SCOTTISH HOSPITALS INQUIRY

Hearings Commencing
13 May 2025

Day 6
21 May 2025
Ross Ballingall
Alasdair Fernie

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10:02

THE CHAIR: Good morning. Now, I think we're able to resume with Mr Ballingall?

MR MACKINTOSH: We are, my Lord, yes. Mr Ballingall is present.

THE CHAIR: (After a pause) Good morning, Mr Ballingall.

THE WITNESS: Good morning, my Lord.

THE CHAIR: Now, as you appreciate, you're about to be asked questions by Mr Mackintosh, who is facing you, but, first, I understand you're prepared to take the oath.

THE WITNESS: I am, yes.

Mr Ross Ballingall

Sworn

THE CHAIR: Thank you, Mr Ballingall.

THE WITNESS: Thank you.

THE CHAIR: Now, you're scheduled for the morning, and we sit until one o'clock when we take lunch, but we usually take a coffee break at about half past eleven. So there'll be a break during the morning, but if at any time you want to take a break, just give me an indication and we can take that break.

THE WITNESS: Okay, thanks.

THE CHAIR: Now, you're slightly soft spoken. It's important that we all hear what you have to say. I mean, it's difficult to do but could I ask you to speak a little louder, a little slower, than you would in normal conversation? The microphones are there to make you audible, but if you could just bear that in mind, it'd be very helpful. Mr Mackintosh.

MR MACKINTOSH: Thank you, my Lord.

Questioned by Mr Mackintosh

Q Mr Ballingall, can I ask your full name?

A John Ross Ballingall.

Q Did you produce a statement in response to a questionnaire we supplied to you?

A I did indeed.

Q Are you willing to adopt that as part of your evidence?

A I am, yes.

Q Thank you. Now, I want to take you back slightly to the past and how you described yourself at the beginning of this story. Can we go to bundle 43, volume 3, document 12, at page 517, which should be a very old photograph of you. 43, volume 3, page 517. Yes. Rather wonderfully, my colleagues have redacted your

photograph. I'm grateful for their efficiency, but I want to look at how you described yourself. I'm assuming you were involved in producing the content for this. You supplied, in a sense, who you were as project director back at the start.

A Yes, I would have been.

Q Yes. So, at the point you were project director of the Brookfield bid to build the new South Glasgow Hospital, what would you describe your role as project director to amount to?

A My main role was managing the process of putting the bid together. Clearly, we had a set of exemplar designs and Employer's Requirements from----

Q And they'd come from the Board?

A They had came-- They came from the Board, and our bid had to respond to those requirements, so I put together a team of consultants and specialist contractors.

Q And there would also have been people from Brookfield itself?

A And there were-- Yeah, there'd be a big team from Brookfield.

Q Right. How many people in total from Brookfield?

A On the bid? Probably

30, something like that.

Q And then, if you add in the independent contractors, how many people more?

A At least that again.

Q When you think of the roles people were playing, you describe yourself as putting together a bid. A bid, obviously, is part of a negotiation process. Ultimately, you're going to try and win the bid.

A Yes, it's the starting point of a negotiation.

Q What role do you see you playing in winning the contract for Brookfield?

A Organising my team to respond in the best way that they can to the deliverables we have to produce----

Q Can I-- Sorry, carry on, please.

A -- but also making sure that, through the dialogue process with the client team, my team are fully engaged and proactive and listening and hopefully giving the client what they want at the end of the bid process.

Q And in this dialogue process, which you have quite a lot of evidence about, your team would have divided up amongst the various threads of the dialogue?

A Yes.

Q Were you in any particular thread, or were you dipping in all of them, or did you sit back and supervise the thread?

A I wasn't particularly in any of them. Occasionally, I would-- if I had nothing else to do, I would-- I would dip in and listen.

Q Was there some form of internal reporting system so each of the threads could report to you about how they were getting on?

A Yes, through my design managers who-- who did attend the various threads, and through our consultants' team.

Q So, if someone from higher up in the company contacted you, and presumably they would have done at some point, said, "How's it going Ross?" you would have been able to know what the various threads were working on during that competitive dialogue and be able to say, "Well, we've had these meetings, we're doing well in this area," that sort of level of management?

A Yes. So, every dialogue meeting, we started with a summary of where we had got to in the last dialogue meeting, what the issues were, what the advice had been, and how we were responding to that in the subsequent dialogue meeting. So, all the way through the-- our bid preparation, I think there were six presentations made to the Board, and they were all, basically, catalogued and recorded.

Q These are recorded in logs?

A Not in logs, just in-- There was a-- there was a progressive sheet that moved from one meeting to the next.

Q Right, and one would hope it got shorter as the issues got resolved?

A Largely dealing with different issues at each meeting.

Q Right, okay.

A Trying-- trying to close out-- trying to close out the issues from the last meeting and then presenting further development of the design.

Q Once you become, or Brookfield becomes, the preferred bidder, we've obviously seen various documents, and I'll come to what some of them are as we're going through this evidence session, but I'm very conscious that we're only seeing a small subset of the documents. So what I wanted to understand from you is what you're trying to achieve as project director in the final stage before contract close; when you're a preferred

bidder, but you're not yet signed, so you're still at the end of Stage 1. What are you trying to do in that period?

A So, is this after being appointed preferred bidder?

Q Yes.

A So Stage 2 design?

Q Stage 2 design.

A Stage 2 design. The ultimate goal of Stage 2 design was to have sufficient information in place for the Board to get full business case signed off, yeah, so that was the overall team's main goal. Beside that, my main goal was that we had enough design signed off such that, from Multiplex's side, I had certainty of what we were expected to deliver.

Q I think I'm wanting to focus on the period before the contract is signed, so is that Stage 1----

A That is----

Q -- or Stage 2? Have I got confused?

A From memory, Stage 2 was the-- was the detailed design of the-- the adult and children's hospital.

Q So Stage 2 runs from-- preferred-- So, what----

A We were-- At that point, we were preferred bidder. So, this is 2010.

Q No, I'm asking to focus on the second half of 2009.

A Oh, right, okay.

Q So, we understand that the Board appointed Brookfield as the preferred bidder. It let go the other two bidders, gave them feedback. There's then a series of negotiations which culminates on 18 December on a contract being signed. So it's that period I'm focusing on. What would you call that period?

A Okay. That was the bid.

Q The bid, right. So, the end of the bid when there's no other competitors, it's just you, what are you trying to achieve as project director? What's the process you're running?

A Well, (a) I am trying to win the bid, but I'm also trying to ensure that what we are offering is what the client wants. I've also got to ensure that our programmes are correct, our methodologies are correct, our costings are correct, our contract conditions are correct, so there's-- there's a load of stuff that goes together to actually make up the whole bid.

Q Thank you. Now, I want to pick up one-- albeit it's a small one, small part of the issue, and I'm going to do it by reference to some text that's in the contract, but I'm not attempting to analyse what the contract means, I want to ask a question based on it. If I

can put up our PPP on procurement, which you might well have seen, which is bundle 26, document 3, at page 202, which simply lifts out of context a series of – page 202, there we are – paragraphs. This clause is clause 5.6, "Control of Infection" and 5.6.1:

> "Prevention and control of infection shall remain a primary consideration of the Contractor in the design and construction of the Works."

I'm not attempting to interpret what that means in the contract, but what I want to ask you is, in your bid team, was there anyone providing you, as the bidders, with advice on the prevention and control of infection?

A The only people in our team who can do that would be the medical planners, taking guidance and trying to satisfy the hospital board's Infection Control team.

Q Right, and which company is that?

A That was Tribal.

Q Did they remain in post after you signed the contract and started the design?

A They were in place through the whole medical planning process. As-- as things get agreed, their role-- their role diminishes, so they're probably the first consultant to leave the team.

Q Okay, thank you. Now, I want to ask about – take that off screen please – the Board's technical team and your technical team, the interface between the two. I wonder if we can go to volume 10 of your tender documentation, "Project execution plan." That's bundle 43, volume 3, document 12, at page 503. That's bundle 43, volume 3, page 503. So it's a little bit behind that, 503. Yes. If we go back one page, that will give us some context-- two pages. We have an exciting map. Within your specialist contractors and design team, who is providing you, the bid team, with specialist advice about hospital ventilation?

A Both ZBP-- Well, largely ZBP, our M&E contractor.

Q And who else might be there?

A Sorry, M&E consultants.

Q Who else might be providing a little bit of advice? You said, "largely," so----

A Mecury, the specialist M&E contractor.

Q It'll be those two?

A Those two, yeah.

Q Okay. But on this plan, there's a little yellow circle called,

"Board advisers," and I wondered who you thought the Board advisers on ventilation would be.

A Wallace Whittle.

Q Now, there seems to be some debate about Wallace Whittle's involvement, so I want to just go through a series of years and ask you the same question.

A Okay.

Q So, before contract closed, was it Wallace Whittle then?

A I'm pretty sure Wallace Whittle were involved in the bid assessments.

Q Right, and then in 2010, in that design period, before full business case and authorisation to proceed that you've just talked about, who was providing ventilation advice to the Board as far as you could see?

A Wallace Whittle were part of the Currie & Brown team. So Currie & Brown were the lead consultant, and below them they had a team of their own consultants, medical planning, M&E, advising them.

Q Because it's been suggested to the Inquiry that that team was stood down and any involvement was very limited after the start of 2010. What's your experience?

A Yeah. Yeah. They were stood down at the start of 2011.

Q That's your understanding?

A Yeah.

Q Right. Then, Wallace Whittle, do they come back in about 2013, you might not be aware, once you've left the project?

A I had left the project then.

Q Right, well, I won't ask you about that. I need to ask you about-- You can take that off the screen and go back to your statement. So, this is question 9 on your statement, which is on page 136. Do you see how we asked you about the "impact of non-compliance on patient safety/infection prevention"? Then in the answer to 9(a) you've said:

> "The input of the QEUH Infection Control expert was managed by the QEUH team. Multiplex would only have been advised of any issues raised."

Now, I need to understand who you think the QE Infection Control expert was and who the QEUH team were in the context of IPC. So, who do you think was the QEUH Infection Control expert in 2010?

A I genuinely can't remember her name.

Q Right, well, that narrows it down slightly. So----

A There was an infection control representative from the NHS team attended all of the user group meetings.

Q Could this have been a Jackie Stewart?

A That could well be her name.

Q An infection control nurse?

A Yeah.

Q So, one of the things that seems important or possibly important is the provision of infection control advice in the context of ventilation systems. Are you aware of whether GGC had someone involved in M&E meetings with an infection control interest or expertise?

A I can't remember.

Q Okay. It's also been put to us that Ms Stewart would have had no experience or expertise in ventilation or water systems. Would that be something that Brookfield would have been aware of?

A Not necessarily, no.

Q Obviously, it's a commercial relationship, building----

A Yeah.

Q -- a hospital for somebody. From your experience, is there an impact of working with people who have a lower level of technical

knowledge than you were expecting in a project?

A Well, there would be, but I don't-- I don't recall having that feeling----

Q You don't recall having that experience in this case?

A -- on the Glasgow Hospital.

Q I want to move on to the NEC contract form. I mean, again, it's not for us to interpret the contract, but it's interesting to work out what people understood was going on, because it affects, I suppose, their motivations and why they did things. Could you explain to the Inquiry what you understand to be the role of the project manager in an NEC3 design and build contract?

A Sorry, is it project manager or project supervisor?

Q Project manager.

A So, that would have been Currie & Brown.

Q Are you sure they were project managers?

A Or that would have been Peter Moir.

Q Which do you think it was?

A If I'm brutally honest, I wouldn't have had any recollection. I suspect having read various bundles

recently that the name Peter Moir was probably appointed project manager after Currie & Brown were stepped down.

Q Right. If I asked you that question, "Who's the project manager?" before contract sign, who would you have expected it to be once you got into the Stage 2 process?

A At the stage I was involved, it was Currie & Brown that were doing the project manager role.

Q So, there's some form of change happens there?

A Currie & Brown's role was quite drastically reduced, I believe, after 2010.

Q Did anyone ever explain to you why that happened?

A I think the hospital board felt they had the experience in-house to carry out that role given the stage that the project had got to by that point in time. Peter Moir was a very experienced architect----

Q Right.

A -- with a lot of healthcare experience behind him.

Q Now, if we turn to the NEC3 supervisor, what do you understand to be the role of the NEC3 supervisor in a design?

A The supervisor is, in terms of Capita's role, the role was to inspect the works, check for compliance with the ERs, witness commissioning, witness testing, and ultimately sign-- sign the building off.

Q So, when you say "compliance with the ERs," that's not compliance with the construction drawings, is it?

A Sorry, I was probably-- probably wrong saying compliance with the ERs. They're checking compliance against the construction information.

Q So, let's use an example. Let's imagine that an ER says that a particular part of the hospital should meet a certain standard.

A Yep.

Q And then there's a design process, and for one reason or the other, that isn't done.

A Mm-hmm.

Q Now, I'll leave the question of whether that's been approved by the Health Board for a moment aside. Should the NEC3 supervisor be getting back to the ERs and checking them against the construction drawings?

A I think in the pure NEC supervisor role, yes, they would. I think in the role that Capita had on Glasgow, that wasn't part of their remit.

Q Why do you think it wasn't part of their remit?

A I read-- I read their witness statement, so----

Q Oh. I suppose that's a disadvantage.

A Capita-- Capita only came on board some time through 2010. I had very limited involvement with them. Well, from what I understand, the NEC supervisor would carry on checking design compliance-- --

Q With what?

A Sorry?

Q With what?

A With their team.

Q No, sorry, one thing that seems important is that----

A Oh, sorry, ER.

Q With ERs? I mean, if we step back a long way, well into the woods, one of the ER requirements is compliance with guidance, and there's a long list of guidance, and you're nodding. There's a person doing a transcript, and it would really help them if you said yes or no.

A Yes. Sorry.

Q So, one of the Employer's Requirements was compliance with guidance and there was a long list.

A Yep.

Q There are other Employer's Requirements that specify that particular guidance should apply to particular rooms.

A Yes.

Q Then there are more narrative Employer's Requirements that describe what certain wards should do.

A Yes.

Q Then there's an exemplar design that attempts to do some of that.

A Yes, and that included the clinical output specs.

Q Yes, and then there's your design and that's been through the user groups?

A Yes.

Q Then there's the technical design that's been through the technical groups----

A Yes.

Q -- reviewable design process. On a sort of pure understanding of what an NEC3 supervisor is supposed to do, how far back into that list of things should they be looking to check compliance?

A If it was a full role, they would check it all.

Q Would you have read----

THE CHAIR: Sorry, just so that I understand, or maybe just check that

I've heard. The question is, how far back would the supervisor go? Now, I don't think I just caught your answer to that.

A They would check it all.

THE CHAIR: All right.

MR MACKINTOSH: So, all the way back to the guidance requirement in the ER?

A I'm slightly unclear in my own head because in this situation you had Currie & Brown and their team doing that through 2010, and then Capita came in and became involved----

Q Yes.

A -- and Currie & Brown's remit was reduced. So, logically, you would think that Capita would take over from where Currie & Brown had got to, which was basically the end of Appendix K and full business case.

Q So, again, thinking about the pure understanding of what an NEC3 supervisor would do and not necessarily what Capita were asked to do. When would an NEC3 supervisor normally be appointed in a contract of this sort?

A I'm not entirely sure, but I would say on appointment of the contractor.

Q Yes, because-- This is a sort of hypothetical. So, you might think it's possible to, I suppose, that if you'd asked Currie & Brown, on the appointment of a contractor, would have quite a detailed knowledge of the process----

A Yeah.

Q -- because they'd been involved.

A Yeah.

Q And there's the design, Stage 2 goes through, they'd have quite detailed knowledge of that process because they'd been involved?

A Yeah.

Q Then, after that, the construction drawings are produced sometime in '11 and '12.

A Yeah, it would-- Production continued, yes.

Q Yes, and eventually you get construction drawings at the end of the process.

A Yes, for all of it, yeah.

Q For a lot of it. I'm trying to explore whether a fully instructed NEC3 supervisor would only go back as far as their appointment to look at developments or would actually revisit the conversations and discussions and the reviewable design dialogue, the M&E logs and right back to the Employer's Requirements from 2009, would they go the whole way into the

woods, or would they stop at the point when they turned up, assuming that everything had been done right to that point?

A I'm not a contract specialist, but I would say that they would-- the logs and the ERs, they would be interested in----

Q Right.

A -- because that sets their bench line in terms of what they would have to check.

Q So, staying away from contract law, but staying with your practical experience, how many large procurement contracts have you built with NEC3? I mean, is it handfuls or tens or hundreds?

A Personally, I think this is the only one I've done.

Q Right, okay. So, what's your experience of what Capita we're actually doing, your own personal experience?

A As I say, I was very-- had very little involvement with them, but my understanding was that they were there effectively to check the works on site.

Q Against what?

A Against the construction drawings.

Q All right. Now, what I want to do now is to spend a little bit focusing on something that you'll know this Inquiry is very interested in, and it's something that we've called, "The agreed ventilation derogation." I appreciate it's not a derogation, and you didn't call it that at the time, but we had to call it something so we could make the conversation shorter. I wonder if we could start by looking at a page from the final M&E clarification log as signed, which is bundle 16, document 23, at page 1664.

Before we do that and look at it in detail, I want to just understand how an M&E clarification log works. Do you start with effectively a long list of issues where the word "agreed" doesn't appear in the fifth column, and then at the end the word "agreed" should appear in every single entry? Is that the basic theory?

A It basically works from left to right.

Q Yes. So, let's go back to find a top column. Can we go back to the first page of this document, please? There we are, that'll do. So, if we look at the blue row, can you explain to us what the columns of the log are for?

A You've got the Board comment, you've then got Brookfield comment, Board comment again, agreed position – yes or no – and

then, basically, I think it's a summary column before the final position is agreed.

Q And so, by the end of the day, everything in the right-hand column should be green and agreed?

A Yes.

Q Yes, so if we go back to page 1664, and we're there, let's look at the bottom entry. So, the description is:

> "Ward Air change to be 6AC/HR, currently shown as 2.5AC/HR which is not in compliance with SHTM 03-01."

There's then an agreed entry and then:

> "Brookfield proposal as outlined within the bid submission is to incorporate chilled beams as a low energy solution to control the environment which do not rely on large volumes of treated air or variable natural ventilation. All accommodation is single bedrooms and therefore the need for dilution of airborne microbiological count contamination should be reduced (rooms could also be at slightly negative pressure to [over the page] corridor. Providing 6 air changes is energy intensive and not necessary."

We go back one page. So, there's then an agreed column and it narrates:

> "The proposal is accepted on the basis of 40 litres per second per single room (8 litres per second per second..."

Might that "per second per second" be wrong, because that would be an acceleration in ventilation, but moving on, "…for one patient and four others."

THE CHAIR: Could you get an answer to that----

MR MACKINTOSH: Yes, well, what is going on there with----

THE CHAIR: I have to say I was puzzled by "second per second."

MR MACKINTOSH: I mean, I know the contract's been signed and it's all locked in, and black and white, but why did it say "8 litres per second per second" at that point?

A I've never noticed that before, and I think it probably is an error.

Q We'll come back to it when I ask you detailed questions.

THE CHAIR: I mean, is it possible, and I appreciate this is not terribly important, but is it possible that it was intended as "8 litres per second

per person"?

A It should be 8 liters, yeah, per second per person.

MR MACKINTOSH:

"…for one patient and four others. Joint review to be carried out between the Board and Brookfield of the [over the page] energy model to determine any impact on energy target/BREEAM…"

Then, there's a reference to:

"Brookfield, however, remain responsible for achievement of the energy target/BREEAM with £250,000 added to the contract sum in this regard. Negative pressure to be created in the design solution."

