Scottish Hospitals Inquiry

Witness Statement of

Liane Edwards

WITNESS DETAILS

1. My name is Liane Edwards.

2. I am a registered architect, currently employed by Multiplex Construction Europe Limited ("Multiplex") in the role of Deputy Project Director. I have worked with Multiplex since June 2014.

PROFESSIONAL BACKGROUND

3. I was registered with the Architects Registration Board in 2007, having completed my Part 1 and 2 qualifications at the Scott Sutherland School of Architecture at Robert Gordon University in Aberdeen, and then the Mackintosh School of Architecture in Glasgow.

4. I have held a variety of roles in private practice. During my posts at BDP in London (Senior Architect) and IBI Nightingale (Associate Director) I worked on the outline design for the 3Ts Redevelopment at the Royal Sussex County Hospital in Brighton and the Queen Elizabeth University Hospital Glasgow during the construction phase.

5. I worked for IBI Nightingale for 2 years and 10 months.

6. I was then Head of Technology and Construction Pilbrow and Partners in London from 2013 until I joined Multiplex in 2014.

PROFESSIONAL ROLE

7. Although I am a registered architect, I was employed by Multiplex as a Design Manager when I commenced my employment with them in 2014 to work on the RHSC Project. There were several Design Managers working on the Multiplex RHSC team – Ken Hall oversaw Mechanical, Electrical and Plumbing ("MEP") and Robert Netherey oversaw external and landscaping elements.

8. As a Design Manager on the RHSC Project, the role was to manage the design consultants which Multiplex employed. I oversaw the architectural team Multiplex employed. I administered several processes, overseeing the designers who were preparing the architectural design, liaising between ourselves and our clients and users, in this case, IHSL (client) NHS Lothian (user).

9. This included overseeing the architects to ensure that they were developing the design in terms of its departmental layout, room layout, and equipment layouts within the rooms. They were also developing the architectural finishes i.e., walls, floors, ceiling, doors.

THE ENVIRONMENTAL MATRIX

10. The Environmental Matrix is a table of the environmental criteria for the hospital. It is not something I am typically involved in as an architect or as the architectural Design Manager.

11. The Environmental Matrix was a briefing document provided by NHSL. IHSL were engaged to meet the briefing criteria. In my role, I would refer to the Environmental Matrix at points where I was overseeing certain parts of work, such as the production of the Room Data Sheets (RDS) as I explain below, but I was not involved in any editing of the technical data in the document.

12. My involvement in the Environmental Matrix might involve some of the administration of bringing other design documents together for Financial Close, with an awareness that the Environmental Matrix existed. As I said above, I would not have had any involvement in the technical input as it is a mechanical and engineering document.

13. I was involved in overseeing some of the Room Data Sheet (RDS) preparation, but my role was bringing together information to ensure that the content of the Room Data Sheets reflected what had been agreed with NHSL. I would not be involved in the preparation of the RDS themselves or the specific data used to populate them.

14. I did attend some meetings at management level with NHSL, where the Environmental Matrix as a document had been discussed but, generally, these meetings were not dealing with the technical and specific data contained within the document. That was discussed in separate workstreams with the correct technical project members.

15. I would not have any cause to be looking at MEP guidance such as that included in SHTM 03-01 or SHPN 04. I am aware that SHTMs, SHPNs exist and would often refer to them architecturally, but ones which are specific to an M&E workstream would be looked at by others.

PROCUREMENT

16. I was not involved in the procurement phase. The Preferred Bidder (PB) stage was achieved in March 2014, and I joined Multiplex and the Project in June 2014.

VENTILATION DESIGN

17. The architectural team I oversaw would only feed into the ventilation system insofar as the architects are responsible for the architectural layout of the

building. That means organising where the departments go in the building, and then subsequently how the rooms are arranged within those departments. Rooms are sized as per the brief, taking cognisance of architectural guidance documentation where it exists. They would co-ordinate the design with the MEP consultants who would reflect the current architectural design in the ventilation design.

18. The guidance and briefing for this would come from a combination of NHS Lothian Clinical Output Specifications and guidance documents, such as SHTMs, HBNs– they guide Health Boards and their designers as to the typical size and shape of the rooms. The architects design the building spatially. This can be a complicated task, in order to make it all fit in the building space and be functional to the Board's satisfaction.

19. My understanding is that Room Data Sheets are normally used as a briefing tool by the Health Board. This was not, however, the case on the RHSC Project.

