development Centre published guidance on designing for dementia in 2007. '**Best Practice in Healthcare Design for People with Dementia'** is a resource pack on dementia-friendly design which reflects a growing awareness of the need to create caring environments that meet the needs of people with dementia. Many of the features identified are the result of researched case studies and/or international best practice. The Dementia Services Development Centre at the University of Stirling has a specialist online library and information service and holds a large collection of documents relating to care of people with dementia: **www.dementia.stir.ac.uk** .

A component of the dementia resource pack is a **Dementia Design Checklist** prepared by Health Facilities Scotland and intended for use across all healthcare properties. It covers areas of healthcare premises, including primary care premises and those operated by independent contractors, where people with dementia are likely to attend as patients or visitors. Although the Checklist has been developed primarily for use in existing buildings it can provide a useful reference throughout the project design development process. The Dementia Design Checklist is available from the Health Facilities Scotland website: **www.hfs.scot.nhs.uk** .

Role of the Client

The key role of the client is to develop a clear, well-defined brief. At the beginning of the project, the client will need to establish the nature and scale of what is required. Clients should establish the views and aspirations of all stakeholders, and their aims will become the

reference point throughout the design and construction stages and can be used to test the overall success of the project over the long term. As with any building project, the initial stages are vital and a period when the most value can be added. Providing sufficient time and resources for strategic thinking will produce dividends in the long run. An informed and motivated client is critical to the success of a project.

As part of their responsibilities, the client must:

- fully develop a client strategy which has identified the need for the building whilst setting and securing a budget for the project. Understand that the budget cannot be finally established until the brief is settled;
- set a realistic and achievable timetable allowing sufficient time for consultation, brief development and for design;
- involve their Design Champion throughout the briefing and project delivery and listen to their comments;
- allocate sufficient time and resources to establish the client's design quality aspirations and set out clear benchmarks which the client must reinforce through all stages of the process;
- consider the skills and experience required of individual client team members, assess in-house skills and, where necessary, engage external consultants;
- where appropriate, appoint a Client Design Adviser to aid in the preparation of the brief and the assessment of the schemes that come forward through any competitive design process;
- consult with stakeholders to establish a clear, well-defined brief;
- be informed and demanding about operational requirements and quality objectives to get the best possible outcome from the procurement process;
- articulate the Board's requirements not only through the use of DQIs but in a clearly expressed brief that establishes and communicates their vision for the development;
- show commitment to achieving a well-designed and constructed project by giving design quality a high percentage in the assessment of bids and publishing that ratio. Make sure that bidders understand that poor or mediocre developments are not acceptable;
- establish clear and effective routes for communication between the Client Team and the bidding Design Teams during the bidding process so that the Board's needs and aspirations can be more fully discussed and incorporated into the designs that are brought forward;
- choose a Delivery/Design Team which is committed to achieving the best quality possible within the agreed budget and timetable; allow sufficient fee budgets for the work that the designers must do;
- not allow design time to be squeezed in order to recover time lost in the programme for other reasons – good design takes time; and

- carry out Post project Evaluations (PPEs) and Post Occupancy Evaluations (POEs) and ensure that the reports from these are available to SGHD for formulation of generic reports which can properly feed back into future procurement processes.

Project Brief

A vital factor in achieving high quality design is that clients have a firm and well-developed view of what they want, before appointing design consultants, and that this is clearly stated in project briefs. A well-developed brief, with common consensus on operational and quality priorities, is essential for the provision of better design. A rigorous approach to this stage of work will significantly improve the client's capacity to deliver a quality project.

On the other hand, proceeding with sketchy and under-investigated assumptions can be detrimental to the outcome of the project. Statements that set out the client's aspirations on design in terms of matters such as character and durability should be incorporated into briefs.

Detailed guidance can be obtained from Health Facilities Scotland.

Healthcare Associated Infection (HAI)

Of particular importance in the context of healthcare buildings is the need for the Project Brief to incorporate policy, guidance and best practice in relation to reducing Healthcare Associated Infections (HAI). It is vitally important to have a clear understanding of how the briefing, planning, design, procurement, construction, commissioning and ongoing maintenance of our healthcare property can contribute to the prevention and control of HAI. Guidance to ensure that prevention and control of infection issues are identified, analysed and planned for at the earliest stage of the provision of new or refurbished healthcare facilities Is contained within Scottish Health Facilities Note 30 (SHFN 30): 'Infection Control in the Built Environment: Design and Planning', published by Health Facilities Scotland. Additionally, Health Facilities Scotland has developed a system which aims to assess and manage the risk of infection in the built healthcare environment called HAI-SCRIBE, an acronym for Healthcare Associated Infection System for Controlling Risk in the Built Environment. HAI-SCRIBE has been designed as an effective tool for the identification and assessment of potential hazards in the built environment and the management of these risks. The tool should be applied from the design and planning stages of a project through to the occupation and operation of the facility.

