SCOTTISH HOSPITALS INQUIRY

Hearings Commencing
26 February 2024

Day 3
Wednesday, 28 February 2024
Darren Pike
Ken Hall

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10:04

THE CHAIR: Good morning to those who are with us in the hearing room in Edinburgh and those who are following the inquiry on YouTube. Now, Mr McClelland will be leading evidence today. Mr McClelland, is there any preliminary matters that we need to deal with?

MR McCLELLAND: Yes. Just one item, my Lord. Your Lordship will recall that on Monday, Mr McGregor raised the matter of the paper by NHS NSS on ventilation technical guidance, and core participants were given until close of business yesterday to say if they wish to raise any questions with the people who had prepared that report. Nobody has indicated that they do, and so, in light of that, the intention of counsel to the Inquiry is not to call them as witnesses. They had been scheduled to appear on Friday, 15 March, but the view we have taken is that that will not now be necessary.

THE CHAIR: Thank you. I take it nothing arises out of that. Well, in that case we can proceed to our first witness.

MR McCLELLAND: It is Darren Pike, my Lord.

THE CHAIR: Good morning, Mr Pike.

THE WITNESS: Good morning.

THE CHAIR: As you appreciate, you are about to be asked questions by Mr McClelland, but before that begins, I understand you are prepared to make an affirmation.

Mr Darren Pike

Affirmed

THE CHAIR: Thank you, Mr Pike. Now, can I ask you to bear in mind that it is quite a large room? People want to hear what you have to say, and I want to hear what you have to say. I am hard of hearing, so if I could ask you to bear that in mind, maybe just a little louder that you would normally speak in conversation.

THE WITNESS: Yes.

THE CHAIR: Maybe a little more slowly. This morning, we will be sitting until a lunch break at one o'clock, but we will take a break during the course of the morning, probably about half past eleven, for 10 or 15 minutes for coffee. If at any stage for any reason you want to take a break, just give me an indication and we will take a break.

THE WITNESS: Yeah.

THE CHAIR: Mr McClelland.

Questioned by Mr McClelland

Q Thank you, my Lord. Good morning, Mr Pike.

A Good morning.

Q Could I ask you please

just to confirm your name?

A Darren Michael Pike.

Q You have, I think, prepared a witness statement for the Inquiry. Is that correct?

A That's correct, yes.

Q If we could please have on screen witness bundle, volume 3, page 59. Do you see there on the screen, Mr Pike, your witness statement?

A Yes.

Q Does that statement set out fully and truthfully your evidence on the matters that it addresses?

A Yes.

Q Is there anything in it that you think needs to be changed or corrected?

A No.

Q This is, I think, the first time that you have given oral evidence to this Inquiry.

A It is, yes.

Q If we could begin by way of introduction just with your professional qualifications and experience, your statement says that you graduated in 1997 with a degree in mechanical engineering. Is that correct?

A That's correct, yeah.

Q Then you worked for 13 years with Balfour Beatty as a mechanical project engineer and then as a project manager.

A Yeah, it was Haden Young, a subsidiary of Balfour Beatty.

Q Then after that, you have worked with Multiplex for 14 years, I think.

A That's correct, yeah.

Q Are you still with Multiplex?

A I am, yes.

Q Is your current role as a project director with them?

A It is.

Q To what extent have you had experience in the healthcare field?

A A reasonable amount of experience with my previous employer. I was involved in a few hospitals in Scotland; Wishaw General Hospital, Fife Acute, and then part of-- There was a merger with a couple of Belfour Beatty companies. When that happened, I worked within their healthcare division.

Q Was that as a project manager or project director, or in any other role?

A It was through a couple of roles. One was as a lead engineer. One was as pre-construction managers, and then also as a project and commissioning manager.

Q To what extent did any of

that work involve work either directly or indirectly in relation to the design of healthcare ventilation systems?

A The pre-construction role involved being part of the design management team on their healthcare projects.

Q To what extent were you, from that, familiar with the guidance applicable to the design of ventilation systems in healthcare settings?

A I would say I was reasonably familiar with it. I wouldn't necessarily say I was an expert, but I was certainly familiar with it.

Q At the time you worked on the RHCYP/DCN project, were you familiar with SHTM 03-01?

A I was, yes.

Q Were you aware that it recommended output parameters to be achieved by the ventilation systems?

A I was aware of, yeah, if you like, the full function of 0301, including the output parameters, yeah.

Q If we could have on screen, please, the document at bundle 1, page 1173. Do you recognise that document or that page, Mr Pike?

A Yes, I do.

Q This is the Appendix 1 at the end of SHTM 03-01, February 2014 version, and if you look down the column on the left-hand----

A Thank you.

Q -- side of that table about halfway down, do you see a line for "Critical Care Areas"?

A I do, yes.

Q As most people in this room will now be familiar with, do we see the recommended air change rate of 10 air changes per hour and the recommended pressure gradient of +10 pascals?

A Yes.

Q The term "Critical Care Areas", what did you understand that to refer to?

A I think over time-- trying to put myself back in the mindset at that time, rather than a lot of the information that's come out subsequently, Critical Care Areas was always an area I believed had a bit of debate as to exactly what that covered because I'm not aware of a specific definition of what those areas are per se. So in terms of the areas themselves, I would usually look to use this document in conjunction with potentially other briefing documents, which would help define exactly where that Critical Care statement is being applied.

Q Is it a point that would be discussed with clients?

A Yes, it would be.

Q When you say there was debate around the meaning of the term, can you expand on that a bit, please?

A Yeah, the Critical Care Areas, as a general statement, within presumably a Critical Care ward-- But then you potentially get HDU wards. You get a number of other wards and function within a hospital that may fall under that definition. Then again with the term “areas,” there are other rooms or there are rooms within a Critical Care area which have their own definition, or you have dirty utilities, which are treated in a specific way, kind of, no matter where they are in a hospital. So, what defines the area and what rooms are to be categorised in that area is always something that is a little bit open to interpretation.

Q Would you understand it to be a recommendation that concerned patient bedding areas?

A Yes, I believe it would cover that, or could cover that as well.

Q I mean, would you understand it to apply to all such bed areas or only to a restricted category of such areas?

A I think it would apply to all the bed areas, unless there’s a specified output which is different.

Q Okay. Now, you explain in your statement that you joined the RHCYP/DCN project in April 2015, so just shortly after financial close----

A Yeah.

Q -- and that from January 2016 you were Multiplex’s project director.

A Yes.

Q We know from other evidence that one of the tasks after financial close was to complete the ventilation design.

A Yeah.

Q That was primarily being done by Wallace Whittle.

A That’s correct, yeah.

Q What were your responsibilities as project director in relation to the ventilation design?

A In a wider sense as project director, my responsibilities were to ensure that we had appropriate people with our own organization, but also within the supply chain, capable of delivering the project with the relevant experience, and that those people had the tools and support they needed to do the role they were being asked to do, and then within that, amongst many facets, would sit the M&E design.

Q Okay, so obviously Wallace Whittle in there as the firm

engaged to produce the M&E design. What arrangements, if any, did Multiplex have in place for checking that the design met the Board's requirements?

A We have a team of design managers. Part of their role is to make sure that we get the information from the design team, and we give it to the Board. Part of that-- they usually have a knowledge in the area that they're working in so, part of that, they would have a check, but they wouldn't necessarily go into the detail of the design.

Q Okay, so you are describing there a role in which information is effectively being passed by the designer to Multiplex and then by Multiplex on to the Board.

A Yeah.

Q And presumably vice versa?

A Correct, yeah.

Q With a degree of knowledge in between.

A Yeah.

Q Can you just expand a little bit on what you would expect the people with that knowledge to be doing within Multiplex as the design passes through their hands?

A I would expect them to run, effectively, a sample check and a

precursory check against the BCRs or the client's requirements and to flag anything if they saw anything out of kilter with that, but predominantly I would expect and anticipate them to manage the process more than do the design.

Q Okay, and so you described there a sample check. Would that cover such things as a check on the compliance of the design with applicable guidance, subject to it being a sample check?

A Yeah, to varying degrees of detail, yes, it would.

Q At paragraphs 9 to 16 of your statement, you discuss the contractual design development process, and what you say is that you were not involved in the detail of that process, but you were aware of it and monitored it. Is that right?

A That's right, yeah.

Q You, again in your statement, say that:

> "… the ventilation design for Critical Care went through this RDD [the Reviewable Design Data] process and [that that design] was approved by [NHSL]."

A Yeah.

Q What did you understand to be the significance of

approval by NHSL?

A I understood the significance of the approval by NHSL at that point in the process to be confirmation that the design, as progressing and as proposed, met the requirements of the contract.

Q What aspects of the design did you understand them to be approving?

A I understood them to be approving the operational functionality of the design, but also that the design in its whole was aligned with the contract.

Q To the extent that the output parameters for the ventilation system were specified in the design of air changes and pressure regimes, did you understand NHSL to be approving those to any extent?

A I understood them to be approving that they met their brief.

THE CHAIR: Sorry, my fault----

A I understood that they were approving that they met the brief.

Q Sorry, they were "improving the"?

A The ventilation parameters met the brief.

Q The brief?

A Yeah, the client's requirements.

Q Thank you.

MR McCLELLAND: Now, as I am sure you are aware, other parties participating in the Inquiry make the point that approval by NHSL of designs submitted through the RDD process had only the limited effect of confirming that the design met the requirements for operational functionality. Do I understand you to be saying you understood it to be doing something more than that?

A Yes.

Q If we could have witness statement bundle two, page six, please. Now, Mr Pike, this is the witness statement to the Inquiry of Graeme Greer of Mott MacDonald. You know who Mr Greer is?

A Yep.

Q I am just going to ask you a question about what he says in paragraph 11. So, I will read it again out loud in a moment but if you would take a moment to read it and let me know once you have done that, please.

A Okay.

Q Okay? So, just picking up from the end of the third line, what Mr Greer says is as follows:

> "My understanding is that NHSL entered into a contract with Project Co to undertake the design in accordance with Project

Co's own quality assurance procedures."

Do you accept that much?

A Yes.

Q

"The design would therefore be checked and approved by Project Co prior to issuing RDD submissions through the Review Procedure."

Again, do you accept that?

A Yes.

Q

"NHSL were therefore relying on Project Co's own design assurance and did not undertake a line by line review themselves."

Do you accept that?

A No.

Q Can you tell me why not?

A Pretty much everything that went through RDD, not just this ventilation aspect, was pretty thoroughly checked.

Q And do you mean by NHSL themselves or by Mott MacDonald or by anybody else?

A By a group of people, both NHSL and Mott MacDonald or potentially a relevant person if there was someone outside the immediate project group that it was thought worthwhile having a review of it.

Q Okay. Mr Greer carries on:

"As NHSL had already employed Project Co to undertake the design and design check, NHSL did not ask MML to duplicate that work and it was not part of MML's remit."

THE CHAIR: My fault, Mr McClelland, just the paragraph number?

MR McCLELLAND: It is paragraph 11, my Lord.

THE CHAIR: Sorry?

MR McCLELLAND: Paragraph 11.

THE CHAIR: 11, thank you.

MR McCLELLAND: So, was that your understanding of Mott MacDonald's remit?

A I couldn't actually comment on what their remit was. I wasn't party to any contract or agreement between Mott MacDonald or NHSL.

Q From what you saw of the way they operated on the project, was it consistent or inconsistent with what is said there?

A I would say it was inconsistent with what's said there.

Q And inconsistent in what sense?

A There was a much

deeper review undertaken of all the RDD project documentation than is being inferred here.

Q And then just moving on a couple of lines, Mr Greer says:

> "MML did however support NHSL with respect to Operational Functionality reviews, and support NHSL with the sample reviews of the broader RDD submissions. RDD items would be returned as Level A, B, C or D. The decision on which Level was to be granted would be made by NHSL with input from MML. Irrespective of which Level was awarded, the approval granted by NHSL under the RDD process related only to Operational Functionality."

Now, I understand from what you said that you disagree with what Mr Greer said in the final sentence?

A Correct, yeah.

Q The point is also made by some of those involved in the Inquiry that the output parameters to be achieved by the ventilation system are not themselves matters of operational functionality. Would you agree with that?

A Yes, I think I would.

Q And the upshot of the position taken by the other parties is that, even for ventilation designs which NHSL approved under the RDD process, the responsibility for ensuring that the ventilation parameters were appropriate remained with Project Co. Again, was that your understanding?

A Yeah. Approval through RDD doesn't necessarily remove the design obligation from ourselves, so we still have the obligation for the design to meet the brief and employer's requirements.

Q Now, Mr Greer, elsewhere in his statement – it is paragraph 18 for anybody who wants to follow it up – he acknowledges that NHSL and Mott MacDonald made comments during the RDD process about things other than operational functionality, but what he says is that any such comments were no more than helpful pointers, and I take him to mean that NHSL and Motts were entitled to raise these comments on issues beyond operational functionality and could do so without disturbing the contractual risk allocation for the design. Now, what is your response to that?

A My response is yes, they're absolutely entitled to raise any point they wish. However, if there becomes a point whereby they are insisting on a specific change which

we believe meets the criteria of the contract and they would like it done in a different way then that would start to lead us into a position where it could potentially be a change to the contract.

Q Okay. At paragraphs 17 to 21 of your statement, you set out your understanding of the Environmental Matrix. As I understand what you said, you understood it to be NHSL's design brief?

A Yes.

Q And by that do you mean that it set out the parameters which the designers were meant to achieve with their design?

A Yes.

Q And where did your understanding come from?

A It came from, when I first joined the project, one of the early things I would do is look at what are we contracted to deliver across all aspects of the job, and when we were looking at the M&E aspects, it seemed pretty clear that the Environmental Matrix as given to the tenderers in the original ITPD was a mandatory document to follow, and therefore all of the design then flowed from that.

Q Okay, and your understanding that it was a mandatory document, do you recall where that came from?

A Yeah, it came from, first of all, conversations with colleagues, but then follow-up review of the contract where, I can't remember the exact terminology used, but it was something along the lines of, "The bidders must comply with the Environmental Matrix" or something similar to that.

Q Okay, I do not think we have got it immediately to hand but, as far as you recall, was that a paragraph in the Board's construction requirements themselves that you are recalling?

A Yeah, I think-- Yes.

Q Was it ever put to you by anyone that the Environmental Matrix was not NHSL's brief but was rather Project Co's proposal for meeting the Board's construction requirements?

A Latterly that became a point of discussion with NHSL, yes.

Q And was it NHSL that were advancing that position?

A Yes.

Q And when you say "latterly", when approximately do you mean?

A Difficult to say exact timeline, somewhere within the body of the project, so potentially somewhere around 2017 when ventilation issues started to come a little bit to the head

of a point of dispute.

Q Okay, so sometime after financial close and during the phase in which the design was being developed?

A Yeah.

Q Did anyone ever say to you that the Environmental Matrix had been supplied as part of a reference design by NHSL and was not intended by them to be taken as a definitive statement of the requirements?

A I think, again, yes, that was said----

Q And again----

A -- latterly.

Q At the same time?

A Yeah, in that same kind of period.

Q Yes, and did anyone explain to you that, prior to financial close, Wallace Whittle had been asked to take on the reference design Environmental Matrix as their own document?

A No, I don't recall that specific conversation or notice.

Q The evidence of Mr McKechnie of Wallace Whittle at the last hearings was that it had been Multiplex who had asked him to do that. That may have been before your time.

A Quite possibly.

Q Yes, and did you understand-- going back to your start in the project, did you understand that the Environmental Matrix was itself subject to the contract design review process?

A Yes, maybe not immediately but relatively early on.

Q And that design review process is one in which the contractor team submit their design proposals to the Health Board?

A Mm-hmm.

Q So if the Environmental Matrix was in fact NHSL's brief, is it, or-- did you think it at the time a bit odd that it would go through that process?

A No, the Environmental Matrix contains a lot of data pertaining to all areas of the hospital. As design develops, as the project develops, certain things can change or certain room types, areas, anything else can, perhaps, change to a different use than they were originally intended, so it wouldn't be uncommon to resubmit the Environmental Matrix periodically to check that everything was still correct within how the environmental parameters of each space was going to be treated.

Q So would you regard that process as an appropriate or suitable one for the finalisation of the client's

brief?

A I think it's not necessarily finalisation of the brief, it is more ensuring that our design and our intent meets the brief.

Q And you explain in your statement that your understanding was that the Environmental Matrix was to be subject to the review process only in respect of a limited set of comments that had been made against it by financial close. Is that correct?

A That was my starting understanding of what was going to happen through the RDD process, yeah.

Q I do not know if you would recall the contract but do you remember there being seven or so points recorded in the reviewable design data schedule of the project agreement?

A Yeah.

Q So were those the points that you understood were to be the only ones dealt with in the review of the matrix?

A That was, like I said, my initial understanding, and that also was wider-reaching just the M&E aspect. That ran for the architectural aspects and the structural aspects as well.

Q Okay. So, to what extent did you understand the various

ventilation parameters in the matrix at financial close to be a fixed requirement?

A Yeah, my understanding was that was basically the fixed requirement of the deliverables from those systems.

Q Okay, and what you say in your witness statement-- I am going to read it out, we do not need to have it up on the screen but this is paragraph 19 of your statement which is in the witness statement bundle volume 3 at page 63. You say there that:

> "The Board, however, reviewed the whole document again and produced further comments. This re-review occurred across the whole Project, not just the Environmental Matrix. The Board were effectively doing a further review of what they wanted post Financial Close."

Have you formed any view about why that was happening?

A I've a number of different views, some from the time, some formed later, some perhaps influenced by things I've read in the last couple of weeks. I think initially the Board had experienced difficulties on other projects and they wanted to have a thorough review of the information to

make sure that lessons learned were incorporated and those same difficulties didn't come up again. I think that, for a long time, the Board would develop in this hospital in a different environment, and they had specific things that they wanted to make sure (inaudible).

Q If I try and just summarise that, was it essentially close control or close interest by the Board in the details of the design? Is that the thrust of it?

A Yeah, absolutely. I think very close interest, and I think sometimes it felt like there was trying to be some control. Certainly a lot of influence on the design.

Q And did you regard that as consistent with the contractual structure that was being used for this project?

A Not entirely. However, there were certain points raised which were very beneficial, because there were certain points raised of things where we perhaps off track from the BCRs and clients' requirements. There were other things raised where they had had issues in the past and allowed us to go and look at the methodology we were delivering with and perhaps modify that. So, it wasn't entirely negative. You know, there

were a lot of positives came out of it, but what we did do with the comments coming back is we started to classify them as to whether that was something that we have got wrong from the BCRs and we need to make the corrections.

Something that we felt was a change from the BCRs or something that was purely an operational functionality aspect or an aspect that we could alter with no time, costs, programme implications at that point in the project. So, we classified the return of the RDD, particularly architecturally under those, and then we would go back and have another meeting with the Board to say, "Okay, points 1 to 6, they're on us; points 4 to 5 we can change. There's no real implication to us doing that. So, we can alter those. These further points (inaudible) believe a change."

Q Yes. Okay, so I think what you are describing there is the commercial implications of the number of comments that were coming back from the Board. Is that----

A Not necessarily just the commercial implications. I'm also describing the level of comments and the depth of review the Board were doing----

Q Yes.

A -- which was above our anticipated level of it being checked against comments from financial close.

Q Okay. Okay, and in paragraphs 27 to 35 of your statement, you refer to the development of the Environmental Matrix under the design review process. My attempt at summarising what you are saying is that you describe a process in which the approval status of the Environmental Matrix fluctuated between approved and unapproved by the Health Board, but you also make the point that throughout that process NHSL did not make any adverse comments about the four air change per hour parameter for the rooms in Critical Care.

Now, the precise contractual consequences of that are ultimately a matter for legal submissions, but I am interested in your understanding of the position. What was the significance, as you saw it, of NHSL approving the matrix without taking particular issue with the Critical Care air change rates?

A From approval of the matrix, which was subject to RDD, so from approval of anything within RDD, that is the point at which we would go into full manufacture and full construction of everything that's getting installed into the hospital. So,

that approval process and that RDD process is highly significant, because that in effect starts the wheels turning of everything that's then going to happen beyond and ultimately be constructed.

Q In the particular case of the air change parameters that had not been commented upon, were you taking the lack of comment from NHSL as effectively confirming that those air change rates were what the Health Board wanted?