20. The M&E designers need to be aware of how the building is developing spatially, so they can make sure that the architecture and the mechanical and electrical design align. Multiplex employ the design consultants to co-ordinate the design. However, the architects are not technically involved in the data within an Environmental Matrix, or what the environmental performance criteria of the hospital is.

DESIGN PROCESS

21. We were co-located with the NHSL on-site, and we met with them frequently to review and discuss aspects of the design. The Project Management Group (PMG) meetings were an opportunity for all the parties to come together to discuss matters arising from the technical meetings, and overall project progress. I attended the PMG's from around August 2014.

22. I also attended User Group Meetings ("UGMs") where the architectural design and layouts of the rooms were reviewed. NHSL would bring their clinicians to these discussions, and the parties would review the drawings together. My understanding is that there were a team of clinicians per department who had a part- time secondment to take part in the RHSC project and advise the NHSL Project team.

23. When we met with clinicians, they would discuss their requirements and were able to comment on the patient safety matters, and their health care requirements. They would also comment on issues such as infection control.

24. The NHSL Project Team (Janice Mackenzie, Fiona Halcrow, David Stillie (MM)), would attend the UGMs, often supplemented by Jeanette Richards (infection control) and Patrick Mackaulay (equipment). They would also bring other relevant department clinicians, because we would usually review a department at a time. I would attend with Multiplex's design consultant architects, HLM. HLM would table the drawings and talk the NHSL team through the design. It was important to ensure that everyone understood the drawings, because not all of the clinicians had experience of looking at architectural drawings.

25. HLM would discuss the design with them, make sure they understood what they were seeing, and the clinicians would discuss and comment. The Project Team for the NHSL had an element of control over what their clinicians could and could not change.

26. Clinicians generally made no comment on environmental aspects in the meetings I attended. If they did, then the NHSL Project Team would take a note to discuss it in the separate MEP workstream. The discussions I was involved in mainly involved clinicians looking at rooms and layouts and understanding if they could operate the department and the rooms with the various clinical processes and procedures they had.

27. For example, in a high-dependency unit, they could say they needed to have access to a particular item of equipment, and how everything else would be placed around the room to make their clinical procedures effective. While SHTM and HBNs provide guidance, clinical teams could request to alter layouts as their clinical practices developed over time. My understanding is that SHTMs and HBNs are not typically revised as regularly as clinical practices may change or develop.

28. If a department such as Critical Care was being discussed, air change rates were not discussed as part of the UGM. I do not recall that any clinician passed comment on specific environmental matters in the meetings I attended.

PROGRAMME

29. When I joined the Project in June 2014, I was made aware that we were working towards a Financial Close date in September 2014. I do not recall being party to any discussions or meetings at the time where it was suggested that that the Board was of the view that the design was not as developed as it should be.

30. The discussions we were having at the time were in line with what I would have expected. For example, we had planned three rounds of user group meetings for each department. Some departments did not need three rounds of review because the clinicians had no further comments to make. There were, however, other departments which needed more than three UGM's because the clinicians still had some comments to make after each round of drawing revision.

31. Three UGMs per department were what had been programmed, but the NHSL Project Team did not seem to want to limit the opportunity for their clinicians to make comment in further rounds of review. This did impact on our ability to sign off the drawings and prepare the supporting design information such as Room Data Sheets for some departments.

32. UGMs are standard practice in my experience. All of the hospital projects I worked on had user group meetings. As far as I understand, this is a typical way to review and consider the design with clinicians in new hospital projects.

33. The UGMs were the forums where the NHSL project team and their clinicians' made comments. The meetings were recorded on the drawings with comments in red pen.

34. Our design team, in this case HLM, would take the drawings away, make any adjustments that had been agreed and then the drawings would be presented back to NHSL team at the next meeting.

35. When they saw the revised drawings, the NHSL Team would either accept them or they may want a further adjustment. We went through this process until we were at the stage of the clinicians having no comments or very minimal comments.

36. As I said above, there would also be NHSL's technical advisors in attendance at the UGM - Mott Macdonald who were technical advisors to the Board, including David Stillie. The process was collaborative. The design was developed based on NHSL's brief and their mandated design and guidance documents, but there were tweaks here and there that the clinicians could make.