Back to the previous page, and then there's a comment, "Energy model based on the agreed 2009 position."

Now, what I'm going to try and find out from you – I think it's important to give you focus – is that this seems to have been a decision that's reached in the last few days before the contract's signed. Are we right to understand that this is resolved late in the process?

A Yes, it was later on in the process, and----

Q Yes, so I'm going to try and understand, get from you what you recollect about this resolution, but what I want to do first is, I want to just take you through some documents that we've unearthed that are referred to here, so that I'm giving you the full context.

A Okay.

Q So, we can go, please, to the "Ventilation and Air Treatment Design Strategy" within volume 3 of your tender, which is bundle 18, volume 1, document 8, pages 311 to 312. Now, do you remember the production of the Brookfield tender?

A Yes.

Q Yes. Would you have had any involvement in the production of these two pages?

A No.

Q No.

A No, they're always sort of produced by my design team.

Q Right. One of the things that happens on the next page is a discussion of energy modeling for the maximum temperature in the building. When would it have been the first time that you realised that this issue, as it were, existed in the procurement, that there was an attempt to get 26 degrees, and there's been some modeling, and you've come up with a

solution? When would you have first got to that level of detail?

A My understanding of thermal modelling is it can't be done properly until, basically, the building layout and room layouts is there, so it can't be done until, effectively, the 1:200 drawings are signed off.

Q What does that mean in terms of timescale about when you would have learnt about this?

A Probably-- The one-- At the start of 2010, our bid was then developed. Because then our bid-- the hospital shape changed, you know, things became outward facing and that sort of stuff. So the shape of the building changed. Within that, the first thing you develop is the 1:500 drawings, which creates all the-- and conforms with all the department layouts, adjacencies, corridors, and all that sort of stuff, and then you move onto 1:200 drawings, which basically set out the rooms within the departments. And my understanding is you can't do the thermal modeling until that 1:200 process is pretty much complete, and the building is set.

Q But this document was produced in the summer of 2009 for the bid.

A Yep.

Q So, that's obviously

before the early part of 2010. I'm wondering, not so much when this was created, because I appreciate that you wouldn't have been involved in creating it, but when during 2009 would someone have said to you, "Ross, there's an issue around air change rates, ventilation, it's on the M&E log, we've got to resolve it"? When was the first time that that issue comes to your knowledge?

A I'm not entirely sure. I would have thought September time.

Q Right.

A I mean, there was some correspondence between myself and Mark Baird. I can't remember the dates though.

Q But this document's been prepared in advance of that moment and what I'm wanting to ask you about is an aspect of the conclusion, and I'm wondering if this would have-- Well, I'll rephrase that. When you learnt this was an issue in the negotiations, what steps would you have taken to brief yourself on the issue?

A I was taking advice from my M&E director, Chris Lovejoy, who was briefing me on really what the issue was.

Q So, what was the issue as you understood it?

A The issue was that, in

black and white, we couldn't comply with the six air changes in the SHTM, and if we went for the six air changes, we couldn't satisfy either the energy model, or the energy limits, or the heat limits.

Q Because there's something in this final paragraph of this document that I want to show to you and ask you whether this was something that was explained to you. The conclusion, which we can read on page 312----

A Yeah.

Q:

> "Both sets of results show that in the wards a mixed mode, natural and mechanical ventilation combination, together with optimising the glazed area and type does not provide the solution to meeting the overheating criteria in the majority of the rooms. It is proposed that all ward rooms be provided with a means of mechanical cooling in the form of an active chilled beam as pictured below [I think they're pictured to the right]. The active chilled beams operate most effectively with the windows sealed as this reduces the likelihood of condensation."

Then, there's a paragraph:

> "It is envisaged that generally only small perimeter non clinical rooms with low occupancy and low heat gains will be able to be solely naturally ventilated. Other similar but larger more densely populated rooms will employ a mixed mode system. Then as stated above the majority of the clinical spaces will be mechanically ventilated or mechanically or air conditioned.
>
> With the overheating design target set at 50 hours per year above 26°C degrees and the summer external design temperature also 26°C the target is an onerous one to achieve with natural ventilation."

Now, that bit to there seems to be roughly what you just said to me, without reference to the energy issue. It's the final sentence that I wondered if you were aware of:

> "In progressing the ventilation design strategy a number of calculations have been carried out using 50 hours per year above 28°C (in accordance with the guidance in SHTM 03-01) as the target and it has been

found that the mixed mode method is a feasible solution in the majority of the ward rooms."

So I just wondered whether you were aware that going back to 28 degrees would have resolved this problem.

A I probably wasn't involved in that level of detail at the time, but reading that, that's what it says.

Q Okay. Now, I'm going to go and look at another log, because there's too many logs in this thing, but if we can look at bundle 17, document 56, page 2232. Sorry, not another log; it's a document called "Removal of Mandatory Maximum Temperature Variant." Given the timing, which we think was June, would you have had any knowledge of GGC removing the maximum temperature variant from the bid specifications?

A No, I had no knowledge of it.

Q Did you ever learn about it before the Inquiry took an interest in this topic?

A I'd have to say I don't have any recollection of it.

Q Then, we go to the "Specification for Ventilating Systems" within volume 4 of the Brookfield tender, so it's back to bundle 17. It's now in document 10, page 455, and do you see how there's a general statement that:

"The mechanical ventilation and air conditioning systems will comply with the relevant clauses…"

And various guidances are listed, including SHTM 03-01.

A Yeah.

Q Now, I appreciate that the Brookfield bid is a huge document, but how is it you can have one chapter saying, "We're not going to comply with SHTM 03-01," and another section saying, "We are going to comply with SHTM 03-01"?

A I'm not-- I'm not entirely sure. From what I gather now, my understanding is that SHTM 03-01 allows you to calculate the air required in a room based on the individuals in that room, which is ultimately, I think, where the 40 litres per second came from, so----

Q Well----

A I'm not an M&E engineer, yeah, so-- but I would-- I'd probably ask the question, "Does our design comply with it in a different way rather than the six air changes per hour?"

Q Who would have told you about that method of compliance?

A To be honest, I probably read it in the recent, yeah, last six months or so in trying to understand the confusion in some of this stuff.

Q Because, I suppose, there are two possibilities here. One possibility is that this inconsistency in the bid docs between this document and the one we just looked at is not justified by a piece of methodology at the time, it's either an error or an inadvertence. Now, that's one option.

A Yeah.

Q The other option is, at the time, someone's come up with a very clever way – as you just described – of making the proposed solution compliant with SHTM 03-01. Are you able to tell us that in the summer of 2009 Brookfield had a justification for their solution being compliant with SHTM 03-01?

A No, we didn't. No, our design team may have felt that at the time, but I wasn't aware-- I wasn't aware of that.

Q So, what I want to understand is it may be that you're going to say, "Ask Mr Lovejoy," and I appreciate that that might be an answer, but if we go back to the point in September 2009 when you first become aware of this issue, how were the NHS GGC team and Currie & Brown for them reacting to this strategy of using chilled beams, sealed rooms and low air change rates?

A To be honest, it wasn't a massive issue at the time.

Q Right.

A The hospital Board's exemplar had suggested the use of chilled beams, so chilled beams were becoming a more frequently adopted solution in hospitals, despite not complying-- not requiring the six air changes. So, yeah, there was-- there was debate about it. The NHS had Wallace Whittle involved and, yes, so Chris Lovejoy was dealing with Stewart McKechnie, and ultimately that's where the solution was deemed to be a sensible one in terms of meeting, shall we say, differing requirements from the client in terms of heat and air and STHMs.

Q Because, I mean, one way out of this issue is as you describe: it's to decide, "We'll have chilled beams," and to justify it, and we come back to what some of the justifications are in a moment. The other way to react might be to say, "Maybe we shouldn't be aiming for 26 degrees, maybe we should be aiming for 28 degrees," as your document's final sentence puts it. Do you have any recollection of that being

discussed as a possibility?

A None at all.

Q Can I take you to an email of Mr Hall to you on 4 December 2009? So that's bundle 17, document 67, page 2272. So, you've been sent an updated RFI log. What's an RFI log?

A Request for information log.

Q So, you're getting one of these logs, like we've looked at, of a log of issues.

A Yes. So, that log would have been where, from memory, if Multiplex asked the question of the NHS, the NHS would reply to that. It would be called an RFI, a request for information.

Q And this is the "Comments 2" has been filled in?

A They would reply to it and that would become another log.

Q Then below that, also attached is an "M&E Design Summary log" that asks issues around clarity.

A Yeah.

Q Does this have any connection to the dialogue around this ventilation issue?

A No, no. The M&E log was created purely to deal with M&E design issues.

Q It's not the log we've been looking at? An earlier version of it that we've been looking at?

A It is that log, but it wasn't created purely for ventilation.

Q Right. I appreciate that.

A It covered a range of M&E issues.

Q So, if we just jump back to bundle 16, page 1664, the document that would have been sent to you on 4 December would have been an earlier version of this document, possibly with fewer comments on the right-hand side in some places.

A Sorry, when would that have been sent?

Q So, the email I showed you was 4 December.

A Right.

Q So, am I to understand that what was being sent to you would have been an earlier version of this document, with perhaps fewer "agreeds" and fewer comments in it? We can't tell what the differences were, but would it have been an earlier version?

A Yeah, from reading David Hall's email----

Q Can we go back to David Hall's email, just to make that----

A -- I would suggest, yes, but the dates don't make sense.

Q Why do the dates not make sense?

A What is the date?

Q 4 December 2009.

A Oh, sorry. That does make sense, yeah.

Q Because we also have----

A That does make sense, because----

Q We also have an M&E clarification log that's dated 9 December 2009, which presumably isn't this one, but it may be in and around the same time. It's in bundle 43, volume 2, document 21 at page 311. Actually, if we go to the beginning of the document, that might be helpful. So this seems to be a shorter version that is not yet required at the right-hand end.

A Yeah. As I said, the logs basically started at the left----

Q And they grow?

A -- and added through time. Going back to your last question, the one from David Hall would have been the starting point of the creation of the M&E log. The final log----

Q Would you like to take some water? Because you're looking like you're suffering a little bit.

A The final log would have been the one completed through Stage 2.

Q So, the one that we looked at first is the one that was part of the contract, and this one is an earlier one, earlier in the process, soon after it starts on 4 December. Yes?

A Yes.

Q So, if we can go on to page 311, we see that there is the same description of the item is now not agreed. There is your comments, Brookfield's proposal is summarised as we had before, but now we have a GGC comment:

> "This derogation to the SHTM is not accepted. Any variation would require Board clinical infection control review."

Now I wanted just to ask you a couple of questions about that. Would we be entitled to infer from that comment in the right-hand column there, on page 311, that at that point nobody had suggested that your solution was compliant with SHTM 03-01?

A Yes.

Q Right. Do you have any memory of the Board talking about the need for clinical Infection Control review around this issue?

A Yes, I mean, they've actually said in their comment they

require Infection Control review.

Q I recognise it's a bit of a longshot, but do you remember any names of Infection Control professionals being talked about to you at this point?

A No.

Q Would you like a short break because you seem to be sort of slightly suffering?

A No, no, fine.

Q Right, okay. So, how did Brookfield decide to respond to this non-acceptance that we see in this row?

A I think the-- At the time, this is when the, "Can we still have naturally ventilated opening windows and six air changes?" was going through.

Q So, is it still being discussed, that option?

A I think so, yeah.

Q What did Brookfield team do to persuade – if that's the right word – the Board to accept this aspect of the design between 9 December and the 18th when the contract is signed?

A Brookfield didn't persuade the client to take it. It wasn't a, "Hand behind your back, this is the option," and we could quite easily have reverted back to six air changes or increased the air changes to achieve the 26. There would have been a cost to that, but I don't think the cost was actually that relevant, given the contingency the Board had. It was never particularly talked about. The main drivers were, shall we say, the varying requirements the Board had.

Q When you say the "varying requirements," what do you mean by that?

A Energy, BREEAM, heat. There were differing requirements, and this was deemed by the Board as technically the best solution.

Q Well, I mean, that might be the end position – I do understand that – but on this point, which is 9 December, they're saying no, and just under nine days later, they're saying yes. Did Brookfield provide them with any additional information that would assist them in making their minds up? By Brookfield I mean your consortium.

A ZBP-- It did happen within a fairly short period of time.

Q I know.

A Yeah. ZBP were involved with Wallace Whittle, the Board's M&E technical advisers, in agreeing. So ZBP gave Wallace Whittle the information that Wallace Whittle felt they needed to then advise the Board that this was the sensible way to go forward.

Q Did you have any involvement in making that happen?

A Apart from pushing Chris Lovejoy to get it resolved, technically no.

Q Well, let's look at a document which actually seems to have been produced by ZBP. So it's bundle 16, document 21, page 1657. Bundle 16, document 21, page 1657, so I think it's a different bundle. Here it is, yes. So it's called a "Ward ventilation design strategy," and we'll just jump to the end of the next page, and we'll see that it doesn't have a signature, but it does have a saving location on a C drive owned by Mr Ross. Who was Mr Ross?

A Douglas Ross was Currie & Brown's commercial director.

Q Right. It also has a file name, which ends "Dec_09," so can we presume this is a December 2009 document?

A Yes, I would assume so, yeah.

Q Well, go back to the previous page. Before you got involved in the Inquiry, had you seen this document?

A Yes, I saw this at the time.

Q Right.

A Yeah. I think I sent it to

the hospital Board.

Q Yes. Whose idea was it to create it?

A I can't remember whether the Board asked for it or whether we offered it, but if we offered it, it would have been Chris Lovejoy who asked ZBP to put it together.

Q Because the interesting thing about it is what it says and what it doesn't say. So if you disagree with me, please do say, but I read it as a discussion of the options which reaches the conclusion that the proposed solution is acceptable. Would you agree with that as a characterisation?

A Yes.

Q Yes. Does it discuss the alternative of having opening windows or no chilled beams that might have cost more or used more energy that you've just discussed?

A Can you scroll down to the next page?

Q Next page, please.

A (After a pause) Yeah. Then, in the conclusion, it does state that within the bedrooms with natural ventilation:

> "...air change rates ... would be variable dependent on window opening and external conditions,

and is rarely likely to achieve 6ac/h."

So it's basically saying that sort of ventilation won't give you six air changes anyway.

Q Okay. Can we go back and look at the document from the bid doc that we've looked at before? So that's bundle 18, volume 1, page 312, that last sentence. Do you see it says there:

"In progressing the ventilation design strategy a number of calculations have been carried using '50 hours per year above 28 degrees' (in accordance with the guidance SHTM 03-01 as the target and it has been found that the mixed mode method is a feasible solution in the majority of the ward rooms."

Now, if we go back to the previous document, is that pitch, I suppose, in this document?

A Yeah, I think the second paragraph of the conclusion is trying to say the same thing, is it not? In that it could achieve the 28 degrees.

Q Okay. So this document was, as you say, produced-- Do you know who in ZBP produced it?

A Specifically, no----

Q Perhaps I can show you an email----

A -- but I would suspect Steve Pardy, who----

Q Why don't I show you an email which----

A Sorry, are you referring to the ventilation strategy?

Q Yes, the one we are talking about.

A That was Steve Pardy.

Q That was Steve Pardy? Right. I'm just going to make sure I've got the right-- Are you sure you don't want to break? Because you seem to be suffering.

A Yeah, I've got a bad cough. I'm afraid this has started me smoking again.

Q Right. I'm just going to make sure I've got the right document on the page. (After a pause) There we are, sorry. Wrong page. If we can go to bundle 17, document 70, page 2855, this appears to be part of an email exchange. It's the main message, third of the way down the page, from you to David Hall, to Mark Baird, copying Chris Lovejoy and Tim Bicknell. Who's Tim Bicknell?

A Tim Bicknell was Multiplex's commercial director.

Q And who is Ed McIntyre?

A Ed McIntyre was

Mercury, the M&E contractor's, project director.

Q So you're sending:

"Attached latest update of M&E Log. There are a couple of bits that I still need to get an answer on but thought I would issue anyway. I have also attached a paper by ZBP on the Wards Ventilation Strategy. They have discussed this with ... [Wallace Whittle] who seems to support it."

Now, I want to just check what you think about some inferences one might draw from this. Would it be a reasonable inference to draw from this that Mr Hall and Mr Baird don't know about the existence of the ZBP paper when you sent them this email?

A I really don't know the answer. They were certainly involved in the discussions, but their role in the logs was really in capturing the different comments from different places.

Q Because this is 15 December at 7.39 in the morning, would you or any member of your team have had meetings with Mr Hall and Mr Baird before this email about the ventilation issue that we've been discussing?

A Chris Lovejoy would've, yeah.

Q Chris Lovejoy?

A Yeah. Not necessarily David Hall and Mark Baird. I mean, Mark Baird would have been more aware of it than David Hall, probably.

Q Right, okay.

A So Chris' conversations were largely with Wallace Whittle.

Q Then the final sentence in this email, "They have discussed this with Stuart at WW." Do you mean "they," ZBP, at this point?

A Yes.

Q And when you mean "this," do you mean the issue or the paper?

A Well, the paper was trying to summarise the issue. Yeah, yeah.

Q The reason I asked that is because we've got Mr Pardy and Mr McKechnie giving evidence next week, and I think it would help us all if we knew whether you thought that Mr McKechnie would have seen the paper at this point?

A Yes.

Q Do you think he would have done?

A Aye. Yes.

Q Can we go within the same----

A I think the NHS relies on his guidance.

Q If we can go to the same bundle, page 2855? Sorry, that's the same page. If you go to 2863. Now, this isn't an email exchange involving you, but since it provides context, I'm going talk you through it. So it's an email from Mr Baird and then an email from Mr McKechnie at the top of the page to Mr Baird at 10.04 on the 15th. So that's only a matter of hours later, and he provides some information and we'll ask him about what that means, but what I wanted to understand is, when was this issue resolved, the issue around the ventilation? Was it resolved in that morning on 15 December? Might there have been phone calls or meetings that we don't have records for?

A From memory, the ventilation strategy was basically put together by Steve Pardy and Stewart McKechnie, so Stewart was commenting on it as it was being produced. So I don't know whether that, the one you've got, is the first version of it. It was the first version I saw, but I think at the meetings they had had before they had discussed it and probably clarified bits of it before they sent it to us, and I sent it to the Board.

Q So they would have had a discussion----

A So that was-- My understanding is it was a done deal.

Q A done deal by the time you sent it?

A Yeah.

Q But when you say a "done deal," do you mean a done deal between the professionals or a done deal between the Board and Brookfield?

A I think the-- No, because this email here is probably the culmination of it coming from Currie & Brown back down to Brookfield. But behind that, Stewart McKecknie had been advising the Board.

Q And why do you know that? How do you know that?

A How do I know that?

Q Mm.

A Because that was happening at the time, it was----

Q How would that have been known to you at the time? Were you being told by Mr Pardy or----

A We were all in discussion all the time.

Q Were you all in the shared office at this point?

A At this point, no.

Q No.

A Although we met

regularly, Alan Seabourne was heavily involved in this.

Q Well, we can always ask him as well. There seems to have been a possible meeting on the 16th between possibly Currie & Brown and probably Mr McKechnie and people from the Board about this topic, and maybe other things too, at the Hillington office. We do not have a minute.

A Right.

Q We're still attempting to get evidence from Mr Seabourne, Mr Hall, Mr McKechnie about that meeting and what was discussed. It would assist us to know if you have any understanding of where you thought things stood on the 15th before the meeting. Had you been told this had been resolved by then, or was it still up in the air?

A I genuinely don't know the answer. It had been resolved between ZBP and Wallace Whittle.