A Yes.

Q (After a pause) If we could have on screen, please, bundle 13, volume 1, page 7. Can you see that on screen, Mr Pike?

A I can, yes.

Q Yes. So, this is an email from the midst of that review process of the matrix, and we can see that it is an email from Mott MacDonald, dated 17 October 2016, to various recipients, and you are one of the copy recipients. The subject heading is "RDD Review Environmental Matrix," and what the sender says is that:

> "The Board have reviewed the Environmental Matrix and still has significant concerns on items that do not appear to comply with the BCRs."

And then there is a list of what

are headed up as “general comments”. Then, further down the page, there is a longer list of what are headed up as “some specific comments”. If we go on to the next page, please, the email signs off with the following:

> “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 BCRs/SHTMs etc, and the Board not commenting, does not remove that obligation on Project Co.”

What point did you understand Mott MacDonald to be making?

A That, in case they had not necessarily spotted something, it wasn’t their responsibility.

Q And that would include something like a non-compliance with guidance?

A It could do, yes.

Q If compliance with the guidance was a requirement of the Board’s construction requirements?

A Absolutely, yeah.

Q And what was your reaction to comments of that nature from Mott MacDonald?

A They’re not particularly unusual comments with any other projects I’ve been in. It’s not an un-standard rider that might come across on the review.

THE CHAIR: Sorry, could you just give me that again?

A That particular comment noted at the bottom of the email is not uncommon to receive back on any of the projects.

Q Not uncommon to receive?

A Yeah.

Q Thank you.

MR McCLELLAND: Did you see it as an attempt by the health Board and Mott MacDonald to get Project Co to go through the Environmental Matrix and check it for compliance, for example, with guidance?

A No, I didn’t see it as that. I saw it more as an iteration by NHSL and Mott MacDonald of their understanding of the contractual position.

Q So, who did you understand to be responsible for ensuring that the ventilation parameters in the matrix were compliant with the Board construction requirements?

A I think it was our responsibility to follow through with the RDD matrix and that they were compliant with the Board construction

requirements.

Q And did that include parameters which had appeared in the version of the matrix at financial close?

A I'm not sure-- entirely sure what those parameters are, but I would say so.

Q If we take the parameters of 4 air changes per hour in the Critical Care rooms----

A Yeah. Yes.

Q When you say yes, you mean that Project Co were responsible through the RDD process for ensuring that those parameters were compliant with the BCRs?

A Yes.

Q Okay. And same question, but in relation to compliance with SHTM 03-01?

A (After a pause) Sorry, yeah. SHTM 03-01, as you'll be aware, is wide ranging across full ventilation systems, not just air change rates, and I think it was our obligation to comply with SHTM 03-01 unless specifically directed otherwise.

Q Okay, and in relation to the particular parameters stated in the matrix at financial close, did you regard yourself as having been told to do otherwise than comply with SHTM 03-01?

A We did, yes.

Q And in what respect?

A The airflow rates in single bedrooms and in four-bed, multi-bed wards, being at 4 air changes an hour, and latterly, as a discussion on four beds, various pressure or notional pressure regimes that were in the systems.

Q Okay. So, were you proceeding on the basis that, in relation to those parameters, Project Co were entitled to proceed on the basis that NHSL had selected them and had themselves taken the risk of their compliance or otherwise of guidance?

A I wasn't aware of necessarily any risk in compliance. I would look at it more along the lines of thinking that that had been a strategic decision with whatever good reason sitting behind it done prior to our engagement in the project.

Q So if, on going through the matrix Project Co had seen parameters which jumped out as non-compliant with guidance, would you regard it as your responsibility to raise that with the client?

A I think there was an obligation on us to raise items we saw as non-compliant to guidance, so that would read across into this.

Q Yes. (After a pause) If

we could go, please, to bundle 13, volume 1, page 12. You should see that on the screen in front of you, Mr Pike----

A Yes.

Q -- again it is an email from Mott MacDonald to Ken Hall and others. You are a copy recipient, 7 November 2016, and Mott MacDonald say:

> "The Board have serious concerns over the upgrading Environmental Matrix to Status B considering some of the issues raised… being the same as the issues that had been raised since [financial close]. There are also concerns over the potential inaccurate information being transferred to the Room Data Sheets being submitted through RDD."

And then he carries on:

> "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… the Board believes would result in a non-compliant Facility.
>
> "The Board would suggest that Project Co resolves the non-compliant and other issues as a matter of urgency…"

And so on. Is it correct that Project Co had asked NHSL to approve the matrix to status B?

A I think there was discussions at the time whereby the matrix relates to the entire hospital and has a major impact on the M&E systems throughout the hospital. There were areas of the hospital that were under construction from a frame perspective where the M&E was now due to go into manufacture or start to be made which were not affected by any of the comments that were being made at this time on the matrix, and therefore we were looking for release of the (inaudible) hospital into production under M&E fabrication.

Q Yes, and so, at the same time as approving it, NHSL are maintaining in fairly strong terms that the design is non-compliant. Was that an uncomfortable state of affairs?

A Not necessarily uncomfortable when taken in context of the comments being made against the matrix.

Q And do you mean-- Do not let me put words in your mouth, but

do you mean that the comments made clear what the issues were?

A Yeah.

Q Yes. I would like to turn now briefly to the ventilation arrangements for the multi-bed rooms, and you deal with this topic in some detail in your statement. It is at paragraphs 36 to 70, and your account there refers to various documents, and that is available to the Inquiry as part of your evidence, and I do not intend to go through it all. This is also a subject in relation to the design aspects that I intend to go through with Mr Hall and Mr McKechnie, who I think were probably closer to the design than you were. Is that fair?

A That would be right, yeah.

Q So, in short, as I understand it, after financial close and in the course of developing the design, a proposal was made for a balanced pressure arrangement in the multi-bed rooms in the hospital. Is that correct?

A Is this in part of the discussion around how the NHS wanted pressure regimes to work within the four-bedded rooms?

Q Yes, indeed.

A Yes, yes.

Q So, the first question is, which party was it that suggested the multi-bed rooms should have balanced pressure?

A I think that came from NHS and from some of the clinical groups within the NHS.

Q What did you understand to be NHSL's reasons for seeking balanced pressure in those rooms?

A I think following consultation with some of their clinical groups there was a relation to cohorting of patients into rooms, and their preference was for them to be at balanced or negative pressure to allow them to do that, from an operational point of view.

Q Did you yourself know the reasons why a balanced pressure arrangement was better for doing-- for that particular clinical use?

A Not specifically, no.

Q That cohorting arrangement, was that something that you were aware of at the time or is it something that you have learned about subsequently?

A It was something that came up in the discussions as to why elements were looking to alter from what was being progressed.

Q What did you, as the Multiplex Project Director, consider to be the commercial implication of that proposal?

A I considered it to be a change from the contract of what we were providing.

Q Why did you consider it to be a change?

A I think because the brief had asked for positive pressure in those areas.

Q By brief are you referring to the----

A BCRs and construction requirements.

Q And in particular to the Environmental Matrix?

A Yeah, but I think also in here you can look into SHTMO 301 again and have a debate about how that particular type of room should be classified as well.

Q Yes.

A We had taken a view on it being classified under a general ward arrangement and others had the different view that it should be classified under a single-bed room arrangement.

Q Yes, and so those who took the view that it should be classified as a single-bed room, that was essentially NHSL?

A Yeah.

Q And Mott MacDonald too?

A I don't know. I know that

NHSL would have been talking to Mott Macdonald, and I don't know Mott Macdonald's specific view on it.

Q But as far as you understood it, NHSL were classifying the multi-bed rooms as within the single-room category in the SHTMO 301 guidance?

A Yeah.

Q You, Multiplex, and Wallace Whittle were classifying them as a general ward for the purposes of that guidance.

A Yeah. That's right.

Q Did NHSL's choice of classification have a bearing on the commercial implications of the proposal?

A It did, yes, because it would flip the pressure regime predominantly into balanced and negative.

Q So that would be something inconsistent with what was stated in the Environmental Matrix?

A Yes.

Q So, what did NHSL see as the commercial implications of that?

A I thought NHSL's view at the time was that we were non-compliant with the PCRs and therefore we should make the change.

Q So, if I could just expand on that, NHSL's position was that the

Environmental Matrix was non-compliant with the guidance by specifying a positive pressure arrangement for the multi-bed rooms, instead of the balanced pressure regime required by the guidance. That was a very long question.

A Sorry, could you just say that again for me, please?

Q Yes. So, was it your understanding that NHSL regarded the Environmental Matrix as non-compliant with guidance in relation to the pressure arrangements it specified for multi-bed rooms?

A That isn't something I had thought of previously, but-- and forgive me a little bit, between balanced, negative, and-- it potentially could be read like that. That isn't something I would have thought of at the time.

Q Okay. Perhaps a simpler way to put it is, in asking for a balanced pressure arrangement in the multi-bed rooms, did NHSL consider that that they were themselves asking for a change in the contract requirements?

A No, they did not.

Q Okay. In response to this suggestion, Wallace Whittle produced a proposal to achieve balanced pressure in the multi-bed rooms, and there are various versions of this, and I will look through more of them with Mr Hall and Mr McKechnie, but if I could go to one with you, if we could have bundle 13, volume 1, page 35, please. Now, do you recognise this document, Mr Pike?

A Yes.

Q And if you look at the heading, first of all, at the top right-hand corner we see the TUV SUD Wallace Whittle crest, this document they produced, and the heading:

> "General Ward - Ventilation Amendment Proposal to Achieve Room Balance."

So, was this document produced in order to deal with the request to have balanced pressure in the multi-bed rooms?

A Yes, it was.

Q What we see if we just look at that page and then ask the document controller to scroll down through the next couple of pages-- what we see in the left-hand column is a list of rooms from A-S, so if we just scroll down that, please. So, we have got 20 rooms listed in this document, and if we go back up to the first page, please, we see the fourth column headed up, "Room Description" and then below that the room description for each of the rooms is "Multi Bed"

room with "(4)," four being the number of patients it was designed for, is that right?

A Yes.

Q Yes. So, these are all-- these 20 rooms, these are all multi-bed rooms in the RHCYP Hospital, is that correct?

A Yeah.

Q Then, if we look on that page, we see in the left-hand column, we have got D, E, and F. There are three rooms marked as D, E, and F, and if we read along into the room number column for those rows, D, E, and F, we see that each of those rooms has a particular reference with "B1" in it. What does the B1 code denote?

A The B1 code denotes that those rooms are within the Critical Care department.

Q If we go down to the third page, please. Oh, yes. Sorry, back up a page. Do we see there, room M also has a B1 reference?

A Yeah.

Q So, is that room also in the Critical Care department?

A That's what that would denote, yes.

Q Okay. Now, if we go back up to the first page, under the heading, "Proposed Solution," so the

column which has the most text in it, and we could look at any of D, E, and F, we see that the proposed solution involves reducing the supply ventilation down to 3 air changes per hour. Then, reading on to the next sentence:

"This will achieve a balanced room pressure."

So, in short, do we see that that is a proposal being made by Wallace Whittle for the achievement of balanced room pressure in all of these rooms?

A Yeah.

Q Then, at the right-hand side of the table we have got a column headed up, "Severity of Works" and another one headed up, "Ductwork Fabricated." Why are these columns there?

A So, with most of these things there are a couple of parts in terms of this aspect. So, between us and NHSL and the project team, we'd recognise that clinical function needs to come at the top of the considerations and at this point in time it was identified that these rooms were not going to serve the clinical function that the NHSL required. So, putting to a side the commercial implications, we both undertook that we would go away and look at the rooms in question.

Wallace Whittle would do an overall design which would achieve a balanced position. The NHS would look at whether it was or wasn't essential for them to have that room, the clinical need, and we would look at what has already happened, what's already built, and how difficult undertaking any alterations to those systems would be. So, the right-hand columns are our columns in terms of, has the ductwork been made, yes, or no? Then, how severe and disruptive would the works be to make alterations to suit this Wallace Wittle proposal?

Q Okay, and then, we also see handwritten on the document the word, essential. If we scroll down through it, we will see that other ones are marked as non-essential. So, yes, on the third page, those ones are marked as not essential, and again, what does that denote?

A That was the NHS having an internal review into which rooms they absolutely needed balanced to negative pressure and which ones where it was not essential to have balanced or negative pressure.

Q Why was it necessary for them to consider which rooms for which it was essential and which it was not essential?

A Whilst we had talked

necessarily whose liability this was while we got to a technical solution, ultimately there was going to be disruption onto the construction and ultimate completion of the project through these works, so it was probably acting in everybody's interests to only alter the systems that required to be altered, essentially.

Q Okay. So, whilst you were working towards a technical solution, everybody recognised that behind it was a commercial debate about who was going to carry the cost of that.

A Yeah.

Q Okay. If we could close that document down, please, and go to bundle 13, volume 1, page 792 – I am jumping forward in time here and missing out a few steps – but what we see here is a later version of the same document. I think from the version box in the bottom from left-hand corner, I think this is version 7. Yes, we can just about read “version 7,” and if we scroll back out and go down a few pages, we scroll down, I think, two or three pages, yes, one more, please. What we see there is the RDD stamp from Janice MacKenzie of NHS Lothian dated 26 July 2018, approving that proposal at level A. So, that is essentially approval of the technical

solution which had been under discussion between the parties.

A Yeah.

Q If we go back up and we look at the solution as drafted for rooms D, E, and F. So, D, E and F again, just to point out, are the B1 code rooms in Critical Care, and the solution described there is:

"Retain the supply ventilation at 4 ac/hr…"

And then, reading on,

"This will achieve a balanced room pressure."

So, do we see there the technical solution that was agreed for these rooms?

A Yes.

Q At any point in the process leading up to this approval, so far as you are aware, was there any consideration by anyone to the possibility that these rooms in the Critical Care department were subject to the recommendation in SHTM 03-01 for Critical Care Areas of 10 air changes per hour and a 10 pascals positive pressure arrangement?

A I can't speak for everybody else. I was never made aware of that through any party. I would say for myself, I was reading it back to what I considered to be the contract, so I was reading it back to

the 4 air changes and not seeing any cause for concern there.

Q Okay, so you are obviously aware that the main function of this proposal was to change the pressure arrangement for these rooms.

A Yeah.

Q Is that right?

A Yeah.

Q The solution for that involves 4 air changes per hour, and so are you saying you would compare that to the Environmental Matrix----

A Yeah.

Q -- and see written in there the four air change per hour parameter----

A Yeah.

Q -- and thereby be comforted that there was not a change being made in relation to the air changes?

A Yes.

Q Though you would be aware that there was a change in the pressure arrangement because the matrix said positive pressure for these rooms?

A Yep.

Q Yes, and you explain in your statement that works in accordance with that solution were then carried out and the ventilation

systems commissioned in around October 2018. So, just to be clear about that, can we take it that the ventilation works in Critical Care were complete by October 2018?

A I pretty much believe that, yeah.

Q Yes, and up on screen we have got there the approval of the technical solution in July 2018. When were the commercial implications of this agreed?

A They were not finalised until the settlement agreement was signed in February '19.

Q The February 2019?

A Yeah.

Q Yes, so that is a few months after the ventilation systems were commissioned.

A Yeah.

Q Yes. If we could go, please, to bundle 13, volume 1, page 798, is this a document that you recognise, Mr Pike?

A Yes.

Q Can you just tell us what that is, please?

A That's the technical schedule that's associated to Settlement Agreement 1.

Q Okay, and we see there two items on screen, but was it the case that the technical schedule set out dozens of solutions to particular disputes that had arisen?

A Yeah, I wouldn't necessarily class them all as disputes either; in legal talk, "disputes," yes, but differences of opinion.

Q Differences of opinion, okay, but they were resolved in technical terms by Settlement Agreement 1?

A Yes.

Q Yes, and if we could go to page 802, please. We see there Item 7, headed up "4 bed ventilation." Everyone will be delighted to know that I am not going to read all of that out, but does that effectively record the technical solution that we saw approved on the Wallace Whittle document a few moments ago?

A Yes.

Q Then if we go forward, please, to page 805, and unfortunately we are straddling two pages here. If it is possible to get this and the following page on screen at the same time, that would be great. We cannot do that, I am told, so we will start here. So do you see at the bottom Item 13, "Single Bedroom Ventilation air changes"?

A Yeah.

Q Then the solution reads:

"The Board / Project Co agree this item is closed, and the

agreed technical solution approved through … (Review Procedure) and, agreed by the Board and Project Co as resolving the Dispute is as set out in Disputed Works Schedule Appendix 1 Item 13."

If we could go please to page 797, we see here, "Disputed Works Schedule Appendix 1 Item 13," "Title – Single Bedroom Ventilation." Is that the document referred to in the technical schedule as the solution to the issue in the single-bed rooms?

A I believe so, yes.

Q If we just read from that, it is headed up, "Single Bedroom Ventilation":

"Detail of Change

Table A1 of Appendix 1: Recommended air-change rates of SHTM 03-01 … [and so on] indicates that single room should be provided with 6 ac/h and 0 or -ve pressure. Single room WC [and so on]."

Then it says:

"Project Co proposes to:

1. Decrease the mechanical air change ventilation rate within single bedrooms from 6 air changes per hour (6 ac/h) to 4 air changes per hour (4 ac/h) [and then a change for the single bedroom WCs]".

The reasons given is that:

"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)."

So, this applies to rooms for which the SHTM recommendation is 6 air changes per hour. Is that correct?

A Not necessarily. I think this applies to the rooms that were single-bed rooms within the context of the design brief.

Q Okay. It starts off by talking about the recommendation in SHTM 03-01 for 6 air changes per hour.

A Mm-hmm.

Q It explains the mixed mode ventilation philosophy, providing 4 air changes per hour, and seeks effectively a derogation from 6 air changes to 4 air changes, so is that not an indication that this only applies to rooms for which the SHTM recommendation is 6 air changes per hour?

A It could be read that way, yes. I think where I would go back to here was these rooms were always at 4 air changes from the outset in terms of through the matrix and everything else. So when we were looking at this particular change request, it was written with joint wording between ourselves, Mott MacDonald and NHSL as part of the agreed protocol to the settlement agreement and not necessarily, certainly from my perspective, paying strict attention to what the origin of these rooms may be.

Q Okay, I think I see that. Well, if we could do it this way-- Sorry, just before we leave that document, that proposal relates to rooms which have WCs and openable windows. Is that right?

A Yeah.

Q Did the single rooms in Critical Care have WCs and openable windows?

A I don't believe so. I think there may have been a time where there were openable windows in that department, but that was subsequently removed by either sealing the window or locking the window.

Q I mean, by the time this document was drafted, had the WCs and openable windows been removed

or----

A Sorry, the WCs were never in question, just the openable windows part. I couldn't actually tell you from a timing perspective.

Q Okay. If we could go, please, to bundle 2, page 70, you should see on screen there, Mr Pike, at the bottom an email from Matthew Templeton of Dalmore Capital to you on the subject of single bedrooms. It is dated 3 July 2019, so this is around the time that people are becoming aware of IOM's report about the air changes in Critical Care. Mr Templeton says:

> "Darren,
>
> With regards to Critical Care single bedrooms and air change rates, to what extent is that affected by Item 13 in the Disputed Works schedule of the Settlement Agreement? This debated whether single rooms … should be 6 ac/hr V's 4/ac/hr; however, it was decided upon 4 with an increased extract through the en-suite.
>
> "[Then comes his question:] When this Item 13 … was discussed and agreed, was the intention it also covered Critical Care single beds or are these covered under a different part of

the SHTM and hence not covered under the SA?"

You reply and say:

"Matt

Reading that through it would apply to all single bed rooms. I'm checking the SHTMs for specifics around HDU/Critical Care.

"Be interested if you/pinsents read it the same way."

So it would appear that at least at that time, you were not going on anything more than the wording of Settlement Agreement 1----

A Mm-hmm.

Q -- to reach the conclusion that that ventilation solution applied to the rooms in Critical Care. Is that right?

A That's right, yeah.

Q Yes. Have you subsequently become aware of any discussion or correspondence to indicate explicit agreement by NHSL that the 4 air change arrangement for single rooms was to apply to Critical Care rooms?

A I haven't come across that from NHSL, no.