37. There was often an infection control representative from the Board present. Her name was Jeanette Richards. Generally, in my recollection, she did not make comment on environmental aspects of infection control in the meetings I was at. She made comments, for example, on the position of a wash-hand basin in a room and where it was best placed to ensure nurses washed their hands, because that was the nature of the information that we were reviewing, positions of equipment in rooms. She may have been present at other meetings, but I was not in attendance and cannot confirm this.

38. If there were any discussions around the technical side of mechanical and electrical elements, ventilation for example, these would not be discussed at the UGM's. If one of these MEP subjects was raised in the UGMs, then the way it would be dealt with is that Janice MacKenzie or Fiona Halcrow, if they thought it was something to be followed up, would note it and ensure it was raised in the relevant MEP workstream for consideration.

39. As part of my role on the Project I also oversaw in the production of the PCP (Project Co Proposal) documents. This was not something I had done on the previous healthcare projects I had worked on. I managed them through the process of being drafted by our design consultants, reviewed by the Board, redrafted in light of the Board's comments, and resubmitted to the Board. I did not comment on the documents technically but instead managed and tracked the process. Multiplex had our technical design consultants employed to prepare the information, and the Board had their technical teams to review the content of the information. The Board and their team were very involved in the preparation of the PCPs.

40. The output from the UGMs were feeding into this process, as well as other teams and workstreams. The production of the PCPs was an iterative and collaborative process. It was set up to be like that. Information flowing back and forth between parties and documents being commented on by the Board, and Multiplex responding to them with the assistance of our design consultants.

41. Multiplex's view at the time was that there was a lot more detail being expected within the PCPs than was reasonable for the time frame that was available, in comparison to previous projects. I cannot really comment directly on this though, as I have not been involved in the preparation of such documents in other healthcare projects.

42. As I said above, I was aware that the date for Financial Close was initially anticipated to be in September 2014, however that did not happen. I can only comment on the aspects of this I was involved in.

43. The development of the PCPs was taking longer than anticipated, although I was not aware of that being was the sole reason why financial close was not achieved. This may have been discussed in higher level meetings that I did not attend. My day-to-day involvement was in relation to preparation of the on the PCPs. They took longer than was expected because they were regularly rejected by the Board.

44. As I recall, they were often rejected for very minimal errors or inconsistencies. It often seemed as if the documents were being rejected for reasons which were not technical.

45. The PCP documents had to keep going through several rounds of review, which, if time was of the essence seemed to be obstructive to the process.

46. As I said above, I tracked the PCP submission process. The process was that MPX's appointed design team would submit the PCP document to me. I would do a high-level review of presentation and content. Looking at the type of information, rather than the technical accuracy of the information. The PCP documents would then be presented to the Board. I do not know who the Board had to review them, but the comments were always returned by Mott MacDonald representatives.

47. Usually, the PCPs were submitted electronically for review, but if there were major comments, then as part of the collaborative approach, we would meet to discuss and review their comments.

ROOM DATA SHEETS

48. Room Data Sheets contain all of the information relating to a particular room. This can include the number of staff and patients, the function, the

clinical equipment, loose furniture, environmental criteria, wall/floor/ceiling finishes, lighting levels, windows, doors, blinds and curtains.

49. In my experience these are typically provided as briefing documents to Contractors and their Design Teams by the ultimate client. These are often developed as the design progresses and provided as an 'as-built' record at the conclusion of the project. NHS Health Boards and their Facilities Management Contractors then use these as an operational management tool during the operational term of the Facility.

50. RDSs were not provided as part of the briefing document on the RHSC project.

51. Revising RDS provided by the client for every room in large hospitals can in itself be challenging in the timeframes that are usually available.

52. In this project IHSL were required to prepare the RDS from scratch using other design and briefing documents which had been provided by the Board and discussed and developed in the various workstreams.

53. It was proposed to provide a reduced number of RDS for Financial Close, reflecting the number of room types rather than every single room in the building.

54. I am not aware who proposed this and who agreed it. However, due to the amount of repetition of room types within a hospital, in my experience this approach is pragmatic and had been used by other Health Boards. This is because the RDS for the specific room types can then be used to create each individual room RDS of that type after Financial Close.

55. In relation to the environmental criteria, my understanding is that Room Data Sheets reflect the Environmental Matrix. The Environmental Matrix was the source of the environmental conditions used to populate the RDS. The Environmental Matrix is a very user-friendly tool because you can see all the data together in one place and interrogate it easily.

56. Room Data Sheets are a multi-page document that contains all the information pertaining to a room. During the design and construction phase, it is common to have the environmental data contained in its own spread sheet so that the data can be reviewed and analysed in isolation from the architectural criteria which is also contained in the RDS.