Q If we can take that off the screen. If we go back to the ZBP paper, which is on bundle 16, page 1657, first page before, we've had a lot of people who weren't involved in writing it give evidence about what they think about it in the previous hearing block last year.

A Right.

Q I think it's probably a broad summary to say that the position is they don't think it covers infection and control adequately. What do you feel about the argument that this process which you were involved in, albeit not as the author of the paper, failed to properly give sufficient weight to infection control on the bidder side?

A This was relating to general wards, so this was relating to wards from Level 5 up, and to my knowledge the Board would have had infection control input into this decision.

Q Why do you say this relates to Level 5 up?

A I appreciate that that is slightly confusing sometimes, but that was what the conversations were about. It was general wards. It wasn't any specialist wards.

Q Because there is a view, supported by another log which I will come back to after the break, that this-- what we've called the "agreed event ventilation derogation" only applies to the tower, the fourth floor and up, so why do you say the fifth?

A That's just my memory of it.

Q Right. Ultimately----

A Sorry, my understanding was that the general wards were from

Level 5 up.

Q Yes, because there are general wards on Level 4.

A I didn't know, really.

Q In any negotiation, people will reach conclusions and we're speaking to the different sides of the negotiation and you're giving your perspective, and in any bid documentation, there's a lot of, to put it slightly cruelly, "fine words" about aspirations about what you're trying to build. Do you feel that this solution that was chosen here and was proposed by your side of the negotiation provided a sufficiently quality ventilation system for this large hospital?

A I don't think in the general wards there was any problem at all with the ventilation system.

Q But how would you respond to the suggestion that building a very large, very expensive major hospital with its non-specialist wards having less air into them in some cases than consultants' offices, per patient, is frankly an inadequate product, considering how much money and effort and emotional capital was being put into this project?

A It's not an inadequate product. It's not within my knowledge, but it is an increasingly common solution in modern hospitals. It's not wasteful. It's energy efficient, and I think if-- from what I've heard, there are no problems at all with the quality of the air in general ward.

Q What happens in a hospital where all the general rooms are half the recommended guidance level of air when you need to move a specialist ward into a general ward for some operational reason? Doesn't that not create a risk at that point to the patients who are moved into that general ward?

A Yes, it would.

Q And so----

A But the general wards weren't designed to be used for specialist patients.

Q If you have, for example, more patients who require isolation than isolation rooms in your-- because something is happening in the community and you decide to put those patients into single rooms as the next option because you've run out of isolation rooms, could it not be that there's an increased risk to those patients because they're now in rooms, and possibly other people, with very low air change rates compared to what you would expect?

A Well, I'm not an expert in this, but air change rates and air

quality are-- air change rates don't-- air change rates don't necessarily guarantee any better air quality than chilled beams with a lower air change rate and, I mean, quite frankly, you can't keep designing and building hospitals for general wards to be used for specialist activities.

Q Given that a specialist ward would require-- a neutropenic ward or a critical care area would require 10 air changes.

A Yeah.

Q And I suppose this is the last way to argue the question, does having the general wards at three just create too much of a step down between the two if you're thinking about future-proofing a hospital being used for 50 years or longer?

A Yes, you could argue that it's not flexible enough, but we weren't asked to provide that.

Q Okay. So, I want just to put to you something that was said by one of the other bidders when they got their feedback. I think you've already actually discussed it, but we'll just look at it. So, this happens to be the Laing O'Rourke response, but it's more the fact that they went through a similar process to you with a similar set of objectives. So it's bundle 43, volume 1, document 13, at page 42.

Now, I just should say that this was attached to an email that's in a different place, for reasons that I've now lost track of, which is bundle 43. Don't put that on the screen. Bundle 43, volume 2, document 16, page 60. So for my colleagues, this document was attached to an email, bundle 43, volume 2, document 16, page 60.

If we just zoom into the bottom half of the page, do you see in this discussion – and I recognise it's not being typed with the ambition that 15 years later it'll be in a public inquiry on a screen and being put to its competitor – but the second sentence, I wonder what you thought about it.

> "All-Air would be the only option when the new enhanced SHTM air change rates have to be adopted. A chilled beam system cannot be easily integrated with the enhanced air change rates stated in the new draft documents (this is from direct experience of having designed multiple hospitals across the UK using chilled beams). The 'non-cooled' all-air option was also considered the low carbon first option, but flexible enough to deal with future increases in external climate

(with the retrofitting of trimmer batteries from a free cooling chiller system if required)."

Do you have any comment about whether you disagree or agree with a broad thrust of what one of your competitors is saying in response to their feedback?

A I think that-- I mean, obviously, we never saw this at the time.

Q Of course, yes.

A Yeah. I think they're basically saying the same as us. What they're not saying is that with an all-air solution, they wouldn't be able to meet the heat gain----

Q Yes, so they're not saying you would get----

A -- and they wouldn't be able to meet the energy target.

Q They're not saying that you could hit 26 degrees or the energy target with an all-air system. They're saying you'd have to.

A No, what they're saying is you can't hit the air changes with chilled beams.

Q Right, yes. If we take that off the screen before we have a coffee break, I wonder what you thought about this as a proposition. There's obviously been discussion about energy gains and BREEAM. One of the things that struck me when I was reading that log and looking at the documentation is the contract benefit or BREEAM is £250,000, the award, and it must have been-- it's a much more expensive hospital than that. Is the interest in BREEAM efficiency financial or aspirational as a term of policy from the Board?

A I think it's a bit of both. I'm not a BREEAM expert, but I certainly know that if you go from the different phases of BREEAM Good to BREEAM Great to BREEAM Excellent, the capital costs on projects is, in my opinion, disproportionately higher than the benefit.

Q So, it gets very expensive to deliver BREEAM Excellent buildings?

A I seem to remember in the past being told that to go from whatever the one below is to go to Excellent was 7 per cent on the capital costs of a job.

Q How do you react to a view that was put to me by one of the Inquiry experts in a consultation which was, if you really want a green hospital you just supply it with 100 per cent renewable electricity, that's the way to make a green hospital and everything else is a compromise? How would you react to that as a sort of approach to

this issue?

A I don't know. No.

Q Not your field.

A It's not my field.

Q Okay. My Lord, this might be an appropriate place to have a short break for coffee because I'm moving on to a different topic.

THE CHAIR: We will take a break. Could I just check my note and maybe ask for a little bit of teasing out? I noted you maybe five or ten minutes ago, and I may have mis-noted you, as the air change rate doesn't necessarily reflect the air quality. Now, first of all, did I hear you correctly?

A I think you did, yes.

THE CHAIR: Right. Could you maybe just tease that out a little?

A I'm not-- I mean, as I said earlier, I'm not an M&E engineer but from what some of the documents say, six air changes with natural-- opening windows doesn't give you a constant quality of air. Reduced air changes with chilled beams does.

THE CHAIR: Right, that seems to me a slightly different point. I mean, I think I take it if you have mixed ventilation, natural and mechanical, I think I understand that you can't guarantee a steady air change rate, whereas if you take the natural ventilation out and you have closed windows, either simply relying on mechanical ventilation or mechanical ventilation plus chilled beams, you will get a steady rate. I think I understand that but I was wondering if there was something more you were saying.

A No, I think I was referring to six changes with open windows.

THE CHAIR: Right, thank you. We'll take a coffee break and if we could be back for twenty to twelve.

(<u>Short break</u>)

THE CHAIR: Mr Mackintosh.

MR MACKINTOSH: Thank you, my Lord. Mr Ballingall, I thought I'd press you on a couple of things around the events in the run-up to 16 or 18 December and this issue around the ventilation chilled beams. I wondered if any part of the GGC's work had been reported back to you and particularly the involvement of two people, who we've had some evidence might have been involved from GGC side, and I wondered if you'd heard in this context the names of Dr John Hood or Mr Hoffman from the Health Protection Agency in England being discussed in December 2009.

A At the time, I had no knowledge of that. I have read in a

statement that----

Q I appreciate that, but it's your knowledge that I'm keen to focus on.

A Yeah.

Q I also want to pick up the issue you mentioned about the fifth floor and above, as it were, whether this agreed ventilation derogation, as we've called it, applied to the tower or to a particular subset of the wards. There's another clarification log that I'd like to show to you, and this is in bundle-- So it's not in the list given to my colleagues, so it's bundle 43, volume 6. It's document 64, and it's on page 112. So that's 46-- That's definitely not it. It's on 43, volume 6, so bundle 43, volume 6, document 64, page, sorry, 1120. I missed out on the 0.

Yes, so the middle row here, item 10, M&E Services, the question being asked is, "Please confirm mechanical air change rate for the ward tower." Now, what sort of document would this be, if we could look at the front page of it, which is on-- We've only given you an extract, sorry. Could this be an RFI-type document or----

A Is this the clarification log?

Q Yes, it might well be, yes.

A I mean, my recollection

of the clarification log was that it picked up-- it was meant to pick up things that weren't M&E.

Q But it has this in it.

A Yeah.

Q Then in the fourth column:

> "A typical ward in the tower has the following air change rates to either meet the ADB requirements or achieve the environment conditions:
>
> • Bedrooms 2.5 ACH (related to ensuite extract rate and air volume for chilled beam unit loadings)
>
> • Ensuites 10 ACH [and so on]…"

There's a list down there, and then there's a reference at the end, "Refer to the M&E Clarification Log in Contract Data Part 2 for typical single bed ward." Now, how does this relate to the M&E clarification log in the process that generates the ultimate contract? Is this an earlier thing or----

A No, there was-- I think there were five logs in total.

Q Can you help us about why it's here?

A It was-- The logs were there to clarify where there were departures from the Employer's

Requirements.

Q Because one possible question here is that this version of this row, as opposed to the M&E clarification log itself, it restricts the issue in some way, depending how you interpret it, to the tower and the other one doesn't. The tower includes all adult wards. There's no children's wards in the tower.

A Yes, that's correct, yeah.

Q So why do you think that the agreed ventilation derogation, as we refer to it, only applies to places either above the fifth floor or in the tower? Why do you think that?

A Because it applied to general wards, and from memory the general wards were Level 5 up in the tower----

Q But were there not general wards in the children's hospital?

A Sorry?

Q Were there not general wards in the children's hospital?

A I don't think it applied to the children's hospital.

Q Because that's one of the questions. If you take it off the screen, I'm going to show you a document that I'm almost certain you wouldn't have seen at the time, but I think you'll know the sort of document it is, and that is a

Room Data Sheet for a room in Ward 2A. So if we go to bundle 47, volume 3 and, from memory, page 383. I'll just find the right page because that isn't it. Yes, if we go to page 398. No, sorry. I looked at it yesterday with Mr Pike.

A 44 and 45?

Q No, but that'll be an isolation room, and I didn't want to show you an isolation room at this point.

A Okay.

Q Ah, here we are. Can we please go to page 427? So this is a 2011 version of a Room Data Sheet for a "Single bedroom: Children/young people; with relatives overnight stay" in the Teenage Cancer Trust Accommodation section of Ward 2A, room number NCH-02-TCT-010. The aspect I want to draw to your attention is in the ventilation section on the environmental page. This is the second page of the Room Data Sheet. Sorry, back one page. It's the row "Mechanical Ventilation Notes" and do you see how it says, "Supply air rate at 40 litres per second"? So this is a non-isolation room in a specialist ward not in the tower. How would it be that 40 litres a second ends up here?

A I've found it.

Q Sorry, I didn't hear that.

A Sorry, I've just found the-

- well, the line you're referring to, and this is in November-- sorry, 2011?

Q Yes, so just to give you the background for context, we think this is a Room Data Sheet in the reviewable design process, user groups processing that's going through in 2011. It's version 3, and it ends up being what is built, so the non-isolation rooms in Ward 2A, so the rest of the ward effectively, including the Teenage Cancer Trust, which is the sort of first part of the ward as you enter it on the curve. All the non-isolation rooms in that ward have 40 litres a second air supply.

That's then confirmed by Mr Lambert when he carries out the study into the replacement of the ward in 2018 and he produces a paper. So there seems to be no doubt that the individual non-isolation rooms in 2A got air at 40 litres a second, and yet you're telling me that it was your understanding that what we call the agreed ventilation derogation was only to apply either in the tower or to the general wards. How would this have happened?

A I don't know. Is this one of the Data Sheets that was approved as----

Q Oh, yes.

A -- in the—no, sorry, in the

500 rooms that were done in 2010?

Q It would've been approved by GGC. I can't tell you exactly when it was approved. I would've understood if you'd asked me that it sits in with the 1:50s.

A It was sitting with the 1:50s, but through 2010, 500 rooms were fully loaded and Room Data Sheets produced.

Q Yes.

A And those 500 rooms covered every room type in the hospital.

Q Yes, no, we had evidence from Ms White about that.

A So through 2011, the loading of the rest of the rooms would've been based on what was agreed in 2010.

Q Yes, but----

A But I honestly don't know how this got to where it got to.

Q Because the thing is I do appreciate that in order to get built, it has to go through a number of different checks, and including the user groups, the technical groups----

A Yeah.

Q -- sign off by GGC in various different ways at various different times----

A Yeah.

Q -- and ultimately

reviewed by Capita, but somebody has to suggest it. Now, Mr Pike's evidence yesterday was that this section on the environmental-- this page, and it goes over the page briefly, these numbers come off an Environmental Matrix – sorry, back one page, please – that is produced by ZBP and was being used by them in 2010 to do this job of populating out the Room Data Sheets and the drawings and iterating out the hospital. What I'm keen to understand is how it is that somebody on the contractor side suggested to GGC in the form of proposals that the Children's Ward 2A outside got 40 litres a second when that wasn't what you think was agreed in the M&E clarification log.

A I don't know the answer to it, but the Environmental Matrix, from my recollection, is actually fed from the Room Data Sheets that were previously agreed, so the Environmental Matrix, I think, would've been produced from the Data Sheets produced in 2010. I might be wrong, but that's my recollection.

Q No, I appreciate that might well be the case, but originally at the very start of this process somebody has to take what's agreed in the contract and is in the M&E log, and apply it to the rest of-- to the

design.

A Yeah.

Q You might argue about whether they should've applied it to the general wards in the tower on the basis, "Is it a good idea?" But no one seems to disagree that it was what was agreed----

A Yeah.

Q -- because it's in the M&E log and the M&E log definitely refers to the tower, so it might not be a good idea, but it's definitely agreed. But in this context, there is a viewpoint, which you seem to hold, that the M&E log only applies to general wards and/or the tower, and yet this isn't the general ward. This is the national paediatric haemato-oncology ward, and it's getting 40 litres a second. Now, somebody had to originally suggest that. I mean, I appreciate we have a conversation with people who failed to spot it down the track, but someone suggested it. How would that have happened?

A I don't know. I don't know, but it should've been picked up through the user groups and reviews.

Q Yes, except there's a problem with these sheets. Every single one of these sheets, with a few minor exceptions, for bedrooms fails to enclose numbers for extract and

supply air. So, if you are a clinician attending a user group meeting and you've been supplied with a version of this Room Data Sheet for any room in the hospital, you don't get told what the supply air rate is or extract air rate is. Now, it may not have been on the agenda for the user groups, that may be something for the technical meetings, but the consultants never see this. So, is there not a possibility that, by having blank used Room Data Sheets on these two fields, somebody has to work out what 40 litres per second means in order to decide that there's a problem? Do you see that as a disadvantage in some way?

A It could be clearer.

Q Yes. Now, what I want to do is, since we're on this topic, let's go and look at Ward 4B. So, this is bundle 47, volume 1, document 7, page 44. This is a 2011 version of the adult haematology-oncology ward. Now, this is in the tower, and there is a clinical output specification for it that doesn't reference the air change rate, I would emphasise that, but it does describe specialist ventilation. Can you explain how 40 litre per second would have ended up in this design? This wasn't built, incidentally.

A No, I----

Q Because----

A I-- I wasn't involved in this level of detail at the time.

Q The thing that concerns me, Mr Ballingall, is that I do appreciate you weren't involved with that, but there seems to have been a system designed which involves somebody taking the contract, the Employer's Requirements, the M&E logs, turning it into Room Data Sheets, initial designs, as you described stepping down 1:200s, 1:50s, and out finally to build construction drawings. There seems to have been a requirement for GGC to check these through user groups and technical groups, and you'd agree with that?

A Yeah.

Q Yes, and, somehow, 40 litres per second has made it into somewhere that's not in the tower and is a specialist Ward 2A, and somewhere that is in the tower but is a specialist ward, the original old 4B before it was upgraded, and then the air change rates are not recorded in the Room Data Sheets. So, would you accept that there is a possibility that that failure to include the numbers in the Room Data Sheets might have contributed to people not spotting the actual air rates on the construction drawings as important?

A I think that the technical

aspects in the data sheets were largely dealt with through 2010 when they were loading 500 rooms. At that time, the technical review was Currie & Brown's team, so you had technical people looking at technical information. I get what you're saying about clinicians not understanding it, but I wouldn't agree that technical people could claim that they didn't understand it.

Q I agree you're not conceding there's a mistake here, but if there's a mistake, that should have been spotted by the GGC technical team?

A It-- it could have been, yes, yeah.

Q Now, it's worth, perhaps, just discussing something you say in your statement about technical teams. Can we go to your statement, question 15, which is on page 141, top of the page. We were asking, "Who from the GGC Project Team and Board were aware of the ventilation derogation [as we've called it]?" You've named Mr Seabourne, Mr McKechnie, Mr Baird, and we've discussed them. You assume Mairi MacLeod and Heather Griffin. Now, they maintain that they weren't aware of it. Why do you assume they would have been aware of it?

A Purely because they were the two project managers looking after the review process, but I said, "I assume." I might be wrong.

Q What did you see their role as, as project managers? Because there's been some debate about what sort of project managers they are.

A They were basically running the user group process.

Q So, it doesn't sound like that's a full project management role.

A They weren't-- they weren't technical people. They were health-- They were like-- Like, they were nurses. So, they were-- they were managing the user groups to make sure that everybody-- from the Health Board side, that everybody that had to be there was there.

Q So, in this 2010 process, when you were still there, outside Wallace Whittle who we've already discussed, who were the technical people on the GGC side?

A There weren't any others. They had the team under Currie & Brown.

Q And that's all?

A Yeah.

Q You wouldn't count Mr Moir as part of a technical skill team?

A Well, he had technical

skills, but he-- at that time, they were-- well, he wasn't employed to-- to review the design, to my knowledge.

Q Once Wallace Whittle and the rest of the Currie & Brown team have gone, who is the technical advice to the Board in the process?

A I think the Board's view was that Peter would supply some of it or they would bring it in as and when needed, but if you think about the fact that 500 rooms were fully loaded and agreed, the other X-- how many hundreds of rooms, the loading of them is-- is repetition. So, you know, the main technical review is done-- was done during 2010. It then becomes repetitive and then starts flowing through into construction information.

Q Don't you lose the opportunity to pick up on things you failed to spot in '10 if you don't have a technical team?

A Yeah.

Q Now, I'd like to turn to an issue that relates to Ward 4B, and it's in the hope that you might have some-- able to help us with a rather unusual little event. So, this relates to the old 4B, the one that was never built, that was going to be an adult haematology ward that we just looked at a Room Data Sheet for. Do you recollect that

earlier version?

A I had-- I had zero involvement in-- I wasn't there at the time, but carry on.

Q Well, that was in 2013, but you were there in June 2010.

A I was in 2010, yes.

Q Yes, so I'm looking at the old version. So, there's a change in 2013 to bring a bone marrow treatment ward in, and you weren't involved in that, and I appreciate that.

A I wasn't involved.