Sustainability

The project brief should also contain statements on the client's desired approach to sustainability. Integral to the design and procurement process, a commitment to sustainable design can bring real benefits in terms of reduced running costs and quality of environment for users. Further general guidance on achieving sustainability in construction procurement is set out in Section 7 of the Scottish Executive Construction Procurement Manual.

Construction of new NHSScotland premises also provides an ideal opportunity to significantly reduce an organisation's environmental footprint. Designing the building and the processes that will be carried out within it with the aim of minimising the whole life costs and environmental impact of the facility can cut costs, improve client satisfaction, improve the healthcare body's public image and help deliver the nation's environmental objectives.

A NHSScotland Body, when setting specifications and letting contracts, should emphasise and promote environmentally preferable features in both the construction and the operation/running of buildings and, in the organisation of the services delivered within them,

to ensure sustainability over the projected property lifespan. The decision making criterion for selection of components and equipment should take into consideration the whole life costs and the environmental impact by setting out all the operational and physical components and risk aspects that contribute to these. Environmentally preferable solutions should be preferred unless there is clear evidence that their adoption would have outweighing disadvantages elsewhere.

To assist NHSScotland Bodies in delivering sustainable solutions and embedding energy efficiency into healthcare building projects, Health Facilities Scotland has developed a **Sustainable Development Strategy for NHSScotland** which provides a framework for sustainability issues in NHSScotland, including new builds and refurbishments. The use of this guidance in the preparation of Business Cases is a requirement of the Scottish Capital Investment Manual. Further useful guidance is also available within the Scottish Ecological Design Association Design Guides on design and detailing for more sustainable construction: **Design and Detailing for Deconstruction; Design and Detailing for Airtightness** and; **Design and Detailing for Toxic Chemical Reduction in Buildings**. http://www.seda.uk.net/guides/

The Project Brief should also cite the use of the exemplar Environmental Management System, GREENCODE, through which NHSScotland Bodies can continually aim to improve the environmental performance of their property and, the exemplar energy efficiency guidance, EnCO_2de, which aims to ensure that everyone involved in procuring, managing and using healthcare buildings and equipment thinks about the implications of energy use.

Activity DataBase (ADB)

Activity DataBase (ADB) is the briefing, design & commissioning tool for both new-build and refurbishment of healthcare buildings. It is a briefing and design package with an integrated textual and graphical database, an interface with AutoCAD and an extensive graphical library - the complete tool for briefing and design of the healthcare environment.

ADB is produced by the Department of Health in England and is mandated for use in Scotland by the Scottish Government Health Directorates as the preferred briefing and design system for NHSScotland (see Mandatory Requirement 7 of this Policy). It has been developed to assist in the construction, briefing development, design and alteration of healthcare facilities.

Spaces designed using ADB data automatically comply with English planning guidance (such as Health Building Notes (HBNs) and Health Technical memoranda (HTMs) as ADB forms an integral part of the English guidance publication process. Whilst Scottish users can create their own project-specific briefs and designs using ADB's extensive library of integrated graphics and text which includes room data sheets, room layouts and departmental room schedules, extreme care should be taken to ensure that such data generated by the package are consistent and compliant with Scottish-specific guidance* such as Scottish Health Planning Notes, Scottish Health Facilities Notes (SHFNs) and Scottish Health Technical Memoranda (SHTMs) as published by Health Facilities Scotland.

* In the near future, all technical guidance will be available from the 'Space for health web resource. The Space for Health website will provide a single portal to the knowledge and expertise of the four UK health organisations. It will draw together the technical guidance published by HFS, the DoH and their equivalents in Northern Ireland and Wales. Further information is available from Health Facilities Scotland.

The Design Team

Design Team selection

There are several methods of selecting the appropriate design team for a project, including Quality Based Designer Selection (QBS) which is a structured procedure for selecting a design team and, design competitions, which primarily select specific design ideas or outline designs for a project, rather than the design team personnel.

Where **Frameworks Scotland** is the chosen project procurement method, the design team will form part of the Principal Supply Chain Partner's (PSCP) delivery team and the members of the design team will have been assessed during the process of selecting the PSCP from the Framework. Although the design team will be managed by the PSCP they will work closely with the NHS Client in a collaborative fashion in delivering the design. (Further detail of the PSCP Appointment Process is available in the **Frameworks Scotland** section of the Health Facilities Scotland website).