57. I was involved in Room Data Sheet discussions with HLM where, as I recall, HLM and I attended a meeting with the Board where we discussed which rooms were to be provided for Financial Close.

58. As I remember, once the decision had been made that a reduced list of RDS would be agreeable, the discussion about which room types would be included was amicable.

59. I was then involved in reviewing the individual Room Data Sheets themselves only as far as to make sure they were populated with the information we agreed would be provided. The technical detail was provided by our Design Team.

DISCUSSIONS AROUND VENTILATION

60. I was aware through attendance at meetings from around September 2014, that there were ongoing discussions around ventilation. I had an awareness that there were things to be discussed, but I was not aware of how they had come about.

PROJECT MANAGEMENT GROUP USER MEETING 27 AUGUST 2014

61. On 27 August 2014 I attended a Project Management Group Meeting (**A34225367 – Project Management Group Meeting Minute – 27 August 2014**)[1]. At point 2.8 the minutes record: "*LE advised that, during a review of the Environmental Matrix, a number of discrepancies have been uncovered,*

[1] Bundle 8 – Scoring & Correspondence Regarding Issues – Table of Contents – Item 11, p.54

impacting on RDS production and requested input from NHSL. IHSL to raise RFI."

62. HLM was extracting information from the Environmental Matrix, in order to populate the Room Data Sheets. This is because on this project the Environmental Matrix had been provided as the briefing tool for the environmental conditions.

63. HLM were not responsible for the environmental data, however as part of their own due diligence, if they spotted something unusual, they would highlight it. For example, where a cell was blank and required an input, or multiple rooms of the same room type had different values. It would be highlighted by HLM and queried with Wallace Whittle. HLM would not query what value was correct- they would simply highlight that one was different and question if that was the intention.

64. We were working collaboratively with the Board so in the meeting referred to above, I have stated that our designers have found a few *discrepancies* as they were populating the Room Data Sheets, and that we may come back to the Board to just clarify these points because the data was coming from the Board's briefing document. I made this comment so that NHSL were aware that we may have some Requests for Information (RFI) to submit.

65. Others were dealing with that technical side of this, and I believe, that instead they resubmitted the entire Environmental Matrix after this for review by the Board, rather than individual RFIs.

66. My understanding is that in populating the Room Data Sheets, the Environmental Matrix was the document that was referred to, because the Environmental Matrix had been provided as the brief and it contained all the environmental data. When HLM then prepared the room data sheets, HLM extracted that information from the matrix into the sheets.

67. It was the Design Team who were taking the data from the Environmental Matrix to populate the Room Data Sheets as per what was agreed should be produced at financial close.

68. At point 3.1 of the recorded minutes of that meeting (**A34225367 – Project Management Group Meeting Minute – 27 August 2014)**[2] there is an entry that records: *"Design Steering Group - 01/09/14 – Board will send LE design risks for IHSL to add to the agenda."*

69. I think that minute refers to Graeme Greer of Mott McDonald. I believe that he was collating a series of 'issues', which he has called 'risks', which have arisen from the detailed technical meetings and were intended to be raised in the agenda for the Design Steering Group.

70. It probably should not have said 'risks', it should have said 'issues,". The Design Steering Group meeting was a place to discuss items that might need to be resolved at a higher level than the forum in which they had been raised.

ENVIRONMENTAL MATRIX COMMENTS

71. I have been shown a document relating to Environmental Matrix Comments dated 13 October 2014. (**A39975805 – Environmental Matrix Comments – 13 October 2014 (attachment to Email from Maureen brown to Colin Macrae and others – 28 October 2014)**[3]**.** At item 7 of that document there is a mention of four air changes per hour in bedrooms, but it refers to guidance for six air changes per hour.

72. I was not involved in any discussion about air changes, which is out with my area of technical expertise.

[2] Bundle 8 – Scoring and Correspondence Regarding Issues – Item 11, p54,
[3] Bundle 4 – Environmental Matrix – Table of Contents - A39975805 – Environmental Matrix Comments – 13 October 2014 (attachment to Email from Maureen brown to Colin Macrae and others – 28 October 2014) – Item 15, p.275

CLOSING COMMENTS

73. I believe that the facts stated in this witness statement are true. I understand that this statement may form part of the evidence before the Inquiry and be published on the Inquiry's website.