Q But I'm looking at the Stage 2 process, after contract sign, before authorisation to proceed, when something happens around the haematology ward that's going to be built that's included in the original design, original bid.

A Right.

Q So, if we can just set that up by looking at bundle 16, document 15, page 1595, which is a clinical output specification. This is the clinical output specification for this haematology ward. Now, I'm not necessarily expecting you to have looked at this at the time, but I'll get there to the question in a moment. Do you see at the bottom of the document it describes some ventilation, and it says the ward has a very specific function, "considerably higher than

average requirement for additional engineering support," and it says:

> "There should be no opening windows, no chilled beams. Space sealed and ventilated. Positive pressure to the rest of the hospital and all highly filtered air >90%, probably best HEPA with adequate number of positive pressure sealed HEPA filtered side rooms for neutropaenic patients as in the Beatson West of Scotland Cancer Centre."

So, the first question is, do you remember whether it was the practice of your designers to go and look at the facilities that were being moved into the new hospital to check out what they had before?

A It wouldn't have been done routinely, no.

Q Why not?

A Because the requirements are clarified in the clinical output spec.

Q So, you'd accept that this clinical output specification-- I mean, you haven't seen it before, but it talks about HEPA filters being an issue in this ward, and the reason I ask that----

A Is that-- It's suggesting HEPA filters be included, yeah?

Q Yes, and the reason I asked that is there was a PMI for removal of this requirement, and we'd like to see if we understand whether you knew about it. So, it's bundle 16, document 24, page 1674. So, this is a PMI which appears potentially to have been generated by Mr Moir, but we can't speak to Mr Moir, he's not well.

A Yeah.

Q It relates to, title:

> "PMI/General/021 - HAEMATO-ONCOLOGY WARD.
> "Alteration to Board requirements for M&E Services.
> The Board confirm that 8 No single rooms no longer require Hepa filter air supply as originally specified.
> The current Nightingale layout [and we're inferring that's designed by Nightingale] reflects the Board's requirements for room split between Haemat-oncology beds and the remained of the ward."

Now, do you have any recollection of this change happening around this specialist ward?

A I would-- I didn't have this level of detail at the time, but, from what I've seen, they were removed because the use of the rooms was

changed.

Q But the rest of the ward, would that have remained HEPA filtered according to this document?

A Yeah. Yeah.

Q Right, thank you. Now, if we take off the screen, by the time the hospital opened, you held a more senior job in Multiplex.

A Yes.

Q What was your title in 2015?

A I was managing director.

Q Yes. So, the opening of the hospital, with the Queen and a lot of fanfare and publicity, would have been a major event?

A It was a major event, yes.

Q Yes. So, a few months later, the adult BMT patient cohort moved into the hospital, and then, less than five weeks later, moved out again. I wondered if you heard about that at the time.

A No.

Q Because would it not be slightly remarkable that a major service like that goes into a new world-beating hospital and then leaves-- you weren't told about it?

A I didn't know about it. I-- I don't know why they left.

Q When was the first time that you became aware, to keep it at a very sort of high level, that there were issues around the building at the Queen Elizabeth?

A Obviously, I still had a team involved who brought a couple of issues to my knowledge, but nothing that really alarmed me.

Q What sort of issues did they bring to your attention?

A An issue with Schiehallion and an issue with some water.

Q What was the issue with Schiehallion?

A I honestly can't remember other than----

Q Could it have related to the presence or absence of HEPA filtration in isolation rooms?

A No, it wouldn't-- I would-- not in that detail, no.

Q No. The issue about the water, can you remember what that was?

A It was to do with quality of water, which-- and I was assured in both cases that neither of them were our issue.

Q How would the company have known that the quality of water was not its issue?

A Well, the quality of water isn't our issue when we hand the

building over, you know, it's----

Q No, but how would you have known that you handed over water that was of a good quality?

A Because we would have commissioning records of it.

Q Right. When did you leave Multiplex?

A I ultimately left in 2020, but I stopped being MD in 2018.

Q Right, because one of the issues that-- From your perspective as MD, when did-- Well, it may not have arised before you left, but when did the question of whether the hospital had been properly built, or properly handed over or the way you phrase it, come to your attention as an issue you needed to take interest in?

A Probably not until 2019.

Q '19?

A Yeah. I mean, I had-- I had a team of guys in Scotland, I had a director in Scotland who was dealing with whatever came up, and there was nothing particularly flagged to me.

Q Was anything ever flagged to you about ventilation being an issue at any point between the hospital opening in 2019?

A Sorry, say that again?

Q So, between the hospital opening and handover in 2019, 2015 and 2019, did your guys in Scotland

come to you with issues around ventilation in the hospital?

A They-- they said that there were issues with patients caused by ventilation, and I think Multiplex were paid to change-- do some more work in the same ward.

Q Can you help us about roughly when that might have been?

A '16/'17.

Q '16/'17.

A I think.

Q Might it have related to the bone marrow treatment ward?

A I don't know.

Q You don't know? I must just check the document before I put it to you. My computer will go slow at this point. Yes, so it relates to the Appendix K process and the full business case and the authorisation to proceed. So, when did you leave the project?

A End of 2010.

Q So, had authorisation to proceed happened before you left?

A Yes.

Q Right. Can you help us understand what Multiplex and your team are trying to achieve through the Appendix K process?

A The Appendix K process was really a Board process, but its primary objective was to give the NHS

Board the information that they absolutely required to go for a full business case, and then, secondly, further information that they wanted to see.

THE CHAIR: Sorry, I missed the second objective.

A Information that the Board wanted to see.

THE CHAIR: Right.

A So, it wasn't required for full business case but wanted to see.

MR MACKINTOSH: Is there a list of things that's required in Appendix K in the Employer's Requirement document that it derives from?

A I can't remember if it was in the Employer's Requirements, but it was agreed in 2010 as basically the objectives of Stage-- It might have been agreed in 2009, I can't remember, but it was basically the objectives for Stage 2.

Q Would that have included any certification that guidance was being followed?

A It was-- it was largely design information that was-- I mean, where guidance was not being followed, people were aware of.

Q Would the project team, that's Mr Seabourne and Mr Moir and the two deputies and Frances Wrath, in your eyes, would some of them have known that the building wasn't compliant with SHTM 03-01 because of this air change rate decision?

A They all knew.

Q They all knew.

A Yeah.

Q So, did, effectively, the contract allow for the Scottish Government to refuse to approve full business case?

A Yes.

Q Was that in any way constrained? Were they limited for the reasons they could do it or----

A No idea. It was-- it was a-- That was a matter for the Board, but----

Q But in terms of you agree the contract, once you signed the contract in 2009, you knew you had to go through a further hoop before you could actually----

A Oh, yes. yeah.

Q So----

A Yeah, we could have been put down in 2010.

Q Yes, and presumably there would have been some compensation payable----

A No.

Q -- but it could have been done.

A Well, we'd have been

paid for the work we did to date.

Q Yes.

A Yeah.

Q I wonder if we look at the Gateway 3 Review. So, that's bundle 43, volume 2, document 33, page 348. Did you have any role in the Gateway 3 Review? Were you interviewed by the reviewers?

A I don't have any great memory of it, but I believe I was interviewed as part of it.

Q If we look at page 355, there's a discussion in 4.4 of which the authors describe:

> "The current phase of the project has been dominated by a highly focused procurement process. [This] used the competitive dialogue procurement."

Then there's a mention in the middle of the paragraph that:

> "...the competitive dialogue period was shorter than typically found, (4 months [compared with] a total of 9-- [the] total of 9 months compared to a normal total of 18 months)."

And they described the approach as being "highly effective and efficient." Was that something you would agree with, from your experience with these competitive dialogues?

A To be brutally honest, no contractor wants competitive dialogue to go on for too long because the contractor's at financial risk and putting a significant amount of money into building a job. Four months to us is better than 18, as long as it gives the level of certainty over what has been bid. The bid period was intense. There's no doubt about that. There was huge amounts of information produced and-- I mean, I said earlier the size of team. You know, so there was a big commitment on part of all three bidders to get the information required as part of their bids within that period.

Q How would you respond to the suggestion that the speed of this process might have contributed to a failure to fully inform people in the Board of this particular change around the ventilation system, or would you not accept there was a failure to inform the people on the Board around it?

A It wasn't an out of control process. It was a very streamlined, thorough process.

Q You felt it was in control?

A Absolutely.

Q Yes. From your point of view, did you feel as the project director that you had full control over

the process from your side?

A Yes.

Q Do you feel that Mr Moir had control of the process from his side?

A I think it was probably more Alan Seabourne, but, yeah, they both had control of it.

Q We discussed earlier on, I put to you, there may be issues around not having Room Data Sheets contain air change rates, and another issue has been found within the minutes. It's about room layouts and room elevations.

A Yeah.

Q If we can go to the project management group meeting on 18 January 2011, bundle 31, document 23, page 147. So this is a meeting-- If we go back to the previous page. One more. Right, there we are. 18 January 2011, you are reported as being present along with a lot of other people.

A Yeah.

Q If we jump forward to page 147, there's a discussion about the 1:50 programme. Did you read this as part of your preparation for today?

A I've read this, yeah.

Q Yes. So, would it appear to involve a suggestion by Mr Ross that elevations be included in the drawings provided to the user groups? And your suggestion is that's not normal?

A Yes.

Q Why were you reluctant to agree to the request that was being made?

A This was 2011. So, at this time, we were agreeing the programme for the loading of all the other hundreds and hundreds of rooms that were to be loaded----

Q But this is after the 500 had been done?

A Yeah. They were to be-- they were to be repeated as we went forward. From me looking at construction information and the information I needed to design everything else, where a toilet roll holder goes wasn't particularly important. So, yes, elevations are important, particularly in critical rooms, but you don't have to have elevations for every room in the hospital to understand what's happening.

Q Would elevations have shown the ventilation system for rooms?

A No.

Q Where would the ventilation system have been in the elevation?

A Generally in the ceiling.

Q Would that not be within the elevation you would capture at this point?

A No.

Q No.

THE CHAIR: I have to confess, I don't know what a room elevation is.

A Basically, it's a drawing of that wall.

THE CHAIR: Right.

MR MACKINTOSH: Would it include the space----

A But-- So, you have the-- you have the-- The purpose of them is to try and give people looking at the drawings an easier understanding of how the room works, because looking at a plan of a room doesn't necessarily tell you the height of fixtures and all that sort of stuff, so----

THE CHAIR: Thank you.

MR MACKINTOSH: Would it have gone up above the suspended ceiling?

A What, the----

Q The elevation?

A No.

Q No. Okay. I want to ask a general question about commissioning and validation. I appreciate that at the time you were managing director of Multiplex, but it's more sort of a policy level issue. A number of your team have expressed the view that validation was not a responsibility of Multiplex. I take it you would agree with----

A No.

Q No. What about the idea that it would be prudent to allow for validation in the programme so that it doesn't delay handover and other parts of the project?

A Validation wouldn't delay handover because it's a matter for the Board post-handover, historically.

Q Right.

A I'm not saying that's right or wrong, mm-hmm.

Q So, you wouldn't see validation as something the Board would do before they accept the building?

A No.

Q Why not?

A I'm not sure there's a contractor who would support that on the basis that-- Well, no. We'd have supported it. If it was properly controlled, yes, but----

Q What are the issues that you're concerned about?

A Well, hospitals are never actually finished when they're handed over because there's significant amounts of equipment to be put in, a final test done, and that's when

validation is done, when it's-- all the equipment's in and it is finished.

Q Right.

A So, you know, Multiplex commission to the construction information.

Q Well, that was the other question, which is I had a long and useful discussion with Mr Wilson about this yesterday. Did you watch any of his evidence?

A No.

Q No. I hope I'll repeat this correctly, but the point I put to him was that-- He explained that in a room, say an isolation room, he would validate the whole system up to the grill, effectively, whether the amount-- the right amount of air----

THE CHAIR: You've used the word "validate." Did you mean to?

MR MACKINTOSH: Yes, commissioned. Sorry, my Lord. He would commission up to the grill. He would check the whole system produces the amount of air at the grill that it's supposed to and extracts the amount of air from the extract, but he wouldn't commission the whole room in the sense, back then, to check that the ceiling was sealed. He would check the original individual bits of equipment. I think that's a reasonably accurate description of his evidence.

Should not commissioning or the contractor at least check that the room performs as designed, as opposed to commission the individual bits of equipment?

A Yes, and then by checking the floors in and out, he's doing that.

Q But also checking-- I don't know how much of this you understand, but we've had evidence that if you build a positive pressure ventilated lobby room in compliance with HBN 04 and SHPN 04, doing it exactly right is very important if you want to achieve the air movement and the pressure differentials that are necessary for the room to do its job. Is that something you've become aware of?

A That is outwith my----

Q Right, but it would therefore mean that it's quite important to test that the room-- for someone, I appreciate this is a question, for someone to test the room that it does what it's supposed to do, that there is a pressure gradient in a particular direction, not in another direction?

A I would expect that to be part of the commission.

Q Right. That's helpful. One of the issues that appears to have arisen is that the contract allowed for

an independent commissioning engineer. Was that something you were aware of at the time?

A Not massively, no.

Q I mean, the reason I ask it is because it might be it's not a standard term in the NEC3 contract, and if it was a bespoke suggestion here, do you know how it arose?

A No.

Q No. Have you ever come across independent commissioning engineers in other contracts?

A They exist. From the projects I've personally worked on, they weren't there, but they were different forms of contract.

Q Okay. I appreciate this might be something you wouldn't have seen, but I think I need to put it to you just in case it was, which is the Stage 3 Sectional Completion Certificate from bundle 12, document 3, page 23, which is signed in 2015. Now, I take it you wouldn't have seen this at the time, because you were long gone. I wonder if we can just step onto the next page, and then there's a Capita form, and then onto the next page. That's interesting. I think I've referred you to the wrong sectional completion certificate. I will look for that in a moment and come back to my final questions. You can take that off the screen.

I suppose since you were the project director in the early days at the time when the technical matters were largely, as you say, determined, I should put to you a series of questions. I think you've answered many of them, but I think it would be appropriate to catch them at this point. What is your explanation for how it was that all the single rooms that weren't isolation rooms in this hospital have air supplied to them through chilled beams, such that the air change rate was half of that recommended by the Scottish Government guidance SHTM 03-01 2009?

A What is my explanation?

Q Yes.

A There were not conflicting but differing requirements that could not be achieved complying with the SHTM, so the balance of getting the best result that the Board could get for the differing requirements was the use of chilled beams with the reduced air rate, and the reduced air rate with chilled beams doesn't reduce the quality of the air in the general ward.

Q Whose idea was this and who accepted it?

A Well, the original

invitation to participate in dialogue asked the bidders to consider the use of chilled beams.

Q Right.

A So, my team used-- You know, and I'm sure all the other teams considered it as well.

Q Okay. My next question relates to the adult BMT unit that was built and was criticised as such by its consultants and its clinicians for lack of air change rates and lack of filters that it only stayed for five weeks before returning to their old hospital. How did that come about?

A I've got no idea, I'm sorry.

Q That's because you weren't there at the time.

A Yeah.

Q Okay. I think we've already discussed this, but I think I should pick it up. Well, actually, we haven't discussed this, and I think I know what your answer is going to be, but actually it's for completeness. How was it that the isolation rooms in the paediatric haematology unit at Schiehallion were built as positive pressure ventilated lobby rooms according to guidance which says they're not suitable for immunocompromised patients?

A I don't know the answer

to that.

Q Do you know when that decision would have been made?

A No.

Q Because during that time in 2009/'10, were you involved in any discussions about the nature of the isolation rooms in the hospital?

A No, but the position of the isolation rooms would have been agreed through that process.

Q Right. There is a hypothesis that the reason the isolation rooms were built as positive pressure ventilated lobby rooms had its origin in the Employer's Requirements. Is that something you've ever been involved in?

A No, not in that detail, no.

Q I mean, and maybe you draw no lessons, but if you do, what lessons do you draw from the procurement of the construction of this hospital?

A I think the procurement and design development process were pretty well done. I think you could argue that a technical team post-2011 would've-- would maybe have identified any issues, and I think there's-- I think the question of validation is one to be answered, to be honest.

Q So, just to drill into that,

you feel that when you say the technical team should have spotted or might have spotted some issues, which technical team?

A Having a technical team on the client side.

Q It's important in your mind?

A The clients are responsible for clinical functionality. So, they'll always-- they'll always argue that they're not technically responsible, and contractually, that's the case, but, yeah, as you said, somebody who understands 40 litres as opposed to two and a half air changes, is a different beast. So you could argue that it would have helped.

Q To have a technical team on the client side.

A Yeah.

Q When it comes to validation, do you see that there's some value in having a system of validation required for these sorts of buildings?

A Validation is required.

Q Yes.

A Yeah, whether it was done or not, but, yeah, there was a requirement in the job to produce a joint commissioning programme.

Q Yes.

A Now, a joint

commissioning programme is not just a contractor's programme. It's an entire team programme based on, "How do we actually get to being operational?" Now, I was involved in the very early meetings on that, so I know that it was being produced, but what it ended up as and what it was used for, I've got no idea, but the intention of it was that it was used to take the hospital from being a building site to being an operational hospital.

Q Thank you. I'm just going to find one more document. (After a pause) The computer is being a bit slow. I wonder if we can look at a letter from 2019. That's bundle 43, volume 4, page 359. This is a letter from Professor Steele to you, in March 2019. Do you remember receiving this letter?

A I don't actually, but I remember having dialogue with Tom Steele, yeah.

Q What did you do after receipt of this letter?

A I think prior to this letter I'd already met Tom Steele. John Ballantine, he was my director in Scotland, asked me to attend the meeting with him.

Q When was that?

A I can't remember exactly, but I think it was before this. It was

either before this or just after it. It might have been just after this.

Q Did you provide or did your company provide any information to the independent review?

A I offered far more than that and it wasn't taken up.

Q What did you offer?

A I offered for my team to work exclusively with Acorn through every issue that Mr Steele had, and if they were Multiplex's issues, I would have them resolved, but that didn't suit Mr Steele's intentions, so----

Q Before this date, you had the meeting that might have happened before this date with Professor Steele. Before that, what knowledge do you have of these issues?

A I didn't particularly have any.

Q Okay, thank you.

A And these issues are still not resolved six years later, to my knowledge.

Q My Lord, if we can take that off the screen, I do have one question which I need to find, but I think this might be a good point to see if anyone in the room has a further question.

THE CHAIR: Very well. Mr Ballingall, I need to find out whether there are any questions that anyone in the room wishes to raise, and Mr Mackintosh has explained he needs to check his notes. So, can I ask you to return to the witness room for 10 or so minutes?

THE WITNESS: Okay.

(<u>Short break</u>)

THE CHAIR: I understand maybe just one question, Mr Ballingall.

MR MACKINTOSH: Yes, Mr Ballingall. It's the position advanced by Currie & Brown that in January 2010, they stood down their technical team, including Wallace Whittle, and there was no technical team working to them in 2010. It's fair to say that Mr Pike gave slightly different evidence yesterday – he pointed out there were two meetings in August 2010 to which Wallace Whittle attended – so I wonder what your recollection is of how and where you would have seen Wallace Whittle in 2010.

A Wallace Whittle were-- Currie & Brown were definitely-- Sorry, are you saying Wallace Whittle were stepped down, or Currie & Brown were stepped down?

Q Yes, Currie & Brown was still there, but in a different role, but they-- So, effectively, this is the narrative. They had a technical team

which was around in 2009 when you're negotiating the contract. We've heard evidence about that. After the contract is signed, it is decided not to retain Currie & Brown as was intended in the full role. Their role is restricted, and at that time they then stand down their healthcare planners, their architect advisors and Wallace Whittle as their M&E engineers. There's some evidence of a small involvement of Wallace Whittle at various points after that, but there is no technical team as such, and that's what I'm putting to you. How do you know there's a technical team? What's your own evidence?