The Scottish Government Construction Works Procurement Guidance: Section 3 – Procurement Strategies and the Appointment of Consultants and Contractors provides general information on some of the different procurement strategies available and the consultancy roles and professional advice that may be required at the various projects stages. Further general advice can be found on the Office of Government Commerce website.

In the NHSScotland context, detailed guidance should be sought from Health Facilities Scotland, and, for 'hub' projects, Scottish Futures Trust.

Regardless of the procurement strategy adopted, the appointment of a design team, consultants, professional advisers, etc, should be based upon the principles adhered to in Quality Based Selection methodology, outlined below. The Royal Institute of British Architects (RIBA), together with the Construction Industry Council, has published a booklet of Guidance for Clients to Quality Based Selection.

Quality Based Designer Selection (QBS)

QBS looks for an appropriate balance of design skills, experience, innovation, and an ability to perform on schedule to the required standards and within budget. A client, or client committee, selects a team based upon a weighted scoring of a list of relevant factors, including technical capacity, resources, previous experience of similar projects, deliverability of the design and partnering arrangements, aimed at determining which design team is most able to handle the project successfully and deliver a high quality result.

Throughout a building project, designs will be developed through constant dialogue with the design team, so it's essential that a key selection consideration is inter-personal skills; the client must feel that it has the ability to work with the designers.

It is essential to know that a design team's claimed expertise is actually currently available. The question of whether a design team has completed major quality projects within the past five years may give a more fair comparison between long established and new design teams. It is important to ensure that the principal designer responsible for successful past projects is present for the interview, and such individuals should be named in the contract if that design team is successful.

Design competitions

A competition to select an outline design, rather than the design team members, requires the client to have a well-developed brief for the project. Design competitions may be appropriate where there is either a unique problem that will benefit from a wide range of design approaches being explored (along with likely considerable public interest - which may be the case on a major new public building) or where the competition promoter wishes to encourage the development of new talent.

Procedure for appointing the Design Team

All public sector appointments, irrespective of the client's preferred nature of competition or reference to any other guidance on design competitions, must be consistent with EU procurement rules in terms of process and outcome.

The appointment or competition must therefore:

- strike the correct balance between quality and price to achieve whole-life VFM;
- evaluate the quality and price aspects against clear, unambiguous and pre-determined criteria;
- assess the technical and financial capacity of the design team (including design partnership arrangements) to deliver the project to the required standards of quality as well as the project on time and within budget; and
- maintain a full and transparent record of all aspects of the competitive process from start to conclusion, including the evaluation of the pre-qualification questionnaires as well as the selection and award stages.

Generally, as Public Sector clients, NHS Bodies are required to ensure that design team appointments follow the procedures described in *Section 3* of the works procurement guidance part of the Scottish Government Construction Procurement Manual. **However, in the NHSScotland context, detailed guidance should be sought from Health Facilities Scotland.**

Design Team selection criteria

Selection criteria should include design ability, aspiration, financial status, insurance provisions and technical capacity; the last of these enables consideration to be given to resources, technical suitability and past performance. This stage also aids production of an objective and transparent short list of the most suitable organisations, from all those that expressed interest in providing design services.

Selection criteria at the bidding stage

The award criteria enables a further qualitative assessment to be made of the specific proposals for the project - not just technical merit of the design proposals but also other aspects of successful delivery such as proposed team-working, management arrangements, and project team organisation.

Where design partnerships are proposed - perhaps to combine the innovative skills of a new or small design practice with the experience and resources of a longer-established designer - the award criteria enables the client to assess the ability of both parties to fulfil their responsibilities and to evaluate the compatibility of working cultures and practices. Visits to

the design offices of all candidates, including those forming partnerships, should follow a consistent approach and involve the same personnel.

NHSScotland Bodies, as clients, should consider the benefits to be accrued from requesting an Interim Bid Submission from bidders, particularly in a PPP or joint venture (such as 'hub') initiative context. This should be based upon clearly specified requirements within the Invitation To Negotiate (ITN) documentation and should be undertaken at an approximate mid-point stage through the period from release of OJEU to the return of ITN documentation with clear expectations on outputs from bidders that are measured but, not too cumbersome, perhaps structured by means of the use of the AEDET Evolution design evaluation tool.

Client organisations should consider the merits of visiting completed buildings by the shortlisted teams to investigate both their past work and allow the opportunitiy to meet previous clients and hear their experience of working with the team. Although this does take some time, the investment is small in comparison to the necessary investment of time and resources in the new project, and the potential learning in terms of the bidding teams ability and working relationships is invaluable.