Q I am just going to return to an explanation that you gave earlier. Just out of fairness to you, I think what

you said was your understanding that the proposal related to all of the single rooms in the hospital came from the fact that the Environmental Matrix had always specified 4 air changes per hour for those rooms.

A Yeah.

Q Is that fair?

A Yeah.

Q Please do not let me put words in your mouth, but----

A No, no, that is how I was reading it at the time, yeah.

Q Yes. If I could turn now to a question about the commercial considerations surrounding Settlement Agreement 1, as we have seen, it documented all of these technical solutions. Once it was signed, practical completion of the building was certified. Is that correct?

A Yes.

Q Almost exactly the same time, actually----

A Yeah.

Q -- as the settlement agreement was signed. The nature of Settlement Agreement 1 was such that some work was yet to be completed at the hospital. Is that correct?

A Yes.

Q One question which arises is why NHSL were content intent to do that. I mean, one

implication, as we understand it, is that the independent validation of the ventilation systems could not take place at that time and had to take place later because the ongoing building work would have stopped it being done.

A Yeah.

Q Is that your understanding?

A Yeah, a few points to cover here potentially. I'll maybe come back to the validation, so prompt me if I don't.

Q Okay.

A So, as we were going through the latter part of 2018 into 2019, there was an attempt to get the hospital completed and opened prior to the busy Christmas period for NHSL, which ultimately proved impossible to quite get there. So, between the period of October into through the winter time, there was very little construction work really going off at the hospital. It was a little bit of change, a little bit of our works, tidying up and some NHSL contractor works, but predominantly the focus was on the settlement agreement and getting, if you like, the commercial aspect of all the technical stuff that we'd agreed before, and predominantly completed the building of, agreed and signed up.

Part of that process involved pulling together a joint completion program which would have everybody's activities on it; Multiplex's activities, NHSL's activities, Bouygues' activities, and any other party that had works to do within the hospital, such that they could all be coordinated and aligned to get to the best possible opening date for the hospital, which is always a few months after we would finish construction anyway. In that, we had been requested to do quite a number of changes by the Board.

We had some further works to do, which were under a kind of semi-disputed works schedule, not necessarily as clear-cut as some of the SA1 original parts to do. The agreement was made that the change works, the "post-completion works" as they became known, our snagging and any defect rectification works, the NHS's contractor and migration works would all occur along a path. That joint----

THE CHAIR: Sorry. Sorry, Mr Pike. My fault. You were talking about post-completion works.

A Yeah.

Q I just did not hear what you said after that.

A I think I said post-completion works, any snagging or

defect rectification works of ours, Bouygues would start to mobilise to take over systems, and NHSL had their own contractors and their own fit-out specialists in, including people like the artwork and things like that being done but also part of the major machinery and hospital operating equipment. So that joint-completion program was very well put together in collaboration from all parties, clearly showed what activities were going to happen when throughout the course of 2019 up to opening. So I was a little bit surprised at some of the statements I read saying they couldn't do an activity at a specific time because construction works were ongoing, because I thought it was fairly well-known through all, and the construction works ongoing were not necessarily the contracted works. However, I would make a point saying there were some contracted works which were asked to be delayed to as late as possible, for example the knocking through of the link bridge into the existing ARI where it was desirable not to have that open until right before opening of the hospital. So, by accommodation of that, we couldn't finish our contract work, strictly speaking, until that bit was done, and I think all parties thought it reasonable

to allow that piece to go past the issue in a practical completion and then be reviewed at a later point in time. So, with that, the validation aspect was always going to be fairly late on in that process, and then just also, and it's possibly slightly more of a side from my experience in other projects, particularly around theatre validation, you-- it's been my experience that that is typically done pretty close to the theatres going operational because people would like to get the validation done not too far in advance of operating the theatre so they know that it's current and everything is absolutely perfect at the moment of putting them into use. Obviously, in considering that, there's always a buffer left in case you find any issues, that you can attend to any issues as well.

MR McCLELLAND: Mm-hmm. Okay, there is a lot in that answer so thank you. I mean, you talked there about the programming of everybody's activities with the objective of opening the hospital as soon as possible. What did you understand, or-- Did you understand that for practical completion to be certified would help in the programming of those activities? What I am trying to get to the bottom of is why---

A It would----

Q -- practical completion was certified when it was.

A I think because, in the main, the contract works were actually finished. The actual original contract was pretty much finished with the exception of the as-late-as-possible works, snagging defects which would come post-contract anyway way, and three other disputed items which came to the fore in mid to late 2018.

Q Okay.

A So in terms of, again, probably more experience across the piece, is when practical completion was issued, judging it purely against the original contract, I would say that that was a fair point to issue it.

Q Okay. The Inquiry has received some evidence about NHSL's decision-making on this issue from Susan Goldsmith, who was the NHSL Finance Director at the time. Have you had an opportunity to, and there is no particular reason why you would have done, but have you had an opportunity to read her statement?

A Yes.

Q You have, okay. So, if we could go to witness statement bundle 1, please. Page 425 first of all. So, we can see here that we are reading from the witness statement to the Inquiry of Susan Goldsmith. Then, if we go forward to page 435, please, and it is paragraph 32 of Mrs Goldsmith's statement, and I am just going to read some passages from this, Mr Pike, and then ask you some questions about it. So, in paragraph 32, about 5 or 6 lines up from the end, she says:

> "In short, SA1 provided financial support for IHSL, who were facing financial distress, without which they may not have been able to complete the hospital."

And then she says:

> "I have copied over paragraphs 6.8 - 6.15 from the Board Position Paper below and adopt them as part of my evidence because they did and do reflect my understanding and answer the questions I have been asked."

And then, in 6.8, she says that:

> "In January 2017, IHSL formally notified the Board that it would be unable to complete by the contracted date of July 2017. At the same time [she says] IHSL also indicated to the Board that Multiplex had suffered significant losses on the Project."

Then, if we go onto the next page at 6.10, she says:

> "Under the terms of the

contract, IHSL would not begin to receive payment for the new facility until it was available to the Board. Therefore, at this time, IHSL had no income with which to service their debt obligations to their senior lenders. Under the terms of IHSL's contract with Multiplex, IHSL could seek damages from Multiplex to replace the lost income that would allow debt service payments to commence and avoid a default under the terms of the loans with their senior lenders. However, while the process of agreeing the Settlement Agreement was taking place, the Board became aware that, as well as the losses Multiplex was facing on the Project, they had not been paying damages to IHSL."

And then she carries on:

"As a consequence, IHSL faced financial distress and insolvency. If IHSL became insolvent, they would be in default of the contract, which may have led to their termination, leaving the Board to then complete the facility or to find another party willing to take over the contract. However, prior to the Board being in a position to exercise any termination rights under the Project Agreement, the Board are obliged under the terms of a direct agreement with IHSL senior lenders to give them prior notice of an intention to exercise the termination rights. Following the service of such a notice, Senior Lenders have extensive rights to step-in and seek to resolve the default. This scenario, or any alternative approach such as Court action, would have resulted in a timescale for completion of the facility that would have been completely unknown. Further, even if the Board were in a position to pursue termination under the terms of the project documents, the facility would only revert to NHS following agreement or determination of the applicable compensation payable to IHSL/Senior Lenders. The compensation would likely have been in excess of £150 million, a sum that would have had to be funded from the Scottish Government's capital program. Avoiding this scenario became a key driver of the Settlement Agreement and the

quantification of the settlement sum it entailed."

Then down to the next page at 6.14, it is just at the end of that she says:

"To further preserve IHSL's financial stability, and to introduce a higher degree of certainty over completion timescale, the Board agreed that their own commissioning program to facilitate commencement of clinical services would run concurrently with the remaining works."

So, that last point is one of the ones that you were (inaudible) to. So, in short, Mrs Goldsmith's understanding appears to have been that settlement agreement 1 was needed when it was to alleviate the risk of financial collapse on the part of IHSL. Do you agree that that is an accurate assessment of the position?

A I couldn't comment straightforward on IHSL's financial stability at that time. That was not something that I was privy to. I would have been aware that all parties involved were under a form of commercial strain. It may have been a reason, and I couldn't dispute that it was or wasn't, but I would also say the completion of the facility to the original contract was also a reason.

Q I mean, in terms----

A Not for SA1 but for issuing of completion.

Q Yes, and in terms of the broader explanation of the financial position that Mrs Goldsmith gave, is there anything in that that you take issue with as being inaccurate?

A Could you just run us back to the first couple of paragraphs, please?

Q So that is-- That would be page 436 of the bundle.

A Yeah, so I don't think there's anything I specifically take issue to. We-- Multiplex paid damages for a long period of time. We paid damages for a period of time that we felt was commensurate with the area of delay that was our responsibility entirely.

Q So, if we just pause there, those were damages paid to IHSL?

A Yeah, but there was a point of time that we came to where the delays ongoing, we did not feel were entirely our responsibility. But in terms of disagreement, I can't disagree because I didn't have the inside knowledge that Susan had on a number of those points.

Q Okay. If I could-- Well, I was going to go onto another topic but I notice, my Lord, the time, and it is twenty-eight minutes past eleven. Your Lordship may prefer to have the break just now. I have a few more questions for Mr Pike, which would not be finished before 11.30.

THE CHAIR: Well, I can see, if you have a few more questions, 11.30 might be a bit of an ask. If this seems to you a good point to break, I am happy to do so. Mr Pike, as I said, we can take a coffee break. We will try and be back about quarter to twelve.

A Okay.

Q Thank you.

(<u>Short break</u>)

THE CHAIR: Mr McClelland?

MR McCLELLAND: Thank you, my Lord. Mr Pike, I would like now to turn to some correspondence that was issued at the start of 2019, and this is a topic that you address in your statement, paragraphs 71 to 79. Just to put it into its context, if we could have the document at bundle 13, volume 1, page 762, please. If we could scroll out a little bit just so we can see the whole letter. That is perfect, thank you.

Do you see there, Mr Pike, a letter from Paul Gray, the Director-General of Health & Social Care and Chief Executive of NHS Scotland? It is a letter to NHS Chief Executives dated 25 January 2019, and it is headed up, "Dear Colleague, Queen Elizabeth University Hospital – follow up actions," and he says:

> "There are a number of controls that I would like you to confirm are in place and working effectively:"
>
> And the fourth bullet point is:
>
> "All critical ventilation systems inspected and maintained in line with [SHTM] 03-01 [and so on]…"

Now, this letter, I think, made its way to you and led to you drafting correspondence on behalf of Multiplex bearing upon the extent to which the ventilation systems in the RHCYP complied with that guidance. Is that correct?

A Yes.

Q If we go down, please, to page 766. Do we see there the letter that you drafted essentially in response to that letter that we saw a moment ago?

A Yes.

Q It is dated 31 January 2019 and it is from Multiplex to IHS Lothian Limited. The subject is "Re-

provision of RHSC and DCN at Little France Plant Rooms + Ventilation System."

A Yeah.

Q And it says:

"With reference to your letter [and you are referring here to a letter from IHSL]. We can confirm the following:"

Then the fourth bullet:

"All ventilation systems have been designed, installed and commissioned in line with SHTM 03-01 [and so on]…"

What was the basis for your statement there that all the ventilation systems had been "designed, installed and commissioned in line with SHTM 03-01"?

A Just probably a question-- I don't know if you're going to go to the letter previous to this one that was issued and then superseded?

Q So, I think that is page 764. (After a pause) Yes. Is that the letter you were referring to?

A Yes. Just because this was the original letter sent, which we then superseded with the one you had on the screen a moment ago:

"All ventilation systems… designed, installed and commissioned in line with SHTM 03-01 as required [and then the full stop]."

You'll see in the first letter you put up, the second letter that went out, that full stop had been dropped from the letter, and changes the way that paragraph reads quite a little bit.

Q Okay.

A Unintentionally, but I can see where that would come from.

Q Okay. So, if we look at the one that is on screen, the confirmation given in the fourth bullet point is that:

"All ventilation systems have been designed, installed and commissioned in line with SHTM 03-01 as required..."

Then if we look at the other one on page 766-- so, yes, we see there that additional words now appear at the end of that paragraph. What was the point you were making, Mr Pike?

A So, there really should be a full stop still after "as required"----

Q Yes.

A -- in that first part. So, then to answer-- I think answering your question, but please let me know if I don't, I meant by that that, as far as we were aware and concerned, all of the ventilation systems had been designed, installed and commissioned in line with SHTM 03-01 as required in the context of the contract, and then

start a new sentence:

> "Systems are maintained in such a manner which allows handover at actual completion to meet SHTM 03-01…"

The addition of that second sentence or additional wording in this context was more to make this letter actually address the point in the original letter that came into IHSL regarding from-- or regarding QEUH, which was specific to maintenance in itself.

Q Yes, okay. All right. So, for present purposes, the bit that I am interested in is the first bit; so, up to where the full stop was, the confirmation that the systems had been designed, installed and commissioned in line with SHTM 03-01 as required. Now, I think what you said a moment ago – and this is what you say in your statement – that what you meant by those words "as required" was, "except to the extent that the board had stated a different requirement." Is that what you meant by that?

A That's the-- an extension of it, yeah. As I believed to be required under the contract.

Q Okay. Would you accept that the letter as sent does not actually say that?

A It's certainly been read differently with that grammatical error in it, yeah.

Q Yes. Certainly, your letter gives no indication of any departure from SHTM guidance.

A It doesn't give any indication of departure from that guidance, no, and answering the question I think we were asked, focusing on maintenance in particular, that was probably the predominant thought in my head at that point at that moment.

Q The letter that we saw issued by the Chief Executive of NHS Scotland, did you understand that to have been prompted by concerns which had arisen at the Queen Elizabeth Hospital in Glasgow?

A Yes.

Q Did you understand the government to be looking for reassurance that other hospitals were being built entirely in compliance with guidance?

A Not from that letter, no. I think what I understood from that letter was they were looking for assurance that systems had been maintained in alignment with the guidance.

Q Okay, but you understood that, at least in general terms, the government was interested

in reassurance that guidance was being complied with?

A Yes, but again, I would say from that letter, the specifics were around maintenance, and I think a particular issue that had arisen at QEUH were the potential for maintenance or plant areas not to have been in a particular way.

Q At the time you drafted the letter, did you understand that the contract requirements did in fact depart from SHTM guidance?

A It's a good question. I had never specifically picked up the Critical Care element versus the SHTM, so I hadn't personally picked that up, and this is January 2019, so I would think at that point I had not made that connection.

Q So, are you referring specifically there to the matter of 10 air changes in Critical Care?

A Yeah.

Q You yourself were not aware at that time that 4 air changes would be a departure from the SHTM recommendation?

A It wasn't something I was conscious of at that time, yeah.

Q What about the derogation from 6 air changes to 4 air changes that had been agreed?

A I was aware of that,

yeah. Sorry, I'm just going to-- I'll ask, if you don't mind, just the context of that question, in that, was I aware that that derogated from SHTM 03-01?

Q Yes, so----

A Yeah.

Q -- at the time you sent this letter, were you aware that there had been a derogation from SHTM guidance?

A Yeah, I was.

Q At least to the extent----

A I was on that, and I suppose, to a way, that is where the "as required" part of that statement comes in.

Q Okay. In the context of the government looking for reassurance about compliance with guidance, would you accept in hindsight it would have been better to say explicitly that the ventilation had derogated from the guidance, at least to that extent?

A In reply to the letter that we received for this, no, not necessarily, because it wasn't addressing that point.

Q So, you----

A So, I suppose I would have been answering out of context to the question.

Q So, the question posed in

the letter from the Chief Executive of NHS Scotland was concerned with maintenance, essentially----

A Yeah.

Q -- but your letter that was up on screen in front of us just now does explicitly address the question of design and installation. So, having gone to the extent of offering reassurance about the compliance of design and installation with the guidance, would it not have been better to be explicit that there had been a derogation, at least in relation to 6 down to 4 air changes?

A I think, would it have been better to bring that one specific one forward? There may be further underlying ones that I was also not aware of at that time. I was answering the letter to give the best level of comfort I could at that time with my understanding of the position.

Q Had you made enquiries of anybody else about the extent to which the design and installation complied with the guidance?

A In terms of prior to sending this letter, I would have spoken to my M&E team. I don't think I would have specifically spoken to Wallace Whittle at that time, because again they would have gone down the line more of the maintenance of the

systems to make sure that we had done those in alignment with the guidance. However, I'm looking at the date of 31 January and appreciating completion was granted in the middle of February. This might be something that it comes onto later on anyway.

We would have ascertained from our designers as part of the completion handover pack that-- effectively, a letter of conformity and comfort from themselves – which might be the next letter you're coming on to – and their systems being designed to meet the BCRs. So, if I wasn't in possession of that letter from Wallace Whittle at that time, it would have certainly been something that we'd have discussed with Wallace Whittle, and I had that knowledge.

Q We are looking at this letter at the end of January. Before sending that, I think you said that you would have spoken to your M&E team.

A Yeah.

Q Would you have understood them to have checked the position with Wallace Whittle----

A No.

Q -- or were you happy to rely on what your M&E team thought themselves?

A In terms of designed, installed position, I don't think I was

asking them-- asking the M&E team again. I wasn't questioning them on that. I think, in our minds, we were long past that point by then. It would have been more along the commission and maintenance side that I was asking them.

Q Then if we go, please, to page 769. This is 12 February 2019, so a couple of weeks after the letter we just looked at, and this is from IHS Lothian to Multiplex for your attention. The letter reads:

> "Dear Sirs, Re-Provision of RHSC [and so on] at Little France…
>
> We would be grateful if you could provide your written assurance:
>
> 1. That engineering systems have been designed and are being installed and commissioned to meet current guidance and statutory requirements…"

And then if we look down at the bottom, we see, "Engineering systems include…" and then:

> "4. Ventilation, including specialised ventilation in isolation rooms, theatres [and so on]…"

Then if we go to page 771, please, is this the letter that you drafted in response to the one we saw just a moment ago?

A Yes.

Q So, this is dated 6 March 2019. It is the same heading:

> "Dear Sirs…
>
> Further to your letter dated the 12th February 2019 requesting our written assurances, we can confirm the following.
>
> "1. The engineering systems are designed and have/are being installed and commissioned to meet the relevant Construction Contract standards, as varied by the Settlement Agreement."

Now, if we just compare that answer to the question, the question was about whether the systems had been designed and installed and commissioned to meet current guidance and statutory requirements, and the answer is that they have been designed, installed and commissioned to meet the contract standards. So, we can see that you do not really quite answer the question that you were asked, and the question is, why not?

A I think that all of our works and engagement is under the contract standards or under the construction contract, and therefore our obligation is to meet that, and

within that construction contract there are-- there is a large variety of applicable standards and guidance and various other documentation to comply with. However, overarching obligation on us is to comply with the construction contract.

Q So, was there any recognition in your mind at this stage that the contractual solution might not in all respects comply with the guidance?

A Well, I was fundamentally aware of the settlement agreement, and I knew within the settlement agreement there were various points and provisions that people-- different people would have different interpretations on whether it did or didn't meet the guidance and on what aspect it did or didn't meet the guidance through the discussions and negotiations in getting to that settlement agreement. So therefore I felt it was important to point out that the settlement agreement could vary some of those positions.

Q So, is it fair to put it this way: you gave the assurance that you felt able to give?

A Yeah.

Q Does it also follow that you did not feel comfortable just giving a straight assurance that all guidance was complied with?

A Yes.

Q Excuse me. I would like now to go past practical completion up to the time in June and July 2019 when NHSL engaged IOM to carry out an independent validation of the ventilation systems. At paragraph 104 of your statement you quote from IOM's issues log produced at that time and, in short, IOM appear to have straight away identified that the Critical Care rooms were supposed to have 10 air changes per hour, and that in achieving 3 or 4, they were falling well short of what was required. What was your reaction on hearing of that report?

A Specific to Critical Care or around IOM in general?

Q Critical Care, please.

A I think initially I was a little bit surprised. I didn't have all the information. When I first heard about it, I was contacted to say, "IOM have raised some issues. There's some discrepancies between what they are measuring and what we have recorded." I was like, okay, that's not always that unusual. There are quite often a number of smaller items that come up during a validation that just require a little bit of attention or tweaking or rebalancing, and it settles it. So, my first thought on hearing

about it was, “Okay. What's the scale of it? How far away are the differences, and what is it they think they've found?” It was then latterly, on the return of that phone call, that they were measuring against the 10 air changes an hour against the baseline of their interpretation of the SHTM, and I knew right away we were not going to be close to that number. So I knew that that was going to be a big problem, and I was like, oh, pretty disappointed and worried, I think, overall. However, I then realised that, actually, standard process would be for them to measure against what they considered to be the standard, and they would do all of their initial testing and results against what they considered to be the standard.