A I mean, I wasn't involved in user group meetings or technical meetings, but I thought they were part of the process of getting all the Appendix K information together and approved with the ERs.

Q You're looking puzzled, and therefore I want to help you out.

A I'm puzzled, yeah.

Q Can we look at bundle 40, please? It's a series of minutes, but we'll look at the "Technical Design Group," page 354, document 119. So there are a total of 11 meetings of this Technical Design Group in 2010, which----

A Yeah----

Q -- morphs into the Medical Planning and Technical Design Group, and the odd thing about it is that, whilst your side is represented – as you can see at this first meeting and, if we just happen to jump to the last one on page 424, we see that that's still the case – do you see how "Distribution" doesn't include an engineer from the client side? So the question is-- and intriguingly, in these minutes, whenever there's an entry in the agenda "M&E," there's never anything in it. So, why are you thinking there's an M&E adviser to the client in 2010?

A I don't know. It was 15 years ago. They may have stepped them down on the basis that the main principles of the design were established in 2009----

Q No, I understand they might have a reason. It's more to try and dig into----

A Ultimately, the Board are not responsible for the technical design. Multiplex are.

Q I appreciate that, but I'd like to just try again-- It's 15 years ago. Just sort of push your mind back to then and think, "Well, why do I think that they were there?" Why do you think they were there? Because you did say they were there, so why do you

think they were there?

A I did think they were there. I just thought they were part of the review process.

Q Right.

A Of the-- of all the work that was done up until full business case.

Q And you've not seen----

A My memory might be completely wrong.

Q Have you seen, as part of your preparation for this hearing, any documents that would suggest they were part of a review process? Sign-offs, minutes?

A I think I saw the comments on the Environmental Matrix. Now, whether that was 2009 or 2010, I don't know.

Q So that would be something that we haven't seen?

A No, because I'd have seen them in a bundle.

Q If you had access----

A It would have been something sent to me.

Q Right. Well, I'll explore----

A I'm pretty sure they commented on Appendix K.

Q Appendix K? Right, yes. Okay. So you think they'll be in Appendix K commentary?

A I think so. Whether it was 2009 or 2010, I can't be sure.

Q Well, we'll have a look in the versions of Appendix K that we have to see if there's a Wallace Whittle comment. With that, I've got no further questions, my Lord.

THE CHAIR: Thank you, Mr Mackintosh. Mr Ballingall, that is the end of your evidence, and you're free to go. Before you do go, can I thank you for your preparation work, which involves responding to the questionnaire, the reading involved, and your attendance today. Thank you for that, but you're now free to go.

THE WITNESS: Thank you very much.

(The witness withdrew)

(Adjourned for a short time)

THE CHAIR: Good afternoon, Mr Connal. We have Mr Fernie?

MR CONNAL: Fernie. We do, my Lord.

THE CHAIR: Good afternoon, Mr Fernie. As you understand, you're about to be asked questions by Mr Connal, who's sitting opposite to you. First, I understand you're prepared to affirm?

THE WITNESS: Yes. I am, my

Lord.

Mr Alasdair Fernie

Affirmed

THE CHAIR: Thank you, Mr Fernie. Now, I anticipate that your evidence will probably take the whole afternoon, by which I mean until about four o'clock, but if you want to take a break at any stage, just give me an indication and we can take a break. The other thing I always would say to a witness at this stage is, can I encourage you to speak a little louder and maybe a little slower than you would in a normal conversation? So, I mean, it's important that you're heard.

THE WITNESS: I'll try to do that.

THE CHAIR: Thank you. Now, Mr Connal?

Questioned by Mr Connal

Q Thank you, my Lord. Well, good afternoon, Mr Fernie. I'll start by asking you the formal question that we always ask witnesses, which is this, that you've provided the Inquiry with a witness statement, and I'll be turning to that shortly. Are you content to adopt that as part of your evidence to the Inquiry?

A Yes, I am.

Q Thank you. Now, your role in the project that the-- let's just call it the "new hospital" to avoid getting into the full narrative of the name----

A Okay.

Q -- was initially as a project construction manager. Is that correct?

A Yes, that's right.

Q And then, due to the untimely demise of one of the team, project director. Is that correct?

A Yes.

Q So these are both reasonably senior positions in the hierarchy building the hospital. Is that so?

A Very much so.

Q On the part of the contractor. Can we just go to your witness statement just so I'm clear what your position is? If we go to the very foot of – I'm using page numbers that come from an electronic bundle – page 6, at the top of the page should come up. Now, at the very foot of that page, you're asked a question, well, framed or not, which is generally designed to see what you know about specific regulations that apply in healthcare construction. You see that there? So we see your answer emerging at the top of page 7.

A Let me just get there, yeah.

Q I noted from your brief CV that you included that you have been involved in healthcare projects previously to this one. Is that right?

A That's correct, yes.

Q Now, you're asked what your knowledge was of healthcare regulations, and you say in answer:

> "I was able to access any regulations required be it directly or via the supply chain. My understanding of the regulations is that these are incorporated into the design and specification."

I just wondered, did you need to have, in the context of the post you had at the new hospital, an understanding of any of the relevant healthcare regulations?

A I guess-- And there were two posts. So there was my post as the project manager who was focused on delivering the construction of the hospital.

Q If I just ask you to speak up a little more?

A I'm sorry, of course.

Q It's primarily so his Lordship makes sure he hears everything. Thank you.

A Okay. My initial post is

construction lead for the hospital. The relevant standards would be on the documents that I'd be reading. So the architectural information, the mechanical information would all be available to me on that platform, and that would be very similar to the information that, even as project director, I would rely on the information issued through the design process to allow me to construct a building.

Q Yes, well, I'm going to come back to what you were actually doing, but I think in the next question and answer on your statement, you accept that you understand that compliance with various guidance and regulations is very important in healthcare.

A I do, yes.

Q I'm keen to understand the extent, if any, to which you applied that issue to the job that you were actually doing in this actual contract. Can I ask you another general question? This was an NEC3 design and build contract. Now, we're going back some years. The contract was signed in the tail end of 2009. How familiar with that contract were you at that time?

A So, I had previously worked for one of the alternate bidders. So I was given access to

counselling on the style of contract, which was beneficial for me in relation to taking on the role in construction for Multiplex.

Q Yes. So, do I take that the alternate bidder, I assume, is Balfour Beatty because that's where your previous role was? Is that right?

A It was. It was that, yes.

Q Not that that matters, it's just so we're clear.

A Yes.

Q Does that mean that prior to starting in this position, you hadn't actually had to operate a contract under those provisions before?

A That's correct.

Q Now, if we go to page 8, because I'm keen that you have what you've said in your statement in front of you when I ask you supplementary questions, you see that there's a little letter (d) about two-thirds of the way down that page, and you're saying, well, "Who was responsible for ensuring that Multiplex complied with the terms of the contract?"
"Responsibility was across all of the disciplines," and then, "What responsibility, if any, did Multiplex have for ensuring that the built hospital complied with relevant guidance such as SHTM and SHFN?" Now, you say, "Well, that's our job. We have to ensure that."

Now, is that, first of all, is that something that was part of your role in this contract?

A So, as project director?

Q Yeah, well, initially as construction manager and then as project director.

A As construction lead?

Q And tell me if they're different.

A So, my role as construction lead would be to ensure that the works were carried out in accordance with the information I was able to access. That would be specifications, construction drawings, and those would be taken off the 2D version and put into practice on site. The standards would be from, you know, the very early days when we started the piling process through the substructure, superstructure, cladding, cutting walling, roofing, and then into the fit-out area.

Q I'll maybe come back to that point a little later, Mr Fernie. I wondered if you had any view, given your experience, on this question. In the context of this type of contract and this project, what effectively was done was something called the Employer's Requirements were put together.

A Yes.

Q You know that was done?

A I understand that, yeah.

Q And that then went out to the various prospective bidders. Are you able to offer any view as to the extent to which it would be understood that these Employer's Requirements could be changed in subsequent discussions at any time before somebody put the pen-- signed the contract?

A I'm not speaking from memory in this instance, but I would speak from my understanding of the process that the Employer's Requirements would be developed into a design developed programme which, in turn, if you were as a bidder giving an option or a betterment, then the Employer's Requirements may, I think, be changed at that process.

Q When, just so I'm clear, you use the word "betterment," do you anticipate by that something which is perceived to be better than what's in the requirements themselves?

A Yeah, it's difficult to get a measurement on what betterment is, but betterment would not always be a reduction in price or better value from a monetary aspect, but it may give something like a better build performance.

Q Thank you. While I'm on these general questions of contracts, on page 9 you're asked about working relationships, particularly with the Project Team, which is something we always see capitalised, it's always capital P, Project, capital T, Team, and you say about two-thirds the way down, page 9, that your relationship was "focused on working together, towards delivering the project as a team." Is that something that was particularly required by this contract?

A Yeah, so there's this kind of dialogue in relation to how this contract's executed, and so that-- and perhaps to give some background, traditionally in construction, people would work in silos and you would have a client team, architectural team, construction team. Construction would take the information and drive the job to get it to completion.

We start large, very large projects like this, that doesn't work, that means that there's opportunity for many problems to occur. Not saying that this contract style doesn't negate the need for other complications, but the premise behind this contract is that there is an open dialogue throughout the process of when it's bidding or when you're going through the FPC process or when you're actually

delivering the project.

Q Thank you. Another introductory matter that you were asked about, which appears foot of page 9 and then going on to page 10, you're being asked about an organisation called Currie & Brown. Now, do you remember them being involved in the contract?

A I do, yes.

Q Now, on page 10, the first-- about a third the way down, you're asked, "Describe Currie & Brown's role and responsibilities in respect of the project. Are you aware of any changes to their role during the project?" You say that:

> "They had a number of managers working with the NHS team. They reported on cost and project management."

A Yes.

Q Now, we should probably just establish so we understand your answer. You arrived in this project, I think, in February 2011. Is that right?

A That's correct.

Q So when you say you don't recall any changes, that's from the time you arrived?

A That's right, of course, yes.

Q And I just wanted to ask you a couple of things about this because your immediate answer to the question is, "Describe their role," and you say, "They reported on cost and project management." Is that the way that you remember their role?

A I remember, I guess, the roles of the people I worked with. So there was Douglas Ross, who was very focused on commercial, and there was David Hall who was a project manager.

THE CHAIR: I've seen the expression "commercial" from time to time. I assume it's something to do with costing but can you help my education on the topic?

A Yes, I'll try to. We, as a construction company, we submit a monthly report to request payment on the basis of how much work we've completed, on the design and on the construction fabric. Douglas would probably review that report and make payment on the basis of it being acceptable or perhaps query some of the items that were in that. That would (inaudible 14:16.11) the dialogue sessions.

THE CHAIR: Right, thank you.

MR CONNAL: Now, Mr Hall, who you remember as a project manager----

A Yes.

Q -- can I just ask this? From your contact with him, was he a ventilation engineer?

A A ventilation engineer?

Q Yes.

A No, I don't think so.

Q So, in the next question you're asked, "Did Currie & Brown have a role in ensuring contract compliance?" which is a phrase that we've heard. You say:

> "Members of the Currie & Brown team would carry out reviews and give advice to the project team and were, I believe, involved in reviewing the design process."

A Yes.

Q What do you mean by "involved in reviewing the design process," in light of the evidence that you've just given us?

A So, there could be a number of items during any one of the project meetings that required some clarification. I'm kind of struggling to give you an example, but I will try and come back to that if I can. David would often take an action to take it from the project review meetings, which would touch on design, and discuss it with either the internal project team – as in the NHS Greater Glasgow team – or discuss it with myself or someone like Darren Pike, for instance, if it was a mechanically-based question and ask us to then discuss it with with our technical experts, who would be the design team that worked for Multiplex.

Q Can I just then follow that up by asking this? Your answers are based on what you recall of the people you encountered, including Mr Hall and Mr Ross. Were you aware of Mr Hall, during your period there, having a team of technical experts to consult?

A I think the best way to describe that is that we were his technical experts and we would pass that back to our design teams to process any questions within the-- any processes that were ongoing at that time.

THE CHAIR: Sorry, just give me that again. The question is, were you aware of Mr Hall having a technical team? Your answer is----

A In my view, the technical part of the job was delivered by Multiplex. We were the design and build contractor. So, his first port of call would have been Multiplex and I'm talking probably more as the project director now, rather than the construction lead. He would also have members of his own team, so he

would have people like Frances Wrath in the project management team as well; Heather; some of the team's names are just escaping me at present but I will get them.

MR CONNAL: Heather Griffin, perhaps?

A Yes, that's it.

Q Mairi Macleod?

A Mairi Macleod, yes, yes. Peter Moir would be there as well. But I think from a-- they were fulfilling a role which meant that David would often come to the construction team or the design delivery contractor and ask for advice on how to go forward on certain elements.

Q Now, you're then asked some questions about another of the players, Capita, and I needn't ask you about that, but I did want to ask you about another point where you may be able to give us some general assistance. Can we see bundle 26, document 3 at page 202? What I'm showing you here, Mr Fernie, is an extract from the Employer's Requirements. You see in the middle of the page a heading, "control of infection" and a general statement in block capitals:

> "Prevention and control of infection shall remain a primary consideration of the contractor in the design and construction of the works."

Now, you arrive after the design's been done, so I'm not about to ask you about that but, first of all, were you aware of this provision?

A Yes, I was.

Q Can you help us at all understand how prevention and control of infection becomes a practical consideration during construction, because that's what you were dealing with.

A Can you ask me that question again, because when you talk to me about construction, I immediately think about what I'm doing on site. Could you just ask it again, please?

Q If I read short what is said in front of us, it says:

> "Prevention and control of infection shall remain a primary consideration of the contractor in the construction of the works."

It's a very broad statement, it's a very general statement and then there's some detailed comments about design. I'm just wondering whether, as a construction professional, you could allow us to understand how you actually put that into practice?

A Okay. So, for fear of sounding repetitive, the practice is put in place through the information in the design drawings and the specifications thereupon, so my experience of infection control is only that which is presented in that information. I am not, obviously, an infection control expert but I would make sure that if there was walls that required a protection on it to ensure that infection control could be managed latterly, then I would make sure that that was part of the sign-off process, inspection and testing at the end, similar for ceilings and flooring in particular.

Q So, you're reliant on what you're given to look for features that may have an infection prevention and control issue with them. Is that right?

A Very much so, and if there was anything that stood out, so if you look at expansion joints in the theatre blocks, for example, they're very difficult to manage from an infection control because by their very nature, there's a space and a gap in the wall where infection could gather. So we need to make sure that the expansion joints are compliant, and that would have been something that had been put through as a sample and would have been approved back into the mix with visibility through the infection control team or individual, whoever it may have been at that time.

Q Well, that's the next follow-up question. We can take that off the screen, thanks. We'll go back to your witness statement at page 13. You're asked a question at the top of that page:

> "In what ways were infection prevention and control staff involved in the construction process?"

Then you answer that by saying, "They were, I understand, involved in the design process." Then you give some examples of that but you don't actually tell us what you mean by, you know, whether IPC staff were involved during the construction process. You say you believe they were on site, but your contact with them was very limited. Is that the extent of the evidence you can help with?

A It is actually because that infection control team would have worked through the project team rather than having interface with someone like me, so my engagement with that as part of the team would have been very, very minimal.

Q So, although you say that you believe they're on site, you can't assist us with who or how?

A I can't. Not names, not now.

Q Now, you're then asked about something that happened long before you arrived, because obviously, at the time these questionnaires were framed, we didn't necessarily know who had done what. But can we go to page 16, because we've been asking on the previous pages about something that the Inquiry has called the ventilation derogation, which is essentially an arrangement under which the standard room air change rate moved from six in guidance to two and a half for reasons that we didn't go into with you. You're asked about halfway down page 16, well, when did you become aware that this was something that had happened? You say you don't recall. I suppose that the question is this, you're holding quite a senior position, should you not know about that because you need to think about it when you're doing your job?

A I could see why you would think that and my answer to that is that as a construction lead, I am very much focused on the information that's presented to me to allow the process to go forward. So I need to make sure that that information comes at a certain time to allow the process

to go through for the supply chain to then procure and deliver and then install the construction equipment or the construction fabric. I, at that point, because I understand there's a process prior to that information coming to me which has been through a number of reviews, I don't see it as a change. I just see the information I've got to deliver and that is how I proceed, on that basis. I wouldn't start to question it unless there was something inherently that would jump out at me at that point.

Q I think the question probably is this, that you've been involved in healthcare projects, you know the importance of guidance and so on. Do you, wearing the hats that you had, manager and then director, do you step back and review what you've got to see whether it appears to be in accordance with guidance or what you remember of guidance or anything of that kind?

A The honest answer on that is that you measure the success of the project on the basis of the information that's signed off. So, you don't necessarily step back and say, "Does this comply with what specification A, B or C says?" You simply focus on the information you've got because you're reliant on the

process having been agreed prior to it reaching you. And so because there is a lengthy process that requires people to have reviewed and understood what it is they're signing or agreeing to, to allow the process to progress for the main contractor to then take that, drawing information and turn it into something tangible, which is the building, then you don't-- I wouldn't say you don't have that luxury but you're conditioned not to do that, I guess, because you're believing the information in front is correct and delivers what the intended purpose was, whether that was part of the technical standards or it was part of what the client ultimately requested.

Q Now, just so I'm clear, are there any exceptions to that? I thought you may have hinted a minute or two ago, you know, "if something jumped out," or words to that effect. Let me give you a hypothetical and ridiculous example. If somebody told you to build a hospital operating theatre with no ventilation in it, and that's what the drawings showed and they'd been through a process and come out to you, would you just carry on and build it?

A I would certainly question something as obvious as that. I'm not sure that the air changes jumped out to me as being something that I would necessarily cause alarm at in relation to the general wards. I probably was led and guided by some of the members of my team during that period. That would have, I guess, been highlighted at the latter part of the job for me, had there been queries around not achieving the building rates that were signed off.

Q You do cover this later in your witness statement, we'll just take it now since you've mentioned it. Things like a ventilation system, we've heard other evidence earlier in the Inquiry that you really need to get that fixed very early on because it affects ceiling voids, duct sizes----

A It can do.

Q -- plant size and so on----

A Yeah, yeah.

Q -- depending on what the issue is. So somebody coming along just before people are about to move in and saying, "We're not happy with this," is a bit late, isn't it, because you can't really do much about it?

A Yes, but you would've expected that process to have happened long before you put the building on site, so you wouldn't-- In my experience, the checks and balances have already been carried out. You know, that information

would've-- What I'm constructing today was agreed perhaps two or three year ago, in any large-scale construction project.

You know, if you look at the hospital project in its own right, it's a village essentially that you're putting together, and you're doing it across an area of ground and you're doing it vertically as well. And in some instances, you've finished parts of the building to-- almost like this room here so that it's no longer a building site as such, but you have concrete being poured seven or eight floors above it because of the time it takes to build these buildings. So there was opportunity, I think, fairly early on in the process to allow that conversation to-- If it had been missed, if anything had been missed, exemplar rooms were ready and available for people to review. Timings and dates of those I don't have in my head, but they would've been very advanced to allow those who ultimately were going to take ownership of the building to be comfortable with it.

Q Yes, I mean, I can see that your evidence is-- Well, I think you told me people need to know what they're agreeing during the design process in order to----

A They definitely do.

Q That's no doubt self-evident, and if something crops up during the design process that creates an issue, no doubt it can be discussed. That assumes of course there's somebody involved in that process who knows what the issue is.