Relation of selection criteria to budget considerations

The qualitative criteria adopted at the selection and award stages should be appropriate for the individual project and weighted to suit the circumstances. It is important that these aspects aren't considered in isolation but should be assessed as part of the VFM evaluation which takes account of fee proposals. Section 3 of the Scottish Government Construction Procurement Manual describes other aspects of appointing consultants, including the various ways of paying for professional services. In circumstances where *ad valorem* (usually percentage) fee structures are appropriate, consideration must always be given to the application of an abatement or capping mechanism in order to contain fee costs at a fair and appropriate level.

Criteria used during selection and award stages must be applied consistently by all of those involved in that stage of the procurement procedure. In other words, once selection and award criteria are established, individual members of a sift or tender evaluation panel must not apply different criteria. Furthermore, once selection criteria are established, they should be made available to candidates. Award criteria must be set out in either the OJEU contract notice or the contract documents; however it is recommended that criteria be advertised in the OJUE notice to demonstrate the client's commitment to valuing quality in the selection and hence assist in attracting similarly ambitious teams.

Scottish Government Health Directorates asset-related policies

Scottish Capital Investment Manual for NHSScotland [NHS CEL 19 (2009)]
Scottish Government Health Directorates
http://www.sehd.scot.nhs.uk/mels/CEL2009_19.pdf

Provision of Single Room Accommodation and Bed Spacing [NHS CEL 48 (2008)]
Scottish Government Health Directorates
http://www.sehd.scot.nhs.uk/mels/CEL2008_48.pdf

Fire Safety Policy [NHS CEL 25 (2008)]
Scottish Government Health Directorates
http://www.sehd.scot.nhs.uk/mels/CEL2008_25.pdf

Environmental Management Policy for NHSScotland [NHS HDL(2006)21]
(Currently under review)
Scottish Government Health Directorates
http://www.sehd.scot.nhs.uk/mels/hdl2006_21.pdf

Sustainable Development Strategy for NHSScotland [NHS CEL 15 (2009]
(Currently under review)
Scottish Goverment Health Directorates
http://www.pcpd.scot.nhs.uk/PDFs/CEL2009_15.pdf

NHSScotland Property Transactions [NHS HDL(2001)15]
(Currently under review)
Scottish Government Health Directorates
http://www.sehd.scot.nhs.uk/mels/HDL2001_15.htm

Property Management Policy and Other Related Matters [NHS HDL(1999)44]
Scottish Government Health Directorates
http://www.sehd.scot.nhs.uk/mels/1999_44.pdf

Supporting guidance

Scottish Capital Investment Manual website
Scottish Government Health Directorates

Capital Planning and Investment website
Scottish Government Health Directorates

Healthier Places website
A project resource to assist clients in the development of design statements, the briefing of projects and in learning from what is being acheived across NHSScotland and elsewhere.
www.healthierplaces.com

IDEAS
A design tool to aid NHS clients and their architects and design consultants to develop their briefs and design ideas.
http://ideas.dh.gov.uk/

Achieving Excellence in Design Evaluation Toolkit (AEDET)
The AEDET Evolution toolkit evaluates a design by posing a series of clear, non-technical statements, encompassing the three key area of Impact, Build Quality and Functionality.
http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_082089

A Staff and Patient Environment Calibration Tool (ASPECT)
ASPECT is a tool for evaluating the quality of staff and patient environments in healthcare buildings and can be used as a stand-alone tool or in conjunction with AEDET to provide a more comprehensive design evaluation of healthcare environments.
http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_082087

Activity Database
The briefing, design & commissioning tool for both new-build and refurbishment of healthcare buildings.
http://adb.dh.gov.uk/

Brief Introduction to the Planning System
http://www.scotland.gov.uk/Topics/Built-Environment/planning/National-Planning-Policy/

NHSScotland Fire Safety Management / NHSScotland Firecode
Health Facilities Scotland

NHSScotland Asset Management System
Health Facilities Scotland

GREENCODE
Health Facilities Scotland

EnCO$_2$de
Health Facilities Scotland

Scottish Health Facilities Note 30: Infection Control in the Built Environment: Design and Planning
Health Facilities Scotland

HAI-SCRIBE: HAI System for the Control of Risk of Infection in the Built Environment
Health Facilities Scotland

NHSScotland Property Transactions Handbook
(Currently under review)
Scottish Government Health Directorates