That would then be relayed against any derogations or any contract requirements which might be different, and then they would be given guidance,

normally from NHSL that-- I'll take that room as an example, just thinking whether-- “Actually, no. We've agreed 4, so is it meeting 4? Yes, it is. Okay, that's acceptable,” and people would know the difference they've got between potentially a guidance and an actual recorded figure. So, that was where my thoughts went next to,

“Okay, once they’ve finished this exercise they'll be referred back to derogations and Environmental Matrix SA1 and it should be okay.” When I checked with-- I think I just checked very briefly that we are reaching the parameters we thought we were building to, which I was told we were. So, I'm like, “All right.” I can't quite remember the exact timescale then between that point and later, but it very quickly became apparent that no, that wasn't going to happen, and the NHS were expecting the 10 air changes as well. At that point, as I appreciated, that was a pretty big difference and was going to be a pretty big issue to resolve.

Q Yes. Okay, did you agree or disagree that SHTM required 10 air changes per hour for these rooms?

A I think it's a personal opinion. I've seen different interpretations of it throughout my career, and not just in Critical Care, across a variety of applied air change rates across various areas, and it has not been uncommon throughout my career for ventilation rates to be lower than within A1 in specific schemes.

Q Just if we divert slightly into that topic, is that typically on the basis of a derogation or not?

A It can be a derogation. It can be a client's brief.

THE CHAIR: Sorry, it can be derogation, it can be----

A A client's brief, but it is usually always-- and in fact, I think in every other experience I have of it, it is agreed from the outset of the project. It's not a derogation midstream, i.e., "We've designed this system and it's not doing 6 air changes, it can only do 4. Is that okay?" It's never been that way around. It's always been agreed in and amongst the design principles that that air change rate would be utilised.

Q Yes. In answering that-- sorry, Mr McClelland, in answering that question, are you thinking specifically about the specification of Critical Care, or are you thinking of other instances?

A Other instances.

Q Right. Thank you.

MR McCLELLAND: Yes, thank you. Do you yourself have experience of a Critical Care department in a Scottish hospital being built with less than 10 air changes since SHTM 03-01 came into force?

A I don't think so on the air changes. I was thinking back, and it was from memory rather than absolute proof. I don't think so in the air changes. However, I would say there were definite areas within a Critical Care area that were not 10 air changes, but if I applied that specifically to bed rooms and, you know, accommodation I think there have been 10 air changes, but they haven't necessarily been 10 pascals positive.

Q Okay.

A We're then back to kind of where we started. In terms of the area, there were certainly rooms like waiting areas and things that were not 10 air changes within that department.

Q Yes. So, if we take ourselves back to this time when IOM make their discovery and report upon it, was there any-- and you say that you were expecting the matter to be resolved once the contract requirements were looked at, but that did not happen. Was there any discussion or debate at the time about whether or not IOM were correct to consider SHTM guidance required 10 air changes for these rooms?

A I think there was a little, a little discussion, not extensive discussion but there was a little discussion, yes, and I think NHS sought internal counsel on that as well. I think we questioned the requirement to them, but it was not an extensive debate.

Q Is that because the possibility of a different interpretation was proposed but then rejected by everybody, or for some other reason?

A I think it was proposed briefly, rejected fairly quickly, but the overarching aspect that everybody had-- and one that everybody had right there was to get the hospital open. So, the debates around what was an interpretation of standard, what did meet the standard, they were all kind of long gone, and everybody's focus was on getting to a safe operational hospital and being very conscious that at that point in time, the migration date was getting pretty close.

Q If we could have document bundle 7, volume 1, page 308, please? This is an email from Stewart McKechnie to various people, including you, 11 July 2019, so just over a week after IOM report what they regard as shortcomings.

A Thank you.

Q Do you remember or recognise that email, Mr Pike?

A Yes, I do, yeah.

Q Yes. I won't go through all of it, but in short it is a sort of fairly robust review by Mr McKechnie, and in short he essentially maintains or sets out there the position that he maintains even now, that the Critical Care ventilation was both designed in accordance with the brief, and that there was nothing in the guidance to require 10 air changes and 10 pascals of positive pressure in the Critical Care rooms. Were you aware that that was Mr McKechnie's view?

A I was at this point in time, yeah.

Q So far as you know, was Mr McKechnie's view communicated further up the chain, so for example to the Health Board or to the Scottish Government?

A It was brought up in the early meetings around the IOM findings.

Q In what context, and what was the response to it?

A The context being at the meetings, I think Stewart made the point that he felt his design did comply, and that he didn't agree there was a non-compliance with SHTM 03-01. However, I think at that time it was only given short air time. I possibly need to step back a little bit on the chronological order into some of the SA1 just to explain our position and thought process at that point. During the SA1, we had took the position that we could argue backwards and forwards for a long time about whether we were or weren't meeting the brief,

or were or weren't meeting the standards across the variety of issues. We came to the conclusion actually the best way forward, and to conclusion of the project, was to give the Health Board what they wanted across all the aspects, within the confines of what we had built being possible, or what the changes were and an appreciation of those changes coming through, and that mindset continued through into this aspect.

So, as soon as it became-- I'll say apparent, but as soon as it became to us, the Health Board saying that we must have 10 air changes, we were just, “Right, okay. Can we get you what you need?” We were not looking to have contractual arguments. We were not going to sit there and say, “Well, our designers say this.” We just went straight into a mode of, can we get you what you need? To a large extent, Stewart’s position, whilst not for me to argue the rights and wrongs as he's the designer, if that was not a position that the NHS felt comfortable to go forward and have a safe hospital, then we weren't going to pursue it.

Q Okay.

A Just-- there is a question there. You asked me the question, “Was this raised to the Health Board?” I really just plucked at the top, but that

copy of that email is actually Stewart McKechnie to Ian Storer at NHS, not NSS.

Q Yes, yes. So, you are quite right. Thank you for pointing that out, so that is Mr Storer at NSS-- so not the Health Board as such, but to Mr Storer. Do you know if Mr McKechnie's viewpoint was considered by NSS?

A I don't, no.

Q If you could go to the witness bundle volume 3, page 82, please. This is your statement, Mr Pike and I just refer you to paragraph 118 and what you say is that on 4 July— you are talking about the 4th of July and then you say:

> “The same day the Scottish Health Secretary announced that the opening of the hospital was being postponed due to ‘final safety checks which revealed that the ventilation system within the Critical Care department of the new hospital requires further works to meet national standards’.”

Now, that statement that she made, that these works were required to meet national standards, did you agree or disagree with that?

A I think there were parts I disagreed with at the time. However, it

wasn't my jurisdiction to really make comment on that.

Q The parts you disagreed with, what were they?

A I think there was-- Well, to be honest, that's probably going into a realm that's not my realm, so I shouldn't go there. It was relating to where we were at with air changes and what were possible. We had been involved for a short time in terms of what I'll call a short-term solution and things like that, so-- but ultimately that's not where I'm qualified to comment.

Q Okay. In short, if I could try and summarise what I have understood from your evidence, McKechnie's viewpoint that this remained a compliant design was put out there and discussed briefly, but the Health Board decided that what it wanted were 10 air changes per hour.

A Yeah.

Q Okay, so standing back from all of that detail, Mr Pike, we have a situation in which the hospital was completed with a ventilation system in Critical Care which NHSL and the Scottish Government only a matter of months later declared to be non-compliant with the guidance and had replaced. That outcome happened despite extensive engagement

amongst the Health Board and various professionals with expertise in the matter. What, in your view, caused that outcome?

A What caused the decision not to open the hospital?

Q Well, what caused the situation in which everybody had been working together to produce a ventilation system, and then only a few months later there is a decision that it is unacceptable?

A I think the very root cause was back at the briefing stage, and then that follows its way through, right the way through the project. There are numerous people reviewing that information. There are people with knowledge reviewing that information. At no point did anyone spot it or see it sufficiently to raise a flag and at least get a discussion going on it. Now, we know, and we've talked about today, there were various items on the matrix – there were various items across all of the technical solutions for the hospital – that were questioned. For some reason, that aspect on the decision to go with 4 from early on, the decision to put 4 forward and then design around 4, to commission to 4, did not at any point in time get recognised, registered or even debated.

Q Okay, so by identifying the root cause, do you mean by that the inclusion of the 4 air change per hour parameter in the Environmental Matrix, or is there more to it than that?

A No, I think that's the main point specifically around the Critical Care ventilation part. From my understanding, only through reading the information I've been sent, the bidders responded to the matrix and were told to basically follow the matrix. One of the bidders did make alterations in that category or in that area. That was their decision, and they had spotted this piece, and they raised it because they thought it needed to be raised in terms of air changes. The other two teams didn't, and then everything stems from that point onwards.

Q Are you aware of NHS guidance called SHFN 30 about the HAI-SCRIBE process?

A Yeah, I have an awareness of it, yeah.

Q Okay, if we could go, please, to bundle 13, volume 3, page 464. So, there we have the front page of it on screen. It is guidance issued by Health Facilities Scotland, and this is the October 2014 version. Now, the HAI-SCRIBE process in this guidance is essentially for health boards to help them manage infection risks arising from the healthcare built environment. One of the things that it emphasises is the importance of collaboration amongst professionals if the risk of healthcare associated infection is to be managed effectively. If we could go, please, to page 470 and paragraph 1.3, I am just going to read from that and the following paragraphs. This identifies the challenge as being that:

> "Patients using healthcare facilities are more likely to be immuno-compromised and also more likely to receive intensive medical interventions, which in turn increase their vulnerability to opportunistic infections. Every effort must be taken to acknowledge and ultimately reduce these risks...
>
> "[Then 1.4, halfway through the paragraph] For HAIs to be reduced, it is imperative that Infection Prevention and Control (IPC) measures are 'designed-in' and IPC risks are 'designed-out' at the very outset of the planning and design stages of a healthcare facility and that input continues up to, into and beyond the final building stage…
>
> "[Then 1.5] To achieve this, it is necessary that designers,

architects, engineers, facilities managers and planners work in collaborative partnership with IPC teams, healthcare staff and the users to deliver facilities in which IPC needs have been anticipated, planned for and met."

Whilst you were not involved at the earliest briefing stages, you were involved at the time of the proposal to change the pressure arrangements in the multi-bed rooms. I would just ask, to what extent in your view did discussions around that subject reflect the, sort of, collaborative partnership that the guidance talks about?

A I think it reflected it pretty well. Despite a difference of opinion in terms of potential contractual liability, the teams actually worked very well together in coming up with a solution around the four beds. I think that actually runs pretty much right through the job. The collaborative approach was there through the project in the main. There were quite a number of disagreements. There were a few disputes. However, to the side of that and ongoing throughout that, the collaboration still stayed.

Q My understanding is that during the meetings to discuss the multi-bed room pressure solution, NHSL's clinicians were not involved. They were not meeting directly with the designers. Is that your understanding?

A I think in the main, NHSL worked with their own team away from us, but certainly as far as I could see, and evidence I had, they were consulting within their own teams. There were occasions that a couple of people would come along to specific meetings. I would say that it's unusual to be able to get infection control people to all the meetings all the time. You know, they're very busy, and their time is much sought after in a number of areas across the healthcare facilities, so it's generally easier then for the NHS project team to meet them at a time convenient and upload and download all the information and bring that back. As far as I could see, that was happening.

Q Mm-hmm, so you are describing there an approach in which the designers are meeting with the NHSL project team, and then the project team separately shuttling back to meet the clinicians and discuss it with them. Is that----

A Often but not always, yeah.

Q Yes. I mean, do you think it would have made any difference if the clinicians had been

present in the same room as the designers?

A I don't know. Elements could well help, but when we're talking sometimes around pressure regimes and air changes, the clinicians might not always twig what that actually meant to them in the outturn position. Do I think it would be useful? I don't think it would be a hindrance, but I think it would be a large time drain on people for areas where they may only have a little bit of input.

Q Perhaps one of the challenges in this field is that infection control via engineering systems involves expertise from a variety of disciplines----

A Mm-hmm.

Q -- so engineers, the clinicians using the space, IPC staff, and so on. Can you think of any improved way of working which would bridge the gap amongst all of those different professions?

A I mean, are we touching on to the NHS Assure part of----

Q We will come on to that----

A -- (inaudible) probably----

Q -- but I am interested in any ideas that you as an industry professional have.

A It probably bridges

across some of the NHS Assure things that I've read through there, but one goes around in terms of resourcing. I think the NHS overall are very stretched. They are people with specific knowledge, and that knowledge is massively beneficial to these projects. It's not knowledge that we possess. It's not knowledge that the project teams possess. I do think the infection control side on this project was reasonably well supported, from what I've seen on other jobs as well. However, it still falls on one person, and their availability is very restricted because of what else they've got to be committed to.

So were it feasible to donate those resources into these projects from the outset, and certainly through the design phase, and then probably in and out of the construction phase and back at the commissioning phase, I think that would be massively beneficial overall.

Q Mm-hmm. I mean, one way of looking at what happened on this project is that one arm of the NHS publishes guidance with recommendations in it, and then another arm of the NHS, the Health Board, appoints designers and gives them the contractual obligation of complying with the guidance, and this

is guidance which we have heard is sometimes open to interpretation. Is that an arrangement of responsibility that works well, or should responsibility for interpreting the guidance lie with the NHS?

A I think the latter is better because ultimately it's from the clinical delivery point of view that these buildings need to work. When you then leave interpretation of anything to somebody who's not from that background, then they could be interpreted in a way that they have completely inadvertently gone away from the point of it in the first place without knowledge of doing so.

Q Yes. You may or may not be aware that SHTM 03-01 was itself revised in February 2022. Are you aware of that?

A I am, yeah.

Q Yes, and have you worked with that guidance since it was----

A I haven't worked directly with it, no, but I have read it as part of-- slightly out of interest for today.

Q Okay. Well, one of the things that that guidance does is introduce the concept of the Ventilation Safety Group. Is that something that you have been able to read about?

A It is, yeah.

Q What are your thoughts about that as a suggestion?

A I think in concept it looks good. I think it's a step in the right direction for sure. Possibly areas it may go further, and it may be intended to go further in the future, but I do think that that's a positive addition to the SHTM and a positive addition to the projects that will be built, constructed, commissioned and set to use under that SHTM.

Q What would you regard as the positive features of it?

A I think the whole thing is around getting expertise available to project teams. When I say "project teams," I'm not even necessarily meaning purely NHS project teams, but to the project teams on a whole, which will start from the planning feasibility stages, getting them access to relevant experts that can, not so much even give guidance, but actually give firm direction, and an attempt to take away some of the ambiguity and some of the areas of interpretation, or at least have a defined interpretation on what it means, rather than each specific design team having its own interpretation.

Q Yes, so to you as a contractor responsible for the delivery of places like this, is that matter of firm

direction about the requirements an important one?

A Yeah, very much so.

Q Bear with me a second, Mr Pike. Another thing that SHTM 03-01 does is perhaps sharpen up the definition of "clinical areas" and "critical systems." If we could go, please, to bundle 1, page 2288. You see 4.12 there, where-- the heading of, "Definition of clinical areas and critical systems." Then there is a definition of "clinical areas" to distinguish them from non-clinical areas, and then at 4.13, it provides that:

> "Certain clinical and non-clinical areas within a health care establishment are considered critical to its ability to provide healthcare. Typically, ventilation systems serving the following are considered critical," and we have down at the third bullet there, "Critical care areas and neonatal units."

Then, down at the bottom, there is a little box that says:

> "If any doubt exists about whether a system falls within this definition, the VSG should be consulted regarding the risk to patient safety and business continuity."

Is that an example of the kind of firm direction that you were saying is helpful?

A Yes, it is. There's potential for it to maybe go a little further but that's a big step in the right direction as I look at that.

Q Then if we go, please, to page 2431, this is appendix 2 to the revised version of the guidance, and we can see it is perhaps a more detailed version of the table that used to be at appendix 1 of the old guidance, and if you see there, Mr Pike, in the box for, "General ward", there are now brackets saying, "level 0 and 1 care." Then, further down, in the box for, "Critical care areas," there is a reference to "Level 2 and 3 care." Would you regard those as helpful improvements?

A Yeah, I think they could have made a lot of difference if this was in place, 2014. So yeah, very much helpful improvements.

Q So, if you just expand on that: what difference do you think it might have made?

A I think that it just brings away-- So, I'll just take four-bed wards as an example, in our view in terms of general ward and other view in terms of single-bed room, the more you can just take away that – it's not really even different interpretations; it's, kind

of, fundamental different starting point to how you then go forward – the better. This table being more prescriptive, having more areas clearly defined as how they're supposed to be treated, is very helpful.

Q In particular, the classification of things by level of care, is that something that is meaningful to a healthcare ventilation designer?

A Personally, I would have to just refresh my memory of what the level of cares are. However, they're not completely unknown, and it wouldn't take a huge amount of time to just get them, and there would be people within our team and within the project team that would know what they were and (inaudible) to refer to.

Q If we keep in mind that you got involved in the project at a time when the Environmental Matrix had already specified 4 air changes per hour for the Critical Care rooms, do you think it would have made a difference to the way you handled the project if the guidance had been in these terms at the time?

A I think if the guidance had been in these terms, it may-- that original position may not have come to be. In terms of how I handled the project, if I put myself back at that point in time, it may not have short-

term because I would have still gone, "What's the contract delivery?" That would be my starting point, and to check what we were doing against our contractual obligations and then take things from there. So if those two things still tied up, I might not have looked. Obviously, having gone through this experience, it would be one of the first documents I looked at on any job going forward but that's the slightly-- coming from a slightly different educational position. I would like to think that the fact that it's got the "level 2"/"level 3" care, "level 0"/"level 1" care, and it's clear, that the actual origin of the issue here wouldn't have been there to start with.

Q The guidance is obviously very long; it is now hundreds of pages. Is there anything more that you think could be done in the guidance to help ensure the right sort of engineering systems are being installed in hospitals?

A I think everything I see is a positive move. You could still expand that table. I know that it gets to a point of, "Where do you stop?" but I think there are still probably areas, and it might be worthwhile looking at current projects or projects that have started recently and asking them where have they seen potential conflict

in interpretation as to whether there's a common theme coming up for additional rooms just to be clarified as clearly as these ones are. I think, you know, the guidance is in a tough position because it has to cover so many scenarios. You know, it is meant to be used and relied upon as the guidance for whatever you do in various stages from what might be a small dental refit in a small hospital to a massive multi-million pound high acute hospital, and it has to try and attempt to cover all that whole range. So it's always going to be very difficult to keep specifics in there.

Whether there's a potential to split parts to make them relevant to different sizes or scales or types might be something worth consideration. The other part, I'd say, maybe getting-- Might be slightly off-question, but anyway I'll state it: this is all in terms of guidance, and I think the healthcare Assure and ventilation safety will be very good additions in supporting this and making sure it gets utilised in the correct manner. There is always a point, though, that all of this guidance through SHTMs are just flipped into mandatory contract documents and it's just not as simple as that, fundamentally, because within this guidance itself there's contradiction to

other guidance with contradiction to other guidance. So just flipping it into a mandatory document is not as easy as it sounds or it's not then interpreted back and we've-- I think you've heard already that somebody's interpretation of it may not be somebody else's interpretation of it, and then therefore who's right and who's wrong, and it's a mandatory document to meet but people will say they meet it and other people will say they don't, you know? So therefore it leaves too many open areas when treated like that but I get the purpose of it and I think the purpose of it is excellent. I think the people writing it have a very difficult job to write it to cover every scenario they're trying to cover.

Q Okay. So, if I try and just pick out the key themes from that, I think what you are saying is that, at least up to a certain point, to have prescriptive requirements that are clear is helpful to the building contractor and the designer but that there is a limit about how prescriptive it can be. Is that----

A No, actually not a limit to how prescriptive it can be, possibly the opposite. I think what I'm saying is the limit is when things just get thrown in in buckets, so all SHTMs become mandatory and the building contractor

or the project delivery team are to sort that out, because they will sort it out in their own interpretations of it, and that gets away from potentially the clinical requirement that started off at the concept stage of the hospital, unintentionally sometimes or-- most of the time, I would think.