A Or indeed if it's picked up during the design process. You know, that's why we end up having changes on construction projects, because design is-- often has human error.

Q Yes, and one can understand at the end when you're doing handover that people are going around carrying out checks, commissioning and so forth. Just help me understand then how, particularly on a technical issue like ventilation, somebody would know at some intermediate stage-- what process would be going on during some intermediate stage that would allow somebody to say, "Whoa, there's an issue here"?

A So, I think it would be difficult to highlight there was an issue if the results of the commissioning are in line with the expected rates for the design at that time and, it's at that point, if you were looking at it in future, you might have a check or a hold point that takes you back to this-- technical requirements of a standard hospital.

But when you're doing that testing commission and you're not-- the practice today has not been to do that. The practice has always been that you test your building on the basis of your design and specification and what has been signed off perhaps two years ago.

Q Yes, so somebody builds to the construction drawings, and then you check against, in effect, what's been built following these drawings.

A Yes, and what would be highlighted would be-- if you weren't getting the results that were required of the technical information on the basis of the drawings and specification, that would immediately throw up a red flag, and there would have to be a review carried out as to why, but you wouldn't revert back. I-- In my experience, you would not revert back to the SHTMs or, you know, the larger design part of what a hospital looks like.

Q Thank you. Just so we see the way you've summarised a position you've explained to us much more fully today, and thank you for that, page 17. It's basically summed up in an answer near the foot of that page:

> "…the construction team take the information that is provided throughout the design approval process and proceed on that basis."

A That's exactly what we do.

Q Yes, and neither you nor anyone else in the follow-on steps really goes back prior to that.

A I don't believe they do because the technical advisers would assess the competency of the building on the design at that point as well.

Q Now, just for completeness, I think earlier in that page you were asked about the significance of BREEAM and whether it was given any particular priority and you said, well, you're aware of it, but you're not aware of it being given any particular priority.

A No more or no less than any other element in the process.

Q Thank you. Your name crops up in a few slightly random places, Mr Fernie, in the sense that, you know, you've explained your journey on the site, but you also appear once or twice-- I wonder if I could ask you to look at bundle 12, page 785, just so we understand your role in this. Now, this is a lot later. We're a way into 2016 now.

A Yeah.

Q This is a communication that comes from you. Now, am I picking up from what you say in your witness statement at pages 18 and 19 that, although you are the sender of the communication, you're not the originator of the information?

A So, this is a very technical, I guess-- I know there's a technical conversation in the background and in the forefront here in relation to what's happening in relation to this email, so I would seek guidance from members of my team. And the date of this happens quite some time after the project has been completed, and so I would probably take guidance from a number of members of the team and/or design team to allow me to facilitate the answer back to David.

Q Now, I wanted to ask you a couple of things about that, and if it's not within your expertise, please just do tell me.

A Thank you.

Q This statement here says that the guidance, which is to be SHPN 04, "does not exclude ventilation extract from both the en-suite and isolation room." Now, that arises as an issue, I think, because the design of the isolation rooms as built did not follow the design as set out in the guidance.

A Yeah.

Q Do you know anything about whether that's right or wrong?

A I don't, no. I'm relying on partners in the business to guide me through that process.

Q The slightly odd bit, and maybe you can or cannot help us with it, about this communication, is that this appears to be an information request which relates to what's called the Schiehallion Ward, Ward 2A, as we sometimes call it, paediatric haemato-oncology. In sending this email, you say, "Well, in any event, what are you referring to SHPN 04-01 anyway, because it doesn't apply to wards with immunocompromised patients in?" Now, I wonder whether that's a slightly odd response because if it doesn't apply, what are you building-- something that is said to be compliant in that ward? Should you not be building something different?

A Mm.

Q Do you understand the point I'm asking about?

A I do----

Q Can you help us at all on that?

A I do understand the point, but I have to be clear that this email would've been written for me, and I would've then-- satisfied that the

information I was sending back was suitable.

Q So you're reliant on others to provide you with the technical material that's contained there?

A Very much so.

Q In fact, you go on to say, just so we get all of this at the same time, "We have looked back at the drawing approval process," and then you say it seems to have been signed off by the board and their advisers, Capita. So on this email at least, Capita are being given the role of providing some assistance to the Board in that part of the design process.

A So I think Capita in this reference here would've inspected the works that were completed and had, I understand, raised no concerns that we were not compliant to the drawings.

Q Yes, well, I don't think, in fairness, that's the point that's being made in this paragraph----

A I see.

Q -- because I think, if you read it, it says that "the first drawings that were issued … as part of the RDD process," so that's the reviewable design section, the earlier section that happened before you were there.

A Yeah.

Q It said the first drawings

that were issued "did represent what is now being asked for, en-suite extract only," which you can take it from me is what the guidance essentially shows. Then the solution was changed to what was built, and it was signed off by the Board and their advisers, so presumably the writer was trying to make some point that, "Well, so what? You signed it off."

A I'm not sure they were saying, "So what?" There was never that sort of dialogue between ourselves and the Board, but there would've been, yeah, a confirmation that there was a signature down the line.

Q Yes, can I just go on to 786 to make sure we're not missing any text? Then it says-- That's the point you were making, and then nobody picked it up during the later process.

A Yeah.

Q One of the issues that this Inquiry has got into in relation to the ventilation derogation is how you should record something that derogates from guidance, you know, should it be clear who agreed it, when they agreed it, what it covers, what it doesn't cover, topics like that.

A Yeah.

Q Would you agree as a

matter of principle that that's a good idea?

A I do.

Q I suppose that what appears to emerge from this email is your company saying, "Well, we take it this is agreed because somebody has signed it off during the process," so there isn't actually any written discussion of departure from the guidance. It's simply that it's happened and Capita have signed it off.

A Mm.

Q That on the face of it doesn't kind of meet the, at least, aim of making any derogations from guidance clear and easily discoverable. Would you agree?

A I would think that the conversations and-- So whilst that letter may or could've been perhaps in hindsight now written better or given a bit more detail or dialogue behind it, I think that it's essentially saying that, during the design development process, there was the opportunity to have a review of what the MEP or what the building fabric was going to be like. Now, how clear that was back then I'm not sure of.

Q I think this is-- What I'm trying to ask you about, and I'm just keen to get your experience on it, is if you're doing it-- All right, go back. In a debate over the ventilation derogation, the idea was, "Let's make these things clear as possible." There are debates as to how far that was achieved in that case, and you're not involved in that debate.

A Yes.

Q But if you have this design process which essentially involves a production of drawings, some kind of discussion and a signature at the end of it, there's nothing elsewhere, no other document, no record, no narrative that actually says, it would appear, you know, "The parties agreed that following guidance document, which is in Employer's Requirements at this page, would not be followed in this respect for these rooms, for this reason." So unless you happen to get into the detail of the process, you don't know.

A Okay.

Q I'm just wondering whether you agree that, at least in principle, that is undesirable?

A Because of it-- Well, you're not asking me what my involvement was during the design development process, but----

Q No, because you weren't there.

A Because I wasn't there.

On the face of it-- I can only answer-- If information is not clear to whoever's signing off, or in some instances agreeing to that design, then we should definitely try to improve that. You know, how the information was presented on something like Aconex and passed between the parties would be far more detailed than, you know, I think a set of minutes. You know, so the drawing information being passed back and forward was, you know, large volumes of information----

Q Mm.

A -- and as well as I wasn't involved in that process at the start, at the back end, I could see how that process was managed and who-- and we're given the opportunity to-- to be involved in those reviews.

Q I suppose I can put the question this way. If you were looking-- You arrive, perhaps late on the scene, perhaps you've changed jobs or whatever, you're looking to find what departures there were from guidance that had been specified way back when the requirements were drawn up. We've had one debate about the ventilation derogation, but to find this one, you have to work your way back through a design process and look for a signature and work out that the design that's signed off isn't in fact compliant. It's not otherwise patent on anything. Do you see what I'm getting at?

A Okay, I understand now.

Q Would you agree in principle it should be possible to do better than that?

A Yeah. I mean, if it's not on a log and it's not clear, then, absolutely, you know, in principle I would agree that----

Q Okay, thank you. Can I just ask you about another small point? Bundle 12, page 416. Let's see where Mr Fernie appears here. (After a pause) This is another email further on in the process, September '15, so that's after handover and indeed after patient migration. Now, is this you, or is this technical people providing you with information on this occasion?

A So, I think there'd be a mix of both, and I would have checked back with somebody like David Wilson in relation to the testing of the rooms, and then my commentary along the lines of, whatever we need to do to resolve the situation, then, as Multiplex, we would be very front and centre in doing that, and it was certainly not a cost issue that was driving any decision-making process at that point.

Q I should, in fairness to you, have shown you the incoming email first, so that's entirely my fault.

A I remember it from the bundles, actually, so----

Q It's just at the foot, there. The reason I want to show you this-- Sorry, go to 416. The request is:

> "Can I ask you to confirm that [Multiplex] have constructed and commissioned all of the rooms in the Schiehallion Ward [so we're back to 2A, which, as we subsequently know, became an issue] in full accordance with the specifications (including SHTM)... and they are compliant."

You say you've constructed the rooms to the correct specification.

A That's right.

Q You don't actually say you've constructed them to SHTM.

A So, what I should have said to make it absolutely clear is that I constructed the room to the contract, and the contract was the drawings that I had.

Q Yes, okay. So, this is the same point you've been making to us earlier----

A It is.

Q -- that, as the

construction chap, what you're saying is, "I got a drawing and I built it to that," and you're asked about SHTM, but you don't know. You assume things have happened in the design phase, but you don't directly know what the position is about SHTM.

A Yes, I-- I have a-- Yeah, like I said before, I have the information in front of me and that's went through the process, which has allowed me to then take it from a drawing and put it into a fabric.

Q If we take this as a communication at or around the time the hospital has been handed over, slightly later, September, when you finish your build job wearing your construction hat, you simply know you've built to the drawings?

A I've built to what we would classify as the contracted works, and that's drawings and specification and----

Q Yes. So, there really isn't any point asking you whether you've built it to guidance or Employer's Requirements or anything else, because all you can say, because you don't go backwards, you've explained to us, is you've built it to the drawings?

A And that is-- That was me trying to give David that clarity

there, that whilst there was a mention of SHTMs, that what he's building is in accordance with the information that was signed off at the----

Q Yes, and I suspect that's where the clarity may have slipped, from an outside reader's perspective, and we're all reading this with our own perceptions, because he says, "Tell me you built this to guidance," and you say, "I've built it to the drawing." Is that right?

A That's exactly it, and that's----

Q So, you're kind of----

A Well, I'm trying to be very clear with David at that point so that there's no mistaking that-- you know, he's not expecting that his buildings should perform in one way or another. It should perform exactly how the information that's set out in the drawings tells it to.

Q Okay, thank you. Now, can we just move-- we can leave that one, thanks, and move back to your witness statement. I'm not going to ask you about everything in it, you'll be pleased to know, but we'll use it as a guide to walk us through some of the issues that crop up.

A Okay.

Q Page 21, you're asked about what your knowledge is of there being wards which involved immune-compromised paediatric patients, and you say, at this stage, you can't really recall----

A No.

Q -- what was what, and then you make the same point-- I think the way you put it here, about halfway down page 21, is:

> "...the focus was to ensure not stepping outside that of construction issue information."

So, that's what your aim is. Is that right?

A Yeah, that's it.

Q Although you say, at the time, you probably had a general overview of any of the specialist departments?

A So, yeah, because I was with the departments-- and depending what part of the project I'm looking at, concrete specification drawings, you know, I'm then looking at theatre information, you know, it's such a diverse range of product that you do on such a fabulous project, really, and, as someone who's in construction, it's got everything that you ever want to do.

Q So, you may be looking at concrete or electrics or anything else on one particular day?

A Absolutely. Absolutely, and then you can be looking at a theatre suite and how the-- how the theatres go together, but you also are mindful of what the departments are, so as you have a form of understanding, but you're not looking at it as any form of clinical expertise, obviously.

Q Yes. I think you're asked similar questions about whether you knew about Wards 4B and 4C, and you give similar answers, you can't remember directly what their position was. Now, if I can just come to 25, just because I think this is probably a point at which to acknowledge an error on the part of the questioner. You were asked about suspended ceilings.

Now, we were firmly rapped over the knuckles by the architect for complaining about suspended ceilings, because the question shouldn't really be about suspended ceilings because they were all suspended ceilings in one way or another. It was the finish of the ceiling, viewed from the room, as it were, that may or may not have been important. The reason I think you were asked about it was that there was an issue in 4B which was discovered, that sealed plasterboard ceilings might have been the desired objective, but a non-sealed grid had been applied instead.

A Yes.

Q And that was then dealt with and fixed. Do you remember that?

A I remember elements around it, yes.

Q One of the slightly technical points that's taken by a number of the witness statements that we've seen is that, the way this contract works, if the builder finds something that's not compliant, they're supposed to tell the employer as opposed to the employer digging around and trying to find something wrong. The builder is supposed to raise what's described as a non-compliance.

A Yes.

Q And you say, in answer to a question about this, "I don't know whether Multiplex raised a non-compliance." I suppose my question is, how would they know if you're simply working off construction drawings?

A Well, that's-- that's a very key point. Ultimately, the fact that there was a lay-in grid ceiling installed in some of these rooms where it might have been a plasterboard ceiling would not have been picked up as part of the process for the construction

delivery team.

Q Because it's said to have emerged from something called a clinical output specification which arose in a much earlier stage and wouldn't be seen by you?

A No, I wouldn't-- I wouldn't have saw that.

Q You're asked, on the same page, about backup air handling plants, and you say you don't know because that's dealt with in design, and you say you don't know the intended occupants of 4C, which is apparently where the original occupants of 4B were going to be moved. Can I just come back to this question of some kind of intermediate opportunity for finding a problem? Page 27, you say:

> "If any concerns had arisen during the construction phase, I would have expected them to be flagged either by the MPX team or, as an additional safeguard, by the Capita team."

Now, if the Multiplex team is doing what you're telling us you're doing, which is working off the construction drawings and not going back behind that, how would they flag something like that?

A Well, they wouldn't, so-- and sorry if I've led to some confusion there. What I'm saying is we have our own inspection and test plans on site that are a sign-off process and hold points above ceilings. We then have an inspection by the building control officer to ensure that they are happy, that we're doing things like firewall and compartmentation correct. We then-- As we go through the process, we have a number of points that Capita's team would have came and witnessed to allow us to close up areas, and that could be from external walls, looking at insulation, to above ceilings and the duct works being completed. If they've highlighted something in the reports during the process of the construction period, we would want to ensure that they had the opportunity to inspect that, to give a commitment that we had completed the works to the satisfaction of the specification and to the standards set out in the contract.

Q Further down on that page, we go back to what we've been calling Schiehallion Ward and 2A and 2B, and you don't remember the specifics of that. We may already have had this from you, but middle of the way of the page, you say:

> "For compliance MPX would have had a testing and

commissioning programme followed by inspection and sign off in accordance with the signed off design."

Now, you say "in accordance with the signed off design." What you actually mean there, do you not, is "in accordance with the construction drawings"?

A Which, to my mind, would be information that had been through the RDD process and had been agreed by the teams that had to agree it.

Q And the testing and commissioning, both of these, I think I'm right, and please correct me if I've not picked up your earlier evidence, would be done by reference to the construction drawings?

A Absolutely.

Q So both testing and commissioning. So you test, somebody comes in, witnesses it, but you're testing off the construction drawings?

A We're testing the construction drawings, because that is the agreed route to completion, as far as I'm concerned.

Q This is why I asked you, particularly in relation to ventilation, by the time you're at the stage of commissioning, which is checking all

the bits of work and so on, it's really too late to do anything significant to that system, isn't it? Because you've built the structures within which the ventilation has to be held, you've built your plant rooms, you've built your ducts, all these things are in place.

A And I think that's the importance of the design review, that-- that emphasises the importance of ensuring that you get it right at that stage. Construction is fraught with design not managed correctly at times, and then the construction team having to make alterations because it's not stood up to the contracted drawings, if that makes sense.

Q So, I may have asked you this already, in which case, apologies: do you agree that, in the context of a project like this, it's important to get the ventilation requirements right very early on?

A That and everything else. So, even if you get your concrete mix wrong, you're going to have a massive problem down the line. So everything that you do needs to be checked and verified during the design process because it's the jigsaw that we then build on site.

Q Do you know, and if you don't know, please tell me because you arrived late-ish on the scene here,

do you know who was checking the ventilation, wearing a GGC hat?

A As in from the project team?

Q Yes, or under the control of the project team.

A So I-- I'm just trying to think if I know the answer to this because I've been reading up on this.

Q Well, I think I'm interested in what you knew----

A Yeah.

Q -- at the time.

A I think-- It would be only fair of me to say that I wasn't clear on who was doing that. I think it's fair.

THE CHAIR: Just so that I'm keeping up, when you ask who was checking on ventilation on behalf of the project team, what stage are we at?

MR CONNAL: Prior to the issue of the construction drawings that this witness has been telling us were his baseline, holy grail, whatever you want to call it.

THE CHAIR: Yes, okay, prior to----

MR CONNAL: Prior to that. So, as I understand the witness's answer, and Mr Fernie is about to correct me if I'm not picking him up right, the answer, my Lord, as I take it, is that, first of all, Mr Fernie was not there, we've established that, during the design process, but it wasn't clear to Mr Fernie who had been checking the ventilation details either in the project team or on behalf of the project team. Now, is that correct Mr Fernie?

A That's-- At that point, yes.

Q Thank you very much. One issue that did crop up, and I'm going come back to this when I'm talking about commissioning and validation because I want to ask you about that, was the isolation rooms and room pressure testing----

A Yeah.

Q -- which cropped up near the end of the job. Do you remember that?

A Yes, I do.

Q I think a broad question is this. First of all, I think I'm right in understanding something like 32 isolation rooms hadn't been pressure-tested. Do you remember that?

A I don't recall that.

Q Do you recall an issue about isolation rooms not having been pressure-tested?

A When you say, "pressure-tested," do you mean air leakage testing, or do you mean pressure testing from the air? Air-- Positive pressure, negative pressure----

Q The air permeability, for instance?

A I do recall that, and was this before January ‘15?

Q Yes. I’ll show you some documents in a minute.

A Yes, that would be helpful.

Q I suppose what I’m about to suggest is, what appears to have happened is that after you might have expected all of that to be done, it was discovered that some of these rooms hadn’t been tested in the way that they should have been. I wondered if you could help us how that could have happened.

A I could-- I would probably need to understand the dates of that. Was that prior to practical completion or after practical completion?

Q I’m going to ask you about practical completion as well.

A Okay.

Q But can we have bundle 12, document 51, page 353, please? I got my numbers wrong. My apologies. This is a supervisor’s notification of defect dated September. So this is considerably after handover----

A Yes.

Q -- and, in fact, after patient migration, which was somewhere around June.

> “Isolation rooms
>
> Following the discovery that Air Permeability Tests were not carried out within 36 isolation rooms in accordance with the... requirements.”

Then the inference is you’re getting on with it now. Do you now remember this cropping up? Because you seem to be on the distribution list.

A Yeah. My memory of it is very faint, but I do recall having some conversations that-- perhaps with the project team who were left in place after I came out of the project. There was certainly some conversation around that, and perhaps there was confusion between the commissioning on the air pressures versus the (inaudible 15:05.43) air leakage.

Q I suppose that we’re always looking, in this Inquiry, to think of how can we----

A Yeah.

Q -- look at things that didn’t quite work and perhaps suggest how they could work better. Can you help us at all as to how something of that apparent scale, 36 isolation rooms, could have happened?