Useful references and web links

General

Health Facilities Scotland
Provides operational guidance to NHSScotland healthcare bodies on non-clinical topics including: building and architecture, procurement, property management, estates engineering, energy & environment.
http://www.hfs.scot.nhs.uk/

Architecture and Design Scotland
The Scottish national champion for good architecture, design and planning in the built environment. This site incorporates sections relating to specific programmes of activity including; Scottisharchitecture.com a network of digital resources relating to architecture and the built environment and SUST - Sustainable Design in Architecture and the Built Environment – which aims to raise awareness of the importance of a sustainable approach to design in the built environment by providing increased access to guidance, tools and techniques for clients, design teams and community-based groups.
http://www.ads.org.uk/

Space for Health
Space for Health provides a single 'front door' portal to the knowledge and expertise of the four UK health organisations. It draws together the technical guidance published by HFS, the DoH and their equivalents in Northern Ireland and Wales.
Note: As of publication of this Policy, Space for Health is under development – further information should be sought from Health Facilities Scotland.
http://www.spaceforhealth.nhs.uk/

University of Stirling Dementia Services Development Centre
The Dementia Services Development Centre promotes good practice for those working in the field of dementia care including guidance on designing for dementia.
http://www.dementia.stir.ac.uk/

Centre for Architecture and the Built Environment
The UK government's advisor on architecture, urban design and public space.
http://www.cabe.org.uk/

Construction Industry Council
The representative forum for the professional bodies, research organisations and specialist business associations in the construction industry.
http://www.cic.org.uk/

Art in Healthcare
A forward-looking arts-in-health organisation formed from Paintings in Hospitals Scotland and the Friends of Paintings in Hospitals Scotland.
http://www.artinhealthcare.org.uk/

Scottish Government links

Scottish Government Built Environment
The provision of planning guidance and advice, construction procurement guidance and technical advice for Scottish Government Directorates and other bodies.
http://www.scotland.gov.uk/Topics/Built-Environment

Scottish Government Architecture and Place Division
Promoting and encouraging better architecture.
http://www.scotland.gov.uk/Topics/Arts-Culture/arch/intro

Scottish Government Construction Procurement Manual
Provides the Scottish Government Directorates, Executive Agencies and most sponsored bodies (as well as the Scottish Parliament Corporate Body and the Forestry Commission in Scotland) with mandatory policy and procedures for understanding construction works projects.
http://www.scotland.gov.uk/Publications/2005/11/28100404/04066

Scottish Government Sustainable Development
Sustainable development is integral to the Scottish Government's overall purpose - to focus government and public services on creating a more successful country, with opportunities for all of Scotland to flourish, through increasing sustainable economic growth.
http://www.scotland.gov.uk/Topics/Environment/SustainableDevelopment

Scottish Government Capital Planning and Asset Management website
Responsibility for the Health Directorates capital planning policy and strategy for NHSScotland and advice on all asset management matters impacting upon the Scottish Government Health Directorates responsibilities for NHSScotland.
http://www.pcpd.scot.nhs.uk/

Scottish Government Capital Planning and Investment website
Policy and guidance on planning NHS capital developments including those developed through public private partnerships.
http://www.pfcu.scot.nhs.uk/

Department of Health (England) links and publications

The architectural healthcare environment and its effect on patient health outcomes
A research project funded by the Department of Health and led by Professor Bryan Lawson and Dr Michael Phiri of the University of Sheffield School of Architecture, in collaboration with John Wells-Thorpe. The document is available for purchase from The Stationery Office, ISBN 011322480X.
http://www.tsoshop.co.uk/bookstore.asp?Action=Book&ProductId=011322480X

The Healing Environment
English Department of Health report which looks at the components of a healing environment and the effect on patients and staff.
http://www.dh.gov.uk/en/Managingyourorganisation/Leadershipandmanagement/Healthcareenvironment/Browsable/DH_4116478

Other references

OGC Procurement Guide 09: Design Quality
Office of Government Commerce 2004
Part of the OGC Achieving Excellence Procurement Guides
http://www.ogc.gov.uk/assets/images/cp0069.pdf

A guide to quality based selection of consultants: a key to design quality
Published 1998, £15.00 ISBN 1 898671 14 1
Construction Industry Council recommends this Guide as an inclusive guide and method for delivering construction clients with the consultants services they require and to realise the real economies and benefits to be had from good design.
http://www.cic.org.uk/services/publicationsCIC.shtml

SCOTTISH HOSPITALS INQUIRY

Hearing Commencing

26 February 2024

Bundle 10 – Documentation relating to Supplementary Agreement 1 (SA1)