Q So, you are describing there a need----

A Probably a need to be more prescriptive.

Q A need to be more prescriptive.

A **"**Under an SHTM, there may be three ways to do something. We want you to do it option B," and then it's crystal clear for everybody.

Q Or perhaps a need, once the designers and contractors have come up with a solution that meets their interpretation of the guidance, to be able to gain confidence that that meets the expectations of either the Health Board or the people who set the guidance.

A Yeah, I agree with that. There was something somewhere I wrote down anticipating the question of what could be done differently under the IOM piece. So, IOM came at the end to do the validation, and that's when issues were raised up, and I thought, looking back through the history of everything and the amount of people looking at it and all of that, it's been well and truly gone over, so I won't go over it again. If a body like IOM had come and done a desktop version of their validation, right back at the start, possibly pre-financial close, possibly even pre-bid acceptance, certainly RDD or end of RDD, that could have made a lot of difference, and I think that's similar to what you were just inferring to there. Like our golden gate review that's a gateway to progress that certain experts come in, re-review, ensure that, yeah, we're content and we're comfortable with that interpretation, and things can proceed.

Q Okay, I think I know the passage that you are referring to, and if we could go to page 2402. Down at the bottom of the page, we have got the design proposal review, and what the guidance now says is that:

> "It is essential that whoever has been appointed to carry out the final validation acceptance of the system should be involved in the initial client's brief and design specification, preferably prior to the project being put out to tender. They will then be fully aware of the client's requirements and any limiting factors."

Is that the process that you were discussing?

A Yeah, that's pretty much part of it, yeah.

Q **Y**ou would regard that as a good improvement?

A I would, yes, and I would-- and I think Assure might do this, but I think taking that review, again, at the RDD point just prior to everything getting pressed for manufacture and construction would be another good point to do it.

Q Yes.

THE CHAIR: Can you just help me with this, Mr Pike? In this context, the RDD process involved quite a lot of data and they carried on after financial close. Now, as I understand it, that is unusual. One would expect an RDD process after financial close but perhaps more limited than occurred in this case. So, when you are talking-- When you use the expression, "By the end of RDD," you are talking about contracts in general, but it would be after financial close, but that is assuming that there is not really a great deal of data to review, or is that oversimplifying what you have said?

A No, it's pretty much on the right track. I think we're saying this review happens as indicated in the document pre----

Q Pre-tender.

A --(inaudible) engagement, pre-tender, and then there is a point in time prior to, I'll call it "pressing the button," but prior to starting manufacture, starting construction, that it is just rechecked again to make sure nothing has gone away between the bid returns, the acceptance and the technical reviews, that it then says, "Yes, that still aligns with what we intended at the outset."

Q Thank you.

MR McCLELLAND: Okay, thank you, Mr Pike. Now, you have already referred to NHS Assure, which has been set up. NHS Assure is a division of NHS National Services Scotland, and one of its aims is to provide assurance to the Scottish Government about compliance with guidance, and that is done via a series of key stage assurance reviews. Now, do you have any experience of a project where these key stage assurance reviews have been in place?

A Not in healthcare, no, I haven't worked under this piece. I have experience of other projects in other sectors that have a-- not as in-depth as this is now proposed, but have a similar kind of key stage/key gateway review.

Q Okay. Which other

industries have something similar to this?

A I worked for the prison service on a number of jobs, and they have a gateway review system in place which was very beneficial.

Q And is that a gateway concerned with compliance with guidance for engineering systems and design and that kind of thing or is it for other purposes?

A It probably covers all purposes but yes, that became part of it or that was part of it.

Q Okay. In preparing for today, have you had an opportunity to look through any of the documents that Assure has published about these key stage assurance reviews?

A Yes, I had a read of it. I'll call it "a brief read", not----

Q Well, fair enough, and well done for taking it on because there is quite a lot of reading but do you have any observations or comments about that from the reading that you have done?

A Yeah, my first and main observation is it looks a positive step again, and I can see they've identified, (inaudible) "gateway reviews", but review points throughout the journey of a project's life. I can see the intent to give access/bring access to specialists

in the area, people with more specific knowledge of areas than a normal project team may have so I think it looks like a very positive step for me overall, certainly in concept. I've never worked with it so I don't know how it is working but I do have a couple of colleagues that are currently working under schemes, not the Multiplex-- ex-colleagues, sorry, and they seem to welcome it.

Q The process, as I understand it, is intended to give assurance to the Scottish Government, who are often funding these projects, and the burden or the task of demonstrating compliance essentially rests on the Health Board. Do you know what impact, if any, it has on the work for the contractors on these projects?

A Not first-hand I don't, but I would think it possibly brings-- it could well bring in additional work at that front-end of the project. I'm not sure what it brings in in the bid stage for the contractor, but I would anticipate it also brings in quite a bit more work for the Health Boards pre-contract in the early stage of the project.

Q Okay. Well, thank you very much for that, Mr Pike. I do not have any more questions for you.

There is a possibility that some of the core participants may have a question, and I think the normal practice is to break for them to have an opportunity to raise those points with me. So, my Lord, that may be----

THE CHAIR: Yes, that is what we will do. The way I would suggest we choreograph this is that we take 10 or 15 minutes with a view to being able to tell Mr Pike whether there are further questions before lunch as opposed to after lunch. So, we will rise for about 10 or 15 minutes. Mr Pike, I will ask you to go back to the witness room, and the purpose is to confirm whether we have further questions.

A Okay. Thank you.

(Short break)

MR McCLELLAND: We have one question, my Lord.

THE CHAIR: One question? You will ask that question?

MR McCLELLAND: I am happy to ask it.

THE CHAIR: Right. Good, thanks to (inaudible). (To the witness) I am told there is one more question.

MR McCLELLAND: Thank you, Mr Pike. Just a few moments ago, we were discussing the Ventilation Safety Group and NHS Assure, and your view was that they were helpful additions to the field, I think partly because of their expertise and partly also because of their objectivity, I suspect. Now, on this project there was an independent tester, Arcadis, who might from one point of view be regarded as another set of eyes on what was going on, but they did not detect the issues, IOM coming in that spotted it. So, the question is, would you see the Ventilation Safety Group and NHS Assure bringing something different to what an independent tester would bring?

A Yeah. I think they have to bring something different, and what I've taken from the documents, I've read around the purpose, is they are much more to look at compliance to technical standards. The independent tester's role, from my experience, is to check that the contract has been met. So, if there is a point in there that perhaps the starting point is debatable, he will not look to pick that up. He will look back at what he considers to be the contract.

Q Yes, so the tester is not going to detect a discrepancy between the contract and the guidance?

A No.

Q And that is where you would see the VSG and Assure

bringing something different?

A Yes.

Q Thank you very much.

A All right. Thank you.

THE CHAIR: Thank you very much, Mr Pike. I appreciate your attendance and the work that went behind that in preparing your witness statement. So, thank you very much indeed, Mr Pike. You are now free to go.

A Thank you. Apologies.

THE CHAIR: Well, a moment for lunch perhaps, or maybe not a moment, maybe an hour for lunch. So, we might sit again about five past two.

(Adjourned for a short time)

THE CHAIR: Mr McClelland.

MR McCLELLAND: Yes. The next witness, my Lord, is Ken Hall.

THE CHAIR: Ken Hall. Thank you. Good afternoon, Mr Hall. As you appreciate, you are about to be asked questions by Mr McClelland, but before doing that, I understand you are prepared to take the oath.

Mr Ken Hall

Sworn

Thank you very much, Mr Hall. What I say to every witness, in large part because I am hard of hearing, is I much appreciate it if you speak just a little bit more loudly than you would normally and perhaps a little more slowly. I want to hear what you have to say, as do the rest of the people in what is quite a large space.

We will be sitting until about four, but we may finish the evidence in that time but we will consider matters then. We may sit a little after, or we may break until tomorrow, but if at any stage you want to take a break, just give me an indication and we will take a break. Just feel that you are entirely in control of that. Now, Mr McClelland.

Questioned by Mr McClelland

MR McCLELLAND: Thank you, my Lord. Good afternoon.

A Good afternoon.

Q Could you please confirm your name?

A Kenneth Hall.

Q You have given evidence to this Inquiry on a previous occasion, is that right?

A I have, yes.

Q Have you provided a further witness statement in relation to this set of hearings?

A I have, yes.

Q If we could have on the screen, please, witness statement bundle volume 2, page 42 and do you see there your statement, Mr Hall?

A I do, yes.

Q Does that statement set out fully and truthfully your evidence on the matters that it addresses?

A It does, yes.

Q Is there anything in it that you think needs to be changed or corrected?

A No.

Q In relation to your experience and expertise, as you have explained to the Inquiry before, you are an electrical engineer by background. Is that right?

A That's correct.

Q And for the last 13 or 14 years, have specialised as a healthcare building services engineer.

A That's correct.

Q Are you still employed by Multiplex?

A Yes.

Q Of course, you worked for Multiplex at the time of the RHCYP project.

A I did, yes.

Q On that project and after financial close, your role was to manage the development of the design for mechanical, electrical, and plumbing installations.

A It was.

Q The design was being produced by Multiplex's subcontractor,

Wallace Whittle.

A That's correct.

Q Can you just explain your role in the process of finalising the design?

A Effectively, it was working with the team at Wallace Whittle and ensuring that their design was produced and interacting with the actual Board on the NHS's side to ensure that we got agreement.

Q Were you working as part of a team of people in Multiplex?

A Yes.

Q How many people were involved in the management or review of the design?

A Is this specifically to MEP or is this for----

Q Sorry, I should say for ventilation systems.

A For ventilation systems, there's kind of pre-construction and construction and the teams are kind of split in that order, but in terms of pre-construction, it was really myself that led that.

Q Okay, and you say "led it." Well, how many people did you have working with you on it?

A None.

Q None, okay. Now, you yourself are not a designer, is that right?

A Previously I've been one, but not latterly.

Q Not on this project?

A No.

Q Was it any part of your role to ensure or check that the design being produced by Wallace Whittle for ventilation complied with the guidance?

A Well, the role really is effectively engaging with Wallace Whittle, who were the designers, ensuring that, you know, they were using the correct documents, maybe, you know, reports. Really, interacting with them and going through it, but not going through it as a design engineer, no.

Q No. So, for example, would you see it as part of your role to go through the entries in the Environmental Matrix and check them for compliance with guidance, or would you rely on Wallace Whittle to do that?

A Wallace Whittle had their own quality standards and so effectively that was their role, but my role was more about ensuring that they were using the correct documents and perhaps using the latest drawings. There's a whole series of items that make up the design and so you are deep within it, but not specifically taking a document to go through every

single line to look to see if it complies, because effectively the client's requirements had already been reviewed, and what we had was what the client was looking for in terms of if we use the Environmental Matrix as an example.

Q Okay. So, just picking up on that last statement, was your understanding that the parameters in the Environmental Matrix were part of the board's construction requirements which Project Co were obliged to deliver?

A Yes.

Q I think you explained previously when you gave evidence that you understood the Environmental Matrix was reviewable design data to the extent of seven comments which had been made against it by the Board. Is that right?

A That’s correct, yeah.

Q Now, in paragraphs 5-21 of your witness statement for this hearing, you discuss exchanges after financial close about the ventilation design, and that is the period from May to December 2015. You explain that this led up to the formal submission of version 2 of the Environmental Matrix under the contractual reviewable design data procedure by IHSL to NHSL. Now, if we could go, please to

bundle 13, volume 2, page 97. You should see on screen there in front of you, Mr Hall, an email dated 4 December 2015, from Multiplex to various recipients, including at Mott Macdonald. The subject heading of the email is, "RDD Review Environmental Matrix," and it says:

"Please find attached RDD documents…for information."

Then, if we could scroll down to page 100, please. Actually, sorry, if we could go back a page to, I think, 99. Yes, so we see here this is the Environmental Matrix and we have got a version date of 26 November 2015. You see that, Mr Hall?

A Yes.

Q Yes, and we also see there in the box:

"Document highlighted items amended inline with NHS comments."

Do you see that?

A Yeah.

Q Okay, and then, if we go forward to page 100, please, and we see here a table with seven lines in it, and then beside the numbers there is a column headed up, "Item." Do you recognise those as the issues which had been raised by NHSL and which had been left unresolved at financial close?

A When you say unresolved, I'm just looking at, for instance, point 4, on the "balanced/ negative pressure."

Q Yes. It was a poorly phrased question on my part. Do you recognise these as the seven comments about the Environmental Matrix which had been recorded in the reviewable design data schedule of the project agreement?

A Yeah.

Q Yes, and to what extent had the revision of the Environmental Matrix after financial close up to this point been to address those seven points?

A Yes. So, the whole purpose back in May while we're now in the construction phase, I was aware that we had to resolve these seven points in the Environmental Matrix, and the engagement with Motts in May time was to resolve these seven points. So, Wallace Whittle pulled together the comments. We tried to use a draft format to go back and forward so that we would effectively have the comments resolved, and that would be the document, you know, a line under the sand.

Q So, had the work up to that point by Wallace Whittle and Multiplex been confined to addressing

those seven points that had been recorded in the project agreement?

A Well, in addition to that, then other aspects crept in where other points had to be addressed.

Q Okay. If we could go, please, to page 101. Now, if we could maybe zoom in on-- Well, just before we zoom in, do you see there, Mr Hall, that there is some text in red?

A Yeah.

Q Is that text in red to denote the fact that it is a change from the preceding version of the matrix?

A Yeah.

Q As we saw on the first page, there was a note that said that some changes were highlighted. Do you recall if there was an agreement amongst the parties that changes to the Environmental Matrix would be marked in red in that way?

A I don't recall a formal agreement on how the whole change process was to be done but it's not uncommon to highlight a change in a colour.

Q I mean, was there-- You said there was not a formal agreement but was there an understanding that it would be done?

A I'm not sure if there really was or it was just accepted that that's what we would do to change.

Q I mean, Mr Greer describes it as a good industry practice to mark changes in that way when going through a design review process. Would you agree with that?

A Yeah.

Q So we see those changes are marked, but there is another change in these guidelines from earlier versions of the matrix, and that is at Guidance Note 15, so if we could perhaps zoom in a bit so that we can read that a bit more easily. You do address this briefly in your statement, Mr Hall. If you see Guidance Note 15 there and you see, reading down towards the bottom of Guidance Note 15, which is quite a long one, there is a section marked, “Critical Care areas”.

A Yeah.

Q Okay, and it reads:

> “Critical Care areas - Design Criteria - SHTM 03-01 - Appendix 1 for air change rates - 10ac/hr Supply for isolation cubicles”.

Now, if we just stop there, the words “for isolation cubicles” did not apply, or did not exist, in the previous version of this matrix. You are aware of that, are you not?

A Yeah.

Q This was a change which

Wallace Whittle had made to Guidance Note 15. Is that your understanding?

A Yes.

Q But it is obviously not marked in red, as the other changes had been. As I say, you were asked about this, and in your statement what you say – it is at paragraph 109 for anyone who wants the reference – that you were not aware of the change having been made at the time and cannot comment further. So do you mean that you were not aware at the time that this change had been made? Is that right?

A The wording change, yeah, I wasn't aware (inaudible).

Q As far as you know, was anybody else at Multiplex aware, at the time, the change had been made?

A No.

Q Now, you say in your statement that you cannot comment further, but I am going to ask you a few more questions in any event. Do you think that the change is material?

A Well, obviously, when it's been made aware to me, I done a little bit of research on it just to track it and follow it, and the main thing that I done was I looked at the actual figures within the spreadsheet, and they weren't changed. In addition to that, there was dialogue at the time, which

is in my statement, around isolation cubicles, and Wallace Whittle was seeking clarifications through an RFI to Motts. So there had been some dialogue.

The fact that the figures-- I said in the last hearing that my belief is that the Environmental Matrix is a summary of the figures that the designers then use to do their detailed design, and so they're focused in on the actual numbers within the spreadsheet. In reality, they weren't changed, so for Wallace Whittle's design it was still the same figures, regardless of whether a change had been made on a line there.

Q So the change in and of itself, it was immaterial?

A Did you say was or wasn't?

Q Yes, was it material?

A In my opinion, it wasn't material because the client's requirements in terms of the actual design figures remained the same.

Q Okay, but if we take the wording of the guidance note in and of itself, before the words "for isolation cubicles" were added, that guidance note specifies 10 air changes per hour supply in the Critical Care Areas, and it does it without any qualification. Do you agree with that?

A Yeah. I mean, I've looked at the previous version when this was made aware to me so, yeah, that's correct.

Q After the change, after those words are added, it restricts the 10 air change per hour requirement to isolation cubicles only. Do you accept that?

A Yes, uh-huh.

Q So just in and of itself in that guidance note, that is a material restriction in the meaning of the guidance note, is it not?

A Well as I've, kind of, tried to explain, the key thing about the Environmental Matrix was not for somebody to be taking all these notes and actually then using them to design. That work had already been done, so effectively the client's requirements were already defined in the actual body of the spreadsheet, and that remained the same.

Q Okay, so are you referring there to the part of the matrix where there are particular parameters specified for each room in the hospital?

A Yeah, the figures.

Q Okay. We can go to it if you need to, but I think you can probably do this from memory, that if we were to go to that part of the matrix for Department B1, the Critical Care department, we would see there the choice of 4 air changes per hour for the single bed and open plan bays in the Critical Care Area. Is that right?

A That's correct, yeah.

Q Yes. So if we look again at the guidance note, would you accept that before the change is made, so before the words "for isolation cubicles" are added, there is a contradiction within the matrix, in that the guidance note requires 10 air changes per hour for Critical Care areas but the individual rooms specify 4 air changes per hour?

A Well, the contradiction existed before that change.

Q Yes, that is what I mean, so I think we are agreeing. There was a contradiction before the change was made.

A Yeah.

Q The effect of the change is to remove the contradiction.

A Yeah, I see how you're-- Yeah.

Q So is that a change which should have been brought expressly to the attention of NHSL?

A Well, I guess, I mean, Wallace Whittle would need to understand why they didn't highlight it, but in reality what I've said that there

was dialogue that came to this aspect, so it wasn't that it was done in isolation and nobody knew in terms of, the actual-- you know, the wording and the RFI. You know, you can track through what Wallace Whittle were doing, and they were clear in how they were making their assumptions.

Q Okay, so do you mean that there was correspondence between Wallace Whittle and either the Health Board or the Health Board's representatives to make clear that, insofar as 10 air changes per hour were specified for Critical Care Areas, that that was only to be in the isolation rooms and for no others?

A Yes.

Q Are you able to tell us when and where we could find that correspondence?

A Well, it's actually in my statement.

Q Okay, I have read all the correspondence that is referred to in your statement, and I did not find anything which would have clarified that. Do you have a copy of your statement there, Mr Hall?

A I do, yeah.

Q Are you able to give us a paragraph reference?

A So if we go to paragraph 16.

Q Yes, so if we could bring that up on screen, please, this is – bear with me – witness statement bundle, volume 2, page 45. So, what you say there is that that, "On 22 September"-- I think that year must be wrong, perhaps 2015?

> "Wallace Whittle then issued a query seeking guidance in relation to isolation cubicles, which I forwarded to Mott MacDonald on the same date. Mott McDonald responded on 25 September 2015, and I forwarded their response to Wallace Whittle."

Then it carries on. So, is that the correspondence which you say clarifies the matter of air changes in the Critical Care department?

A Yes.

Q I mean, we can go through it if it is helpful, but my recollection of that correspondence is that whilst it discusses the isolation rooms, it does not say anything about the other patient spaces in the Critical Care department. Is that a fair recollection of it?

A Well, it discusses the two types of isolation rooms, and then there's a clarification, I think, from Motts. So when you say the other rooms, can I ask which ones you're

referring to?

Q The non-isolation rooms in the Critical Care department, so the spaces for patients, the single-bed rooms and the open plan bays in the Critical Care department. What I am wondering is whether there was anything in those exchanges to confirm that there was not a requirement of 10 air changes per hour in relation to those.

A Not explicitly, no.

Q No.

A The reason I was quoting that was is to back up the change that Wallace Whittle had made, but it was to do with the isolation, but it doesn't go into the detail of all the other spaces, no.