A I guess it would be-- And I’m not wishing to sound in any way

making excuses because ultimately that's not why I'm here. It's a very large complex project with-- if you've got 36 isolation rooms, you've got, you know, nearly 6,000 rooms inside the building, and so the scale of the project may have led to some oversight. Now, that oversight should be picked up as part of the QA procedures, which were managed through, from a Multiplex point of view, with a quality manager who would have extracted from the specification and commissioning what the requirements were for each of those rooms, and so that you didn't suffer from this scenario. I can only think that it wasn't picked up as part of that process.

Q There may be an argument that it should have been picked up by someone on behalf of GGC as well.

A I think-- I think there's a backstop in relation to-- It's Capita who have obviously highlighted this. Capita are certainly not responsible for this oversight, but they weren't part of the team who would have carried out that review.

Q Can we go to page 296? Thank you. This appears to be an email in August. So, again, we're after handover, some considerable time, raising questions about how particular issues had cropped up. Do you remember this at all?

A I didn't remember at the time, but when I read it in the bundles, I had some memory of it, yes.

Q Can you help us as to what you understand was happening here?

A I'm just reading that, sorry, just to----

Q Of course.

A Hold you back.

Q Seems to be something about the pressure that's being achieved isn't working properly, at least in some rooms.

A So, this was-- I think this may be in-- I've not read it all yet, but I think this may be in relation to the early leakage testing.

Q Yes.

A So, Gillon was one of the original construction team. He had been on the project for a number of years and was specifically involved in the Children's Hospital, and his project manager was Fergus Shaw. I'm not sure if the email here is referring to only the Children's because, at this date, Gillon would have had more of a site-wide role to support or to manage any of the defects that would have been coming up during this period of

time. So, if Gillon was involved with, you know, testing and would have, you know, had people with, you know, trying to find where air leakage was coming from, and so if that was behind the panels, the IPS panels, which would be a potential obvious point for air leakage, then Gillon would be trying to identify where the gaps were and how to resolve the issue.

Q Thank you. Now, I don't think we'll go into the detail of that with you, Mr Fernie. The next thing I wanted to ask you about, and it's largely because we're trying to get to the bottom of it in this Inquiry, is the early filling of the water system, i.e. the filling of the water system at a date prior to handover. I just wondered whether you're able to help us with that at all. We have some information suggesting it wasn't going happen before March 2013. So that's quite a long time before handover. Can you help us at all as to when it was filled?

A I can't be specific in that, I'm afraid. Filled with water. I really can't be specific, but it's-- When it was filled, it would have been done under the controlled measure to ensure that the pressures didn't impact operatives, because it would still be a construction site, that the incoming water would not impact the system. So it had been tested prior to the water coming in. And then there would have been a watch put in place to ensure that if there was any leaks over the period of what would be a week or so, that you would expect any water to escape or a valve to come off or a loose fitting, then that would be monitored day and night over the project so that we didn't have a large damaging impact of a flood, but the actual date of that, I'm afraid, I don't have that in my head.

Q I'm interested in your answer because what you've explained there are precautions that you know of which were designed to prevent leaks and flooding and, no doubt, very sensibly. So do you know what was done to try to keep the water, as it were, in a safe condition?

A Mm-hmm.

Q Because it's potentially sitting there----

A Yeah.

Q -- for some considerable time.

A So, generally, once we fill a system, we have a regime of flushing, but prior to that, there's testing of the water until the water gets to a certain rate. So, you're cleaning the system through. Whatever's in the pipe work will eventually-- and obviously it takes quite some time on a

project of that size, and so you do it in parts. And then once one part's finished, you then bring the next part online ensuring that you don't have any contaminants going back into the initial tested and cleaned area.

Then you have a system of, essentially, operatives who are nominated to go around and like you see-- a poor analogy, sorry, but if you're in a restaurant, you walk in, you see in the toilet there's an inspection, that someone's come in and signed to say that they've cleaned the toilet that day or they've inspected it every hour, and we would have a signatory person going around and flushing the toilet, running the taps for a certain period of time, and doing that right around the campus as the project grew in size.

Q Why are you doing these things? Why do you understand you're doing these things?

A So, again, not an infection control expert, but we-- I know that if the water is allowed to sit in the system, then there are potential problems with contaminants growing, Legionella being one perhaps, a number of different elements whose name don't come to me now, but if you don't do it and you don't manage it religiously, I should say, then there's a potential for that to happen, and so

you need to evidence that. You need to evidence how you're doing it by test results, and actually the piece of paper where the operatives have signed it, and also doing spot checks and ensuring that the operatives are doing it instead of doing something else.

Q Do you know, and if you don't, just tell me, who from the GGC side would be aware of this filling of the water system?

A The timing of it or the process?

Q Well, both.

A Oh. So, the timing of it, it would be discussed at the project meetings. So, the project-- So, for me it would have been-- David Loudon would have been made aware of that, Peter Moir, David Hall. That would certainly not be something that we would do without agreeing it. We would then advise them of the process to ensure that we were managing the water.

Q One of the issues that's cropped up in this Inquiry is what's been described as the size and complexity of the water system at this very large build. Was that an issue for Multiplex in trying to keep it safe?

A No, I don't believe so, and I believe because-- Again, some context on that is that we have a

supersized project, for want of a better term, which is a very complex build and requires careful handling until you hand it over and after you hand it over, okay? So management process-- so my job is very much processing people, okay? I get people to manage a process and then look at how we report on that, and is it sufficient. So, numbers of staff, Multiplex had 100 staff on the project and maintained a high level of staff until the completion or the partial completion of the project.

We also had a large volume of management of the supply chain, so, Mercury, who were ultimately responsible for the MEP installation for the hospital and would have managed the process of flushing and testing but would have been monitored by somebody like David Wilson, and those results would have came to me as project director, had there been any concerns over the results. So it wasn't the size of the project, I don't believe. It was the complexity for Multiplex, other than the day-to-day doing it correctly or trying do it correctly with the best will.

What I think subsequently became-- it was the people, the team who were going to take over that responsibility, had never encountered something like this, because they had

worked on perhaps smaller buildings, and so the responsibility that would have passed from me as project director over to, I guess, the Estates team, was something that required very careful management to ensure that that team were aware of how to manage the process as it came from being a building site to being partially occupied, to then becoming a hospital building. It's-- For the Inquiry's point of view – and I'm sure you know – this is one of the biggest buildings that-- or one of the biggest hospitals in the country, you know? It's enormous, so it can be quite daunting for those who (a) come to the building, and those (b) who are responsible for looking after it.

Q Is one of the challenges of doing that properly that what you're doing is testing and spot testing, but you might not, for instance, spot test in the place where there was a problem on a particular day? You can only know the results of your spot testing.

A There's a potential, I'm sure, for that, yeah, but we would-- to negate that risk, you would test in separate areas and take your readings from separate areas.

Q When the hospital is operational, it was designed with a thermal disinfectant approach, depending on water temperatures.

What was happening while it was under the control of Multiplex?

A So, during the-- before----

Q After it was filled and before the heating system kicked in.

A So, I believe, at that point, that that was the regime of flushing, which would be the-- obviously, as I was discussing earlier, going through a, you know, cycle. I can't remember how often we had to do it, but, you know, every tap, every toilet, anywhere there was a water source for the building would have to be turned on and let run for a period of time, and they would record doing that. That was logs that were then presented to the project teams to give them confidence that we were doing that, and I know that that was a system that was managed and closely monitored by David Wilson and Darren Pike and his team. So the spot checks were getting carried out.

Q Let me move forward a little bit. We can take that one off the screen, thank you.

THE CHAIR: Just before we leave: filling the water system, you've said that you can't be specific when this happened. Can you give us any indication as to how long it would have been filled before handover?

A My Lord, I really can't give you specifics, but it would be months and months and months prior to handover. Months and months prior to handover, because we would be bringing on the system piece by piece, but it would be months and months.

THE CHAIR: Thank you.

A And the reason for doing that – just again for context – is the filling of the system allowed us to then do the commissioning, check that the building was working in compliance to the design information that we built it to.

MR CONNAL: In another section of your witness statement, you're asked about commissioning and validation, and to some extent we've touched on commissioning a little bit on the way past, as it were. So, page 33 of your witness statement, you see, third of the way down, commissioning work was managed by David Wilson, and then there was an update, etc., and the commissioning was on an inspection basis, witnessing rates and ultimately achieving the contractual requirements. What you mean by that is what was on the drawings.

A Yes.

Q So you're not there going back to SHTM or anything like that?

A No.

Q Then you explained that it was done by Mercury, who of course were a subcontractor to----

A That's right.

Q -- Multiplex. I suppose it's really back to the email exchange with Mr Loudon where I suggested that perhaps in the result, parties were speaking past each other rather than to each other. When you're asked near the foot of that page that the employers:

> "...require the Contractor to demonstrate and certify to the Board the successful completion of all commissioning, testing and compliance with all relevant standards."

You say today, I think, "What I can do is demonstrate that I built to the construction drawings," but how would you meet the requirement to confirm that you've been building to all the standards? Simply by saying the construction drawings must be the standards?

A Yeah, and I say that because I'm furnished with the knowledge that, prior to those drawings reaching the construction team, there's been a process in place which should have captured the requirements for this building, and

whoever was going to be using the building is either an employee or a patient.

Q I'll try and ask you one or two more questions about kind of end point of the contract shortly. I wanted to ask you about a topic that cropped up, and I'm not going to ask you to read lots and lots and lots of supervisors' reports, you'll be pleased to know, but you're probably aware that there was a topic of pipes with open ends.

A I'm aware of that, yes.

Q The Inquiry has trawled through supervisors' reports and finds that, in different ways and in different extents of detail and with different adjectives applied, the question of pipes with open ends crops up regularly, if I can put it that way, over a period of years.

A Yes.

Q Well, given your role in the project, first of all, do you accept that pipes with open ends are undesirable?

A Very much so.

Q We happen to know that, in this case, this was an issue that recurred. What were you doing to try to stop that?

A So, this boils down to behaviours on site and how the

operative-- This is the very granular level of construction, okay? And so operatives are given the role to instal, whether it be reinforcement for the concrete or pipework above ceilings. They follow a risk assessment and a method statement to make sure that they are aware of the requirements to allow that work to be satisfactory. We had, at peak, 1,700 operatives come into site to deliver the job. I would think more than 50 per cent of that proportion would be the mechanical and electrical installation at that point, and so what would often happen is materials would arrive on site as modular units, if we stick to the pipework.

They would come to site capped and inspected. If the inspection was signed off as being appropriate, then the materials would be allowed to be kept in a building ready for the next phase, and the modular unit is essentially a large, bracketed element of materials that are pipework, sometimes ductwork, sometimes basket or cable tray, and the idea is that it's manufactured off site to improve the quality of it, so as that we don't have site environments impacting the work process.

It's then guided along the corridors inside the hospital on wheels, and then it's lifted up in its entirety and hung from brackets. When it comes off, each of these modules has a gap whereby you have an infill piece to allow the cables or-- sorry, cable trays or pipes to be jointed together. There is always a point where a cap needs to come off to allow this jointing piece to be made, and, in some instances, that's maybe where Capita were finding this.

An operative, if they were taking it off at 4.30 p.m. and finishing at 5 p.m., we would be very keen that they (a) didn't take it off, so the method statement risk assessment would be something more so than methodology at this time because the risks have been managed, but your method of installation would be part of that process. So we'd say, "When you remove a cap, then it needs to be, to allow you to make a joint, or if you finish for the evening or in the afternoon, or it's the weekend, then you need to cover that cap." The caps could cover medical gases or domestic water or drainage or ductwork, and so it's ideal if we limit the exposure of the services by capping them at the end of the day or when they arrive on site.

The backstop to that is, whilst we continually tried to do that and continually had lessons learned for the

operatives on site, we still struggled to have instances where all the caps were on all the time. That could be because the process was, the caps off, the joint was made, or the operative might just be looking at his or her watch and saying, “It’s time to go home,” and so there’s human error which comes into that. So to capture that human error, we then have a system of cleaning that pipework and cleaning that ductwork, so that whilst we do have the not ideal situation of people not doing the way I want them to do on site for the MEP installation, we capture the risk associated with that as part of the cleaning process at the end. Or should be. If the pipework is damaged beyond it, then we take it away and replace it.

Q Well, I wonder if I could just ask my question again in a slightly different way in light of your very helpful answer. If this question of, can we call, operator behaviour was a known issue, should you not have been catering for the fact that it was a known issue by doing something else to avoid it?

A On the face of it, you could say that, but I guess I’m trying to inform the Inquiry here that the size and quantum of open ends would be hundreds and hundreds of thousands

of bits of pipe, hundreds and hundreds of thousands on this hospital. So to-- if you’ve got, say, 60 pipe fitters on the project at any given day, making 5 joints a day, then you get 5 times 60 open ends, all open, and they should have completed the pipeworks joint or capped the end as he walked away. Not everyone would do that, but it was in a very small quantum as far as I am aware, in relation to the many hundreds of thousands of open potential pipework, and what we did do is we had what we call foremen or supervisors’ talks, and the operatives would be stood down, so stopped from working, and the risks associated with what they were discussed, and everybody then taken back through the methodology of how to do the-- how to manage any open ends, and that is a very commonplace thing in the construction industry because I think it’s not just a problem for the construction industry, but people do tend to take shortcuts, and managing that requires a firm hand in some instances, but more so training and the training was what we tried to identify as being the way forward.

THE CHAIR: If I can run back over some of the things you’ve said. Now, you’ve described the use of modular units.

A Yes.

THE CHAIR: Now, I imagined the modular – well, I think this is what you described – a modular unit being brought into a partly-constructed building, so I've got that set.

A That's perfect, yeah.

THE CHAIR: Does the modular unit remain as a unit to be, as it were, slotted in or is it disassembled before it's installed?

A Okay, so the modular unit comes in; there are vertical units and horizontal units. The vertical units sit inside the risers and the risers are the main arteries in the building, and when they are delivered to site, they can have very large elements of pipework and duct work on them. As long as the design has allowed the MEP team to get it to construction status information, then everything that's in that riser comes in, and we actually have the flooring installed. So when the riser drops down with the crane, it's completely shrink-wrapped, so there's no chance of any damage by weather or dirt or dust, but it's open to elements in relation to whatever the humidity level would be at that point, okay? So we drop these large units in, and these units tend to go either between two floors-- they tend to go between two floors or three floors at a time, and if the floors are 4.7 high, then it was the full length of an articulated lorry that these things get lifted off and vertically dropped into place.

And the idea behind it, my Lord, is that we make it safe for the operative not working inside a scaffolding. We drop it in as a completed unit, and then the operative walks through the safety barrier into a riser, and the riser could be-- Essentially, at the half size of this part of the room, you'd have four operatives working on it at a time. This is because of the size of the project, but because we have dropped him in as a modular unit and the flooring is there, we know that the operative is safe, and they can then joint between the floors, or every third or second floor, and piece everything together, and again, we had the same opportunity for risk of open ends, but the environment means that it's not so open to dust and dirt because it's sitting inside a riser unit, a concrete shell.

When the horizontal units come in they are generally smaller, but they can be as deep as 1.5 metres, and they can be as long as, probably, up to 4 metres long and even as short as 2 metres long, and they form the veins of

the building for the services, and they're made up of what we call a Unistrut system. So it's a metal system, and from when it comes off the lorry to it sits on the ceiling, and it's lifted up on rams or jacks if you like, so small lifting elements, and basically, we have threaded rod coming down off the ceiling which is a large piece of steel like a large screw, and the unit goes up and the screw gets tightened, and that unit never comes back down and never changes shape from the minute that it leaves the factory to the minute it arrives on site, thus ensuring the quality of pipework is standardised across the project and that the material that we use is standardised.

THE CHAIR: Now, we're obviously particularly interested in the pipework that makes up the water system. In addition to use of modular units, would part of the water system be constructed of simply pipes that are brought onto site as recognisable pipes?

A There may be some instances of that, but even as you take-- even when you come off the main arteries of modular units, even when we've come into the rooms, we have small modular units again, so as-- that we limit the use, and there's a couple of reasons for that in

construction. One is the quality is maintained in an off-site fabrication and the other is to actually try to complete all that work would have required another thousand or so operatives, all trying to get to the same place, working at height. So we negate that risk by doing it all off-site, and the more modules we can make, whether they're small or large, the greater control we have, and so the pieces of pipework that you're referring to would be, I believe, not commonplace. They would form part of the modularised units, but the junctions between each of the modules would be brought into site. In fact, they would sometimes be part of the delivery for the module in a bag or in a box, so that you knew the pipework between here and here, and the joint was to go in, and that's the piece that would be carried out on site.

THE CHAIR: So, my rather simple-minded and no doubt an old-fashioned picture of separate pipes being brought onto site and then stored outside for a period of time in order to be brought in or put together as individual lengths of pipe is simply wrong?

A No, sir, not in all instances, but they wouldn't be left outside. So, when the pipe would be

brought to site, this is high-value material, often it's copper, and we would have storage areas which would be controlled environments, so they wouldn't be exposed to the weather. They would be clean, and they would be capped end, and they would be locked so that people couldn't take it without permission. But if you, again, go back to the quantum of because of the overall size of the project, the only way to deliver a job like that is to do it, in my view, and what we ultimately managed to do, is manufacture the majority of the pipework and electrical routes all off site, and also looked at how we modularised and what we call plug and play systems was that, you know, sockets were on the trunking as well, so as that you didn't have to do any of the small jobs.

You could literally walk up and plug in your light fitting once that had been wired through.

THE CHAIR: Thank you.

MR CONNAL: Let me ask you about another word, "validation" in the context of a ventilation system. Are you familiar with that concept?

A I am, yes.

Q Now, I don't think there's any dispute that commissioning is done by the contractor, validation is supposed to be done under the guidance by the client, correct?

A In this particular project, yes.

Q Yes, okay, so it might be different if it was PFI-type project?

A It can change, it can change, yeah.

Q Yes. Now, the understanding I'm going to suggest to you is that the aim of validation is for the client to decide, having carried out this testing, whether the area's ventilation is acceptable. Would you agree with that general description?

A So the validation can be a number of things, right, and this is where I think, in future, projects can learn from this, which is the commissioning and testing carried out by the contractor is in reference, as I've already said, to the contractor ones, and there is no change to that going forward. The validation of the room may or may not refer to what the patient core is, or who's going to finally use the room, or may just be a verification of the contractor's results.

Q Yes, well, I think what I'm trying to get to, and perhaps you can assist us on thinking of ways in which things can be done better; if the contractor were to think of validation as something that had to be done before handover, so in other words,

the customer had to be satisfied with their validation before they took the ward, or the room, or whatever it happened to be----

A Yeah, yeah.

Q -- then the contractor would have to make some kind of provision for that in their programming and other arrangements. Would you agree?

A I would, but if I can talk about the kind of-- the last part of the project, where we went from commissioning to completion, and then migration strategy, which was after PAC.

Q Well, I understand that there's that point, but if you pull validation back to handover, does it not have the advantage that both parties, in this cooperative and hand-in-glove environment, have an interest in validation getting done and done successfully? Because the contractor, I have to suggest to you, is keen to get on and get you to take this building from me.

A Yeah, yeah.

Q The client wants to know, "Yes, I've had it checked and it's all fine."

A Yeah.

Q So, what would you need to do to make sure that both parties had an interest in that being done?

A Yeah, so you could put it in prior to practical completion, and you would identify-- So, going forward and in future projects, because of the-- because of what I know now in relation to the complexities of after the project was PC'd, it would be about the validation exercise; speaking to the patient. And what I mean is when the patient arrives, is the environment correct for that patient, right, as opposed to validating what has already been inspected and commissioned and tested. So, the validation may only be a repeat of what we've already done to validate the system. What I guess would be beneficial, and perhaps there would be two hold points in the project going forward. One would be at the construction stage, before I start to pour concrete and put the fan core units in and all the stuff that goes inside hospitals, that there's a check on, is everybody happy that this is the correct level of lighting, ventilation, water for whoever that patient's going to be and whatever service this department provides.

Q Yes, well, let's pause on that one. I think Mr Pike may have been asked a similar question, and he was talking about what he described as a loop back, that you have various

parties contributing to the discussions about what they want at an early stage, and then it gets taken over by a kind of building process. You're really referring to something similar here where you've done your design, you think you're doing the right thing, but before you start doing anything irretrievable, you have a kind of pause point.

A Yeah.

Q And in comes the Health Authority or whatever and says, "Right, we're going to get somebody to have a look at this afresh."

A Yeah, absolutely.

Q And go, "Yeah, you're absolutely right," or, "How did we get here?"

A Yeah, and that would be potentially something that could delay a project, but it would mean we perhaps reduce the risk of getting to a place where people thought they were getting (a) and in fact they were getting (b). So that would be essential, I think, going forward and also the people who are going to manage that part of the building come already aware of what they currently have in their building. So if it's air changes, "This is how many air changes we have," and, "Do we have that?" So, the conversation around litres per minute or second

versus changes and the complexities surrounding who understands what that means, and who's signing it off, I think it's got to be, in future, the clinical person has that opportunity. Now, how you manage that process is perhaps beyond my set of skills. But it just sounds like it's a hold point for the Project Team to bring that person in and say, "This is what we've signed off on, on our contractor. Mr Fernie's going to go and do that. Is everybody happy?" And then-- Sorry.

Q No.

A And then just----

Q I didn't mean-- I thought you'd finished. No, carry on.

A And then the second hold point is before that patient, I think, comes into the room.

Q Which might be before practical completion?

A You could do it-- I mean, practical completion is a name of a date, right?

Q Yes, I'm going to ask you about that in a minute, so----

A Okay.

Q We'll pause your description of practical completion for the moment. I suppose what I was getting at, you've described or you were going to tell me about two hold points.

A Yeah.

Q You've told us about one. I was wondering whether the other hold point is somewhere around where validation is assumed to be now, which is at a point when contractor's done commissioning and then the recipient says, "Now I do validation," at the end of the exercise?

A Yeah, but the validation should, I believe, not only be checking the homework of the contractor, for want of a better explanation, but actually checking that it fits the bill for the patient.

Q Because as you probably know, one of the issues here is that validation wasn't done so everything moved on, and what I was trying to explore with you – and I'm very grateful to you for your answers – are how we might build in some requirement for validation so that it's in the minds of both the client of the job and the contractor.

A Yeah.

Q Because that way there's, perhaps, a better chance of it happening.

A And, also, the definition of validation probably needs to be very clear because I remember having conversations with Karen Connelly, who was responsible for the theatres block getting a validatory check on the cleanliness levels, i.e. could you take a patient in that room after the cleaning process has happened, and we have a number of cleans prior to the practical completion of a building and we also have a maintenance team of cleaners because you can't hand a building over that's not at a certain level of cleanliness, whether it be in a clinical area or non-clinical area, back of house, front of house. But the theatre has another clean after the contractor and that, to me, is a validation of that area but it doesn't necessarily talk to the contractor's commissioning rates for, you know, like a theatre canopy or something like that.

THE CHAIR: Could I just clarify, you were describing what Mr Connal described as the "first hold point." Could you just define for me, I wasn't entirely clear where----

A Where it is?

THE CHAIR: -- your first hold point would be in the history of design into construction.

A Okay. Yeah, so the ABC status of drawn information means that information goes back and forward between Multiplex and the Greater Glasgow team. Once you get to an approved or agreed status, and I use those words intentionally, then at that

point it's considered construction status. It's ready to come to me and my team or go into another iteration of what we call "working drawings" or "shop drawings."

So once the building envelope has been agreed, then we send the drawings to a specialist envelope contractor for the windows. They produce shop drawings and then those drawings come back in to the team for agreement, not necessarily approval, but agreement. From an MEP perspective, and if it's ventilation or water supply, then my hold point I think would be after A has been agreed, the shop drawings have been produced and the rates of output for any part of the building can be clearly seen as 80 litres, 40 litres or – and talking in the right language – how many air changes am I getting?

After that's done and then inspected by the clinical team and the clinical team say, "I can use this building to treat my patients," and it seems a very obvious hold point to then, before I start, to pour the concrete that provides the floor that provides the walls, which then determines the spatial part of the building.

THE CHAIR: Right, so it's conclusion of design, the client has approved it at A level?

A Yeah.

THE CHAIR: And sufficient drawings have been-- construction drawings have been completed which would allow the clinician, perhaps with someone standing beside the clinician to explain the drawing to understand what is being proposed?

A Yeah, I would perhaps suggest it's done as almost a presentation, as opposed to a, "Here's the drawings, what do you think?" It's almost, "This is what your building is going to look like."

THE CHAIR: Right, thank you.

MR CONNAL: Now, I deliberately interrupted you when you were going to talk about practical completion because in your witness statement you gave an answer that I suspect is where you're about to go with this. When you said, "Well, practical completion is just when you get to a point that everybody's prepared to sign a piece of paper to say it's practically complete," which I thought was an interesting take on what an outsider might think practical completion was. Am I right in understanding?

A I didn't mean to belittle it so much.

Q No, no, no.

A I hope I didn't sound like that. Practical completion is a date that we target to make sure that the construction works are complete and the job changes in an instant, and a fraction from being a construction project to a live building, right? It then has an occupancy certification allowing people to come to the building who are general public, who don't understand construction, who shouldn't need to understand construction, and can access the building without having any worries about the fire alarm system or the life safety systems of the building.

So PC, from a contractor's point of view, has got a number of elements to it. One of them is it recognises when we've finished from being a construction site to a completed product. But a building as big as the hospital does not always mean that the construction work is finished, okay? Because you've got other elements of work that are required to be completed after practical completion, which should be defined as part of the completion certification or as part of the contract prior to that PC date. There'll be a defects list, right? And defects don't always mean something's wrong. It can mean something's not completely finished, okay?

Q So, are these two separate things then, work still to be done and a defects list?

A So, if you step in at the end of January, to the hospital, 2015, the week leading up to that handover, I had the job going from 700 operatives for that last month to maybe 100 people in the last day. The last 100 people would be quite a lot of staff and cleaners and life safety system, MEP management team, and there was a reason for doing that which, probably, I need to go back before I go forward and if I'm allowed to do that----

Q No, I'm keen to understand it because I think just before you do, you'll understand that we've had differing views recorded about the state, or the perceived state of the building.

A Yeah. I'm very keen to clear that up, to be clear.

Q Some people saying, "It was just like a building site, it was a complete nightmare. We had hundreds of Multiplex subcontractors turning up the next day wanting permits to work, to do lots of things."

A Yeah.

Q Others saying, "It was absolutely fine, there were only minor things. If there was any work being done, it was being done by the Board

to install equipment."

A Yeah. Yeah.

Q And there's clearly a difference in perception. So can you help us?

A I think perception is a big thing at this point actually, and people actually understanding what PC means and what it means to them as what a building should look like and what it means to me as the principal contractor.

So, for me, it's to finish all the construction works and to ensure the building is handed in a position which allows the next phase of work to go through. So all my life safety systems are operational, fire alarm systems and the like, everything that could require automation, i.e. if smoke sensors all cleared off, the alarm panel not bleeping, everything just as it should be.

So from end of January, if you walk into the hospital, you'll see very few construction people working. They'll have a small team of people who are maintaining a system to ensure that we're doing our checks and balances and we're desperately trying to get finished all of the small outstanding works, so damage to a floor tile, a damaged ceiling tile, a scuff on the wall, because paint and

decoration, you know? And we've got what's known as a temporary occupancy certificate from building control because we've brought that service into the process to make sure that they are comfortable, because they've never handed a building over as big as this. So they need to be comfortable to know that our works are installed to the correct standard to protect the public.

So those checks and balances have all been completed. We've taken the Board's representative teams, Capita, and some of the Greater Glasgow teams around the project. Often, people can look at a project with a month to go and think, "I don't think you're going to finish it," and as a project director, sometimes, you know, the pressures there are such that you start to think, "How am I going to get this building complete?"

I'd like it to be absolutely clear to the Inquiry that the practical completion date was a date that was a target date, and if we had to move that date due to not being ready, the contract completion date was a month later. So there was no pressure on me as a manager to maintain a date that I could move. Where the drivers come from is you have a super tanker behind you, which is the movement, the

migration strategy, and so you'll see in some of the minutes with the Board I was keen to understand what the migration strategy was and how the staff were going to come to the hospital. Who was coming first? When did they come? And what support did they need from me to ensure that there was no adverse experiences as you arrived on what was still, essentially, my or Multiplex's building.

At PC, making sure that everybody in the Greater Glasgow team understood what that meant, as in, the minute you give me that certificate, I'm now not responsible for that building in an insurance point of view, from a security point of view, or a maintenance point of view, unless we set out prior to that what it is you need. So if you look at the size of the team that were coming to manage the building versus the size of the team that were building the building, there was a drastic difference. I had a large team of MEP specialists, commissioning management teams, who were balancing the building, right? So the energy centre was working, the main hospital was working, and all the different parts around in the Estate, except for areas where the office accommodation was still-- the temporary accommodation was sat and some landscaping.

So everything, if you looked at that building, you would walk up to the door and think, "We're finished here." The dialogue with the Greater Glasgow team was to ensure that they were comfortable taking the building off me and I was comfortable to give them it because, as a director in charge of a facility like this, you need to make sure that you're not going to end up with a catastrophic, "Who's going to take this building off me?"

So I think in traditional projects in the past, there was always very much a "them and us" straight approach to what a PC would look like, and clients often would take a building because it would suit them not to manage it, not to maintain it for whatever reason, purely financially driven in many respects, and at other times it would be because the building wasn't complete, but the hospital was complete to the standard and service that it needed to be to allow the Glasgow team to take it on and complete their next phase of works, which entailed hundreds of people fitting out Marks & Spencer's shop, the coffee shops, the imaging area, the MRI areas, they were throughout the project.

Also, you had a massive team – and I don't use the words lightly – of people coming in to protect the floors, the floors that we had literally just lifted the protection off to ensure that the inspections could be carried out, the final day's inspections. It's just one of the things that happen in construction whereby you remove the protection so you show everybody your finished product and then to then furnish the building – desks, chairs, beds, you know, 5,000 rooms worth of furniture all coming through the door, articulated lorries on trolleys, it's a large number of people. So, as a team we decided that we didn't want to have a scenario where we had hundreds of people all waiting to get access to the building. We agreed that we would have a defined list of construction work to be completed after PC and that we would have a controlled and managed process of delivering that work, carrying that work out and completing it and then doing the inspection. That was done through a request for access to the building through the FM team.

We also provided a support mechanism for that FM team for quite a long period of time, myself included, on call to manage anything that was not clear to the FM team or the migration team that the training had

maybe not picked up for them, so we trained the staff on how to manage the building as part of the contractor's requirements to do that. When I say manage the building, I mean the MEP, large plant, small plant, we gave them the information they required to do that, the training, and then the O&M manuals followed through once we agreed how the O&M manual system should be managed.

So, that perception of, "My God, where are all these-- why are there so many people here on the day after PC," was that the Board were a super-tanker of activity right behind what we agreed would be the PC date. But they came into a building that was signed off as completed and the backstop checks that were carried out the month up to that point involved the project team personally accompanying me on site to look at the areas of concerns, and then systematically going through our risk register of everything that we need to turn the building on to make it live, so the thumbs up from our perspective. Are we, as a business, happy to hand the bill? Because that's really important.

And then are we completing the areas of concern? So, ceiling tile missing here. Mairi, Heather, Peter, David Hall, they split into a number of

groups. I guess Mairi would have done the children's, Heather would have done the adult's, Peter had an overall walkaround and literally walked around that building to satisfy themselves that the works were or were not complete. Even to the point of the day of PC when I had spoken to Peter Moir, and it was Peter Moir who ultimately signed the building off, not David Loudon.

Peter and I walked, you know, the majority of the corridors – because you can't go into all the rooms – on that day to ensure that Peter was satisfied that the fire doors was one of his last remaining concerns. But when I walked through that building, there was no ceiling tiles missing, there was no incomplete works. There was nothing obvious to me that would make me feel unhappy to pass that building over and there was no pressure to do it from a Multiplex point of view. We had another month in contract to complete anything that might have spooked anyone at that point, so I guess it is perception.

I was there the day after PC or the week after PC and I could see the number of people coming through the building and in many respects, it's a moment in time for the PD and the construction team to take a breath and watch how the building's getting communicated and also watch how the building, your precious building – I don't want to over egg this too much but it is a very precious product to you – is then starting to get daily usage and damage, potentially, where trolleys are getting bumped over and doors getting damaged and things like that. That's when we were ready to respond to fix doors, fix floors, replace ceiling tiles.

A great example from obviously getting ready for the Inquiry today – and I'd heard about people's perceptions on what was and finished previously to this – there was a number of people came into the project very soon after PC who were lifting ceiling tiles out and drilling holes and walls to allow their works to be completed. I think it was something to do with IT but they were drilling holes in the firewalls and firewalls, whilst not our responsibility anymore at PC, the thought of someone coming in and saying, "Multiplex have left a hole in the firewall," and all of the complexities that go with that meant that we had a conversation with the Board to say, "We will supply fire stopping material and a fire stopper who is licenced to carry out that work and come behind that trade and fill those holes."

Again, I guess the picture I'm perhaps trying to portray here is the operatives that would have come into any hospital in the past would have probably thought it was all right to come and drill a hole in the wall and feed their cable through, but we knew that the compartmentation of the building was ultimately the safety of the people in the building so we wanted to control that. That was very good dialogue with the Greater Glasgow team. That wasn't something that we were trying to beat people over the head with. What we were saying is, "Tell me the migration strategy, show me who's coming in," and we will side by side make sure that there is not a car crash or a migration strategy. That's what PC is to the contractor.

So, you're always going to have construction works, but it's not construction works that would remedy the building unusable. You're always going to have client fit-out, so there's a Marks & Spencer's that required a complete fit-out in the ground floor. The imaging area, which was-- this is why it was a partial occupancy certificate because there was areas inside imaging that were not complete but there were contractors working on behalf of the Greater Glasgow and Clyde outside the contract for

Multiplex, but facilitated by Multiplex. But inside their area, they were their own contractor.

Q I think the stress point seems to be around, if you leave aside physical appearance for the moment, the idea that sort of on day one, this Estates team which has arrived almost cold into this position is having to cope with, I think the suggestion was several hundred Multiplex subcontractors needing permits to, because it was now the Board's building, not Multiplex's building, and that process having to be managed by the people who are now responsible for the maintenance of the building which suggested that there was a lot of work still to be done by Multiplex, not by GGC. Is that inaccurate?

A I feel-- I feel it's inaccurate in as much as the reason for anyone going back to do work would have been to carry out what was on the agreed list. Now, there was a requirement for us to go back into the energy centre to do some additional works to satisfy. There was an inspection carried out and something to do with the hot water temperature in the boiler required us to go back in there and that required quite a number of operatives to go back in, but they were in the energy centre and not

inside the building. The teams that were inside the building, some may have been facilitating the FM team to ensure that they were comfortable still maintaining that building.

Q Thank you, I'll leave that. I think I probably just can finish on one topic for the moment at least. Three things that relate to one another: asset tagging, ZUTEC, and CAFM, the planned preventative maintenance. Now, in your witness statement, you say, well, there was a document control called ZUTEC, the Estates team were happy with it. Now, the evidence this Inquiry has had has tended to suggest that the Estates team were not happy with ZUTEC because it was very difficult to manoeuvre, the stuff wasn't in the right place and there was a big dispute over that that went on for ages until eventually, an outside government agency came in and said, "We agree it's not properly populated." Are you therefore wrong to say that they were happy with it?

A I would say that my understanding from the time – and this came to me latterly after this, understanding that they weren't happy with it – but my view was that my team had told me-- or had not indicated any issues, I should say. So, I knew there

was ongoing dialogue about how the Board wanted asset tagging and ZUTEC and things like that to work and that there was-- I'm not sure if delay would be the right way to say that information making its way back to Multiplex to provide a platform for the O&Ms. Perhaps now, in the 20/20 vision of this Inquiry, the training for that might have been something that we had to focus on.

Q But they're related. I mean, we've heard a lot about asset tagging and it doesn't seem to have been done and doesn't seem to have been completed, in fact, for a period of years, which wasn't the original intention as I understand it. Is that correct?

A That's correct.

Q But one of the purposes behind that is so that you can operate a planned preventative maintenance system which can link to the asset tags and provide you with information when you scan the codes and so on and so forth. One of the issues now is that, or may be, there seems to be an issue as to whether that system should have been available at the point of handover to the Board so that they could get on with their planned preventative maintenance and whether it was provided at handover.

A Yes.

Q Now, can you help us on these?

A I don't know that I can be-- I wasn't as close to this as perhaps – and, you know, looking at it with the rose-tinted spectacles on now – I thought I was, and so because there was nothing coming at me to say, "There's a red flag here," then I wouldn't seek to understand if there was an issue and that actually, understanding that it was an issue all this time later, it's disappointing to hear that.

But I guess my thoughts on this would be that Multiplex don't tend to leave project directors sitting on a job for a long time after it's been completed. They agree with – and I was agreed with David – that there would be a period of time that I would be involved in the project. Ultimately, things like letters and stuff like that came through me because that was the contractual requirement. I was then taken to another project a number of months or so, a month or so after we PC'd that but there was a team left in place to ensure that the hospital felt that they still had support. So, in finding out now about the the ZUTEC side again, I think I would maybe have put it down to perception, but if you're telling me that an independent body was brought in and said that it wasn't suitable, which I didn't know about, then I cannot see anything other than we need to understand why that happened.

Q What about the CAFM, the automated planned preventative maintenance system? Were you aware of an issue about it not being provided?

A No.

Q Can I ask you a slightly more random question? Do you know anything about the use of a non-permitted material in flexible hoses in showers? Something called EDPN?

A I don't.

Q I think, in fairness, you've just told us you were sort of moved on to another job reasonably swiftly after handovers. Is that right?

A I think about a month or so. I had a holiday after as well.

Q My Lord, these are the questions I currently have, if this might be an appropriate moment just to have a short pause.

THE CHAIR: Mr Fernie, what I want to do now is provide Mr Connal with the opportunity to check if any of his colleagues have additional questions. That might take ten minutes, so if I could ask you to return

to the witness room, please.

A Yes, my Lord.

(Short break)

THE CHAIR: Mr Connal.

MR CONNAL: My Lord, I'm pleased to report there are no additional questions.

THE CHAIR: Right. I understand there's no more additional----

THE WITNESS: Okay.

THE CHAIR: -- questions Mr Fernie, which means that your evidence is finished and you're free to go. Before you do that, can I thank you for the work you've done in preparing your evidence and providing us with a written statement, and also with your attendance this afternoon? It's been helpful and I'm very appreciative of it, but you're now free to go.

THE WITNESS: Thank you very much.

(The witness withdrew)

THE CHAIR: Now, Mr Connal, I understand you will be resuming----

MR CONNAL: I am.

THE CHAIR: -- tomorrow morning with Mr Hall.

MR CONNAL: Indeed so, my Lord.

THE CHAIR: Right, well, we shall see each other tomorrow, and if I can wish those who are still with us a pleasant afternoon.

(**Session ends**)

16:22