Q I mean, you have helpfully given us the references to that correspondence. Is there anything else that you are aware of that you would regard as having supported the change that Wallace Whittle made to the matrix, or is it confined to that correspondence that you refer to in your statement?

A No, I think that that's where I'm relating-- I mean, I've never discussed this with Wallace Whittle, so I just don't know what they were thinking at the time. This is me making assumptions really, and joining it

together that they were asking the request and they were looking at the matrix. Then the output of this request, they then altered that matrix, but that's an assumption from me.

Q Yes.

A It's not fact.

Q Okay. I mean, if I could just put it this way: if the change to the matrix had been marked in red or otherwise explicitly brought to the attention of NHSL, would you accept that it would have given the Health Board the opportunity to consider what they wanted, whether they wanted 4 air changes per hour or 10 air changes per hour in the single and multi-bed rooms in the Critical Care department?

A Well, my view by that time, it wasn't an option. It had already been defined.

Q That is on the basis that you were taking the Environmental Matrix as a fixed brief of the Health Board's requirements?

A Yeah.

Q But I think you accepted a moment ago that prior to the change being made, the matrix was actually contradictory in that on one page it said 10 air changes per hour for Critical Care Areas, but then in another it said 4.

A Yes. I mean, it's

obviously making assumptions. The actual-- the original person, presumably who was Hulley & Kirkwood, I don't know what they were assuming when they wrote that, but it seems odd that, you know, the wording that perhaps Hulley & Kirkwood had written was not correct because how we ended up with the figures in the actual spreadsheet-- So it's very hypothetical, and I don't think there's a factual answer.

Q Well, do you accept that by not highlighting the change, the Health Board were denied the opportunity to make a choice between 4 and 10 air changes?

A Yes.

Q The change that was made by Wallace Whittle reflects Stewart McKechnie's interpretation of the SHTM guidance. In his view, the recommendation of 10 air changes per hour and 10 pascals of positive pressure for critical areas only applied to isolation rooms. That is his view; that is his interpretation of the guidance. So, were you aware at the time that Mr McKechnie was proceeding on the basis of that interpretation of the guidance?

A My understanding was that we were working to the client's brief and what was contained within the Environmental Matrix was what we were designing to.

Q Yes, okay. So, a moment ago we were looking at what was revision 2 of the Environmental Matrix, and what you say in your statement is that you were surprised at the extent of the comments made by NHSL on that draft, and if we could go, please, to bundle 13, volume 2, page 134. We see here-- I think you should have it on the screen in front of you, Mr Hall. It is an email from Mott MacDonald to you and others at Multiplex, 20 January 2016, and what Kamil from Mott MacDonald says is:

> "Please find attached Board's initial comments on the Environmental Matrix. As briefly discussed at the PMG on 13 January and yesterday with Ken Hall the workshop is required to discuss Board's comments. The workshop has now been arranged for Tuesday 26th January at 10am. Note the review is not complete and the Board will require xls version of the matrix to comprehensively review it and provide remaining comments prior to the workshop. Please forward an xls version of the EM."

What did you understand to be the

scope of the review being carried out by NHSL and Mott MacDonald on the Environmental Matrix?

A Based on that email or based just generally?

Q Well, you can take that email into account but just in general.

A My understanding was that they were reviewing not just the Environmental Matrix but all of it in terms of the detailed design to ensure sure that it was meeting the client's requirements.

Q The phrase that Mr Kolodziejczyk used was he was looking for an "…xls version of the matrix to comprehensively review it and provide remaining comments…" What did you take from that, if anything?

A At the time, I didn't-- I mean, the whole issue was that we had an Environmental Matrix where we had seven points, I'd engaged with Motts in May, and in reality I thought that that was going to conclude the review. So when that came out, I didn't really-- there wasn't an alarm bell or anything that there was an issue. I just thought they were doing their final sweep-up and review, which I took as positive.

Q Then if we could go forward to page 136, please, we can

see the Board's comments. That is the first page, and if we could just scroll down to the second page, and then the third. So, we see there that what the Board has described as "initial comments" on the matrix extended to 40 comments, and was that the extent of things that came as a surprise to you?

A That was certainly a surprise but I think there-- ultimately there was 50 comments in total.

Q Yes, so more in due course?

A Yeah.

Q How thorough did you understand the checking or the review of the matrix by NHSL and Mott MacDonald to be?

A Well, certainly given the time, I assumed that it was a thorough review, that they were just ensuring that the client's requirements were definitely what they still wanted and this was the output of what they had found.

Q What Graeme Greer of Mott MacDonald says in his statement about it, and the reference-- We do not need to bring this up onscreen but the reference is witness statement bundle 2 at page 6. He said-- I am just going to read from it. He is talking about the checks being done by NHSL

and Mott MacDonald, and he said:

> "My understanding is that NHSL entered into a contract with Project Co to undertake the design in accordance with Project Co's own quality assurance procedures. The design would therefore be checked and approved by Project Co prior to issuing RDD submissions through the Review Procedure. NHSL were therefore relying on Project Co's own design assurance and did not undertake a line by line review themselves."

Does that reflect your understanding of what Mott MacDonald and NHSL were doing?

A Well, in relation to design, I would agree that that was Project Co that were responsible for the design, but what we're talking about here is a client's requirements. You know, this is a document that reflects what the client wants and then ultimately, once that document is agreed, Wallace Whittle then would take that document to then take responsibility to do the design. But in terms of the actual contents of the Environmental Matrix, you know, a quality check-- we wouldn't be able to do a quality check in terms of verifying that the Clinical Team had asked for a

certain air change with a certain room. So that aspect, I think it needs to be split between-- you have the client's requirements, and that's a document, and I don't see that as design, and then you then have, actually, design, and that's what we were contracted to do.

Q Okay. So, you said that you regarded the Environmental Matrix as the client's brief. So insofar as that was going through the contract design review process, do you understand the purpose of that as being to finalise or clarify NHSL's brief?

A In relation to the Environmental Matrix?

Q Yes.

A Yeah. So, my understanding after contract award was that we were updating these seven points, we would then have a document that represented the client's requirements, and then during the contract there may well be changes and issues that have to be-- result in that the Environmental Matrix getting updated, and that would go through for RDD but I didn't see it as an avalanche of comments after construction was awarded.

Q Yes, okay. If we could go, please, to bundle 13, volume 2 at page 159. This is an email from you to

John Bushfield at Wallace Whittle on 10 February 2016:

> "Hi John
>
> Feedback from the Board based on the 2 meetings reviewing the matrix. I will speak to Project Co about this being a status C…"

Just pause there, that is one of the non-approved statuses of an item in the RDD process?

A Yes, level C, rejected.

Q So rejected by the Board:

> "…however its quite a risk to the project having this rejected [and then so on.]"

What did you mean by that?

A The risk to the project?

Q Yes, when you say it was quite a risk to the project having this rejected, what did you mean?

A Well, in reality, you know, what we expected at the May-time, to resolve the seven points and then for Wallace Whittle to get cracking with their design, because the matrix informs what their design will be, and in reality that started in May and we were now into February and were sitting with a rejected matrix that we just didn't know was coming and it impacted on the design program that Wallace Whittle were having to adhere to. In reality, the risk was that, you know, here were more comments coming on a document that we thought was the client's requirements in the previous iteration.

Q So the risk was to the certainty of the program for the project, was that what you meant?

A That was one aspect but also, just in general terms, it felt like it was now getting changed, and that-- I mean, I don't deal with the commercial side but it could have had an impact on that, but just generally, what do we have to now review to see what impact there is on the actual infrastructure of the project and-- You know, so there was many facets to it.

Q If we go, please, to bundle 13, volume 2 at page 169. In fact, if we make it page 172, please. We can see there from the box at the left this is revision 5 of the Environmental Matrix and it is taking account of comments up to the 11 February 2016. Then if we could go forward to the next page, please. We see there that is a table of responses and so on to the original seven comments about the matrix. Is that right?

A Yeah.

Q Then if we go forward to the page after that, there is a new

table, and we see the left-hand column goes up to number nine, and in fact the document runs on for another four or five pages, and just briefly, what was this?

A Well, effectively, these were the changes that the Board had asked to make to their own requirements.

Q So we see there that there is a list. The second column is headed up, "NHSL comment." Are those taken from the document we saw a moment ago with the big, long list of comments?

A Yeah, yeah.

Q If you look along to the right-hand side of the table, there are two columns, "FC comment" and "Post FC comment." What were those there for?

A Yeah, so, that was to distinguish if the comment was before financial close or if it was after.

Q And the significance of it coming after financial close was what, in your view?

A Well, it wasn't included for and we weren't aware of it when we signed the contract, basically.

Q So did you mean it is something that might give rise to a contractual change at the instance of the Board?

A Yeah.

Q Okay, and you explain in your statement that this version of the matrix came to be approved by NHSL at level B, so that means approved subject to whatever comments are made, is that right?

A Yeah.

Q Yes, and what you say in your statement was that, as far as you recall, none of the comments made by NHSL took issue with the pressure regime or the air change rates proposed in the matrix for the Critical Care Department. Now, the contractual significance of that might be a matter of debate but what did you take from that?

A I took that-- Well, I guess, in the bigger picture, we now had all these comments that had been made. We ultimately took them on board and there was no contractual issue in terms of impacting on the project so we just absorbed all the comments, but what I took overall was that we now had a matrix that represented the client's requirements now.

Q Yes, okay. (After a pause) If we could go, please, to bundle 13, volume 5, page 1097. Next page, please. Sorry, 1097. We see here this is a communication from Mott

MacDonald to you and Darren Pike at Multiplex dated 15 April 2016, and you see there a file attachment with the name "Environmental Matrix rev 05 Board Comments," and then if we go down to the next page, please. We have a message from Kamil at Mott MacDonald. The first paragraph we see there, he says:

> "Relative to the Financial Close comments, the Environmental Matrix is given status B."

What did you understand him to mean by giving the approval status B in relation to the financial close comments?

A To be honest, I didn't differentiate. It was basically, we had this matrix and it was now status B and we could proceed.

Q If we can just zoom back out of the document, please. Then the final paragraph reads:

> "IHSL are also reminded that the reference design has no relevance to the current contract, and IHSL are to comply with the Project Agreement and in particular the BCRs and PCPs. Any non-compliance with the BCRs or PCPs should be highlighted to the Board."

What did you understand that to mean?

A I took that as a standard statement. In reality, it was a line under the sand. We now had status B Environmental Matrix, so we could proceed. There was a comment about the reference design which was the Hulley & Kirkwood pack that had the modelling information and the issues over what they had modelled in terms of overheating in some of the spaces, but we accepted that that reference design was not mandatory. So, that was fine, and then in terms of the complying with the BCRs, again that was the Environmental Matrix. So, we took this as a concluding statement that if we were going to deviate from the Environmental Matrix and the figures coded within it, we would need to highlight it to the Board.

Q Okay, so are you distinguishing, then, between the Environmental Matrix and the reference design? You see those as different things?

A Yeah, so my understanding was the reference design was the Hulley & Kirkwood pack, that effectively Wallace Whittle had to take ownership of that. So, they took design responsibility, because within that Hulley & Kirkwood had modelled a space. Hulley &

Kirkwood's view was that it wouldn't overheat at 4 air changes, and Wallace Whittle had done their own modelling to ensure that that was correct. They then took that design responsibility, but we knew that that was not part of the contract and we had to prove to ourselves that it wouldn't overheat.

Q Okay. I am just going to read out to you what Graeme Greer of Mott MacDonald says about that paragraph that we have just been looking at, and this is at paragraph 30 of his witness statement. Can we just keep that document on screen? So, we do not need to go to Mr Greer's statement, but I will read from it. So, the reference for that is witness statement bundle, volume 2, page 13, and what Mr Greer says is:

> "This email reminded Project Co that they had responsibility for the development and design of their Environmental Matrix. They could not simply rely upon the Environmental Matrix which had been issued to them as part of the reference design. Project Co had responsibility to develop their Environmental Matrix so that it complied with the BCRs and SHTM 03-01. This is just one example of several reminders which NHSL's project team had to send to Project Co during the construction phase to drive home to them that they had responsibility for developing the design."

To what extent do you agree with what Mr Greer says and to what extent do you take issue with it?

A Well, I don't agree with it, and I would have thought that if that was the view, it would have said it in this particular Aconex, more specific. However, when you look back to the time when we were working together producing this, we were in the same building, we were working together closely, we had meetings every week, sometimes two and three times a week, you know, and the relationship was good. So, I would have expected-- because there were other issues where people would come to me with something from Motts or I might go and speak to them about something, so if there was a genuine concern, I would have expected somebody to have discussed it with me.

Q Okay. (After a pause) If we could go, please, to bundle 13, volume 2, page 649. This is moving on slightly. It is 17 October 2016, and it is an email from Mott MacDonald to

you, amongst others, again about the Environmental Matrix, and it reads:

> "The Board have reviewed the Environmental Matrix and still has significant concerns on items that do not appear to comply with the BCRs."

Then they set out some general comments, six of those, and then they have some specific comments. If we can just scroll down to the next page, please. It finishes up by saying that:

> "Whilst the Board has noted general and specific comments above, the Board reminds Project Co that unless the Board has already accepted a derogation, it is Project Co's obligation to comply with the BCRs/SHTMs etc, and the Board not commenting, does not remove that obligation on Project Co."

Now, Mott MacDonald appear there to be saying, are they not, that it is for Project Co to bring the matrix into line with SHTM recommendations? Do you accept that?

A I'm trying to-- Which revision of the Environmental Matrix was that? Is that the 07 one? On the dates-- I'm trying to get clear in my mind.

Q Just bear with me. That is revision 7, so that is the version that was returned by the board at level C. So, level 5 having been returned, approved, then this version, revision 7, was returned at level C, rejected.

A Yeah. So, putting that into context, you know, my opinion in terms of industry good practice is that once something's been reviewed through RDD, you don't get another bite of the cherry, shall we say. It would only be changes that have been made that would be reviewed. So, that's my experience with the RDD process generally. What we had here was a situation where the matrix had been approved and, in addition to that, that triggered, you know, departmental designs which, by that sort of date, had been also approved.

Then there was an emerging issue over four-beds, and what it appeared to me was that there was now an ambition to back out of what had been approved, and this was just an attempt to now reject the matrix. So, that's the context of it, in my opinion. In relation to the comment that you asked me about on the final paragraph, the obligation to comply with the BCRs, well, my view was that we were complying with the BCR, because that was the Environmental Matrix which was the client's requirements.

Q Could you understand what he meant when he-- If you were sitting there taking the Environmental Matrix as being the board construction requirements, what did you understand him to mean by saying that it was "Project Co's obligation to comply with the BCRs… and the Board not commenting [on the matrix] does not remove that obligation on Project Co"?

A At the time, I didn't analyse it to that extent. My view was, we had an approved document that had the Board's requirements that they wanted, and so-- I guess, thinking about it now, it's not clear as to then how does it-- the Board not commented, because they already had commented and given us the level B, but I didn't really analyse that at that particular point, to be honest, as to what he really meant.

Q Because what we have is you are saying that you take the matrix as the Health Board's brief, the Health Board is coming back with lots of comments and dissatisfaction with the matrix and telling you that the matrix had to comply with the BCRs and the SHTMs. If the matrix really is the brief, it seems to be a bit of a circular problem.

A Yeah, but in the background, if you know that you have

signed off a document that has now allowed various departments to have mechanical services in terms of ductwork actually be under manufacture, you then have an issue, and therefore perhaps it could be seen as trying to back out of approvals. Because I guess when you look at some of the comments that were made, are they level C in this list?

Q What do you mean, "Are they level C"?

A Well, because the whole matrix was rejected level C, when you actually look at what the comments were, are they significant?

Q Right, and if you want to scroll briefly over them, was it your view that, in general terms, they were not all that significant?

A From memory, it was difficult to understand why you could reject it after approving it, and in reality, there was this other emerging issue that was appearing.

Q Yes. Okay, and you say emerging issue. Are you talking there about the issue of the pressure arrangement for the multi-bed rooms?

A Yeah.

Q Okay, let us move on to that. So, you explain in your statement that NHSL wanted to have balanced pressure for the multi-bed rooms, and

you describe that as a change. Can you just confirm why you viewed that as a change?

A Well, the client's requirements stated that for the multi-beds it was to be 4 air changes and positive, and now there was a request to make it either balanced or negative.

Q Okay. So, the view that it is a change rests on your view that the Environmental Matrix represented NHSL's brief on ventilation.

A Yeah, but in addition to that, there were also the, you know, departments where there was detailed design done and all submitted for RDD. That also had been approved at the-- which represented the Environmental Matrix. So, it wasn't just the Environmental Matrix. There was a whole series of other aspects that had been reviewed and agreed, in my opinion.

Q Yes. In dealing with this change proposal in relation to the pressure, was it necessary in your view to ensure that the change design complied with SHTM guidance?

A Well, the way it was dealt with was that it was very much, you know, the design as it stood had complied with the client's requirements. There was now an issue raised that they wanted

something different, and therefore the way Multiplex dealt with it was, "Well, okay, fair enough. Let's see what you want now and we'll see what we can do to deliver that." But the design wasn't led by Wallace Whittle.

Q So, then my question was whether it was necessary, in your view, to ensure the change to design was compliant with SHTM guidance? Should we take your answer as no, that what was necessary was for it to comply with the new instruction from the client?

A Yeah.

Q If we could go, please, to bundle 13, volume 2, page 668. This is Brian Rutherford at Wallace Whittle to Stewart McKechnie and yourself amongst others, 9 February 2017, headed up: "Multi Bed Room Ductwork Amendment Proposals" and he says:

> "All,
>
> Further to our Ventilation workshop on Monday, please find enclosed a copy of our Multi Bed Rooms – Ventilation Amendment Proposal to Achieve Room Balance, Proposed Solution To Rooms identified as Being Of Concern."

Then if we scroll down four pages, please, to 672. Is this the proposal produced by Wallace Whittle

in response to the workshop?

A Yes. So, Wallace Whittle who were listening to what was being asked and then they then took an action to go away and pull something together that represented what was being asked, to then further debate it.

Q Okay, so this was Wallace Whittle's proposal for achieving the request for balanced pressure in the multi-bed rooms that the Health Board had made, yes?

A Yeah.

Q We see this is headed up:

"Proposed Solution To Rooms Identified As Being Of Concern"

Who was it that had identified rooms as being of concern?

A Who was it? I think it was the NHS, I think.

Q NHS Lothian.

A Yeah.

Q Just why was there a concern about them?

A Well, it was to do with the fact that they weren't what they now wanted in terms of a pressure regime.

Q Okay. Do we see there, rooms D and E on that list have the room number reference with B1 in it? Are those rooms in the Critical Care department?

A Yeah.

Q If we go over the page, please, to see F, was that also in the Critical Care department?

A Yeah.

Q We see there the-- If we just read the one in F, the proposal is to reduce the ventilation down to 3 air changes per hour, and then reading on:

"This will achieve a balanced room pressure."

So, do we understand that the reduction in air changes was Wallace Whittle's method of achieving the balance pressure in the rooms?

A Yeah. It was an option that they-- listening to what was being asked for at the workshop, that this is-- you know, they looked at the design back at the office and then looked to see what they could do with existing equipment that had been specified, and in some cases installed.

Q The recipients of the email included various representatives of NHS Lothian including Brian Currie, Ronnie Henderson, and various representatives from Mott MacDonald. Do you know if they understood this proposal included rooms in the Critical Care department?

A I couldn't comment if they knew or not but what I do know is that

Wallace Whittle pulled together. We're only talking about 20 rooms so it's not like the original matrix that had so many rooms that it could be difficult to follow, so they pulled together a set of drawings that showed exactly where they were in the building, and that was what was used as the agenda to talk through what would be acceptable, so---

Q So, if we go to page 670, please, we see there a drawing with D, E, and F marked on it. Does that correspond to the Critical Care rooms that we saw on the document?

A Yeah, yeah.

Q Does that greyed-out area where those arrows are pointing, is that the Critical Care department?

A Yeah.

Q As far as you know, would the members of NHSL's project team have appreciated that that diagram showed the Critical Care department?

A Yeah. I mean, it was it was certainly familiar to me, so I'm assuming everybody working in the project to this degree would have known, but my understanding was that these departments had their own clinical team and so the various iterations of the report and the discussions, the team that were at the meeting from the NHS would go away. I presume that they were discussing with whoever was responsible for these different departments and coming back with what they could or could not do or accept.

Q I mean, the discussions about the multi-bed rooms lasted for some months and there were a number of versions of this proposal or this document which were discussed. Is that right?

A Yeah.

Q Throughout all of those discussions about the multi-bed rooms, do you recall any open discussion about the fact that four of them were in the Critical Care department?

A I can't really recall if there was specifically an open discussion on it.

Q Do you recall any – and the answer to this might follow from the first –
but do you recall any discussion about the possibility that because they were in the Critical Care department they might, under SHTM guidance, be subject to different recommendations for air change and pressure parameters?

A Well, certainly that wasn't discussed at the meetings that we

were attending, but basically, the meetings that we were having was all about what is it that you want now. So, there may well have been other meetings with technical advisors and the clinical team who were coming to an agreement as to what was the minimum they could accept, and therefore that might have formed those meetings that we just were not party to.

Q Okay. One of the things you say in your statement, and I think it was something it chimed with something that you said a moment ago but I did not pick up on it at the time, I am sorry, is that the design review and optioneering was very much being led by the Board. That is the way you put it in your statement. Can you just explain what you mean by that?

A Yeah. So, we were coming to these workshops and meetings as we've already provided a design that complies with the client's requirements and so we were coming to listen to what the client now wanted. So, it wasn't led by Multiplex.

Q Okay. If you could go, please, to bundle 13, volume 2, page 675. This is an email from Brian Rutherford at Wallace Whittle, 21 February 2017 to Darren Pike and Stewart McKechnie. You were copied in, and he says:

> "Darren,
>
> As agreed at the meeting last Friday, see enclosed a copy of our report covering the accommodation design criteria for the single rooms and the multi bed wards."

If we could scroll down, we have got there-- So, yes, scroll down. We have got there Appendix 1 from SHTM 03-01. Then, if we scroll down another couple of pages we have a report here from Wallace Whittle headed up: "Accommodation Design Criteria – Single Rooms & Multi Bed Wards." So, this appears to have been exchanged only between Wallace Whittle and Multiplex. What was its purpose?

A I don't really recall that report. I don't know if it-- because it's addressed to Darren, whether Darren had asked for that.

Q Okay. So, you do not remember that?

A I'm just reading the contents of it.

Q Yes. Take your time.

A I'm not sure if that formed part of the discussions between Multiplex and Project Co where, you know, a request for a change was. I wasn't party to that dialogue, but it

could have been something along those lines.

Q Ah, okay. I mean, I will not spend too much time on it if you do not remember the document, but just reading from the introduction that says:

> "We have carried out an internal review of the design solutions for single and multi occupancy wards against the ventilation requirements of SHTM 03-01…"

Then, if you scroll down to the bottom page, sorry, the next page, 679,

the conclusion is:

> "As demonstrated above the current designs for the Single Rooms and General Ward Areas are fully in compliance with SHTM 03-01."

You know, were Multiplex interested in knowing at this point whether or not the existing design complied with the SHTM 03-01 guidance?

A I'm not sure why it would say that that because obviously it's the client's requirements that we would be looking for compliance with, so this might've been a separate request, for some reason, to review that. I just don't recall that report.

Q I mean, that is why I was wondering. You know, your evidence has been that Multiplex and Wallace Whittle were designing to the Environmental Matrix, but here we have a document passing between Multiplex and Wallace Whittle where the focus is on compliance of SHTM 03-01.

A Yeah, there might've been an additional request because the focus was starting to move to, "Do the designs comply with SHTM?"

Q Mm-hmm.

A There was that debate starting to come in, and maybe Darren had asked for Wallace Whittle to verify that, just so that he had fuller information as to, you know, the bigger picture. That type of, you know, the contractual wrangles and all that sort of aspect, I just wasn't involved in.

Q Okay, you were the, sort of, technical side rather than the commercial side, and----

A The commercial side. The way Multiplex do that, it allows the designs to progress and not get bogged down with these other aspects, so it gets taken away and it's dealt with by the more senior team, really.

Q Okay. In the midst of this discussion over the multi-bed rooms, Wallace Whittle asked for asked for a

line-by-line review of the Environmental Matrix. Just to put that in context, if we go to bundle 13, volume 2, page 1045, and you should see just at the bottom there, Mr Hall, an email from you to various people, Multiplex and Mott MacDonald, 20 September 2017. You say:

> "Kamil
>
> Stewart [which I take to be a reference to Stewart McKechnie] is insistent that the meeting he requested to go over the comments still be held so we can get full agreement at the meeting with all stakeholders."

Then up at the top, another email from you to Kamil saying:

> "Thursday 28th suits Wallace Whittle, 10am. Intention is to go through all comments made, the WW response and get full agreement to close this out.
>
> Can the relevant people attend the meeting who are familiar with the comments made?"

Then if we go down to page 1048, we have got a note that you have taken of that meeting, and this is a note by you dated 5 October 2017. It is about the Environmental Matrix meeting on 28 September 2017, and you confirm the discussions. At point 2 what you say is:

> "TUV SUD [so essentially Wallace Whittle] requested a review line by line, Motts noted if TUV SUD can confirm a check has been made line by line then there was no requirement to do a line by line check. TUV SUD confirmed the line by line check had been carried out in their office. Item closed."

What is your understanding of why TUV SUD requested a line-by-line review?

A Well, there was an element of frustration and also concern, given-- Was this revision 9 of the matrix, or the, kind of, date, period trying to----

Q Bear with me.

A I think it was revision 10.

Q Yes, so revision 9 was approved in July 2017 and revision 11 in November 2017, so----

A Yeah, so----

Q Probably revision 11, I think.

A Yeah, so, I mean, the date, time of that was everything had been through RDD. All the approvals had been made. The site, you know, was installing, and Stewart's concern was, you know, "How many more times are we going to get this

Environmental Matrix back with more comments?" It seemed there wasn't a realisation that, you know, the site was under construction. You know, he was, you know, quite insistent, as I've recorded, that he wanted the people who were making the comments to be in a meeting, and he wanted to go through them all. He wanted to make sure that there were no more comments coming because his view was this was a client's brief, and he was continually getting more comments, and he was getting concerned.

I think he put a few proposals-- Motts' offices were in Glasgow, and his office was in Glasgow, and he was willing to send his own people down. You know, there was different scenarios, but his main issue was, you know, he wanted the matrix concluded with all the client's requirements and no more comments, really.

Q Okay. So what he had wanted was a line-by-line review, and what Mott MacDonald say in response to that is that a line-by-line check is not necessary if TUV SUD can confirm that they have done one. Why did you understand Mott MacDonald to be satisfied by TUV SUD having done a review without their involvement?

A Well, TUV SUD could

only review that, for instance, the detailed design drawings tied in with what the matrix had, but the bit they couldn't do was, "Is this really what the client wants?"

Q Yes, so if that was your view, that you needed Mott's input to confirm the Environmental Matrix, did you challenge Mott MacDonald on the idea that it was enough for TUV SUD to do it on their own?

A Well you can't force-- Effectively, it's your client, and if they're telling you that it's not needed, you know, you've got a relationship there to build and maintain, so you can't go against what they're saying, and so that's why it was minuted. It was basically so that if there was an issue further down the line, we could say, "Well, we asked for it. It was felt it wasn't needed, and that's where we got to with it."

Q Okay, so did you effectively take reassurance from the fact that Mott MacDonald said they did not need a line-by-line check?

A By that time, I was concerned as well because we were up at revision 11, and there was no indication that the comments were going to stop by that time.

THE CHAIR: Excuse me, Mr McClelland. I am sure the fault is

mine. I am not sure that I really understand what is meant by a line-by-line check in this context. I mean, Mr Hall made the point that you have got to check one thing against another, and I am not sure what the one thing or the other is.

MR McCLELLAND: I am obliged, my Lord. (To the witness) Would it be correct to understand the reference to a line-by-line review as meaning a line-by-line review of the Environmental Matrix in and of itself?

A Yeah.

Q Is that what you understood Mr McKechnie to be talking about?

A That was what I took it as, to actually take the Environmental Matrix, and, you know, it might be that part of the debate he could have narrowed it down, but my take on it was that he wanted to ensure that the drawings that he'd produced, and they were all approved through the RDD, represented what the client wanted in terms of the Environmental Matrix. By going through the different lines, by department probably, you could get to a stage where you say everybody's in agreement.

THE CHAIR: So we are talking about literally line by line, of which there may be 4000 lines, perhaps?

A Yeah, because there was no more detail done on it, but for instance, then on an Excel spreadsheet you could maybe narrow it down by department.

Q Mm-hmm.

A Then by department, you would then perhaps narrow it down by room types, you know, so there's ways to do it, but we never got into that detail. Stewart's starting point was as he wanted a line-by-line.

Q So one thing you are comparing is what appears in the spreadsheet as against-- Now, you mentioned drawings, but anything else?

A The drawings----

Q Again, I may be being a bit slow there, Mr Hall.

A Yeah, no, it's a bit like a jigsaw, so you might be reviewing it against schedules, design schedules, the drawings. You could introduce other aspects like change. You know, there's a series of items that if you were really doing it line-by-line, you might introduce all that, but the detail of-- we didn't get into.

Q No. Right, okay, so what I am taking away from that, although it was not actually carried out, what Mr McKechnie had in mind was a literal checking. It was not just a, sort of,

expression of exasperation.

A No, no, because the concern was that each version that was put in was coming back with more comments, and those comments perhaps had an impact on the detailed design drawings that had already been approved.

Q Mm-hmm.

A In addition to that, because they had already been approved, they were getting manufactured or they were getting installed.

Q Yes. Sorry, Mr McClelland.

MR McCLELLAND: No, I am obliged, my Lord. (To the witness) I mean, if you read what you record at points 3 and 4 there, Mr Hall, you say on point 3:

> "Feedback from Motts [is] that subject to the 11No clarifications required for Rev 010 this concludes the review of the matrix."

So, was that, sort of, some reassurance that you were getting to the end of the process of revising it?

A Yeah, some reassurance, yeah.

Q Then point 4:

> "Multi bed rooms were not discussed at this meeting. Matrix will require to be updated once the changes are instructed."

So was the idea that once final agreement had been reached on the technical solution for the multi-bed rooms, the matrix would be changed to reflect whatever was agreed?

A Yeah.

Q Now, if you could go please to bundle 13, volume 2, page 1242, this is an email from you to Stewart McKechnie and various people at Mott MacDonald and NHS Lothian, recording the outcome of a meeting on 12 April 2018. It is given the subject heading, "4 Bed Workshop Summary." What you seem to have recorded here is the key points discussed. Item number 1, what you note is:

> "[Stewart McKechnie] noted concerns on agreement from the previous workshop No1 that the objective of workshop No2 was to obtain agreement in principle on the draft drawings being tabled to allow progress to continue on 4 bed design. This was due to NHSL held up at another meeting, and no delegated authority at the workshop.
>
> "[Then below that] Action. Concerns resolved as Ronnie Henderson joined the workshop

at 13.30."

What did you understand to be Mr Henderson's authority at that meeting?

A Well, it was a decision-making authority because -- you know, it was a moving situation where proposals were getting put on the table, we needed people at the meeting to agree that that was, in principle, what was now required to allow Wallace Whittle to move that along to the next stage, and so, you know, many times before we'd had at these meetings where, predominantly, Motts had to take all the stuff away to then debate it with the NHS, I think, and then, you know, you would get a response back. But this issue was too pressing and we needed the decision-makers in the room, and it appeared that Ronnie was the decision-maker.

Q Okay. So you took him as having authority on behalf of NHSL to make decisions about the four-bedroom solution?

A Yeah.

Q Then item 2.0, under the heading of, "4 BED Agenda Item:"

> "14 rooms in question tabled based on the previous Rev 05 schedule. Rooms cross referenced drawings against the schedule. See attached schedule and drawings [etc]".

Revision 5 schedule, is that a reference to revision 5 of Wallace Whittle's proposal for the multi-bed rooms?

A Yeah.

Q Then, reading down to item 6, "NHSL confirmed agreement in principle to the strategy tabled…" So, when you say "NHSL", was that Ronnie Henderson?

A Well, the only person from NHSL at that meeting was Ronnie.

Q And you say, "confirmed agreement … to the strategy tabled…" Did you take that as agreement to the Wallace Whittle proposal for the multi-bed rooms?

A Yeah.

Q And then, just below it, there is item seven, "Spare capacity. TUV SUD tabled the initial draft assessment," and it reads, "Supply: No impact as being maintained at 4ACH as per the Environmental Matrix." Can you explain what that means, please?

A Yeah, so, part of the review that TUV SUD had to do back in their office was looking at their calculations and seeing what spare capacity they could have in their air handling units, basically a big fan that

produces air, and it's either sucking or blowing, in basic terms. So their analysis was that the supply was going to be remaining the same, so there was no change. So that would remain at 4 air changes an hour, which was what was listed in the Environmental Matrix, and then you'll see, in terms of the extract, the spare capacity was getting used up because more was needed to give this balanced in the rooms.

Q Okay. So the point really is that there was a discussion about air change rates at the same meeting where the proposal for the multi-bed rooms was agreed in principle?

A Yeah, it was an all-encompassing-- it was effectively an impact analysis Wallace Whittle were doing on what was being asked for now.

Q If we just scroll down to page 1246, is this a record of the attendees at that meeting?

A 12 April, I didn't catch what date my minutes were, to be honest, but----

Q If we go back to page 1242, just in the block of text at the top of your note, it says, "Date and Time: 12.04.18 @ 13.00Hrs." Then, if we go down to 1246, we see, "Date of Meeting: 12th April 2018 Time 13.00 M+E Workshop." Were those the attendees at that meeting?

A Yeah.

Q So, do we see that, in addition to Ronnie Henderson, there was Colin McRae from Mott MacDonald and a Douglas Anderson from Mott MacDonald and Kamil Kolodziejczyk amongst others?

A Yep.

Q Now, if we go to page-- So, bundle 13, volume 2, page 1235. So, this is the day after the meeting. Brian Rutherford at Wallace Whittle to people at Multiplex, including you:

> "Colin, See enclosed a copy of the revised ward ventilation proposals to achieve a room balance at 4ac/hr."

Now, up until this point, the Wallace Whittle proposal had involved a reduction in the air change rates from 4 air changes per hour to 3 air changes per hour, and so this encloses a proposal to do it at 4 air changes per hour. So why had the proposal been revised to use a higher air change rate?

A From memory, it wasn't acceptable to the NHS. I think they had debated it outwith the meeting we were in and they'd come back and said that they didn't want that.

Q Why had it only been

raised to 4 air changes per hour?

A I don't really know what the discussions were at these meetings that they had, and so I'm not sure I could really say.

Q Okay. So you were not looking behind it, you just-- you understood that the Health Board wanted it to be 4 air changes?

A Yeah, because we were listening to what that feedback was that they wanted, and then Wallace Whittle were trying to, you know, provide that.

Q Okay. If we could go to bundle 13, volume 2, page 1255, please. This is an email from Ronnie Henderson in response to your note of the meeting on the 12 April. Mr Henderson's email is 18 April 2018. He says to you:

> "Hi, Ken, I note the attached schedule rev 05 still refers to Air Change rates between 2.7 & 3.5, we are seeking design for 4 Air Changes to all 14 rooms. Can you confirm that this is the brief to WW."

So, the reference there to schedule revision 5, that is presumably to the version of the Wallace Whittle multi-bed room proposal in circulation at the time. Does that seem right?

A Yeah, mm-hmm.

Q So we have here Mr Henderson asking for 4 air changes. Do you accept that, when Mr Henderson asks for 4 air changes per hour, he is coming at that from the perspective that he wants something higher than the 3 air changes being proposed by Wallace Whittle?

A Yes.

Q So he is trying to increase the number of air changes?

A Yeah.

Q If we could go, please to Stewart McKechnie's witness statement which is witness statement bundle 2, page 180, and it is paragraph 52. So, this is what Mr McKechnie says about the multi-bed room issue. He says:

> "NHSL wished to explore the potential consequences involved when changing from 4 air changes within bedrooms, as set out in the EM and accepted design drawings and designed 10 air changes from the adjacent bathrooms. We were advised that as part of our review we could consider reducing the 4 A/c supply rate to 120l/s, which would align with the Building Standards Vent Rate for 12 occupants."

That is what Mr McKechnie says. Now, we will ask him about this

tomorrow but he appears to be saying here that NHSL were driven by a desire to change the air change rates whereas the impression from the documents is that they were driven by a desire to change the pressure in the room. Which of those was your understanding?

A Well, they were looking at both because they are linked, you know, in terms of the air coming in and going away ultimately impacts on the pressure of the room. So, this particular bit was at one of the meetings where, from what I recall, that it was about what's the minimum to comply type-question because we were in a situation that all that equipment was predominantly installed, and so it was very much about optioneering and seeing what the permutations were, and one of them was, in terms of the building standards, you know, I think, would it comply with that, and that's based on how many people you have in a room, and that's how they calculate that. So I think that was one option that the NHS looked at.

Q Do you accept that NHSL came into this debate about the multi-bed rooms motivated by a desire to change the pressure arrangement? They were not motivated by a desire to change the air changes.

A I think that the initial issue was that the client's requirements asked for a pressure that they no longer wanted, and so, you know, the motivation probably was that to start with but the air changes are linked to the pressure and therefore, you know, you can't exclude one from the other.

Q Yes, and insofar as the air change rates were changed, that was initially by Wallace Whittle as a means of achieving what the Health Board wanted. So the air changes were changed down to three as a means of bringing about the balanced pressure arrangement?

A Yeah.

Q Insofar as the Health Board were making decisions about air changes, what we actually see is that Mr Henderson sought to increase the air changes?

A Yeah, that's----

Q If we can go, please, to Graeme Greer's witness statement at witness statement bundle 2, page 34. If you just bear with me, Mr Hall. Okay, you see that, yes, about five lines from the top there is a sentence that begins, "When Project Co…"? You see that? Just beside the hand?

A Yeah.

Q Yes, and what Mr Greer says is that:

> "When Project Co were first invited to provide a proposal to achieve balanced pressure, their design [this is in the multi-bed rooms] included a proposal to reduce the air change to between 3ac/hr and 2.7ac/hr. The air change rate was therefore always an integral part of the technical solution required to reverse engineer balanced pressure into Project Co's design."

Now, I take him to mean that the choice of air change rates for the multi-bed rooms was constrained by Wallace Whittle's existing design. Is that fair?

A Constrained? Well, I mean, anything's possible. So, the forum here was: what is it that you need? What is it that you want? Because, you know, in terms of the solutions, you can bring air from other areas, you can do something. So, if somebody had said they wanted 50 air changes, we would have had to look at a solution that would provide 50. So, I'm not sure it's strictly correct to say that it's constrained by the current design.

Q It is maybe a question to be followed up with Mr McKechnie, but if when the multi-bed room proposal was under discussion, as well as saying the pressure regime was to be balanced, the decision had also been to install 10-- or to provide for 10 air changes, would that have required more work than merely altering the pressure balance on its own?

A Yeah, you would need to take each one individually, because what you're really doing is using spare capacity within the system, and each, depending on where all the rooms were, could be fed by a different fan. Therefore, you need to look at that and see what spare capacity you have and then take a view on, can you get more out it to meet whatever figure that you're now trying to achieve.

Q That is sort of speaking in generalities, but the specifics of the Critical Care department. At the time the proposal was under discussion to have balanced pressure instead of positive, if instead of doing that at 4 air changes, you were trying to do it at 10, would the work required have been greater than it was to bring about balanced pressure at 4 air changes?

A Yeah, I would say so, because it's quite a higher number and it's unlikely to have that kind of spare capacity within the system.

Q Okay. If we go, please,

to bundle 13, volume 2, page 1268. If we can scroll down a couple of pages, please. So this, I think it is revision 6 of the Wallace Whittle proposal, and we can see that it is stamped and signed by Brian Currie, approved at level B under the RDD process, and we see some handwritten comments there to the left.

A Yeah.

Q Whose handwriting is that? It looks like it might be Brian Currie's. Is it?

A I think the way it was done-- It's certainly not Multiplex's, it's from the Board, but I think somebody prepared the document and then it was just given to Brian to sign.

Q Okay. The second comment there is about rooms D, E and F, and we see the B1 references. So, this is a comment about the rooms in Critical Care.

A Yeah.

Q What he says is these rooms "Do not have en-suites," and then if we could scroll up to see rooms D and E, and if we just read the proposed solution for room D. They are materially similar. It says:

> "Retain the supply ventilation at 4 [air changes per hour] and the en-suite ventilation at 10 [air changes per hour]."

Now, that reference to en-suites was not in previous versions of this proposal. Do you know why they were added?

A I don't know.

Q Brian Currie notes that the rooms do not in fact have en-suites.

A Yeah.

Q Just while we are here, we can note that the air changes in the proposal are now 4 air changes, as Mr Henderson had asked for. Then if you go to bundle 13, volume 2, page 1279, and we can see here that this is issue number 7, so it is the next version on of this document. If we scroll down, I think, 3 pages, please, we can see that this one has been approved at level A by Janice MacKenzie of NHSL on 26 July 2018. If we go back up to rooms D, E and F, please, we see there that the reference to the en-suite ventilation has been removed. But you do not know why there was one version of this which introduced the idea of an en-suite in these rooms and then took it out?

A No.

Q Then, again, if we can scroll down a couple of pages, please. Do you see that a note now appears at the bottom of the proposal, and note number 2:

"Bedroom ventilation is based on a fresh air rate allowance of 10 [litres per second] in line with SHTM 03-01."

What do you understand that to be about?

A I think that that's a similar point to the one that we looked at before with the building standards. Probably best for Wallace Whittle to comment on that, but thinking back, I think there might have been a line in the SHTM that perhaps referred you to the building standards. I'm just not sure.

Q Okay. Then volume 13, bundle 2, page 1337, please. An email from you to Mr Kolodziejczyk at Mott MacDonald and Ronnie Henderson at NHSL, dated 5 July 2018. You say:

"Kamil/Ronnie, [Wallace Whittle] have pulled an extract out of the matrix detailing the update for your information for the 4 bed wards. These are the only changes being made to the 4 beds inline with rev 07 of the 20 room schedule previously issued through RDD. Let me know if there are any comments on this matrix extract."

If we go down to page 1340, we

can see the attachment. If you can just expand that a little bit, please. Do we see there that for the first column, we have got the four rooms with the B1 reference? Then reading along, if you can just scroll along to the right, please, do we see there that the supply and extract ventilation for each of these rooms is provided for at 4 air changes per hour?

A Yeah.

Q Did you get any comments or objections to that from Mr Henderson or Mr Kolodziejczyk?

A No.

Q Sorry, Mr Hall, what did you say?

A No.

Q No.

A Not that I can recall.

Q Okay. We know from other evidence that those arrangements, that technical solution for the multi-bed rooms was documented in Settlement Agreement 1, which was signed in February 2019. If we could just quickly have a look at the schedule to that, please, which is bundle 13, volume 1, page 805. (After a pause) Are you familiar with this document, Mr Hall?

A Yeah, I had some involvement. Yeah.

Q We have been talking up

until now about the multi-bed rooms, but now, down at the bottom, we see the agreed resolution of the issue to do with single bedroom ventilation, and what the schedule says is that:

> "The Board/ Project Co agree this item is closed, and the agreed technical solution approved through [the review procedure]… and, agreed by the Board and Project Co as resolving the Dispute is as set out in Disputed Works Schedule Appendix 1 Item 13."

If we could go, please, to page bundle 13, volume 1, page 797. The document is headed up, "Disputed Works Schedule Appendix 1 Item 13." Is that the document that was referred to in the schedule we looked at a moment ago?

A Well, the schedule spoke about the RDD process.

Q Yes.

A So, the Environmental Matrix that obviously went through the RDD has had the design drawings for all the single bedrooms?

Q Yes. The schedule that we looked at a moment ago said that the solution to the single bed ventilation issue was "as set out in Disputed Works Schedule Appendix 1 Item 13," and I was just wondering if that is the document that it was referring to. If you do not know, it does not matter.

A Yeah, I couldn't be confident because the single bedroom vent started as two changes.

Q Do you recognise the document that we are looking at on screen just now? Are you familiar with that?

A I think I've seen it at some point, yeah. Those kind of changes, it wasn't me that was dealing with----

Q Okay.

A Certainly in the single bedroom one.

Q Who was dealing with that?

A I think that might have been Leanne that was dealing with the changes.

Q Leanne?

A Edwards.

Q Edwards?

A Whereas in four-bed we actually had a-- I was involved in that and we had a pack that was formed into the-- but my understanding for the single-bed room was, because that pack wasn't available, it was what had been previously approved through RDD. So, the design drawings for all the single-bed rooms that had already

been reviewed.

Q My Lord, I note the time. It is four o'clock. I suspect if we were able-- if it was convenient for everybody involved to sit on until half past four, I could probably get Mr Hall finished today.

THE CHAIR: Right. I think my preference and perhaps your preference, Mr Hall, would be to finish. Are you quite happy to sit on without a further break?

A Yeah.

Q Well, as I say, if you ever want to take a break, just indicate that. I do not think I would want to go beyond half past four, Mr McClelland, but by all means, let us sit until then.

MR McCLELLAND: Yes. I am obliged, my Lord. As you know, I think, Mr Hall, in June 2019, NHSL brought in IOM to carry out an independent validation of the ventilation systems for theatres and other critical areas. Was that something that you had expected to happen?

A It's an area of-- I don't have any expertise in the commissioning side, and I'd said in my statement that I had no involvement in that side, so the pre-construction, that was me, but not the construction element. That was a different team.

Q Okay. Are you aware, Mr Hall, of NHS guidance or an NHS process under NHS guidance called HAI-SCRIBE, the Healthcare Associated Infection System for Controlling Risk in the Built Environment?

A I am aware of it, yes.

Q Are you familiar with the guidance about it?

A Only insomuch as we obviously-- Well, on this project at stage one, we had to or were called upon in terms of the ventilation in the single-bed rooms, so I'm aware of the four stages, and there's a requirement for the contractor to input at certain stages. More for me at the start where it's designed, rather than the construction element.

Q Yes, okay. Well, it is really that, the design aspect, that I am interested in. If we could go to bundle 13, volume 3, page 464, please. So, this is SHFN 30, which is Part B of the guidance on HAI-SCRIBE, and this is the version from October 2014, and if we just go to page 470, please. It is talking here about – you see the heading, "The Challenge" and it reads at paragraph 1.3:

> "Patients using healthcare facilities are more likely to be immune-compromised and also

more likely to receive intensive medical interventions, which in turn increase their vulnerability to opportunistic infections. Every effort must be taken to acknowledge and ultimately reduce these risks. This includes risks associated with the built environment that can arise from, for example, demolition, construction and refurbishment activities."

Then, paragraph 1.4, picking up halfway down:

"For HAIs to be reduced, it is imperative that Infection Prevention and Control (IPC) measures are 'designed-in' and IPC risks are 'designed-out' at the very outset of the planning and design stages of a healthcare facility and the input continues up to, into and beyond the final building stage."

And then, at 1.5:

"To achieve this, it is necessary that designers, architects, engineers, facilities managers and planners work in collaborative partnership with IPC teams, healthcare staff and the users to deliver facilities in which IPC needs have been anticipated, planned for and met."

So, to the extent that you were involved in meetings and discussions about ventilation parameters at the RHCYP, did you think that those meetings and discussions reflected the guidance here about the importance of collaborative partnership?

A The MEP is slightly different, compared to perhaps the architectural side, and so in my opinion it's more about a supporting role. So, if we take what happened on-- before financial close, there was a stage one review, and then what was flagged up was the possible issue on the pressures of single-bed rooms, and that then triggered-- The designers had to be brought in to then do a proposal. So, that's kind of my experience for the MEP side, that you would be-- rather you'd be supporting, rather than, you know, fully involved. So here we took our lead really from, I guess Motts to feed back anything that was an issue and to contribute where required. So, it's probably more an ad hoc arrangement we have in terms of the MEP.

Q So, there was an extended process for consideration of the ventilation parameters in the multi-bed rooms, which resulted in a design solution which, for the Critical Care rooms, only a matter of months later

the Health Board decided did not achieve what it wanted to achieve. The question really is, do you think that if there had been more collaboration amongst the designers and clinicians or IPC teams, that outcome would have been less likely to occur?

A Well, we weren't party to the collaboration on the four beds because we were ultimately just listening for what the solution was, so I don't know if that behind-the-scenes happened. Whereas on the single beds it was this kind of formal review where we were called in to comment, and obviously amend the solution from being positive to negative. So, I don't know what went on with the four beds, to be honest.

Q So, do you think it might have made a difference to the outcome if you had been invited along to the-- or you and the designers had been invited along to the meetings with the clinicians about it?

A No, because we were taking a role that we were effectively waiting to hear what the client wanted on this particular item.

Q Are you aware that SHTM 03-01 was revised in February 2022?

A I am aware of it, yeah.

Q Have you worked with that revised guidance since it came in?

A No.

Q Have you had the opportunity to consider the guidance or to read it, or anything of that nature?

A I read the update through the magazine and some of the changes they were making.

Q Are you aware that one of the changes it has made is to introduce something called the Ventilation Safety Group?

A Yeah.

Q What are your views about that? Do you have any views about whether that is a good development or otherwise?

A Yeah. It seems to cover some of the issues, ironically, that we have on this project and so to bring infection control to the-- as part of the safety group, I think is a good thing. The issue about derogations is a good thing. In reality, I don't know how that will pan out in terms of it being applied, but in theory, it should remove some of the issues that that we currently have here.

Q Yes, so you mentioned there, derogations. If we could go to bundle 1, page 2288, please. This is what the revised version of the guidance says about the VSG's role in

relation to derogations. Paragraph 4.10 says that:

> "Any derogations or alternative design strategies from this guidance should be subject to the scrutiny and agreement in writing by the VSG [Ventilation Safety Group]. The reason for the derogation or alternative design strategy and limits to its application should be recorded.
>
> Designers proposing a derogation or alternative design strategy should be able to supply a body of evidence that their proposal will provide a degree of safety no less than if the guidance in this document had been followed."

And is that the issue in relation to derogations which you think would be a welcome improvement?

A Yeah.

If we could go, please, to page 2402 at paragraph 12.6. Now, I hear what you said a moment ago, Mr Hall, that you do not tend to be involved at the validation or commissioning stage, but this is a proposal about-- or a piece of guidance rather, about the involvement of the validating engineer at an earlier stage, and what it says is that:

> "It is essential that whoever has been appointed to carry out the final validation acceptance of the system should be involved in the initial client brief and design specification, preferably prior to the project being put out to tender. They will then be fully aware of the client's requirements and any limiting factors."

Do you have any views about that idea?

A Yeah. I mean, in principle, it sounds positive. I guess the issue is whoever's doing the final validation, are they going to be available at the start or before it goes out to tender?

THE CHAIR: Sorry, I just missed that, in principle positive?

A Positive, but there's obviously a final validation at the end. However, what the document is saying is to get that company or organisation involved earlier, and would that person – if you take a hospital, which is quite a considerable length of period before it goes out to tender and built – would it be the same party that would be available at the start?

Q Right, and I suppose that raises the question as to what we mean by the same party. I mean, it could be the same company and a

different----

A Yeah.

Q -- and a different individual.

A It could be a different individual but, as you probably gathered going through the design, everybody has their own view on MEP design or validation, and so there's always variances. So, you know, my view is if you bring two engineers in, they have different views.

Q Thank you.

MR McCLELLAND: Okay, so there may be practical issues around it, but the basic idea, do you think, is a good one?

A Yeah. It's positive.

Q If we could go forward, please, to page 2431. This is the latest version of the appendix, summarising the ventilation parameters, and you see there, there is a line for general wards, where some words have been added to refer to level 0 and 1 care. Then, down at the Critical Care line, the words are added, "Level 2 and 3 care". Do you have any observations about that as a change?

A Yes. So, it looks like there's more information to then select what's required, which is positive. I think perhaps it could go a bit further in

terms of adult and children, because there are some differences in terms of the design of areas and I don't think, certainly the current SHTM really deals with that.

Q Okay, just expand a little bit on that. What sorts of differences are there for children as from adults?

A Well, we've obviously discussed that a cohort is one aspect. I think there's also operational policies within maybe each health board that, because what happens is, in the winter, when the hospitals are under a lot of pressure, I think they actually take other rooms to then use to provide the nursing. So, you know, there's those aspects that SHTMs don't really reflect.

Q Are there any other areas where you think the SHTMs could be improved?

A I think predominantly the biggest issue is that SHTMs are guidance as we know. They're not a document that is easily put into a contractual form of documentation, that is-- then you can comply with, and so I think there's a bigger issue that needs to be thought out for the future, that how do we get that type of document to work contractually?

Q Okay. Final topic, are you familiar with NHS Assure, NHS

Scotland Assure, which has been set up recently?

A I've heard of them, but given I'm not doing healthcare projects at the moment, I've had no dealings with them.

Q Okay. Well, thank you, Mr Hall. I have got no more questions for you.

It is possible that one of the core participants will, and what we normally do is break for a short moment just to see whether or not that is the case.

THE CHAIR: We will follow what Mr McClelland proposes. Just before we do that, would you like just to elaborate a little on the point you made almost at the very end, which is that starting from the proposition that the SHTM is a guidance document, you suggest it was not easy to fit that sort of document into a set of contractual documents? Do you want just to expand on that point a little?

A Yeah. So, I mean, the origins of an SHTM was for guidance and to use as a reference document, and perhaps options to then apply to whatever is required in a particular ward, but some of the items are contradictory. There's maybe a selection of items-- If we move away from just the table A1, which I know has been a key focus, but there's 180

pages of other information. Those pages can be contradictory because they've not been written in a way that allows the document to flow and be clear on what's required because it has been written as guidance.

So you may have various sets of options that you then select what's appropriate for the particular project that you're working on, but that doesn't fit with where you get a contractual overarching document that says you have to comply with SHTM 03-01. So straight away you've got a conflict that everything in that document can't be complied with.

Q Thank you. We will rise for perhaps 10 minutes----

A Okay.

Q -- just to check if there's any further questions.

(Short break)

THE CHAIR: Mr Hall, apparently one more question. Mr McClelland.

MR McCLELLAND: Thank you, my Lord. Thank you, Mr Hall. If we could go please to bundle 13, volume 2, page 545, this is a question, Mr Hall, about the single-bed room ventilation and a derogation in that context. You see on screen there is an email from you to Kamil Kolodziejczyk at Mott

MacDonald, Colin MacRae at Mott MacDonald, 1 August 2016. What you say is:

"Colin/Kamil

Re discussions and dialogue on single bedroom vent and air changes, please find attached the derogation to close this one out."

Then if you scroll down to the next page, 546, you see there-- If we could maybe just zoom in on that to make it a little bit easier to read. Can you read that okay, Mr Hall?

A Yeah.

Q So you see it is headed up "Derogation Request," "Reference WW015." The "BCR Clause" is "8.1 Minimum Engineering Standard." Then below that, "Relevant Regulation" is "SHTM 03-01." Then the next heading is "Requirement," and it reads, "Compliance with SHTM." Then if we go a little bit further down, "Derogation," and under that heading it reads:

"The air change rate has been decreased within the single bedrooms from 6ac/hr to 4ac/hr. Mixed mode ventilation has been provided with additional natural vent available from the opening windows. Single bedrooms without opening windows have been provided with 6ac/hr."

Then the "Proposal":

"Single bedrooms with opening windows to have a mechanical ventilation rate of 4ac/hr."

So we see there that this derogation request is to go from 6 air changes per hour to 4 air changes per hour. Do you see that?

A Yeah.

Q Now, your evidence was that you took the Environmental Matrix to be the Health Board's fixed brief, and the Environmental Matrix already specified 4 air changes per hour for the single-bed rooms. So the question is, why were you preparing a derogation to a figure which was already in the Environmental Matrix?

A Yeah, so this was aligned to the request from Motts if a derogation was required for the en-suites. So for completeness, you know, this dovetailed in with how the en-suite had been designed in terms of minimum 10, so it was basically aligning the ensuite with the bedroom and then aligning the actual designs that had went through RDD to then tie up with the Environmental Matrix. So it was just a kind of sweep up.

Q But if the Environmental Matrix already specified 4 air changes

per hour, what need is there for a derogation down to that figure?

A Well, the email that we had received from Motts was referring to the SHTM, and so this was just aligning with the SHTM so that you had the two changes together.

Q Okay, I think if we can go up to page 538, please, this is an email from Kelly Bain at Mott MacDonald, 19t May 2016. Is this the email that you were talking about just a moment ago?

A Yeah, yeah.

Q Okay, and what she says is:

> "Hi all
>
> The Board have noted the number of air changes within the en-suites is higher than that required under the SHTM. The Board understand this is to provide adequate air changes for the volume of air within both the en suite and the single room and there is not an extract fan within the bedroom room. As the extract fan is in the en-suite and extracting 'dirty' air the Board understand that no heat recovery is possible. Can Project Co please confirm the above and if a Derogation needs to be submitted for the Board's approval?"

So is that is that the context which you say prompted the production of the derogation from 6 air changes to 4 air changes?

A Yeah.

Q So what did you see as the function of the derogation?

A Well, it basically reaffirmed that everybody knew what the design was. We'd just put through all the packages in terms of the different departments, and they had been approved, and effectively this was just drawing a line under the sand that we now had all these packages. It was agreed and, because it was the Board that was requesting it, they would just close that off with a particular derogation.

Q It may be, Mr Hall, but I am not sure I quite follow that. If the Board had been asking about derogation in the context of the en-suites, why did that give rise to a derogation in relation to the air changes for the single rooms themselves?

A Because the air in the en-suite was increased because there was no extract in the bedroom, and the air change in the bedroom had to be at a certain value to then match with the en-suite because we had this debate

about it had to be either balanced or negative.

Q Mm-hmm.

A So it was drawing the two together to then provide what the Board had wanted where it was balanced or negative.

Q I mean----

A You can't have one without the other.

Q Does the derogation request go from Project Co to the Board? Is it the Board that's being asked to approve the derogation?

A Well, I think it comes under a change, you know, but in reality that was what was captured in the SA further down the line. So those derogations ended up-- Well, the change that they applied to was then changed to then just becoming part of the SA?

Q I think this is what is confusing me. You are talking there about change and so on, and the reason for the question is that your understanding was that the matrix was the Board's fixed brief, and it already stated 4 air changes per hour in the single bedrooms, so what was the derogation for if the brief was already fixed?

A Well, it just reaffirmed because we'd had the debate before financial close where it had to be changed from positive to negative, so there was that debate, and all the single rooms had to be changed. So, you know, we didn't see anything other than this was just reaffirming the whole package together that this is what the Board wanted.

Q I mean, one way of looking at a derogation request is that you are effectively looking for the Board's approval to a particular parameter. Is that a fair way of looking at it?

A Well, we weren't looking for approval because, I mean, actual design that was contained within the Environmental Matrix was defined, but this was just, as we seen it, an aspiration to get that paperwork together. We didn't see any issue. The whole process had been based around the Environmental Matrix, and it was agreed, and this was just about a box ticking thing because at that time the relationships were still strong. We didn't have this four-bed until later on, and so it was just all about, you know, taking a sigh of relief. We'd got through the design process, and this was us just complying with the Board to actually provide that information. I don't think it was for us to be requesting delegation per se because

we designed to the Environmental Matrix, and those designs had been signed off.

Q Okay. If I can try and just summarise my understanding of what you have said, that essentially the derogation was produced to complete the paperwork and acknowledge that the already finalised brief departed from SHTM guidance in relation to the number of air changes for the rooms. Is that----

A Yeah.

Q Is that a fair way of----

A Yeah, that's a fair summary, yeah.

Q Yes, okay. Thank you, Mr Hall. I have got no more questions for you.

THE CHAIR: Thank you very much, Mr Hall. You are now free to go, but before you do go, can I repeat the thanks that I think I gave on a previous occasion for the amount of work that has been involved not only in attending, but in preparation? I appreciate that that involves a lot, but it is necessary if the Inquiry is to discover what it is trying to discover, so thank you very much for that.

THE WITNESS: Yeah.

THE CHAIR: You are now free to go.

THE WITNESS: Thank you.

(The witness withdrew)

16:32

(Session ends)